# Rhydycar West

## Phase 1 Geoenvironmental Assessment
## Desk Top Study and Coal Mining Risk Assessment



January 2023

V4 ISSUE

TETRA TECH

# Phase 1 Geoenvironmental Assessment Desk Top Study and Coal Mining Risk Assessment

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**PRESENTED TO**

**Marvel Limited**
3rd Floor
Elizabeth house
Ruettes Brayes
St Peter Port, Guernsey.

**PRESENTED BY**

**Tetra Tech Limited**
5th Flr, Longcross Court
47 Newport Road
Cardiff
CF24 0AD

029 20 829 200
tetratech.com

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|---|---|---|---|
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# EXECUTIVE SUMMARY

| | |
|---|---|
| The Site | The site covers an area of 30.4 hectares within the wider Rhydycar West site, located adjacent to the A470 to the south west of Merthyr Tydfil on the eastern slopes of Mynydd Aberdâr. |
| Proposed Development | The proposed development considers the following:<br>*An outline application for erection of a mixed leisure development comprising indoor snow centre (up to 39,200 sq m), waterpark (up to 7,500 sq m), indoor activity centre (up to 9,000 sq m), external activity areas, hotel accommodation (up to 418 bedrooms), forest lodge accommodation (up to 30 units), car parking (up to 830 spaces) and associated earthworks, access, drainage, servicing and utilities connections/infrastructure on land situated at Rhydycar West, Merthyr Tydfil, Wales* |
| Site History | The site has been extensively mined for coal and ironstone since the late eighteenth century although small scale surface mines may pre-date the recorded activities. Intensive mining began in the 1760s when the site became the main mineral take for the Cyfartha Iron Works. Mining for Cyfartha is reported to have first occurred in the Cwm Pit in the south-eastern corner of the wider site, with coal being carried by boats along the Cyfartha Tub Boat Canal. Mining for iron stone diminished within the site by the late 19th century although coal mining continued until the mid-20th century. By this time, the site was largely derelict and abandoned with large areas of colliery spoil tips and more localised areas of made ground associated with former tramways, canal and collieries. |
| Geology | Geological mapping indicates that extensive deposits of made ground are present across the site in the form of large spoil heaps present across the majority of the site with additional areas of Made Ground anticipated associated with former developments including rail lines and colliery infrastructure.<br>Superficial deposits of Glacial Till are anticipated across the site with the exception of the uppermost parts of the ski slope. The bedrock underlying the superficial deposits are noted to consist of strata from the Middle and Lower Coal Measures Formation consisting of mudstone, siltstone and sandstone. The Middle Coal Measures are recorded across the majority of the site, with the most easterly areas of the site underlain by strata of the Lower Coal Measures. |
| Historical Coal Mining | The site is located within a high-risk development area with respect to the presence of former mine entries and shallow mine workings within the development area. A large number of spoil tips are also present on the site, including the main development platform which is associated with the construction of the A470 dual carriageway. It is likely that the placement of this material may have led to the burial of mining features (shafts / surface extraction). The proposed development incorporates a number of spoil tips present within the site, including the main development platform. Coal Authority records indicate at least eleven coal seams and ironstone seams outcrop at the site. |
| Hydrogeology and Hydrology | Where present, the superficial stratum of Glacial Till is defined as unproductive strata with the underlying bedrock strata of the Lower and Middle Coal Measures defined as Secondary A Aquifer aquifers. Secondary A Aquifers are classed as permeable layers capable of storing water supplies at a local rather than strategic scale, and in some cases, form an important source of base flows to rivers. |

| | |
|---|---|
| | The aquifer vulnerability classification varies across the site, where superficial deposits are present the groundwater vulnerability is considered to be low, with a medium vulnerability value assigned to the location of the proposed ski slope where superficial strata are assumed to be absent.<br>The site is not located within a designated Source Protection Zone for groundwater abstraction |
| Radon | The site is located in an area where less than 1% of homes are above the action level for radon and as such, radon protection measures are not required within new developments on the site. |
| Unexploded Ordnance | Based on freely available mapping data from Zetica UXO (Zetica UXO, 2008), the site is located within a Low Risk Area with regards to Unexploded Ordnance (UXO) |
| Environmental database search | The current environmental setting poses a limited risk of contaminative land uses within this vicinity of the site, however records reflect the historical industrial nature of the site and environmental sensitivity of the site in terms of the SSSI/SINC and Scheduled Ancient Monuments on site and in the surrounding areas. |
| Preliminary geotechnical assessment | Based on the preliminary assessment, the site is at risk from instability associated with extensive historical mining (shallow workings and shafts) as well as the potential for inground obstructions, shallow and variable groundwater bodies, poorly consolidated and variable ground conditions leading to potential for instability. The anticipated remedial works, construction of an engineered platform and likely requirement for ongoing monitoring and maintenance which will be incorporated into the proposed design to effectively manage any identified risks. |
| Ground Gas Risk Assessment | Given the extensive made ground deposits anticipated on the site and the historical coal mining legacy ground gas and mine gas poses a risk to the future development and will be assessed through detailed ground gas monitoring to inform the necessary level of protection for new developments which will be required to reduce the identified risk to an acceptably low level. |
| Coal Mining Risk Assessment | Coal mining records indicate an extensive coal and associated ironstone mining legacy on the site including shallow workings and mine entries within the proposed development area. It is likely that further coal mining workings are present than those recorded by the Coal Authority. Ground investigation will be required to be undertaken to assess shallow workings across the development area.<br><br>Mine entries will need to be located, risk assessed and made safe as part of development plans. Shallow working will also require mitigation potentially consisting of grouting in areas deemed to pose a risk to the proposed development. |
| Preliminary ground contamination assessment | Potential ground contamination risks are associated with the presence of made ground on the site and the historical developments associated with the collieries and associated infrastructure including rail lines. Ground investigation will be undertaken to assess the extent and nature of any contamination and any necessary remedial works required to reduce the risks to receptors to a suitably low level. |
| Conclusions and Recommendations | The key recommendation will be to undertake a detailed site-specific survey and intrusive ground investigation to consider the following elements.<br>• Ground conditions and depth to competent strata and/ or bedrock;<br>• Nature and extent of made ground in terms of stockpiles and general made ground; |

| | |
|---|---|
| | • Presence/absence of contamination, to enable an updated CIRIA 552 risk assessment;<br>• Presence of shallow mine workings and mine entries;<br>• Stability of spoil tips;<br>• Geotechnical properties of shallow soils and bedrock;<br>• Permeability of the ground encountered, hydrology and hydrogeology; and<br>• Potential for ground gas generation and migration.<br>Based on the findings of this ground investigation an updated Coal Mining Risk Assessment will be required to inform necessary remedial works to facilitate the development.<br><br>Geotechnical and contamination assessments will also be required to inform the design process and identify the requirement for additional remedial works.<br><br>The findings of the ground investigation will be used to inform the refinement of the current cut and fill model based on the recorded ground conditions. This will inform the nature and quantities of the materials which are required to be excavated during the development phase and the associated re-use of this material within the proposed design. |
| Summary | The information presented in this report provides a review of available data and preliminary assessment of the risks posed to the proposed development in terms of geotechnical, coal mining and ground contamination constraints. The assessment will need to be considered in combination with other specialist reports for the site including hydrogeology/hydrology assessments, drainage assessment and the overall design process.<br><br>Due to the nature of the assessment presented herein, the risk assessments are considered to be relatively conservative at this stage providing a worst case assessment based on the current level of information available at the time of writing and will need to be refined following the completion of a detailed phase of ground investigation and liaison with the relevant regulatory authorities.<br><br>Remedial works will be required to facilitate the development in terms of risks associated with geotechnical parameters, coal mining legacy and ground contamination. The anticipated outline requirement for remediation is presented within this document, however it is noted that further works may be required based on the findings of any future assessments. However, based on the current level of understanding, the scope and scale of these additional works are unlikely to pose a barrier to the proposed development. |

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# ACRONYMS/ABBREVIATIONS

| Acronyms/Abbreviations | Definition |
|---|---|
| AOD | above Ordnance Datum |
| bgl | below ground level |
| BGS | British Geological Survey |
| BTEX | Benzene, Toluene, Ethylbenzene and Xylenes |
| C4SL | Category 4 Screening Levels |
| CIEH | Chartered Institute of Environmental Health |
| CLEA | Contaminated Land Exposure Assessment |
| CoC | Constituent of Concern |
| CSM | Conceptual Site Model |
| DEFRA | Department of Environment, food and Rural Affairs |
| DQRA | Detailed Quantitative Risk Assessment |
| DTS | Desktop Study |
| DRO | Diesel Range Organics |
| DWS | Drinking Water Standard |
| EA | Environment Agency (England) |
| EPH | Extractable Petroleum Hydrocarbons |
| EQS | Environmental Quality Standards |
| FOC | Fraction Organic Carbon |
| GPR | Ground Penetrating Radar |
| LOD | Limit of detection |
| LQM | Land Quality Management |
| NRW | Natural Resources Wales |
| OS | Ordnance Survey |
| PAH | Polycyclic aromatic hydrocarbon |
| PCB | Polychlorinated biphenyl |
| PPE | Personal Protection Equipment |
| ppm | parts per million |
| PRO | Petroleum Range Organics |
| SGV | Soil Guideline Values |
| SOM | Soil Organic Matter |
| SVOC | Semi-volatile organic compounds |
| TPH | Total Petroleum Hydrocarbon |
| TSV | Tier 1 Screening Values |
| VOC | Volatile Organic Carbon |
| VPH | Volatile Petroleum Hydrocarbons |
| AOD | above Ordnance Datum |

# 1.0 INTRODUCTION

## 1.1 INSTRUCTION

Tetra Tech Environment Planning Transport Ltd (Tetra Tech) was commissioned by Marvel Limited (the client) to undertake a Geo-Environmental Desk Top Study for a site known as Rhydycar West (known hereafter as "the site").

The location of the site is shown on Figure 1.

## 1.2 BRIEF

Tetra Tech has been commissioned to undertake a Ground Conditions Desk Top Study and Coal Mining Risk Assessment for the site to support the relevant planning application and Environmental Impact Assessment for the proposed development outlined below.

## 1.3 PROPOSED DEVELOPMENT

It is understood that the proposed development is shown in the Holder Mathias Architects Masterplan presented at the end of this report (drawing reference RHDR-HMA-LE-ZZ-DR-A-PL-010, issued 17th January 2022).

The development includes the following:

> *An outline application for erection of a mixed leisure development comprising indoor snow centre (up to 39,200 sq m), waterpark (up to 7,500 sq m), indoor activity centre (up to 9,000 sq m), external activity areas, hotel accommodation (up to 418 bedrooms), forest lodge accommodation (up to 30 units), car parking (up to 830 spaces) and associated earthworks, access, drainage, servicing and utilities connections/infrastructure on land situated at Rhydycar West, Merthyr Tydfil, Wales*

## 1.4 REPORT SCOPE

This report includes the following key elements:

- A record of the site visit and visual inspection walkover;
- A discussion of the current site status and key associated environmental influences observable by general visual inspection around the site;
- An historical site and area review, primarily referring to past editions of Ordnance Survey Maps;
- A discussion of the general expected ground and groundwater conditions within the topographical and area context referring to our own geological and hydrogeological maps library;
- Details of an Environmental database search (Groundsure™ report) of key relevant agencies, including Local and Statutory Authorities such as the Natural Resources Wales[1];
- A baseline UXO risk assessment using on-line databases to classify the site with regards to UXO risk;
- Review of a Coal Authority Mining Data for the site and a Coal Mining Risk Assessment;

[1] It is noted that the site boundary depicted in the Groundsure has varied since the data search was commissioned. All data has been reviewed in the context of the updated site boundary and the report amended where relevant.

- Development of a site model based on available information and outlining the key Source Pathway Receptor Model for the site;
- Development of aground model including anticipated geology, historical mining legacy and the proposed development platform based on available information, historical data and cut and fill modelling;
- Preliminary geotechnical hazard assessment;
- Qualitative ground contamination risk assessment (compliant with CIRIA 552 (CIRIA, 2001) methodology);
- An executive summary of the report to allow a rapid, layman's overview.

## 1.5 CONTEXT OF ASSESSMENT

The assessment of ground conditions is generally undertaken following a phased approach, with an initial assessment based on a Phase 1 Desk Top Study to identify the potential risks and constraints which may require further investigation. The findings of the Phase 1 assessment are used to design an appropriate intrusive ground investigation, collect site specific data, facilitate further detailed assessment and to refine the ground model (geotechnical perspective) and conceptual site model (ground contamination perspective) including recommendations for any remedial works deemed necessary.

This report provides an initial assessment of the site based on the available information and represents a conservative assessment of the site based on the current level of information available at the time of writing in order to highlight areas requiring further investigation. On completion of further assessment, including ground investigation, the risk assessments and conclusions included herein will be updated and refined based on the additional site specific data.

This report is structured such that the initial sections (1-9) provide a summary of the available data and the latter sections provide current assessments of the ground conditions, including recommendations for further assessment if deemed necessary based on the current level of information available.

## 1.6 LIMITATIONS

The recommendations and opinions expressed in this report are based on information obtained as part of the desk study or provided by others. Information provided from other sources is taken in good faith and Tetra Tech cannot guarantee its accuracy.

This report is subject to the report conditions presented in Appendix A.

The information contained in this report is intended for the use of the Marvel Limited and Tetra Tech can take no responsibility for the use of this information by any third party or for uses other than that described in this report or detailed within the terms of our engagement.

# 2.0 SITE INFORMATION

## 2.1 LOCATION

The site is located adjacent to the A470 to the south west of Merthyr Tydfil town centre, on the eastern slopes of Mynydd Aberdâr south of the village of Heolgerrig.

The site is approximately 30 hectares in area and is centered on National Grid Reference (NGR) 304660, 204824.

A site location plan is presented in Figure 1.

## 2.2 GENERAL AREA CONTEXT

**Table 2-1 - Surrounding land uses**

| | Description |
|---|---|
| North | Undeveloped extension of Rhydycar West site area. Settlement of Heolgerrig is located 1km to the north of the site. |
| East | A470 dual carriage way with River Taff and southern extent of Merthyr Tydfil beyond, with Merthyr Leisure Centre located 150m north east of the site. |
| South | Undeveloped extension of Mynydd Aberdâr with Bike Park Wales located 1km to the south. |
| West | Mynydd Aberdâr with Black Pins Iron workings immediately to the west of the site. |

## 2.3 SITE CONTEXT

The site has an extensive history of mining and quarrying, dating back until at least the 1770s although small scale mining may have pre-dated this.

The site was originally part of the mineral take for the Cyfartha Iron Works, and provided the coal and ironstone required to supply the Iron Works. Mining for coal and ironstone was originally undertaken via patchworks, scouring (the release of artificially impounded water) and via levels. It was likely that early movement of site won minerals was undertaken by people or draft-animals, until the construction of the Cyfartha Tub Boat Canal. Coal was placed on tub boats that travelled to the Cyfartha Iron Works at the terminus of the canal; however, the canal fell into disuse by the 1840s, by which time tramways were being used for transportation. Only limited sections of the canal now remain visible on the site.

By the 1840s, the majority of the mining was being undertaken by a combination of shallow and deep shafts (some potentially reaching depths of 50 metres). A substantial number of main access and air shafts are present across the site, although they appear to occur predominantly in a band running north-west to south-east. Abandoned levels also occur in the same area. Mining via these shafts had largely ceased on site by 1900, although some mines were reopened during the First World War.

Active mining of the Cwm Dû Drift and some smaller levels in the extreme south-eastern corner continued until the 1950s, mining on the site finally ceased in the 1960s with the closure of levels along the extreme western boundary of the site that exploited the Gorllwyn seam.

The extensive mining activity resulted in the deposition of large volume of spoil across the surface of the site.

Further spoil has been placed on the site during the construction of the A470 dual carriageway. This are forms the main development plateau for the proposed leisure complex.

## 2.4 SITE DESCRIPTION

A site walkover inspection was originally undertaken on the 30th and 31st May 2017, and on the 15th June 2017 and subsequently re-visited on the on the 26th May 2021. A series of photographs are presented at the end of this report and are cross referenced in the following section. The general site layout is shown in Figure 2.

The main development area is situated on the spoil tip associated with the A470 dual carriage way, which provides the main development platform for the leisure complex, with an access track linking the development area to an access gateway off the A470. The site extends to the west along the line of the proposed ski slope and to the south associated with the area designated for woodland lodges.

The ground conditions in the main development area include rough grass and informal scrub and tree cover. The remainder of the site consists of a mixture of young to mature woodland and open spaces. Some streams flow through the area, mostly flowing north to south, although some in the western portion flow west to east. There are a small number of ponds located in the lower areas, with areas of boggy ground also noted during the walkovers.

The land is largely flat across the main development platform and lower areas, although there are some elevated areas and large breaks of slope related to spoil tips. To the north of the proposed development is the Cyfartha Canal Level which is designated as a Scheduled Ancient Monument.

The location of the old Lower Colliers Row terrace is located within thick undergrowth (Plate 1). Close by to Lower Colliers Row is a large, metal structure on a concrete base. It is believed that this is likely to be the footings of the wheel winch for the former pit. It was not possible to locate the former Lower Colliers Row level; as the area of the level was very overgrown, with bare patches of ground on “hummocky” ground.

Part of the remains of the Cyfartha Tub Canal were observed (Plate 2), as an empty channel with some small areas of standing water. The proposed development is located immediately to the east of the former canal structure and associated feeder reservoir. In this area, a feature that appeared to be a crown hole was observed, full of water, in the base of the canal (see Plate 3). An outcrop of the Amman Rider coal seam was also observed (Plate 4).

There is an area of dense woodland in the south-western corner of the development area, although the remainder of the area is occupied by thinner woodland, open space and a large area of wetland with reeds.

The location of the former GWR railway line runs from the entrance to the old Abercanaid-Cwmbâch tunnel to the south west of the study area (Plate 5).

The area identified as the ‘Glyn-dyrys Engine House’ in previous reports (Plate 7) was identified as a large stone structure, through which water could be seen emerging before flowing off-site into the remains of the Glamorganshire Canal.

It is noted that since the completion of the site walkover, significant works have been undertaken by the local authority to improve drainage on the site with the construction of a series of lined drainage channels at the base of the spoil tips and also providing drainage routes across the face of the tips.

## 2.5 DIGITAL GROUND MODEL

A digital ground model (DGM) has been developed by Tetra Tech for the site utilising available LiDAR data and information from the proposed development masterplan.

This DGM has subsequently been used to facilitate a preliminary cut and fill model for the development along with an associated mass balance calculation. The results of the modelling were incorporated into the design process and used to refine the Master Plan.

The results of the mass balance calculation indicate that the development masterplan results in a general mass balance where excavated materials will be re-used within the proposed design with negligible requirements for importation or disposal of soils. The results were presented in a summary report which is included in Appendix B.

# 3.0 PREVIOUS INVESTIGATIONS

## 3.1 PREVIOUS REPORTS

A range of site surveys, outline remediation strategy reports, summaries and Environmental Statements have been prepared for the site in support of previous planning applications. These reports have been developed both to provide a detailed assessment of the site in terms of the land stability as well as developed for historical development proposals.

The following list of reports have been assessed as part of this review.

- Risk Assessment Report, Heolgerrig Merthyr Tydfil. Halcrow Group Limited. October 2009.
    - Halcrow Group Limited were commissioned by Merthyr Tydfil County Borough Council to review the available data on the mining hazards on site in light of Planning Application P/08/0288, and to comment on the appropriateness of the remedial scheme proposed;
- 2008: Land at Heolgerrig (Merthyr Village) Review of Site Stability and Remedial Options Volume one and Volume two, Arup.
    - Volume one is a review of information relating to the stability issues on site, with an assessment of potential hazards;
    - Volume two is an assessment of the available remediation options for the site in view of the assessment of potential hazards from volume one;
- Borehole Investigation and Monitoring Report 1980-1988. Author & date unknown.
    - This document is a collection of ground gas and groundwater level monitoring on site, as well as copies of borehole logs. The logs are taken from the Sir William Halcrow and Partners report from the 1980s, as well as logs from 1986 for drilling undertaken on behalf of the National Coal Board (The site name is “Trunk Road”, and the Site Number is 0780874);
- Environmental Statement, Ground Conditions Chapter. William’s Thomas Consulting Limited. Ref. CAC0026. June 2002.
    - This is a Chapter of an Environmental Statement submitted in support of planning application P/02/0060 in 2002;
    - Appendix 3 of Environmental Statement. This section reports the results of laboratory analysis of on-site soils, and is an Appendix to William’s Thomas Consulting Limited. report (Ref. CAC0026);
- Report on Mining Hazards on Land South of Heolgerrig, (Merthyr Village), Merthyr Tydfil. Blandford Consulting Report. Ref. BC/MB/03.07.02. July 2002.
    - This report was written to evaluate the mining history and hazards on site, and propose remedial options;
- Condition Survey of Former Mine Workings Site. Land at Rhyd y Car, Merthyr Tydfil, South Wales. Merebrook Consulting Engineers Limited. Ref. CSR-B1060-05-7. December 2005.
    - This report was undertaken in 2005 by Merebrook Consulting Engineers to carry out a condition survey of the site in light of the formation of (at the time) recent surface depressions, to define the existing/potential geotechnical hazards on site and discuss suitable, required remedial options;
- Overview for Steve. L. Smith. WAG Land Reclamation. September 2007.
    - This is a brief review providing a summary history of the site and the planning applications that have been submitted regarding its development, as well as outlining the mining related hazards on site and discussion of the preferred remedial approaches;
- Disused Spoil Tips at Rhyd-Y-Car, Near Merthyr Tydfil.

  - Factual Report on Ground Investigation, Exploration Associates. Ref. 151233, November 2001. This was a factual report relating to a ground investigation of disused spoil tips. 95 trial pits were dug, and samples were taken for geotechnical and coal recovery analysis.
- Merthyr Village Reclamation Scheme, Merthyr Tydfil. Slope Stability Assessment. Merebrook Consulting Engineers Limited. Ref. SSA-B1060-08-3, February 2008.
  - Merebrook Consulting Engineers were contracted by Merthyr Village Land Trading Partnership to undertake an interpretative ground investigation to assess the slope stability of the spoil tips on site.
- Collapse on land at Heolgerrig, Merthyr Tydfil. Summary report. Coal Authority. Ref. H5800. January 2008.
  - This document reports the collapse of a shaft on site in January 2008. The grid reference in the report is very close to the main shaft of the Lower Colliers Row Pit;
- Reclamation Scheme Land at Rhydycar, Merthyr Tydfil. Environmental Statement. Merebrook Consulting Engineers Limited. Ref. ES-S3846-08-106. June 2008.
  - Merebrook Consulting Limited were contracted by Merthyr Village Limited to produce an Environmental Statement in support of Planning Application P/08/0288.
- Preliminary Ground Investigation Summary Report, Investigation of Disused Spoil Tips at Rhyd-Y-Car, Merthyr Tydfil. Williams Thomas Consulting Limited. Ref. J042/E/002/R. January 2002.
  - William Thomas Consulting Limited were commissioned by Merthyr Village Limited to undertake a ground investigation to evaluate the quantity of recoverable coal present in the existing spoil heaps.

These reports have been made available by Marvel Limited. The information contained within these reports was prepared by the author of each report for their respective clients use. Tetra Tech has no reliance on the information contained within these reports and the reader is referred to these reports for further information.

It should be noted that these reports were generally prepared for the wider Rhydycar west Site and not all information will be pertinent to the current assessment.

### 3.1.1 Halcrow 2009 Risk Assessment Report, Heolgerrig Merthyr Tydfil. Halcrow Group Limited. October 2009.

This report provides the most up to date assessment of the site made available for review. It was commissioned by the local authority to review the supporting information presented with regards to a planning application submitted by the then landowners (Merthyr Village Limited) for the reclamation of 221 hectares of the site primarily by means of excavation and removal of coal bearing strata for commercial gain. Information under view relates to a number of reports, but primarily focuses on works presented by Arup in 2002.

The report was intended to provide an independent health and safety hazard assessment of the site and to assess the suitability of the proposed restoration scheme in terms of risk mitigation.

The report summarises the historical development of the site and notes the site includes numerous mine entries and references a shaft collapse which occurred in January 2008 in the eastern section of the site.

The report states that the proposed works included the "*reclamation of approximately 221 hectares of land (by means of open excavation including coal excavation and washing of coal from selected tips) and reinstatement works. The reclamation of the site would involve the removal of site hazards by excavation of both the soils and rock and the re-compaction of these materials in an engineering manner. The proposed reclamation scheme impacts on the vast majority of the site for both excavation (to depths up to 30m) and storage of overburden in various areas of the site. Coal extracted as part of these operations is reported to be 'incidental' coal amounting to an estimated 1.2 million tonnes from the excavation and 200,000 tonnes recovered from specific spoil tips located on the site".*

The report provides a summary of anticipated ground conditions and historical mining activities including more than 200 mine entries (shafts and adits) across the wider Rhydycar West site, and also notes the potential for bell pits to also be present on the site.

In terms of the stability of the wider site, the report states that *"collapse of shallow abandoned mine workings is evident in the form of crown holes. However, on the basis of our researches of aerial photographs it is evident that ground collapses are concentrated within distinct zones of the site. This was confirmed by our subsequent site inspections. Where identified these tend to be concentrated within the central zone of the site. However, depressions are evident in other areas of the site on a more localised basis. These appear in some areas to relate to settlement of the surface due to collapse of mine adits and in other areas due to settlement of the made ground (i.e differential settlement of spoil or by the local reworking of spoil)".*

In terms of Risk Assessment, the report concludes that a single risk rating would not be applicable for the site and notes that areas of higher risk are likely to be present in areas of the site associated with the recorded mine features including:

- Mine Shafts
- Mine Adits
- Shallow Mine workings
- Tips
- Water features
- Surface Structures
- Surface workings / quarries.

The report states that the proposed remediation works would involve the removal of risk through the excavation of soil and rock and the re-compaction of these materials in an engineered manner across the majority of the site, it notes that little consideration has been given to the mine features located outside the area of proposed excavation or the impact of the works on the local environs (noise, vibration, air quality) or drainage of water within the coal workings which receive water from areas outside the study site.

An alternative mitigation approach is presented by Halcrow, whereby the site should be treated appropriately on the basis of the *"principles of prevention with the isolation and/or treatment of higher risks and education/restriction/maintenance to address risks of a lower level".*

It should be noted that Halcrow assume the ongoing land use will remain unchanged with continued use of the site by members of the public, despite access being restricted. The proposed mitigation methodologies for the area of the site considered by the area of the site considered herein includes regular inspections (frequency determined by area based on the level of perceived risk), provision of information boards, fencing of areas of surface depressions and areas of thin cover of superficial materials and provision of a maintenance schedule.

Whilst the report highlights the short coming of the proposed mitigation procedures, it concurs that *"the scale of reclamation proposed by MVL would only be appropriate if the site was being prepared for subsequent development/construction. The MVL reclamation would involve the removal of site hazards by excavation and controlled backfilling of the excavation".*

No commentary is provided for smaller scale developments such as that considered herein, and it is considered unlikely that the proposed approach presented in the Arup (2008) report would be considered suitable for a development of this scale. Additionally, given the Halcrow report focuses on the mitigation of risk for the ongoing use of the site for informal public access, the proposed mitigation schemes may not provide sufficient protection in terms of the current development plans. As such a revised approach will be required which represents a combination of engineered solutions to mitigate the risk posed by shallow workings and other related hazards.

### 3.1.2 Arup 2008 Land at Heolgerrig (Merthyr Village) Review of Site Stability and Remedial Options Volume One and Volume Two.

Volume 1 of this report provides a detailed review of the site setting, historical mining and previous assessments on the site. Volume 2 presents the Remedial Options for the site, primarily through the excavation, extraction of coal and construction of an engineered platform. This report was produced for the Merthyr Village Land Trading Partnership and provides the assessment which was reviewed in the Halcrow document discussed above.

Arup report on the general lack of clarity regarding the number of "main shafts" on site, as well as reporting on the collapse of a shaft at "Lower Colliers Row" in 2008. This shaft was capped with wooden beams over which turf had grown. The wooden beams had rotted leaving only the turf. It was reported that the drop to water was ten metres, and the depth to the base of the shaft was sixteen metres. Rhyd-y-Car shaft (off-site) had been left open, to depths of over seventy metres, and had been capped with rusting tramway rails, bricks spanning the gap between the rails, and with a thin layer of concrete over the top. Arup state that it is probable that the work was carried out in the 1950's, and that other shafts in the area were capped at a similar time, using a similar approach and could present a similar risk.

The report states that adits (or levels as they are called in the report) on-site were variable in origin and function, and therefore size. They will have ranged from small operations within a single seam with timber supports (likely having collapsed soon after abandonment) to well supported and engineered access routes into extensive seam workings. Some were driven at a slight angle to aid drainage, whilst others were driven downwards to intercept several seams. The number of levels is significant, and not all are identifiable at the surface.

Arup evaluated the potential sources of information as part of a review of historic subsidence, and refer to a review of aerial photographs held by the Welsh Assembly. As stated by Arup, circular depressions are visible across the site. Arup report circular depression features, particularly in the outcrop zone of the Six Feet (both Upper and Lower), Four Feet and Two Feet Nine Seams.

### 3.1.3 Blandford Consulting (2002) Report

From the outset of the report, it is stated that the philosophy of the report is directed by public safety, ignoring any future proposed use of the land. However, it is noted that the report was commissioned by the previous owner to support the potential future extraction of coal from the site with the construction of a development platform the end point following the removal of the 'incidental coal' and is this considered to be focused on the potential constraints of the site, rather than the potential for re-use through future development. Consequently, it is not directly relevant to the current development plans.

They recommended four available options to deal with the "substantial risk" from the site to members of the public:

1. Monitor the Position;
2. Do Nothing;
3. Piecemeal Remediation; and
4. Comprehensive Reclamation Scheme.

Blandford go on to state that "Given the degree of risk, the complexity of the mining hazards and their potential to interact with each other and the fact that the mining hazards extend across approximately 87% of the site area, we would recommend that the most appropriate option is Option 4, a comprehensive land reclamation scheme."

In relation to option 4, they state: "Only a comprehensive reclamation scheme could deal with all the mining hazards. Such a scheme could remediate the shallow mine workings, remove the risks from mine water and mine gases, remove all the surface hazards within the area remediated (abandoned shafts and adits, bell pits and surface subsidence) and comprehensively deal with the issue of tip stability and the risk of combustion of

tip material. Such a scheme could be undertaken in a much shorter time-frame than Option 3, but might end up taking no greater a land-take than Option 3." [2]

The spontaneous combustion of coal tips was evaluated by Blandford Consulting[3] in their report of 2002. They state that the steam coals on site are amongst those which are capable of spontaneous combustion given the appropriate circumstances. However, given there have been no reports of combustion events on site, it is considered an unlikely scenario, particularly given the age of the tips. They do point out however that a change in the environment of a tip (for instance, the collapse of a tip slope enabling ingress of oxygen to within the tip) could precipitate an exothermic reaction leading to combustion.

### 3.1.4 Merebrook Slope Stability Assessment (2008)

Merebrook undertook further ground investigation works on-site, choosing Cwmdû East and Cwm-glo North as the tips to be evaluated. Boreholes were drilled with standpipes installed. Logs proved colliery spoil over boulder clay. Monitoring of groundwater was suspect in the boreholes in Cwm-glo North due to a blockage, but showed groundwater was some 15m below crest level in Cwm-glo East. Variation was shown to be approximately 0.5m over the monitoring period, though this did coincide with heavy rain. It was concluded that the water levels within the tip would have a significant impact on the stability of the structures.

FoSs were calculated for the tips, and Merebrook considered these to be unacceptably low in comparison to modern day practice. The extent of any failure was considered to be extensive; the collapse of mine workings and/or changes in groundwater flow could precipitate catastrophic failure (it was not taken into account in the analysis) and significantly affect the A470.

### 3.1.5 Merthyr Tydfil County Borough Council Tip Inspections

As part of their obligations under Part II of the Mines and Quarries (Tips) Act 1969, Merthyr Tydfil County Borough Council inspect certain spoil tips on the site once a year, looking for evidence of instability. As can be seen in Section 5.3, the most recent inspections indicate that the tips are all regarded as being 'satisfactory' within the context of the assessment. This is intended to confirm the ongoing monitoring program could be maintained and no remedial works were required based on the observations made at the time.

[2] It is also noted that this report relates to the wider Rhydycar West site including areas which were subject to more intensive historical mining legacy. The recommendations included in this report is therefore not considered directly applicable to the smaller development site under consideration herein.

[3] Report on Mining Hazards on Land South of Heolgerrig, (Merthyr Village), Merthyr Tydfil. Blandford Consulting, 2002.

# 4.0 GEOLOGY, HYDROGEOLOGY, HYDROLOGY AND RADON

## 4.1 GEOLOGY

Details of the geology underlying the site have been obtained from the following sources:

- British Geological Survey (BGS) Sheet No. 231 (Merthyr Tydfil) Solid and Drift Edition, 1:50 000 scale;
- BGS website (British Geological Survey, 2021), accessed 21/07/2021;
- Environmental database (Groundsure™) presented in Appendix C;
- BR211 Indicative Radon Mapping (Scivyer, 2015);
- Coal Authority Information (The Coal Authority, 2021), accessed 21/07/2021.
- Coal Authority Report presented in Appendix D.

### 4.1.1 Made Ground

Extensive deposits of Made Ground are recorded across the site defined by the BGS as 'artificial deposits'. These areas coincide with the spoil tips recorded across the majority of the site area with the exception of the upper parts of the proposed ski slope and southern part of the site.

The extent of the historical tips on the site are detailed in the drawing presented in Appendix E.

This is anticipated to be of a variable composition and man-made and will vary in depth across the site. The majority of the Made Ground is comprised of tips from coal and ironstone mine waste. There is evidence that some of the tips around the Cwm Pit were composed of slag (which has subsequently been reworked) although it is not known where this material originated from; it is possible it was tipped here from the Cyfartha or Ynys-Fâch Iron Works. The former tramways, railways and canal will also have had Made Ground used in their construction.

### 4.1.2 Superficial Geology

BGS mapping records the superficial deposits on the site to consist of Glacial Till, present across the entire site area with the exception of the upper half of the proposed ski slope.

Glacial Till is an unsorted sediment composed of varying grain sizes that were deposited on the bases, edges and surfaces of glaciers, towards the end of the Devensian period during the last Ice Age. The superficial deposits are believed to be thickest in the east of the site, gradually thinning to the west.

### 4.1.3 Solid Geology

The site is underlain by rocks of different age; the South Wales Lower Coal Measures outcrop along the eastern boundary of the site, and the South Wales Middle Coal Measures outcrop across the remainder of the site. Both of these strata are noted to contain numerous ironstone viens and coal seams developed within a shallowly dipping sequence of bedded and jointed mudstone, siltstones and sandstones. The geological strata are indicated to have an average dip of 3.8 degrees to the south.

#### 4.1.3.1 Coal and Ironstone Seams

The local geological sequence includes a number of named coal seams, many of which have been worked below the site. The stratigraphy is summarised in the following table. Those seams recorded as being worked below the site are presented in *italics*.

**Table 4-1 – Summary of Coal and Ironstone Seams**

| Seam Type | NCB Seam Name | Alternate Seam Name | Notes and Vertical Interval between Seams | Approximate Seam Thickness (m) |
|---|---|---|---|---|
| *Coal* | *Two Feet Nine* | *Upper Two Feet Nine* | *Simple seam, 12.2m to Four Feet* | *1* |
| Coal | | Twenty Inch / Top Four Feet (or Top Four Feet Rider) | Not Noted by NCB | 0.6 |
| *Coal* | *Four Feet* | *Four Feet* | *Simple seam – 9.8m to No 1 Yard* | *1.5* |
| Coal | No 1 Yard Rider | None | 0.31m in thickness | - |
| Coal | No 1 Yard | No 1 Yard Coal Seam | Simple seam, 9.8m to Four Feet. | 1.2 |
| *Coal* | *Six Feet* | *Lower Six Feet* | *Simple seam, sometimes with thin shale parting.*<br>*24.4 m to Nine Feet* | *1.6* |
| Ironstone | None | Soap Vein | No information | - |
| Coal | Red | None | Thin inferior quality seam 6.1 – 9.1 m below Six Feet | - |
| *Coal* | *Nine Feet* | *Nine Feet* | *Nine Feet (simple seam) and Bute separated by a fireclay horizon, up to 6.0 m worked strata.*<br>*1.2 – 6.1 m above Bute.* | *2.5* |
| *Coal* | *Bute* | *Bute* | *Two leaves with 0.69 m parting.*<br>*11.9 m to No 2 Yard Rider* | *2.5* |
| Coal | No 2 Yard Rider | Five Foot Six | Simple seam 4.4 m above No 2 Yard | 0.4 |
| *Coal* | *No 2 Yard* | *No 2 Yard* | *Split seam with two leaves. 13.4 m to Seven Feet* | *0.8* |
| Coal | Seven Feet Rider | Lower Two Feet Nine | 4.6 m above Seven Feet | 1 |
| *Coal* | *Seven Feet (top and bottom leaves)* | *Seven Feet* | *Average 4.9 m to Five Feet but varies from 1.8 m to 8.5 m. Two leaves split by between approximately 0.5 m to 1.5 m* | *1.4* |
| Coal | Five Feet (top leaf) | - | 12.5 m above Middle Leaf | 2 |
| Coal | Five Feet (middle leaf) | Five Feet / Gellideg | 3 m interval to Bottom Leaf | 1.25 |
| Coal | Five Feet (bottom leaf) | - | - | 1.25 |
| Ironstone | None | Black Pins | No information | - |
| Ironstone | None | Blue Vein | No information | - |

| Seam Type | NCB Seam Name | Alternate Seam Name | Notes and Vertical Interval between Seams | Approximate Seam Thickness (m) |
|---|---|---|---|---|
| Ironstone | None | Little Vein | No information | - |
| Ironstone | None | Big Vein | No information | - |
| Coal | Not noted | Garw | Not extensively worked in this area | - |
| Ironstone | None | Rosser Vein | No information | - |

Ironstone veins sub-crop across the site and were mined from both levels and shafts. Most of the worked ironstone veins in the area appear to be present below the Gellideg Seam.

There are no faults recorded onsite. One is shown off-site along the western boundary and disrupts the Gorllwyn seam, with a horizontal off-set of approximately 20m, and a vertical off-set of up to 6m. The Merthyr Fault is off-site to the east, and generally follows the direction of the course of the River Taff, with a downthrow to the west and a horizontal off-set of approximately 260m. The Merthyr Fault intersects the Gellideg and other seams east of the site on the opposite side of the River Taff. To the south-west is an area of significant faulting in the location of the former Werfa Pit.

### 4.1.4 Historical Borehole Logs (BGS records)

There are no borehole records present within the proposed development area however there are numerous records relating to the construction of the A470 to the east of the site (including one located adjacent to the site entrance.

A representative selection of records are presented below from adjacent areas with copies of the borehole logs presented in Appendix F.

**Table 4-2 – BGS Borehole SO00NW223**

| BGS Reference, year, notes | Location | Strata | Depths (mBGL) | Description |
|---|---|---|---|---|
| SO00NW223<br>1990<br>Hole commenced at ground level (179.6mAOD) and was 53m deep | E304846, N205106.5.<br><br>Access road near roundabout. | Possible Made Ground | GL – 6.50 | Firm to stiff grey sandy silty CLAY |
| | | Glacial deposits | 6.50 – 10.70 | Clay and sand based strata. |
| | | Mudstone | 10.70 – 11.42 | Yard Seam Subcrop |
| | | Claystone | 11.42 – 21.90 | Dark grey ironstone 15.66-15.80mbgl |
| | | Mudstone | 21.90 – 23.50 | Dark grey to black thickly bedded slightly silty mudstone.<br>Strata dip 3° |
| | | Coal | 23.50 – 24.50 | Seven Feet Seam<br>Bright Coal, core loss 23.68 – 24.50m |
| | | Claystone | 24.50 – 24.55 | Seat earth |
| | | Mudstone | 24.80 – 31.40 | Dark grey to black thickly bedded mudstone becoming thinly bedded. |

| BGS Reference, year, notes | Location | Strata | Depths (mBGL) | Description |
|---|---|---|---|---|
| | | COAL | 31.40 – 32.15 | Upper Five Feet Seam<br>Black, bright coal. |
| | | Claystone | 32.15 – 33.95 | Seat earth |
| | | COAL | 33.95 – 34.40 | Lower Five Feet Seam<br>Black, bright coal. Possible core loss 34.15 to 34.40m |
| | | Claystone | 34.40 – 34.70 | Black thinly laminated fresh claystone |
| | | COAL | 34.70 – 35.55 | Gellideg Seam<br>Black, bright coal |
| | | Claystone | 35.55 – 37.20 | Seat earth.<br>Ironstone nodules 36.50m (Black Pins Iron Stone) |
| | | Siltstone | 37.20 – 40.40 | Light grey, thickly laminated to thinly bedded siltstone. |
| | | Sandstone | 40.40 – 40.13 | Grey fine massive quarzitic sandstone. |
| | | Siltstone | 40.13 – 42.00 | Light grey, thickly laminated to thinly bedded siltstone. |
| | | Mudstone | 42.00 – 42.50 | Black thinly bedded fresh mudstone. |
| | | Siltstone | 42.50 – 44.10 | Grey thinly laminated siltstone.<br>42.85m clay ironstone (Big Blue Ironstone) |
| | | Mudstone | 44.10 – 46.05 | Light grey, thickly laminated to thinly bedded mudstone. |
| | | Siltstone | 46.05 – 48.15 | Grey thinly laminated siltstone.<br>Clay ironstones recorded at<br>• 49.38m<br>• 49.72m (Possible Little Blue Ironstone)<br>• 50.49m<br>• 51.80m |
| | | Mudstone | 48.15 – 53.00 | Dark grey thinly laminated mudstone. |

**Table 4-3 – BGS Borehole SO00NW214**

| BGS Reference, year, notes | Location | Strata | Depths (mBGL) | Description |
|---|---|---|---|---|
| SO00NW214 1976 Hole commenced at ground level (not recorded, but approximately 215mAOD) and was 66m deep | E 304214 N 205344 GR SO042 053 Central Eastern Cwm-glo Pit Zone, near to the boundary with Lower Colliers Row Pit Zone. | Coal (Unnamed) | 17.33-17.45 | Very soft and friable, shaley |
| | | Coal (Unnamed) | 17.90-18.09 | Clean, bright, very soft and friable |
| | | Mudstone (Amman Marine Band) | 29.74-29.94 | Dark, firm, lingulids present |
| | | Coal (No. 2 Yard Rider/Amman Rider) | 30.35-30.66 | Hard, bright, clean, Cone in cone structure and few thin pyritic bands present |
| | | Coal (Unnamed) | 34.58-34.96 | Bright, hard, clean, stick. Cone in cone structure present |
| | | Coal (Unnamed) | 34.99-35.31 | Hard, bright, clean, stick |
| | | Coal (Unnamed) | 35.41-35.96 | Hard, bright, clean stick with cone in cone structure ankerite present |
| | | Coal (Seven Feet Seam) | 48.88-49.62 | Bright, broken into 3cm pieces. Very soft and friable |
| | | Coal (Seven Feet Seam) | 49.93-50.16 | Bright, broken into 2cm pieces. Soft and friable |
| | | Coal (Seven Feet Seam) | 50.16-50.34 | Bright, very soft and friable |
| | | Coal (Upper Leaf Five Feet Seam) | 54.06-54.24 | Firm, broken into 1cm pieces, bright |
| | | Coal (Upper Leaf Five Feet Seam) | 54.29-54.51 | Hard, broken, bright, mostly vitrain |
| | | Coal (Upper Leaf Five Feet Seam) | 54.51-54.66 | Very soft, friable, bright |
| | | Coal (Middle Leaf Five Feet Seam) | 56.28-56.70 | Bright, stick, with a few thin bands of fusain, shale, and pyrite |
| | | Coal (Middle Leaf Five Feet Seam) | 56.76-56.93 | Bright, stick, within few thin bands of fusain, shale and pyrite |
| | | Sandstone | 57.81-60.51 | Hard, broken stick. Silty at top grading downwards to hard fine-grained sandstone |

**Table 4-4 – BGS Borehole SO00NW215**

| BGS Reference, year, notes | Location | Strata | Depths (mBGL) | Description |
|---|---|---|---|---|
| SO00NW215, 1963, Hole commenced at ground level (216.50mAOD) and was 41m deep | E 304121 N 205418 GR SO041 054 Eastern Cwm-glo Pit Zone | Coal (Part of Upper Leaf Bute Seam) | 10.66-10.68 | Very bright, soft |
| | | Coal (Lower Leaf Bute Seam) | 11.12-11.64 | Very bright, friable, broken and fragmentary |
| | | Coal (Rider Seam) | 24.38-24.68 | Very bright, brittle, broken stick |
| | | Coal (Unnamed) | 28.65-29.10 | Bright, brittle, broken and fragmentary |
| | | Coal (Unnamed) | 29.48-30.08 | Very bright, brittle, broken, fragmentary |
| | | Coal (No. 2 Yard Seam) | 30.12-30.19 | Very fragmentary |

## 4.1.5 Historical NCB Borehole Logs

A large number of logs are available from the NCB, who undertook drilling during the early 1960s and September 1986 to January 1987 to aid in estimating the reserves of coal left on site. A memo, "Notes on the Site"[4], dated May 1964 indicates that the results from the boreholes and a comparison of these with the old working plans did not provide *"a close comparison".* The memo goes on further to state that *"In all cases except the No. 2 Yard seam the plans indicated a degree of working less than that indicated by drilling." They also state that "It is realised that extensive crop workings as visible over the Four Feet, No. 1 Yard and Six Feet seams were in the main unauthorised and therefore unrecorded".*

In an Addendum Report "A"[5], dated March 1966, a statement is made relating to keeping access (the old tramway between Lower Colliers Row and Cwm Pit) open for Rees Concrete Products and their shale tip concessions in the area. It is also mentioned in this report that there is a pumping station present in "Castle Pit" which is situated "1½ miles to the south east of the site".

## 4.1.6 Other Historical Borehole and Trial Pit Logs

A large number of boreholes and trial pits have been drilled and excavated since the early 1980s, for varying purposes; from spoil tip stability investigations to determining groundwater regimes. Figure 4 shows the location of these and which boreholes have groundwater and ground gas monitoring standpipes installed.

## 4.1.7 BGS Soil Chemistry

The Groundsure Report also provides Urban Soil Chemistry Averages for the site (source: Urban Soil and Soil Chemistry data provided by the British Geological Survey). The information is summarised in the table below.

[4] National Coal Board – "Opencast Executive, No. 7 Region – South Wales. Operations Site – Colliers Row 070846. Notes on Site" 1964
[5] National Coal Board – "Opencast Executive, No. 7 Region – South Wales. Operations Site – Colliers Row 070846. Addendum Report "A"" 1964

**Table 4-5 – Urban Soil Chemistry Averages**

| Determinand | Soil Concentration Range | |
|---|---|---|
| | Minimum (mg/kg) | Max (mg.kg) |
| Arsenic | 15 | 25 |
| Cadmium | 1.8 | |
| Chromium | 60 | 90 |
| Lead | 100 | |
| Bioaccessible Lead | 60 | |
| Nickel | 15 | 45 |

The listed values represent the anticipated background concentrations of heavy metals based on the recorded geology and information provided by the BGS. On completion of site specific soil testing the recorded concentrations can be compared to the values listed above to determine the impact from naturally occurring background concentrations of heavy metals in comparison to those from anthropogenic sources.

For reference, it is noted that the values listed above are all significantly below the Tier 1 published screening values for a commercial development.

## 4.2 HYDROGEOLOGY

### 4.2.1 Aquifer Classification

The superficial deposits beneath the site are Glacial Till which are categorised by Natural Resource Wales (NRW) as unproductive strata. These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

The solid geology beneath the site comprises the Lower and Middle Coal Measures of the Coal Measures Group which are categorised by the NRW as Secondary A Aquifers. Secondary A Aquifers are classed as permeable layers capable of storing water supplies at a local rather than strategic scale, and in some cases, form an important source of base flows to rivers.

### 4.2.2 Groundwater Vulnerability

Guidance released by the EA (Envionment Agency , March 2017) states that activities that have the potential to affect the quality or quantity of groundwater must prevent groundwater pollution. All groundwater is vulnerable to pollution, and some geological formations are more vulnerable than others. The risks of groundwater pollution from any given activity depend in part on:

- The physical, chemical and biological properties of the underlying soil and rocks;
- Depth and quality of soil;
- The presence of glacial sediment and other materials – known as ‘drift’ deposits; and,
- Depth of the unsaturated zone.

All of the above affect how groundwater is more or less vulnerable to pollution, with type of vulnerability generally one of the following:

- Intrinsic vulnerability – this relates to the physical characteristics, it includes soil type, presence of superficial soils, or rock type; and,

- Specific vulnerability – this relates to the effect of the proposed activity including any contaminant and consequent risk to groundwater.

The site is divided into a number of areas based on the vulnerability of the recorded superficial and bedrock geology of the site with vulnerability determined as medium regarding bedrock geology and low vulnerability with respect to superficial geology. Medium vulnerability is defined as the 'intermediate between high and low vulnerability' as summarised below:

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

Data provided within the Groundsure report, based on EA mapping, indicates the majority of the site is defined as having low vulnerability for superficial deposits, with medium vulnerability associated with the underlying bedrock geology, this bedrock classification extends along the length of the ski run, where superficial deposits are noted to be absent. The northern extent of the site covering the access road and northern most part of the development is defined as low vulnerability with regards to both bedrock and superficial geology.

### 4.2.3 Groundwater Source Protection Zones

The EA defines groundwater Source Protection Zones (SPZs) around identified abstractions to aid the assessment of risk to groundwater or abstraction sources from development. SPZs have three subdivisions and bespoke SPZs are defined for all major abstraction sources intended for human consumption or food use, e.g. boreholes and springs. These sub-divisions are defined as follows:

- SPZ1 – Inner protection zone - defined as the 50-day travel time from any point below the water table to the abstraction source. This zone has a minimum radius of 50 metres;
- SPZ2 – Outer protection zone - defined by a 400-day travel time from a point below the water table. This zone has a minimum radius of 250 or 500 metres around the abstraction source, depending on the size of the abstraction;
- SPZ3 – Source catchment protection zone - defined as the area around an abstraction source within which all groundwater recharge is presumed to be discharged at the abstraction source.

The site is not shown to be situated within an EA defined groundwater SPZ.

### 4.2.4 Depth to Groundwater and Anticipated Groundwater Flow Direction

Groundwater within the underlying strata is likely to be influenced by the extensive historical mining below the site and the wider area. Perched groundwater is likely to be present within the Made Ground / Spoil tips and is likely to be complex and vary across the site dependant on the nature of the Made Ground strata.

Groundwater within the bedrock strata will be present within sandstone bands, however the extent of historical mining recorded on the site indicates that significant flow pathways will be present in these workings. General flow direction is anticipated to follow the topography and flow towards the east of the site towards the River Taff.

The hydrogeology of the site is subject to an assessment presented under separate cover.

### 4.2.5 Groundwater Abstractions

There are no groundwater abstraction records within the Environmental Database (Groundsure™) within the site boundary and only one recorded within 500m of the site as summarised below.

**Table 4-6 – Summary of Groundwater Abstractions within 250m**

| Location | Details |
|---|---|
| 337m North East<br>Easting: 305190<br>Northing: 204690 | Borehole at TBS (south Wales) Ltd for general washing/process washing.<br>Licence number 21/57/22/0035 start date 8/6/1994. |

## 4.3 HYDROLOGY

Details of the hydrology of the area have been obtained from the following sources:

- MAGIC interactive mapping website (DEFRA, 2021), accessed 21/07/2021; and,
- Environmental database (Groundsure™).

Numerous surface water features are present on the site including streams, rivers, drainage ditches and ponds, as observed on site and information determined from Ordnance Survey (OS) maps for the site. A detailed assessment of the surface water drainage has been undertaken and is presented under separate cover in conjunction with a hydrogeological assessment of the site.

The land at the site generally slopes downwards from the west to the east towards the A470 which bounds the eastern area of the site. There are several streams which are shown to be crossing the site area, generally flowing in a west to east orientation towards the River Taff which is located approximately 600 metres to the east of the A470.

The original Nant Canaid stream flows close to the southern boundary of the site, adjacent to the former Aberdare to Merthyr railway track before flowing off-site to the east. Water is also shown to flow along the former mainline railway track which is sourced from spring water emerging from within the Abercanaid Tunnel with eventual discharge into the Nant Canaid.

### 4.3.1 Surface Water Abstractions

There are no surface water abstraction records within the Environmental Database (Groundsure™) within the site boundary and only one recorded within 500m of the site as summarised below.

**Table 4-7 – Summary of Surface Water Abstractions within 500m of the site.**

| Location | Details |
|---|---|
| 276m North East<br>Easting: 305160<br>Northing: 204620 | Extraction from Nant Canaid at Glyn-Dyrys for non-evaporative cooling.<br>Hoover Plc. Annual abstraction 509,152m$^3$.<br>Dated 25/7/1979. |

### 4.3.2 Discharge Consents

The table below outlines the surface water discharge consents recorded within 500m of the site.

**Table 4-8 – Summary of Surface Water Discharge Consents within 500m of the site.**

| Location | Details |
|---|---|
| 94m north west | Glyndyris Disused Mine Shaft<br>Receiving Water: River Taff<br>Consent Expired (Revoked Date 18/9/1986). |

| Location | Details |
|---|---|
| 438m north east | Rhyd-Y-Car Leisure Centre Mt<br>Effluent Type: Sewage Discharges - Pumping Station<br>Receiving Water: River Taff<br>Effective Date: 12/12/2016 |
| 452m east | Groundwater Remediation Treatment at Former Willows Gasworks,<br>Permit Number: EPRNB3735AW<br>Receiving Water: Groundwater<br>Effective Date: 15/04/2013<br>Revocation Date: 23/12/2013 |
| 465m north east | Rhydycar Sports Complex<br>Effluent Type: Trade Discharges -Site Drainage<br>Permit Number: AF3031901<br>Receiving Water: Taff River<br>Revocation Date: 06/05/2004 |
| 474m north | Merthyr - Rear Of Eastfield TE<br>Effluent Type: Sewage Discharges - Sewer Storm Overflow - Water Company<br>Permit Number: AE2025309<br>Receiving Water: Taff River<br>Effective Date: 15/04/1964 |

## 4.3.3 Pollution Incidents and Prosecutions

A summary of recorded Pollution Incidents and Prosecutions are presented in the table below.

**Table 4-9 – Summary of Pollution Incidents and Prosecutions within 500m of the site.**

| Location | Details |
|---|---|
| 240m east | Incident Date: 04/05/2016<br>Pollutant: Oils and Fuels<br>Pollutant Description: Unidentified Oil<br>Water Impact: Category 3 (Minor) |
| 294m south east | Incident Date: 26/11/2002<br>Pollutant: Inert Materials and Wastes<br>Pollutant Description: Rocks and Gravel<br>Water Impact: Category 3 (Minor) |
| 448m north | Incident Date: 10/03/2017<br>Pollutant: Inert Materials and Waste<br>Pollutant Description: Soils and Clay<br>Water Impact: Category 3 (Minor) |
| 470m north | Incident Date: 01/03/2017<br>Pollutant: Inert Materials and Waste<br>Pollutant Description: Soils and Clay<br>Water Impact: Category 3 (Minor) |
| 478m north | Incident Date: 30/01/2017<br>Pollutant: Inert Materials and Waste |

| Location | Details |
|---|---|
| | Pollutant Description: Soils and Clay<br>Water Impact: Category 3 (Minor) |

## 4.4 RADON

The BRE document 211 (Scivyer, 2015) mapping coverage for the site area was consulted and indicates that the site is located within an area where no radon protection measures are required for new developments. This statement is supported by the Groundsure Report Appendix C which confirms that the site is in a low probability radon area as less than 1% of homes are above the action level.

# 5.0 HISTORICAL MINING

The site is located within an area with and extensive coal mining legacy and is located within a Coal Mining Reporting Area and a Development High Risk Area as defined by the Coal Authority.

The site is also the location of a large number of spoil tips both within the proposed development area and the wider Rhydycar West site which extends to the north and east.

## 5.1 COAL AUTHORITY INFORMATION

The following table summarises information provided by the Coal Authority.

**Table 5-1 – Summary of Coal Authority Report**

| Feature | Details |
|---|---|
| Development High Risk Area | With the exception of small isolated areas the whole site is designated as a development high risk area due to the complex development of the site as detailed below. Due to the complex nature of the site, for the purposes of this assessment the whole site is considered to be within the High-Risk Development Area. |
| Underground Coal Mining | Underground mining is recorded in multiple seams below the site, further details are provided in the following sections. |
| Mine Entries | Multiple mine entries are recorded both within the area of the proposed development and the wider Rhydycar West site. |
| Fissures and break lines | None recorded within site boundary. |
| Past Opencast (surface) Coal Mining | Surface mining is not recorded on the site, however, small scale informal mining of surface reserves cannot be discounted. Any evidence of this work is likely to have been removed by the subsequent intensive mining and placement of spoil across the site. |
| Shallow Coal Mining | Shallow coal mining is recorded across the majority of the proposed development area with a further area of probable shallow coal mine workings located within the north-eastern part of the site. |
| Coal Outcrops | Numerous coal seams are recorded as out-cropping across the site. Based on available mapping, outcrops associated with the following seams are anticipated within the development area from lowest seam stratigraphically.<br>• Seven Feet – outcropping close to the location of the A470, crossing the entrance road to the site.<br>• No. 2 Yard<br>• Amman Marine Band<br>• Bute<br>• Nine Feet<br>• Lower Six-Feet<br>• Upper Six Foot<br>• Four Feet<br>• Two-Feet Nine Group.<br>Mine workings are anticipated at shallow depths in all the above listed seams. |

## 5.2 HISTORICAL WORKINGS

Historical workings are recorded in the majority of seams present across the site. Drawings presented in Appendix G show the extent of recorded workings in each of the seams. Based on the current development proposals, the footprint of the development is likely to be impacted by workings within the following seams.

**Table 5-2 – Summary of working within Proposed Development Area**

| Seam | Extent of Mining within Proposed Development Area |
|---|---|
| Upper Gelli-deg. | Extensive workings within proposed development area. |
| Seven Foot | Extensive workings within proposed development area. |
| No 2 Yard | Extensive workings within proposed development area. |
| Bute | Extensive workings within proposed development area. |
| Nine Foot | Extensive workings within southern and western areas of proposed development. |
| Upper Six Foot | Workings limited to upper reaches of ski slope. |
| Four Feet | Workings limited to upper reaches of ski slope. |
| Two Foot Nine | Workings limited to upper reaches of ski slope. |

### 5.2.1 Mine Entrances

Within the wider Rhydycar West development site it is estimated that there are approximately 196 recorded shafts and adits which is split roughly between 83 shafts and 110 adits, a number of which are also located within the area of the proposed development.

## 5.3 MINE TIP STABILITY REPORTS

Merthyr Tydfil County Borough Council (MTCBC) were contacted in regards to the most recent tip inspection reports. Reports for the tips on site were provided from 2015 onwards with the most recent inspection reports made available for review dated 16th March 2022. Tip numbers below relate to those given by MTCBC. A plan relating to Tip Numbers and Names is available in Appendix E.

**Table 5-3 – Summary of Coal Tip Inspection Reports**

| Reference | Description |
|---|---|
| Tip 79 | This tip is identified as the “Glyn-dyrys Tip”. This tip was noted as being satisfactory at the time of the 2015 inspection (21st April 2015). In 2016 and 2017, although being noted as satisfactory at the time of inspection, minor ponding was observed (26th April 2016 and 16th May 2017).<br>The most recent report made aviaalbe for review (16th March 2020) indicates the ponding remains along the toe of the slope. Additionally, a strong out flow of water is noted from the toe of the southern flank of the tip. Recommendations were made to investigate the source of this water and manage the ponded water at the toe of the slope. |

| Reference | Description |
|---|---|
| Tip 80 | MTCBC reference "Lower Colliers Row, Rhyd-Y-Car S.W Tip".<br>This tip was noted as being satisfactory at all inspections, but was observed to be merged with Tip 79 from 2016 onwards due to construction work from the A470 (22nd April, 2015, 26th April 2016, and the 16th May 2017).<br>No instability was noted at the time of the most recent inspection (16th March 2020). |
| Tip 81 | This tip is identified as the "Fan Tip", and some of the smaller tips to the north and west, and appears to be associated with Lower Colliers Row Mine.<br>In the 2015 inspection, vegetation around the shaft was noted as being dense, although the tip was satisfactory (22nd April 2015). In 2016 and 2017, some erosion was noted to the west of the shaft, although the tip was considered satisfactory (26th April 2016 and 18th May 2017). |
| Tip 75 | MTCBC reference Cwm Pit, Waunywllt".<br>The main body of the "tip" is composed of a railway cutting, MTCBC have identified the edges of the cutting as areas where tipping has occurred. This tip was noted as being very wet and boggy with areas of standing water, as well as flow of water being obstructed by debris at the times of inspection (21st April 2015, 3rd May 2016 and the 10th May 2017).<br>The report dated 16th March 2020 notes the tip is directly influenced by drainage from Tip 79 and makes reference to a shallow landslip notes to be a result of *"an outburst of water ponding in a low area upslope of Tip 79"* The recommendations include the clearance and management of culverts across the site. |

## 5.4 COAL MINING REPORTS (COAL AUTHORITY)

Coal mining reports have previously been obtained from the Coal Authority for the site. Due to the known mining history, there is also the prevalence of previous reports which include coal authority records, and ready online access to the Coal Authority's Mine Entries database online.

In summary, the Coal Authority records 110 adits and 75 shafts as being present on the wider Rhydycar West site. These numbers are derived from historical coal mining records that were legally required to be lodged with the Coal Authority's predecessor due to historic mining accidents. The majority of adits and shafts are outside of the development zone, in the western and central portions of the site. However, a significant number of mine entries are expected to be present within the development zone, associated with the Coedcae Pit, and the Lower Colliers Row Pit mines.

# 6.0 UNEXPLODED ORDNANCE

Based on freely available mapping data from Zetica UXO (Zetica UXO, 2008), the site is located within a Low Risk Area with regards to Unexploded Ordnance (UXO). A 'Low Risk' area is defined by Zetica as:

> *'Low risk regions are those with a bomb density of up to 10 bombs per 1000 acres. These areas are considered to have a significant but low UXB risk. In general, further action to mitigate the risk is considered prudent, although not essential. Care is required when assessing the risk for specific sites where the risk may be higher because of local wartime activity'.*

In general, sites classified as Low Risk do not require additional mitigation measures during site development works.

# 7.0 SITE HISTORY

## 7.1 INTRODUCTION

The historical development of the site and surrounding area has been assessed using information available from historical Ordnance Survey (OS) maps within the Groundsure Report for the site which is presented in Appendix C of this report.

In the context of the summary of historical development of the surrounding area, the descriptions are limited to within approximately 500m of the site boundary, unless specified in the following section. Any potentially contaminative land uses outside 500m are generally considered unlikely to pose a risk to the development site considered herein. However larger more complex sites may be included for reference, where applicable.

## 7.2 SITE HISTORY

### 7.2.1 Detailed Analysis of Site History

The table below provides a detailed account of the review of available OS mapping coverage and historical aerial imagery for the site and general area dating back to 1875.

**Table 7-1 – Summary of Historical Data**

| Map Date & Scale | Within Site Boundary | Surrounding Area |
|---|---|---|
| 1875-1878 1:10,560<br>1875 1:2,500 | The Gethin Railway is located along the eastern edge of the site running north-south a second rail line divides from this line and runs towards Ynys-Fach Iron Works to the north. The Great Western Railway (Vale of Neath Section) is shown running through the southern half of the site orientated south-west to north east and leading to Cwm Pit Colliery to the south west of the site.<br>Glyn-dyrys Pit (ironstone) is recorded in the central southern part of the site including a number of tramways. A smithy is recorded to the west of the Glyn-dyrys Pit.<br>An Old Level (Ironstone) is recorded in the northern part of the site.<br>A reservoir is located in the south western extent of the site with a water course orientated north-south along the western boundary.<br>Spoil tips are recorded across the majority of the central and north western parts of the site. The western area of the site (route of the | The Brecon and Merthyr Railway (Merthyr Branch) is recorded immediately to the east of the site.<br>The southern railway line runs towards Cwm Pit Colliery 200m south west of the site where it enters the Abercanaid tunnel.<br>The Gyln-dyrys Pond is recorded immediately to the east of the southern part of the site.<br>Lower Colliers Row (residential properties) are recorded immediately to the north of the site with Old levels (ironstone) and Shaft (coal) recorded within 100m of the northern boundary.<br>Rhydycar Pit (Ironstone) is shown immediately to the north east of the site with associated infrastructure and spoil tips. |

| Map Date & Scale | Within Site Boundary | Surrounding Area |
|---|---|---|
| | proposed ski slope) is largely recorded as undeveloped rough grassland with trees, this area is bisected by pathways. | The Glamorganshire Canal and towing path is recorded 250m to the east of the site. |
| 1898-1901, 1:10,560<br>1900, 1:2,500<br>1903, 1:10,560 | The intersection of the Great Western Railway (GWR), Gethin Railway and Ynys Fach rail lines is now recorded as Cyfarthfa Crossing.<br>The course of a further railway line (north-south oriented) is recorded to the west of the Gethin Railway; and is noted to be under construction.<br>A further rail line is recorded along the southern boundary of the site and is recorded as 'Old Railway'. This line links the Great Western Railway line and Gethin Railway lines.<br>Glyn-dyrys Pit is recorded as Disused. | Rhydycar Pit is recorded as disused. |
| 1915,<br>1919, 2:500<br>1921-22, 1:10,560 | A Coal Drift is recorded in the centre of the northern half of the site, to the south of Lower Colliers Row. This includes a tramway and spoil heaps. | The Glamorganshire Canal is now recorded as disused, beyond which the Gas Works (Merthyr Tydfil Gas Co.) is now shown. |
| 1938, 1:10,560 | No significant changes in land use is recorded on the site. | No significant changes in land use are recorded in the surrounding areas of the site. |
| 1947-48, 1:10,560 | The Coal Drift in the north is now recorded as 'Old Coal Drift'. | The Glyn-dynys pond is no longer recorded. |
| 1964-1965, 1:10,560<br>1968-1969, 1:10,560 | All railway lines, with the exception of the GWR line are now marked as dismantled. | The site of Cwm Pit is now marked as Mine (dis). A slag heap is recorded immediately to the south of the site. |
| 1971, 1:2,500<br>1976-77, 1:10,000 | The GWR railway line is now recorded as dismantled. | No significant changes in land use are recorded in the surrounding areas of the site. |
| 1982, 1:10,000<br>1984-1986, 1:2,500 | No significant changes in land use are recorded on the site. | No significant changes in land use are recorded in the surrounding areas of the site. |
| 1989-92 1:10,000 | No significant changes in land use are recorded on the site. | No significant changes in land use are recorded in the surrounding areas of the site. |
| 2001, 1:10,000 | No significant changes in land use are recorded on the site. | No significant changes in land use are recorded in the surrounding areas of the site. |
| 2010, 1:10,000 | No significant changes in land use are recorded on the site. | No significant changes in land use are recorded in the surrounding areas of the site. |
| 2021, 1:10,000 | No significant changes in land use are recorded on the site. | No significant changes in land use are recorded in the surrounding areas of the site. |

# 8.0 ENVIRONMENTAL DATABASE SEARCH

## 8.1 INTRODUCTION

Regulatory authority information relevant to the site and its surroundings has been obtained from the undertaking of an environmental database search (Groundsure$^{TM)}$. The information is summarised below, and the environmental database records are enclosed in Appendix C.

. Distances stated are approximate and are taken from the boundary of the site to the database recorded entries.

The following summary is generally limited to locations within 500m of the site boundaries unless it is considered that installations or activities beyond that range could potentially have an impact on the site or be affected by the redevelopment of the site.

## 8.2 POLLUTION CONTROLS

There are no Integrated Pollution Controls, Integrated Pollution Prevention and Controls or Local Authority Pollution Prevention and Controls recorded within 500m of the site.

## 8.3 WASTE

There are no historical or registered landfills or waste management facilities recorded within 500m of the site.

## 8.4 HAZARDOUS SUBSTANCES

There are no records pertaining to the Control of Major Hazards Sites (COMAH), storage of explosive materials or the Notification of Installations Handling Hazardous Substances (NIHHS) within 500m of the site.

## 8.5 ENVIRONMENTALLY SENSITIVE AREAS

**Table 8-1 – Summary of Environmentally Sensitive Areas**

| Designation | Location | Details |
|---|---|---|
| Nitrate Vulnerable Zone (Surface Waters) | - | None recorded within 500m |
| Nitrate Vulnerable Zone (Groundwater) | - | None recorded within 500m |
| Special Protected Areas | - | None recorded within 500m |
| Sites of Special Scientific Interest (SSSI) | On site | The Cwm Glo a Glyndyrys SSSI is recorded within the area of the site designated for the position of the ski slope. The SSSI covers a wider area if approximately 180 hectares and is designated due to its ecological value. |
| Sites of importance for Nature Conservation (SINC) | On site | The majority of the site is located within the Rhydycar Gorllewin/ Rhydycar West SINC |
| Special Areas of Conservation | - | None recorded within 500m. |

| Designation | Location | Details |
|---|---|---|
| Adopted green belt | | None recorded within 500m. |
| Green belt | | None recorded within 500m. |
| Nature Reserve | | None recorded within 500m. |
| Designated Woodland | 10m south west | Area recorded immediately south west and west of the site. |
| Scheduled ancient monuments | Adjacent to site boundary | Cyfarthfa balance pond and leat. |
| | 5m south | Cwm Pit and head of railway |
| | 68m west | Black Pins early ironstone workings |
| | 199m south west | Vale of Neath railway cutting and tunnel portal |

## 8.6 FLOODING

The absence or presence of flooding potential at the site is summarised in the table below.

**Table 8-2 - Summary of Flooding Potential**

| Designation | On Site | Detail |
|---|---|---|
| Flooding at Surface (from Groundwater) | No | - |
| Flooding below Ground Level (from Groundwater) | No | - |
| Flooding from Surface Waters | Yes | Low lying ground to the east of the Tub boat canal is recorded as at risk from surface water flooding with a 1 in 30 year risk of flooding greater than 1.0m (highest recorded risk). This assessment is based on general classification of the site, a comprehensive Flood Consequence Assessment has been prepared for the site and is presented under separate cover. |

## 8.7 INDUSTRIAL LAND USE

The following section outlines the surrounding industrial land use within 250m and considered to be relevant to the site and the proposed development.

**Table 8-3 - Summary of Industrial Land Use**

| Land Use | Detail |
|---|---|
| Contemporary Trade Directory Entries (on site) | None |
| Contemporary Trade Directory Entries (surrounding area) | Closest records relate to Rhydycar Business Park located 75m north east of the site. |
| Fuel Station Entries | None within 500m. |

## 8.8 SUMMARY OF ENVIRONMENTAL SETTING

The current environmental setting poses a limited risk of contaminative land uses within this vicinity of the site, however records reflect the historical industrial nature of the site and environmental sensitivity of the site in terms of the SSSI and Scheduled Ancient Monuments on site and in the surrounding areas.

# 9.0 PRELIMINARY GEOTECHNICAL ASSESSMENT

The following section summarises the anticipated ground conditions and associated geotechnical assessment for the site, including highlighting the potential constraints for future development. Actual ground conditions may need to be confirmed through ground investigation in due course.

## 9.1 ANTICIPATED GROUND CONDITIONS

The following ground conditions are anticipated underlying the site:

- Made Ground
    - General Made Ground
    - Spoil Tips (colliery spoil, ironstone waste and general spoil)
- Glacial Till
- South Wales Middle Coal Measures
- South Wales Lower Coal Measures.

Ground conditions on the site have been extensively modified due to the historical coal mining activities in the sub surface below the site and also due to the placement of significant quantities of colliery and iron stone waste on the site.

Ground conditions will vary across the site depending on the presence or absence of superficial Glacial Till deposits and thickness of Made Ground present.

Ground stability is also likely to vary based on the varying nature of the ground conditions including areas of poorly consolidated materials and areas which may have been destabilised due to the movement of perched groundwater within the spoil deposits and movement of groundwater within coal mine workings.

Localised areas of compressible ground may also be present in areas of lower lying ground which were noted to be boggy at the time of the site walkover.

## 9.2 SLOPE STABILITY

The elevation of the site varies not only due to the natural topography of the site, but also due to the presence of spoil tips across a large proportion of the site. Detailed inspection of the stability of the spoil tips have not been undertaken as part of this assessment and will need to be included in any future assessment of ground conditions to support the proposed development.

A summary of inspection reports provided by the local authority is presented in Table 5-3 of this report.

## 9.3 MINING RELATED RISKS

A number of potential risks are associated with the long mining history with respect to geotechnical stability of the site including:

- Potential instability of spoil tips;
- Risk of tip combustion;
- The presence of shafts and adits;
- Surface subsidence resulting from collapse of shallow mine workings;

Mine gas and mine water drainage are considered in Section 11.2.

## 9.4 ENABLING WORKS

### 9.4.1 Anticipated Cut and Fill

The current development proposals will require a degree of cut and fill to facilitate the development.

A preliminary cut and fill model has been developed for the site to aid the design process and provide initial mass balance calculations. The topography of the site has been considered during the deign process to limit the extent of cut and fill required, however areas of cut will be required to site the ski slope within the landscape and minimise visual impact, with the lower parts of the slope placed below the current ground level.

Due to the varying nature of the ground conditions a degree of instability of the excavations may be experienced during the enabling works and further investigation will be required to establish the nature of the ground conditions in the context of the development including the suitability of the materials for re-use and optimum conditions for placement of areas of fill.

Excavations are likely to be required through the made ground and superficial deposits as well as underlaying bedrock strata to facilitate the proposed cut and fill model.

### 9.4.2 Ground Improvement

Remedial works associated with the coal mining works are likely to be required within part or whole of the site development area and surrounding regions to facilitate the proposed development, the extent to which this will be required will need to be confirmed following the completion of intrusive investigations on the site and discussions with the Coal Authority.

## 9.5 ANTICIPATED FOUNDATION REQUIREMENTS

The required foundation design will need to be determined following the completion of detailed investigation of the ground conditions and subsequent geotechnical assessment. The assessment will need to consider the requirement for specialist foundations to facilitate the proposed development including piled foundations on the larger structures advanced to suitable founding strata.

The need for remedial works will also need to be considered within the context of the proposed development in liaison with the appropriate regulatory authorities including the Coal Authority.

## 9.6 TEMPORARY WORKS

### 9.6.1 Excavations

Due to the varying nature of the anticipated ground conditions across the site the stability of any excavations are likely to vary, although it is considered likely that excavations may exhibit some degree of instability and may require battering or site protection to facilitate the proposed development.

### 9.6.2 Groundwater

The presence of shallow groundwater will need to be confirmed through detailed hydrogeological assessment in due course with the potential for shallow groundwater to influence the proposed development.

Further details are provided within the hydrogeological assessment for the site under separate cover.

### 9.6.3 Inground Obstructions

Only limited development is present on the site however obstructions are potentially present on the site associated with former mining infrastructure, rail lines, tramways, buildings etc. these may be present at the ground surface or at depth within the areas of spoil tips.

## 9.7 DRAINAGE

The shallow soils underlying the site are anticipated to exhibit variable permeability depending on the nature of the superficial strata (where present) and the degree of compaction. In addition, areas of standing water are present across to the site indicating limited drainage potential, primarily in the southern part of the site.

## 9.8 POTENTIAL CONSTRAINTS

Within the context of this geotechnical assessment and based on the information above, the following potential constraints have been identified with respect to the proposed development.

- Extensive historical mining
- Potential for inground obstructions.
- Shallow and variable groundwater bodies.
- Poorly consolidated and variable ground conditions.
- Instability in excavations.

To support the development, detailed ground investigation will be required to develop an accurate ground model for the site including the depth and extent of superficial and Made Ground strata, depth to bedrock, presence of mine workings, requirement for remedial works and nature of groundwater and perched groundwater bodies. It is noted that the summary presented above is necessarily conservative based on the level of information available at the time of writing. The outcome of the detailed ground investigation and geotechnical assessment will be utilised to determine the extent and nature of any remedial works which are deemed necessary to stabilise the development area.

Any remedial works will need to be undertaken following discussion with and approval from The Coal Authority, although works are likely to focus on the location of mine features and grouting of any workings deemed to pose a potential risk to the proposed development.

However, based on the current level of understanding, the scope and scale of these additional works are unlikely to pose a barrier to the proposed development.

# 10.0 GEOTECHNICAL RISK REGISTER

## 10.1 INTRODUCTION

The geotechnical risks associated with this project have been identified and relevant health and safety issues have also been considered. The register highlights the risks and consequence of those risks.

The following Geotechnical Risk Register has been considered with regard to the details of other construction related risks known at this time. The risks have been evaluated using the risk evaluation matrix suggested in Part 2 of CD 622 'Managing Geotechnical Risk, which is reproduced as Table 10-1.

### 10.1.1 Risk Assessment Procedure

For the purposes of this report, risk has been assessed with reference to 'probability', 'impact' and 'risk rating'. Risk rating I = Probability (P) x Impact (I) as detailed in Table 10-1.

The Geotechnical Risk Register has been compiled to show the degree of risk attached to various ground related aspects of the proposed development. The purpose of the register is to provide an assessment of the risk to the project posed by common ground related problems, identify suitable mitigation measures that would connect the risk to an acceptable level. The risk register should be developed and refined as the geotechnical design and assessment progresses such that the register will allow the management of the geotechnical risks.

The inclusion of a risk in the register does not constitute as confirmation that the problem actually exists at the Site. A probability of "very unlikely" is indicative of a condition which the available data suggests should not be present. The calculated risk is not the risk that the impact will occur. It is the risk that mitigation will be required to enable the project to progress. For the purposes of this risk register the magnitude of each impact of the resulting severity of risk is measured against that which would/could "normally" be expected for each element. Before incorporation into the risk register, the impacts and risks for each element should be moderated by an assessment of the cost and time implication of the individual mitigation measures.

The Geotechnical Risk Register has been developed in general accordance with the guidance presented in ICE/DETR Document "Managing Geotechnical Risk" (2020) and the HA documents HD41//03 and HD22/08. The degree of risk (R) is determined by combining an assessment of the probability (P) of the hazard occurring with an assessment of the impact (i) the hazard and associated mitigation will cause if it occurs (R = P x i). The scale against which the probability and impact are measured, and the resulting degree of risk determined is presented below

### Table 10-1- Risk Evaluation Matrix

| PROBABILITY (P) | | IMPACT (I) | | | | | RISK (R = P x I) | RESPONSE TO RISK |
|---|---|---|---|---|---|---|---|---|
| Very Likely | 5 | Very High | 5 | Potential to halt project | OR | Potential for major claim or similar | 17 to 25 | Unacceptable: act now to prevent |
| Likely | 4 | High | 4 | Significant delay on overall project | | Major impact on cost | 13 to 16 | Unacceptable: act now to prevent |
| Probable | 3 | Medium | 3 | Major delay on this task, but significant impact on overall project unlikely | | Significant impact on cost | 9 to 12 | Early attention required |
| Unlikely | 2 | Low | 2 | Minor delay on this task, but significant impact on overall project unlikely | | Minor impact on cost | 5 to 8 | Regular attention required |
| Negligible | 1 | Very Low | 1 | No significant impact on task or project | | Negligible impact on cost | 1 to 4 | Monitor |

**Table 10-2- Geotechnical Risk Register**

| REFERENCE | IDENTIFIED GEOTECHNICAL HAZARD/RISK | CAUSE | RISK BEFORE CONTROL | | | CONSEQUENCE | CONTROL MEASURES | RESIDUAL RISK | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | P | I | R | | | P | I | R |
| 1 | Variable shallow ground conditions | Varying thicknesses of Made Ground overlying glacial strata (where present) and bedrock. | 4 | 3 | 12 | Cost (foundation solution) and programme implications | Ground investigation to create detailed ground model including properties of shallow soils. | 2 | 3 | 6 |
| 2 | Unexpected ground conditions | Variations in ground conditions between exploratory holes | 4 | 4 | 16 | Design variations required; programme and cost implications | Ground investigation coverage required in line with industry best practice/guidance will improve knowledge, however localised variations cannot be discounted due to the highly modified nature of the ground conditions. Construction of an engineered development platform as part of proposed design will reduce overall variability. | 2 | 2 | 4 |
| 3 | Differential settlement / poorly consolidated ground | Varying ground conditions / soil strength | 3 | 3 | 9 | Impaired serviceability of proposed building. Cost and programme implications. | Ground Investigation will be required to assess shallow ground conditions to determine an appropriate foundation solution to mitigate this risk. Creation of engineered development platform within proposed design. | 1 | 2 | 2 |
| 4 | Chemical attack on buried concrete | Aggressive chemical environment within superficial deposits | 2 | 2 | 4 | Increased cost of chemically resistant concrete | Laboratory testing of shallow soils to determine classification of concrete required. | 1 | 2 | 2 |

| REFERENCE | IDENTIFIED GEOTECHNICAL HAZARD/RISK | CAUSE | RISK BEFORE CONTROL | | | CONSEQUENCE | CONTROL MEASURES | RESIDUAL RISK | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | P | I | R | | | P | I | R |
| 5 | Ground instability due to coal workings[6] | Extensive coal workings | 5 | 5 | 25 | Cost (remedial works and foundation solution). H&S risk to worked from collapse of shafts. | Detailed ground investigation and geophysical surveys in co-ordination with Coal Authority. Updated CMRA and detailed ground model. Remedial works as required and in agreement with Coal Authority and ongoing monitoring as required. | 2 | 3 | 6 |
| 6 | Ground instability due to spoil tips | Extensive spoil tips on site. | 4 | 4 | 16 | Slope failure, increase costs for stabilisation / re-profiling. | Assessment of slope faces by qualified Engineer, ground investigation, management of surface water and groundwater flow within drainage design. Construction of engineered development platform as part of development. Design process to consider placement of structures relative to slope faces. Remedial works / stabilisation if required. | 2 | 2 | 4 |
| 7 | Shallow and variable groundwater | Anticipated variations in groundwater including shallow groundwater present across the site | 3 | 3 | 9 | Groundwater present in foundation excavations. Softening of sub-grade material reducing bearing capacity values, | Ground investigation to consider the potential for shallow groundwater across the site. Assessment to identify whether control measures during excavation for foundations may be necessary. Drainage controls to be designed accordingly and installed in correct sequence. | 3 | 2 | 6 |

[6] Risk associated with coal mining activities are detailed further in Section 10.2

| REFERENCE | IDENTIFIED GEOTECHNICAL HAZARD/RISK | CAUSE | RISK BEFORE CONTROL | | | CONSEQUENCE | CONTROL MEASURES | RESIDUAL RISK | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | P | I | R | | | P | I | R |
| 8 | Instability during excavations | Varying ground conditions, poorly consolidated soils, shallow ground water. | 3 | 2 | 6 | Poor excitability, increased costs during construction. | Ground investigation to consider likelihood of spalling within excavations and presence of shallow groundwater, appropriate mitigation measures adopted on site. | 2 | 2 | 4 |
| 9 | Services strike | Unidentified buried services beneath the site | 2 | 4 | 8 | Risk of damaging services on site.<br><br>H&S risk posed to site workers | **Limited services anticipated on site.**<br>Ensure up to date services records are obtained and available on site.<br>Location of services to be marked out on site prior to excavations.<br>Relevant Permit to Dig in place and all excavations CAT scanned prior to breaking ground.<br>Existing services to be protected as necessary. | 1 | 4 | 4 |
| 10 | Buried obstructions | Relict foundations/in ground obstructions | 2 | 2 | 4 | Cost and programme implications | Buried obstructions are anticipated to be limited on the site but cannot be discounted. Ground investigation required to provide greater level of information to inform risk. | 1 | 2 | 2 |

## 10.2 SUMMARY

The risk summary presented above reflects the current level of understanding of the potential constraints associated with the site and the requirement for detailed ground investigation to confirm ground conditions and to refine the current understanding of the ground model.

The control measures outlined above include proposed construction of an engineered development platform as well as those remedial measures which may be required in due course. It is acknowledged that further remedial works not listed above may be required to facilitate the development, however based on our current understanding of the site these additional works are unlikely to pose a barrier to the proposed development.

# 11.0 COAL MINING RISK ASSESSMENT

## 11.1 RISK ASSESSMENT AND MITIGATION STRATEGY

The following table summarises the key hazards identified by review of the available data sources, the factors affecting risk posed by each hazard and an assessment of the estimated risk posed to any proposed re-development on the site.

Assessing risks from coal mining is based upon guidance provided by the Coal Authority following a 'risk based' approach implemented through PPG 14 – Development on Unstable Land.

The risk posed has been assessed as one of three categories;

**Table 11-1 – Risk Classification**

| | |
|---|---|
| High risk | Based upon the data available there is a significant risk of shallow ground instability associated with coal mining. Investigation will be required as part of the site re-development. Mitigation measures likely to be required. |
| Moderate risk | Based upon the data available there is a potentially significant risk of shallow ground instability associated with coal mining. Investigation will be required as part of the site re-development. Mitigation measures may be required. |
| Low risk | Based upon the data available there is a low risk of shallow ground instability associated with coal mining. No further assessment or investigation is recommended. |

The table below summarises the potential risks associated with coal mining legacy at the site.

**Table 11-2 – Potential Coal Mining Legacy Issues**

| Coal Mining Legacy | Yes | No | Risk Assessment |
|---|---|---|---|
| Underground coal mining (recorded, shallow and deep) | ✓ | | Required |
| Underground coal mining (unrecorded, shallow and deep) | ✓ | | Required |
| Recorded mine entries (Shafts and adits) | ✓ | | Required |
| Unrecorded mine entries (Shafts and adits) | ✓ | | Required |
| Subsidence features | ✓ | | Required |
| Surface mining (bell pits, recorded/unrecorded) | ✓ | | Required |
| Colliery spoil tips | ✓ | | Required |
| Combustion of Coal Seam | ✓ | | Required |
| Combustion of Colliery Tips | ✓ | | Required |
| Mine Gas | ✓ | | Required |
| Mine water release | ✓ | | Required |

Based on the information obtained from this assessment, the following risk assessment has been compiled, which identified plausible risks at the site in the context of the proposed end use.

Risks associated with mine gas and mine water drainage are covered in Section 11.2.

**Table 11-3 – Identified Risks and Mitigation**

| Hazard | Area of site affected | Factors affecting risk | Risk | Mitigation |
|---|---|---|---|---|
| Underground coal mining (recorded, shallow and deep) | Entire Site | Coal Authority records suggest shallow and deep workings on the site within both coal seams and ironstone veins. Workings are anticipated across the majority of the proposed development site. Workings are also present off-site, to the north, west, south and east, and there is the strong possibility that interconnections exist between workings on-site and off-site.<br>All seams and veins across the site appear to have been worked to some extent, workings appear to occur from the outcrop of the seam or vein, into the mountain, so cover a wide range of depths from surface. Extent of recorded workings are presented in Appendix G. | High Risk | Detailed ground investigation will be required prior to development in order to develop an accurate ground model of the site. Multiple phases of works are likely to be required to inform an updated risk assessment and provide sufficient information on the requirement for mitigation, including grouting works. |
| Underground coal mining (unrecorded, shallow and deep) | Entire Site | Given the age of workings on site and with evidence provided from NCB records, there are likely to be unrecorded seam and vein workings. Workings likely to occur from the outcrop of the seam or vein, into the mountain, so cover a wide range of depths from surface. | High Risk | Systematic ground investigation across the whole development area to provide a detailed assessment of ground conditions and development of a ground model as above. |
| Recorded Mine entries (Shafts) | Entire Site | Coal Authority records suggest shallow and deep workings on the site, of both coal seams and ironstone veins across the majority of the site.<br>The adequacy of capping of mine entries is unclear with uncapped shafts and adits anticipated on site and potentially below current spoil tips. | High Risk | An assessment of available evidence is required to understand further the presence of shafts on site, and which shafts have been remediated to an acceptable degree. This data can then be used to assess the risk from shafts in relation to the proposed development. |

| Hazard | Area of site affected | Factors affecting risk | Risk | Mitigation |
|---|---|---|---|---|
| Unrecorded Mine entries (Shafts) | Entire Site | Given the age of known workings on site there are likely to be unrecorded main shafts and air shafts. Given that later mining produced spoil heaps that cover a large proportion of the site, it is likely that shafts are buried beneath spoil tips. | High Risk | It is conceivable that a large number of unrecorded shafts are present. A targeted geophysical survey could be used to evaluate the location of subsurface voids that could be related to shafts. Targeted areas should include areas where the majority of works have been undertaken, which can be evaluated from the locations of all shafts, adits, bell-pits and subsidence features, as well as historical maps. |
| Recorded Mine entries (Adits) | Entire Site | Coal Authority records suggest shallow and deep workings on the site targeted by levels and drifts respectively, targeting both coal seams and ironstone veins across the majority of the site. Some of these have been infilled, and others have been fenced off, but it is possible that some still remain open. | High Risk | An assessment of all available evidence is required to understand further the presence of adits on site, and which adits have been remediated to a modern acceptable degree. This data can then be used to undertake appropriate risk assessment in relation to the proposed development. |
| Unrecorded Mine entries (Adits) | Entire Site | Given the age of workings on site, there are likely to be unrecorded adits. Given that later mining produced spoil heaps that cover a large proportion of the site, it is probable that a large number of adits above those already known, are buried beneath spoil tips. | High Risk | It is conceivable that unrecorded adits are present. A targeted geophysical survey could be used to evaluate the location of subsurface voids that could be related to adits. Targeted areas should include those areas where it is thought the majority of works have been undertaken, which can be evaluated from the locations of all shafts, adits, bell-pits and subsidence features, as well as historical maps. |
| Subsidence features | Entire Site | The 2001 Coal Authority reports indicates that there are no damage notices of claims having been given, made or pursued since the 1st January 1984, although this may be due to the lack of structures on the site. This study indicates that subsidence features do occur, and appear to be limited to certain areas of the site, although the presence of them in other locations where mining has occurred close to | High Risk | A suitable evaluation of onsite subsidence features, from site inspections and available historical aerial photography is required. This can then be used to adequately assess the risks from the site in light of the proposed development. |

| Hazard | Area of site affected | Factors affecting risk | Risk | Mitigation |
|---|---|---|---|---|
| | | the surface of the site cannot be discounted. An adequate survey of all subsidence features has not been undertaken, although partial site surveys have been undertaken in the past. | | |
| Surface mining (Bell Pits, recorded/unrecorded) | Entire Site | Bell pits are likely to have been used on site since Roman times, and these will have been the main process of extracting coal until the use of adits and shafts in the late 1700s. It is considered likely that these features have subsequently been buried by more recent spoil heaps or re-worked on site. | High Risk | A targeted geophysical survey is recommended to evaluate the location of subsurface voids that could be related to bell pits (although it should be recognised it may not be possible to distinguish these from subsidence features). Targeted areas should include those areas where it is thought the majority of works have been undertaken, which can be evaluated from the locations of all shafts, adits, bell-pits and subsidence features, as well as historical maps. |
| Colliery Spoil Tips | Entire Site | Spoil tips are widespread across the site. The Local Authority regularly inspect the spoil tips across the site. Inspection reports from the Local Authority do not indicate any significant instability associated with the onsite spoil tips, however ongoing Local Authority monitoring should continue. | Low Risk | The proposed ground investigation and design process will need to consider the impact on tip stability including the requirement for ongoing monitoring in agreement with the relevant regulatory authorities. |
| Combustion of Coal Seam | Entire site | Shallow coal seams are anticipated across the proposed development site. The Coal Authority have published a list of coal seams which are considered to be at risk of spontaneous combustion. None of these seams are below the site. | Low Risk | None anticipated.<br><br>All investigations and developments to be undertaken in line with required licences and agreements with the Coal Authority. |
| Combustion of Colliery Tips | On site tips | As noted above, the recorded coal seams are considered to be at low risk of combustion. As such the residual material within the associated tips are also considered to pose a low risk. | Low Risk | Any spoil re-used on the site as part of the development will be placed a minimum of 1m from any heat sources, with material movements documented under a Materials Management Plan. |

| Hazard | Area of site affected | Factors affecting risk | Risk | Mitigation |
|---|---|---|---|---|
| Mine Gas | Areas where foundations and structures interact with mine entries and shallow workings. | Risks from ground gas generation and migration are considered to pose a high risk to the proposed development based on the current level of information. Ground investigation and ground gas monitoring may allow this risk to be reduced in due course. | High Risk | Comprehensive ground gas monitoring will be required to facilitate a Ground Gas Risk Assessment for the proposed development. This assessment will be required to assess the potential for ground gas generation within coal measures and colliery spoil and subsequent migration into the enclosed spaces of the proposed development.<br>Mitigation measures may be used to reduce risks to an acceptable level as part of the detailed design process. |
| Mine water release | Entire site | Flooded workings and mine entries on the site indicate the possibility of uncontrolled release of mine water which may impact the site including the proposed development. | Medium Risk | An assessment of ground conditions, including the presence of flooded mine workings and mine entries within the proposed development area and surrounding environs will be required to assess the likely impact on the development and any requirement for remedial actions. |

## 11.2 SUMMARY OF MITIGATION MEASURES

### 11.2.1 Coal Authority Policy

As documented above, the site is located within a High Risk Development Area and is underlain by workings within multiple seams and with mine entries noted within the development site.

As part of the Pre-Application Consultation process, the following comments were received from the Coal Authority.

- *The site is within the potential zone of influence of former mine workings in 10 coal seams, including workings at shallow depth.*
- *There are parts of the site where historic unrecorded coal mining activity is likely to have taken place at shallow depth.*
- *There are 29 recorded mine entries (shafts and adits) and their associated zones of influence present within the site or within 20m of its boundary. We hold limited treatment details for two shafts and no information relating to past treatment of the remaining mining entries. Due to potential plotting inaccuracies, the actual positions of the mine entries could deviate from their plotted positions by several metres.*
- *The identified mining legacy poses a potentially significant risk not only to surface stability but also public safety, and may give rise to the emission of mine gases.*

The Coal Authority highlights the implications for building within the zone of influence of any mine entries and *states "Any form of development over or within the influencing distance of a mine entry can be dangerous and raises significant safety and engineering risks and exposes all parties to potential financial liabilities. The Coal Authority has adopted a policy where, as a general precautionary principle, the building over or within the influencing distance of a mine entry should wherever possible be avoided.*

*In most cases it is possible to design a layout of development which is informed by the presence of recorded mine entries and avoids these features and their associated zone of influence. However, we appreciate that this is not always possible for large scale development proposals. The proposed development at Rhydycar West could be considered to fall into this category.*

*In those exceptional cases where development is proposed over recorded mine entries, the Coal Authority's Planning & Development Team would typically expect the features in question to be physically located, their condition assessed and clear information provided as part of the planning application to demonstrate how the risk posed by the mine entries is to be addressed in the detailed scheme of development."*

The information outlined above highlights the risk from both shallow workings and mine entries which have been highlighted during the assessment process.

The Coal Authority also provide comment on the feasibility of the ground investigation and state:

*"We accept that the undertaking of site investigations to locate the numerous mine entries prior to securing outline planning permission may not be feasible in this case. Nevertheless, we would expect any outline planning application to set out clear justification as to why development cannot be arranged to avoid the recorded mine entries. A clear and robust methodology should also be provided which sets out how the risk posed by these features is to be addressed , including the anticipated phasing of investigation works and subsequent remedial treatment works and mitigation measures."*

*"...the shape of the proposed application site and the layout of development shown on the Illustrative Masterplan, suggest that the development will take place over numerous mine entries. "*

Due to the nature of the site, the design of the proposed development is acknowledged to lie in proximity to the anticipated locations of mine entries and shallow workings.

The proposed development is located on a platform formed by material excavated as during the construction of the A470 road adjacent to the site as such the utilisation of the proposed development plan limits the ability to relocate the proposed structures. Additional constraints relating to statutory designations (SSSI, SAC and SAM) further limit the ability to relocate the proposed development. However, the findings of proposed ground investigation and remedial works outlined below will be utilised within the detailed design process where possible.

## 11.2.2 Mitigation Strategy

### 11.2.2.1 Ground Investigation

The key methodology for mitigation of the identified risks is through the use of non-intrusive and intrusive ground investigation of the site to locate and assess mine entries and shallow workings on the site. These works have not been completed at this stage; however extensive investigations will be required to assess the risk from historical coal mining activity on the site. The scope of the investigation will be discussed in conjunction with the Coal Authority and reviewed at key points during the assessment process.

The assessment will follow an iterative process and it is considered likely that a phased approach to the ground investigation will be required in order to review data from initial phases and target further works as required. The scope of works cannot be confirmed at this time however the following phases of assessment are anticipated.

1. A review will be undertaken of the ground model developed by WYG (now Tetra Tech) in 2015. This model utilised available Coal Authority records to identify the extent of workings in coal seams below the site. The ground model will be considered within the context of the current proposed development to highlight areas for initial investigation. The model will be reviewed and updated during the course of the phased investigation works outlined below to refine the understanding of the site and to target additional ground investigation works as required.
2. Initial assessment undertaken utilising geophysical surveys to identify potential locations of mine entries across the site. Advice will be sought from specialists to determine the appropriate methodologies and survey techniques to gather the data whilst maintaining the safety of all staff on site.
3. The results of the geophysical survey in conjunction with a detailed review of historical mapping, Coal Authority records and on-site observations will be used to identify key areas to target with intrusive investigation. This will include drilling to assess for shallow workings and probe holes to locate mine entries. Any intrusive works will be undertaken following consultation with the Coal Authority and under the licensing requirements of the Authority.
4. The intrusive investigation will be undertaken in phases, with detailed review undertaken at each stage to further refine the ground investigation and highlight features which may require further investigation. The key objective of the ground investigation will be to locate the mine entries and shallow workings, assess their condition and identify the requirement for treatment to reduce the risk posed by the feature.
5. Following the completion of the investigation works, the findings of the investigation will be used to update the ground model for the site in conjunction with the proposed development plan. The findings will be discussed with the Coal Authority to agree the remedial works which are deemed necessary to facilitate the proposed development.

Tetra Tech have previously developed a ground model for the site based on available Coal Authority records and have a good understanding of the anticipated requirements for the ground investigation to address the risks highlighted above. The exiting knowledge of the site will be used to design a detailed investigation to identify ground conditions and develop a practical remedial methodology.

### 11.2.2.2 Potential Remedial Methodologies

The exact nature of any remediation will be determined based on the findings of the phased ground investigation process outlined above. The location of the mine entries will also be considered within the context of the proposed design with consideration given to the proposed layout and in the safety and engineering implications for the development. On completion of any site investigation works an assessment will be made of the location of the identified mine entries and the proposed development masterplan. The potential remediation methods to be used will depend on the location of the mine entries, depth of rock head and the nature of the development in the vicinity of the mine entry. The treatment of all mine entries will be carried out under appropriate licensing requirements of the Coal Authority at the time of treatment.

Shafts will typically be filled and grouted for the full depth and dependent on the depth to rockhead a concrete cap constructed over the shaft. If required a gas vent may also be installed within the cap in order to ventilate any mine gas to surface. This will depend on the gas regime encountered during the ground investigation and nature of any development

Adits will typically be capped with concrete and brick stoppings and rock head and, if required any open adit beyond the concrete stopping backfilled with granular material. This will depend on the nature of any development and the results of the ground investigation.

Shallow coal and ironstone workings will be grouted using a cement bentonite grout in areas where structural development will occur. In other areas, such as parking and landscaping, where mineworkings are considered to be a lower risk to the development then it is possible that a geotextile will be used to mitigate any risk of voiding propagating to surface.

### 11.2.2.3 Protection of the Environment

During the Pre-Application consultation process Natural Resources Wales (NRW) provided commentary regarding the potential risk to the wider environment which could be realised during the remedial works to stabilise the mine entries and shallow workings.

The following elements have been highlighted and would be incorporated into the remediation strategy for the site.

- Vulnerability Survey
    - Information from the ground investigation and detailed hydrological and hydrogeological assessment (presented under separate cover) will be used to identify groundwater, surface water bodies and drainage features which may be at risk from the release of grouting materials. This will consider features both within the site boundary and the wider site setting down-stream or down gradient of the site.
    - Consultation will be held with local parties who abstract water from the ground or river to identify vulnerable parties and provide a warning system in the event of a break-out. This will be undertaken in consultation with NRW.
    - During the grouting works, daily reviews will be undertaken to monitor the progress of the works and a monitoring programme will be put in place to monitor sensitive features identified prior to the start of works.
    - A reporting system will be implemented and agreed with NRW prior to the start of works.
    - Emergency procedures will be developed in conjunction with NRW to be implemented in the event of unprecedented loss of ground or potential release of grout into the groundwater or surface water environment. A notification procedure will also be developed.

# 12.0 CONCEPTUAL SITE MODEL & PRELIMINARY GROUND CONTAMINATION RISK ASSESSMENT

## 12.1 OVERVIEW

The information presented in the previous sections of this report have been collated and evaluated to establish an initial qualitative risk assessment for the site. A conceptual model of the site has been generated based on information derived from this Phase 1 Geo-environmental Assessment, supplemented by information attained during the Tetra Tech site walkover.

The site has been considered with regard to current UK legislation and guidance, namely Part 2A of the Environmental Protection Act 1990 and the Contaminated Land (England) Regulations 2006, as amended, and in accordance with current UK good practice guidelines (for example BS10175:2011).

In general, ground contamination can occur through several causes, particularly from historical operations and activities. Contamination can result from either on-site sources or from on-site migration from off-site sources, leading to long term liabilities under recent legislation for any site owner.

For a risk of pollution or environmental harm to occur as a result of ground contamination, all of the following elements must be present:

- Source, i.e. a substance that is capable of causing pollution or harm;
- Pathway, i.e. a route by which the contaminant can reach a target; and
- Receptor (target), i.e. something which could be adversely affected by the contaminant.

If one of these elements is absent there can be no significant risk. If all are present then the magnitude of the risk is a function of the magnitude and mobility of the source, the sensitivity of the receptor and the nature of the migration pathway.

## 12.2 CONCEPTUAL SITE MODEL

The key source, pathways and receptor model is outlined below within the context of potential development of the site.

### 12.2.1 Potential Sources of Contamination

Limited chemical analytical testing of soils at the site has previously been undertaken in relation to contamination, most of the chemical testing that has been undertaken relates to coal recovery and quantification. No groundwater or surface water analytical data is available.

The main potential sources of contamination on the site are associated with existing features as well as historical land uses on the site as summarised below.

On site Sources

- General Made Ground associated with former railways / tramways / other development on the site (metals, inorganic compounds, organic compounds);
- Spoil tips (metals, inorganic compounds, organic compounds, ground gases);
- Asbestos containing materials within Made Ground;
- Ground gas from Made Ground Strata including colliery spoil;
- Ground gas from former coal mine workings.
- Mine water (pH, metal ions, inorganic compounds, organic compounds, dissolved ground gases)

Off Site Sources

- Mobile contamination associated historical development on the site.
- Mobile contamination associated with Made Ground / spoil tips.
- Ground gas from Made Ground Strata including colliery spoil;
- Ground gas from former coal mine workings.

### 12.2.2 Potential Contaminant Pathways

The following contaminant pathways are considered to potentially be active based on the current site use and proposed development:

Human Exposure Pathways

- Direct dermal contact or ingestion of soils, or inhalation of dust and/or vapours (i.e. human interaction with surface and sub-surface materials).

Environmental Pathways

- Leaching and horizontal or vertical migration through the unsaturated ground, either through permeable sub-surface materials and/or preferential pathways;
- Lateral and vertical migration of groundwater through permeable sub-surface materials and/ or preferential pathways;
- Leaching to surface water run-off/drainage;
- The migration and accumulation of gases or vapours through permeable sub-surface materials and/ or preferential pathways.

### 12.2.3 Potential Receptors at Risk

The following potential receptors have been identified:

Human Health

- Current site users (informal access only, short duration);
- Future site users within
    - leisure complex;
    - woodland lodges
- Site workers during the redevelopment of the site.

Wider Environment

- Secondary A Aquifer within bedrock strata (superficial strata are defined as unproductive strata);
- Surface waters (on site water bodies and River Taff);
- Ecology (SSSI);
- Archaeological features (SAM)
- Building Infrastructure and supply pipes;

## 12.3 GROUND CONDITIONS RISK ASSESSMENT

The source, pathway, receptor linkages identified in the previous section are outlined and a qualitative risk assessment shown in the following tables.

The risk assessment considers the site within an area context and assesses potential risks to identified receptors in relation to the existing site setting and the proposed development. CIRIA C552 has been used to

define the risk rating presented in the Qualitative Risk Assessment matrix, the methodology for which is presented in Appendix H.

**Table 12-1 – CIRIA C552 Qualitative Risk Assessment**

| This matrix is based on CIRIA C552 risk evaluation methodology, definitions for risk ratings is presented in Appendix H. | | | | | | |
|---|---|---|---|---|---|---|
| **Source** | **Pathway** | **Receptor** | **Consequence of risk being realised** | **Probability of risk being realised** | **Risk Classification** | **Potential risk management requirements** |
| General contamination associated with Made Ground from historical developments | Direct dermal contact, ingestion, inhalation | Current Site users | Medium | Unlikely | Low risk | Contamination associated with historical developments, rail lines, colliery infrastructure is likely to be localised and of limited extent. Ground investigation will be required to determine actual ground conditions on the site and the extent and nature of any made ground. Localised excavation and disposal of impacted materials may be required to managed localised areas of contamination. Risks to construction workers should be mitigated through the use of appropriate PPE / RPE and the adoption of good hygiene procedures on site during the development phase. |
| | | Future Site users (leisure complex) | | Low likelihood | Moderate / Low risk | |
| | | Future Site users (woodland lodges) | | Low likelihood | Moderate / Low risk | |
| | | Construction users | | Likely | Moderate risk | |
| | Leaching and lateral migration | Groundwater (Secondary A Aquifer) | Medium | Low likelihood | Moderate / Low risk | Future ground investigation will need to consider the likelihood of potentially mobile contaminants entering the groundwater and surface water systems on site including groundwater and surface water monitoring. |
| | | Surface waters | | Low likelihood | Moderate / Low risk | |
| | | Ecology (SSSI / SINC) | Mild | Low likelihood | Low Risk | Localised areas of contamination may impact the areas of the site designated as a SSSI/SINC. Investigation within these areas will need to be undertaken in such a way to minimise the impact to the SSSI whilst assessing ground conditions. |

| This matrix is based on CIRIA C552 risk evaluation methodology, definitions for risk ratings is presented in Appendix H. | | | | | | |
|---|---|---|---|---|---|---|
| **Source** | **Pathway** | **Receptor** | **Consequence of risk being realised** | **Probability of risk being realised** | **Risk Classification** | **Potential risk management requirements** |
| | | Archaeological features | | Unlikely | Very Low Risk | Only limited impact is anticipated with regards the to the SAM features on site with regards to localised ground contamination. |
| | | Building Infrastructure and supply pipes | | Unlikely | Very Low Risk | Whilst ground conditions will require further assessment, it is considered unlikely that specialist barrier pipe will be required within new developments on site. |
| Made Ground associated with spoil tips | Direct dermal contact or ingestion of soils, or inhalation of dust (i.e. human interaction with surface and subsurface materials); | Current Site users | Medium | Unlikely | Low Risk | Extensive deposits of Made Ground are present across the site in the form of spoil tips both from the historical mining legacy and the placement of material from the construction of the A470 dual carriage way. The nature and extent of the Made Ground is currently unknown and will need to be confirmed through ground investigation and laboratory testing in due course. |
| | | Future Site users (leisure complex) | | Low likelihood | Moderate / Low risk | |
| | | Future Site users (woodland lodges) | | Likely | Moderate risk | |
| | | Construction users | | Likely | Moderate Risk | |
| | Leaching and lateral migration of mobile contaminants | Groundwater (Secondary A Aquifer) | Medium | Likely | Moderate Risk | Any further investigation will also need to consider the impact on water bodies and the wider environment in terms of potentially mobile contamination |
| | | Surface waters | | Likely | Moderate Risk | |

| This matrix is based on CIRIA C552 risk evaluation methodology, definitions for risk ratings is presented in Appendix H. | | | | | | |
|---|---|---|---|---|---|---|
| **Source** | **Pathway** | **Receptor** | **Consequence of risk being realised** | **Probability of risk being realised** | **Risk Classification** | **Potential risk management requirements** |
| | | Ecology (SSSI/SINC) | Mild | Likely | Moderate/Low Risk | Localised areas of contamination may impact the areas of the site designated as a SSSI/SINC. Investigation within these areas will need to be undertaken in such a way to minimise the impact to the SSSI whilst assessing ground conditions. |
| | | Archaeological features | Mild | Unlikely | Very Low Risk | Only limited impact is anticipated with regards the to the SAM features on site with regards to localised ground contamination. |
| | | Building Infrastructure | Mild | Unlikely | Very Low Risk | Whilst ground conditions will require further assessment, it is considered unlikely that specialist barrier pipe will be required within new developments on site. |
| Asbestos within Made Ground | Inhalation | Current Site users | Medium | Unlikely | Low Risk | Whist the Made ground strata on site (general made ground and spoil tips) vary in age, the presence of asbestos cannot be discounted within the near surface soils.<br>Laboratory testing of soils will be required during any future ground investigation to allow a risk assessment to be undertaken for both the construction phase and the operational phases of the development. |
| | | Future Site users (leisure complex) | | Low likelihood | Moderate / Low risk | |
| | | Future Site users (woodland lodges) | | Low likelihood | Moderate / Low risk | |

| This matrix is based on CIRIA C552 risk evaluation methodology, definitions for risk ratings is presented in Appendix H. | | | | | | |
|---|---|---|---|---|---|---|
| **Source** | **Pathway** | **Receptor** | **Consequence of risk being realised** | **Probability of risk being realised** | **Risk Classification** | **Potential risk management requirements** |
| | | Construction users | | Likely | Moderate risk | Additional risks to construction workers will need to be managed through the use of appropriate PPE / RPE under the auspices of an Asbestos Management Plan if required. |
| Ground Gas associated with Made Ground | Accumulation in enclosed spaces and inhalation | Future Site users (leisure complex) | Severe | Likely | High Risk | Ground gas generation from Made Ground deposits and within coal workings both on site and the surrounding areas indicates a high risk of migration into enclosed spaces associated with the proposed development on the site.<br>Detailed ground investigation will be required across the area of the proposed development footprint to further understand the conceptual model in terms of ground gas generation and migration.<br>It is recommended that long term monitoring techniques should be used to inform how the system responds to atmospheric and hydrogeological changes on site.<br>Monitoring boreholes and investigation locations within the footprint of the development which enter mine workings / coal bearing strata should be fully decommissioned prior to the commencement of the development to remove any additional pathways generated during the investigation. Lower risks are associated with the lodges due to the proposed foundation design including |
| | | Future Site users (woodland lodges) | | Likely | High Risk | |
| | | Building Infrastructure | Severe | Likely | High Risk | |
| Ground Gas associated with Coal Workings | Accumulation in enclosed spaces and inhalation | Future Site users (leisure complex) | Severe | Likely | High Risk | |
| | | Future Site users (woodland lodges) | | Low likelihood | Moderate Risk | |
| | | Building Infrastructure | Severe | Likely | High Risk | |

| This matrix is based on CIRIA C552 risk evaluation methodology, definitions for risk ratings is presented in Appendix H. | | | | | | |
|---|---|---|---|---|---|---|
| **Source** | **Pathway** | **Receptor** | **Consequence of risk being realised** | **Probability of risk being realised** | **Risk Classification** | **Potential risk management requirements** |
| | | | | | | platforms elevated from the ground surface. |
| Mine drainage water | Lateral and vertical migration of groundwater through permeable subsurface materials and/or preferential pathways, or surface run-off into surface water receptors | Groundwater | Medium | Likely | Moderate Risk | The hydrological and hydrogeological systems on the site are subject to a separate assessment, however further information will be required regarding the quality of waters discharging from mine workings and any remedial actions which may be required. |
| | | Surface water | | Likely | Moderate Risk | |
| | | Ecology (SSSI) | Medium | Low Likelihood | Moderate / Low Risk | |
| | | Archaeological features | Mild | Unlikely | Very Low Risk | |
| | | Building Infrastructure | Mild | Unlikely | Very Low Risk | |
| Mobile contamination associated with off-site historical developments, spoil tips | Leaching and lateral migration of mobile contaminants | Ground water | Medium | Low Likelihood | Moderate / Low Risk | As per on site sources of contamination off site sources are noted as potential sources of mobile contamination which will need to be considered during any future ground investigation. |
| | | Surface water | | Low Likelihood | Moderate / Low Risk | |
| Off-site ground gas generation associated with general made ground and coal workings. | Lateral migration and accumulation within enclosed spaces. | Future Site users (leisure complex) | Severe | Low Likelihood | Moderate Risk | Whilst off site migration of ground gases pose a lower risk to the proposed development than on site sources the potential remains for accumulation of ground gasses within new structures. Assessment of off site ground conditions |
| | | Future Site users (woodland lodges) | | Low Likelihood | Moderate Risk | |

| This matrix is based on CIRIA C552 risk evaluation methodology, definitions for risk ratings is presented in Appendix H. | | | | | | |
|---|---|---|---|---|---|---|
| **Source** | **Pathway** | **Receptor** | **Consequence of risk being realised** | **Probability of risk being realised** | **Risk Classification** | **Potential risk management requirements** |
| | | Building Infrastructure | Severe | Low Likelihood | Moderate Risk | will be required in addition to on site ground conditions. |

## 12.4 SUMMARY

The risk assessment presented above is considered to represent an initial assessment of ground conditions in terms of potential contamination. The risks are based on the available data at the time of writing and are necessarily conservative in nature due to the absence of site-specific information available at the desk study stage. The levels of risk identified within this document may subsequently be downgraded following the collection of site-specific information.

Where potential risks have been identified, this indicates the requirement for further, more detailed assessment based on information obtained from the site through ground investigation, collection of representative soil samples and laboratory analysis. Following the completion of the ground investigation phase and analysis of the data, the risk assessment will be updated, and specific remedial options recommended where necessary to reduce the identified risks to an acceptable level.

Potential remedial actions include the localised removal of impacted soils for off-site disposal, placement of materials below areas of hardstanding or clean capping or localised treatment of soils and/or groundwater.

With respect to gas protection measures within buildings, these will need to be proportionate to the level of risk identified through ground gas monitoring and should be designed by a specialist in ground gas protection in conjunction with the requirements of BS8485:2015+A1:2019.

Whilst recommendations for remedial actions cannot be confirmed at this stage, the requirement for any treatment is likely to be accommodated within the proposed design following the assessment and management structure outlined below.

Further, based on the current level of understanding, these risks are unlikely to pose a barrier to the proposed development.

# 13.0 MATERIALS MANAGEMENT

## 13.1 INTRODUCTION

The proposed development includes an element of cut and fill to facilitate the formation levels required by the masterplan. The following section provides a brief summary of the key processes required to manage this process, suitability of this material for use on the site and procedures for identifying unsuitable materials which will be required to be removed from the site as waste.

The systems outlined below will be confirmed and amended on completion of site-specific assessment and ground investigation.

Based on the current level of understanding, the development cut and fill and materials management is unlikely to pose a barrier to the proposed development.

## 13.2 MASS BALANCE CALCULATIONS

A preliminary mass balance calculation has been undertaken to inform the design process and indicates a general mass balance within the proposed design. A copy of this assessment is presented in Appendix B.

A more detailed assessment will be required in due course based on more accurate survey data, incorporating information from the ground model derived from the ground investigation. This will determine the volumes of each material type (Made Ground, colliery spoil, superficial deposits, bedrock) anticipated to be encountered during the excavation phase and the geotechnical properties of these materials.

It is anticipated that the majority of the material excavated as part of the development will be re-used on site unless deemed unsuitable as per the requirements of Section 13.4.

## 13.3 INCIDENTAL COAL

It is anticipated that excavation of the bedrock strata will be required, specifically along the route of the proposed ski slope where no superficial strata are recorded in available mapping and significant Made Ground deposits are absent. It is therefore considered likely that coal bearing strata will be encountered during the works.

The excavation of any coal strata will be undertaken under an appropriate licence from The Coal Authority following detailed discussion of the findings of the ground investigation.

Based on the outcome of the mass balannce assessment, it is anticipated that the excavated coal will be retained on site and used within the proposed development. The re-use of this material will be undertaken in agreement with the Coal Authority and in line with their requirements for re-use including placement at a distance greater than 1m from any heat source.

## 13.4 MATERIALS MANAGEMENT PLAN

The excavation, importation and re-use of materials on site will be undertaken within the framework of a Materials Management Plan (MMP).

The Materials Management Plan will follow the requirements of the CL:AIRE: Definition of Waste: Code of Practice (DoWCoP). This document is designed to minimise the volume of materials defined as waste by the re-use of materials on site and documenting the suitability of these materials for re-use through the following principals:

- The materials do not pose an unacceptable risk of pollution of the environment or harm to human health;
- The materials are suitable for re-use without further treatment;
- The materials have certainty of use within the proposed development;
- Quantity of material does not exceed the required volumes.

The suitability of the materials for re-use will be determined based on the findings of the ground investigation with any requirement for remediation specified within the MMP. An Earthworks Specification will also be required to manage the materials based on geotechnical properties of the relevant material.

A Qualified Person will complete a declaration outlining that the MMP meets the requirements of the DoWCoP) prior to implementation.

The MMP process is not expressly designed to be implemented with the use of spoil or mining waste. As such, prior to the commencement of the development discussions will be held with CL:AIRE to identify the most appropriate methodology for managing the movement of these materials. Any movement and reuse of material on the site will be undertaken in a controlled manner utilising the appropriate recording process.

## 13.5 WASTE CLASSIFICATION

Materials deemed unsuitable for use within the proposed development will be defined as a waste and will be removed from the site for disposal at a licenced disposal facility. Prior to off-site disposal, the material will be classified to identify an appropriate disposal facility.

Waste classification is a two-stage process, with the first step comprising a hazard assessment of the soil quality data in line with the guidance set out in the Environment Agency waste classification technical guidance WM3[7] document. Once the hazardous properties of the materials are known, the second step is to assess the potential performance of the materials in a landfill, undertaken by considering the results of waste acceptance criteria (WAC) testing.

[7] Environment Agency 2018. Technical Guidance WM3: Guidance on the classification and assessment of waste (Version 1.1).

# 14.0 CONCLUSIONS AND RECOMMENDATIONS

## 14.1 CONCLUSIONS

### 14.1.1 Ground Contamination

The site has a long and extensive history of coal and iron ore extraction, however, there is little evidence of other industrial activity that could have resulted in significant ground contamination. Extensive areas of Made Ground are associated with the presence of spoil tips at the site and more localised Made Ground is anticipated to be present associated with the location of former collieries, railways, tramways and potentially infilled canals.

#### 14.1.1.1 Human Health

Based on the limited interaction with near surface soils risks to current site users is considered to be limited due to the informal, an unofficial access to the site, however the proposed development will increase the anticipated exposure through the introduction of users of the proposed development. The risk assessment presented within this report considered two types of end user, those associated with the main leisure complex and those staying in the forest lodges. Whilst attendance on site will be limited for both groups greater exposure to near surface soils is anticipated within the forest lodges which is considered to represent a situation more characteristic of a public open space than the leisure complex which will predominantly consist of internal activities with outside areas predominantly consisting of hard-standing (buildings, carparks etc), albeit with areas of soft landscaping within the outdoor recreation area. The risks to users of the leisure complex from the near surface soils is considered to be of a low to moderate order with marginally increased risks to users of the forest lodges.

Additional risks to site construction workers should be managed through the use of appropriate PPE / RPE and the -adoption of good hygiene practices on site.

The presence of asbestos within the made ground cannot be discounted and will need to be considered as part of any future ground investigation. Laboratory testing of soil will be required to confirm the requirement for risk management procedures on site during the construction and development phase.

Based on the current level of understanding of the site is it considered likely that any contamination identified across the site can be managed through a combination of capping systems in areas of soft landscaping to remove pollutant linkages associated with future site users and localised excavation and disposal of impacted soils if these are deemed unsuitable for retention on site.

#### 14.1.1.2 Wider Environment

Risks to the controlled waters of the wider environment are derived from the potentially mobile components of Made Ground, both from localised sources and associated with the on-site spoil tips. Based on the volume of Made Ground on site and the unknown nature of this material a Moderate risk has been attributed to groundwater and surface water bodies, with a similar level of risk attributed to ecological components of the SSSI/SINC where plant growth may be impacted by localised areas of Made Ground. Risks to the archaeological features on the site are considered to be relatively low and will be managed through a comprehensive and sensitive strategy (formulated in consultation with CADW) which is detailed in separate reports.

Risks can also be attributed to mine drainage which should be investigated as part of any future ground investigation to further assess the impact on local surface waters.

#### 14.1.1.3 Ground Gas

Ground gas generation potential on site is associated with the extensive Made Ground deposits, including colliery spoil and from the underlying mine workings. Ground gas migration and accumulation within buildings

poses a high risk within the context of the proposed development and further detailed assessment will be required to fully assess the level of mitigation measures required within the new structures.

### 14.1.2 Geotechnical

The site has been extensively modified in terms of the historical local mining legacy and the placement of spoil tips across the majority of the development site. As a result, varying ground conditions are anticipated across the site with the potential for shallow and perched ground water.

Due the uncertainty of ground conditions, detailed ground investigation will be required to develop a concise ground model of the site to inform foundation design and confirm the stability of stockpiles on the site.

Information obtained from the ground investigation will be used to confirm the suitability of material for re-use within the context of the proposed cut and fill model under the specification of an MMP. It is noted that the current Mass Balance Calculation indicates achievable mass balance and as such it is intended to re-use the majority of site won materials assuming all requirements are met for reuse.

Drainage rates are likely to vary across the site, with standing water noted within the south eastern areas of the proposed development site, soil infiltration testing will be required to confirm site specific infiltration rates and inform the drainage design process.

Given the nature of the redevelopment, we expect to be able to reuse site won material, even if mixing is required to achieve this. Based on the current level of understanding, these issues are unlikely to pose a barrier to the proposed development.

### 14.1.3 Coal Mining Risk Assessment

Coal mining records indicate an extensive coal mining legacy on the site including shallow workings and mine entries within the proposed development area. It is likely that further coal mining workings are present than those recorded by the Coal Authority. Ground investigation will be undertaken to assess shallow workings across the development area.

Mine entries are widespread at the site and will need to be located, risk assessed and made safe as part of development plans. A large number of shafts and adits have been identified from historical Ordnance Survey maps however, many are likely to be buried under later spoil tips. Geophysical surveys could aid in the identification of shafts, adits, and other workings. Ground investigation will be used to confirm the location of mine entries.

Liaison with the Coal Authority will be undertaken to design and implement an appropriate ground investigation to identify the presence of shallow workings and mine entries across the development area and to design appropriate remedial measure as required.

Any remedial works will be undertaken following liaison with the Coal Authority and NRW to manage the process and monitor and manage the impact to the wider environment.

## 14.2 IMPLICATIONS FOR THE PROPOSED DEVELOPMENT

This report provides an initial assessment of ground conditions in terms of the mining legacy, geotechnical parameters and the potential presence of contamination on the site. The preliminary nature of this assessment is designed to highlight areas requiring further investigation and identify the key constraints to the proposed development. However, it is noted that the assessment process presented herein is necessarily conservative and will be refined based on site specific data following the completion of ground investigations and further assessment. As such it is anticipated that risks presented in this report will be refined in due course.

The recommendations outlined below provide a framework for the future assessment work whereby the identified constraints will be investigated further and provide information to design any remedial works which are deemed necessary. Based on experience from other sites of this nature this is likely to include grouting of mine workings which are deemed to pose a potential risk to the development, capping of identified shafts and

adits, remediation of identified contamination and ongoing inspection and monitoring of spoil tips on the site. Further remedial actions may also be required based on the outcome of the additional assessment.

Whilst uncertainties remain regarding the ground conditions on the site, the client acknowledges the that remedial works will be required to facilitate the development. Based on the current level of understanding and experience from other sites, the identified constraints are not considered to be a barrier to the proposed development.

## 14.3 RECOMMENDATIONS

Due to the complex nature of the site and the extent of the proposed development, ground investigation will be required to support the ongoing design process. It is likely that any ground investigation will need to be undertaken in phases following an iterative process to further define risks and areas of uncertainty.

Any future ground investigation should consider the following elements.

- Liaison with Coal Authority during the ground investigation design phase to agree appropriate methodologies and scale of investigation;
- A Geophysical survey (resistivity for shallow ground, and seismic for deeper ground) to aid in the identification of worked coal seams and ironstone veins, shafts, adits, subsidence features and bell pits across the site;
- Evaluation of the stability of tips on site with a risk-based targeted investigation and inspection by a suitably qualified Geotechnical Engineer.
- Investigation, logging and sampling of general ground conditions (made ground, superficial soils and bedrock) to assess the variability of soils and assess the depth to competent strata and/ or bedrock;
- Investigation of Coal Measures to determine the presence of shallow coal workings and mine entries in the extent of the proposed development area and immediately surrounding environs. Works to be undertaken in line with a License from the Coal Authority, with appropriate safety measures in place.
- Logging, sampling and analysis of Made Ground and Superficial deposits to assess potential impacts to human health, property, controlled waters, ecological and archaeological receptors, relating to ground contamination;
- Installation of ground gas and groundwater monitoring points;
- Geotechnical testing of soils (in situ and laboratory);
- Infiltration testing to assess the feasibility of soakaway drainage;
- Completion of detailed ground gas monitoring to facilitate a ground gas risk assessment in accordance with CIRIA 665 guidance;
- Monitoring of groundwater and surface water quality;
- Development of a detailed ground model based on the findings above;
- An interpretive land quality assessment including development of a refined conceptual site model (based on site specific data) and a qualitative risk assessment (compliant with UK CLR guidance and CIRIA 552 methodology) within the context of a generic land use scenario corresponding to the proposed development;
- An interpretive geotechnical assessment of ground properties with respect to the proposed development of the site, including assessment of likely solutions for foundations, floor slabs and hard surface areas, feasibility of soakaway drainage, sulphate chemical attack and other salient matters such as potential requirements for ground improvement and stabilisation of mine workings.
- Decommissioning of all boreholes to reduce potential pathways for ground gas migration on completion of all assessment works.

Following the completion of the ground investigation phase, further works are anticipated to aid the development of the site, including but not limited to the following elements.

- Remedial action to manage risks associated with shallow coal mining and mine entries within the development footprint. This may consist of grouting and decommissioning of surface features. All works to be undertaken with liaison with and co-operation of the Coal Authority and Local Authority.
    - Any works will be implemented in line with an assessment of the remedial works on groundwater and surface water bodies. This will include monitoring the potential break out of grout into the water environment and developing monitoring and emergency response procedures in the event of a break out.
- Development of a remediation strategy to manage any areas of contamination identified within the proposed development area. Works will be designed to reduce the risks to key receptors to acceptable levels.
- Long term monitoring programme regarding the ongoing stability of spoil tips within the development area.
- Materials Manage Plan utilising the CL:AIRE Definition of Waste Code of Practice (DoW CoP) to record on site soil movements and minimise the volumes of soil defined as waste requiring off site disposal.
- Construction Environmental Management Plan to manage the environmental impacts of the construction and development phase.
- Asbestos Management Plan in the event that asbestos containing materials are identified within the Made Ground soils on site.
- Piling Risk Assessment to identify and manage risks associated with the introduction of preferential pathways for the migration of contamination and ground gas.

# 15.0 REFERENCES

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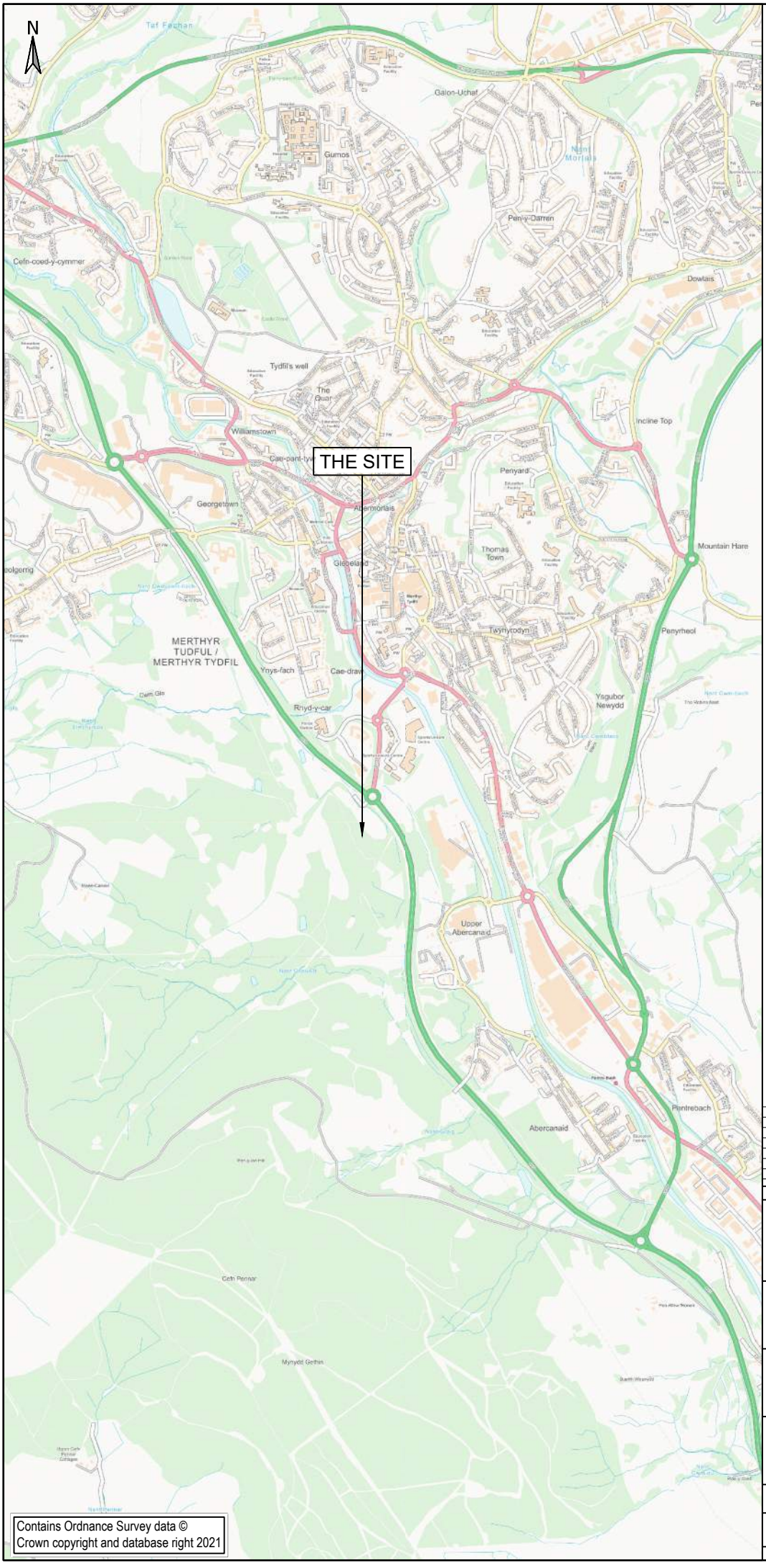
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# FIGURES

**Figure 1- Site Location Plan**




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| Rev | Description | Date | Drn | Chk | App |
|---|---|---|---|---|---|
| P01 | PRELIMINARY FIRST ISSUE | 01.12.2021 | PP | SR | |

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Issuing Office

**Tetra Tech Cardiff**

5th Floor, Longcross Court,
47 Newport Road, Cardiff,
United Kingdom, CF24 0AD
***Tel:*** +44 (0)29 2082 9200
www.tetratecheurope.com


TETRA TECH

Client

MARVEL LTD

Project Name

RHYDYCAR WEST RESTART

Sheet Title

SITE LOCATION PLAN

| TTE Project Number | Drawn By | Date | Checked By | Date | Approved By | Date | Scale @ A4 | Suitability |
|---|---|---|---|---|---|---|---|---|
| 784-B023905 | PP | 01.12.21 | SR | 01.12.21 | - | | 1:25,000 | S0 |

| Client Project Number | Originator | Volume/System | Level/Location | Type/Code | Role | Number | Revision |
|---|---|---|---|---|---|---|---|
| B023905 | TTE | 00 | XX | DR | U | 0001 | P01 |

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**Figure 2 - Site Layout and Photograph Location**

N

SITE ACCESS POINT

A470 SPOIL TIP

SITE BOUNDARY

CYFARTHA
BALANCE POND
AND LEAT

CYFARTHA
JUNCTION

GLYNDYRYS TIP

FORMER
RAILWAY BRIDGE

NANT Y CARIAD
STREAM

ROUTE OF FORMER
ABERDARE TO MERTHYR
RAILWAY

NOTE:
DRAWING BASED ON HOLDERMATHAIS ARCHITECTS DRAWING. DRG REF: RHDR-HMA-ZZ-XX-DR-A-PL-001REV P3. DATED 23.09.2021

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47 Newport Road, Cardiff,
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***Tel:*** +44 (0)29 2082 9200

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Sheet Title

SITE LAYOUT PLAN

| TTE Project Number | Drawn By | Date | Checked By | Date | Approved By | Date | Scale @ A2 | Suitability |
|---|---|---|---|---|---|---|---|---|
| 784-B023905 | PP | 01.12.21 | SR | 01.12.21 | - | 01.12.21 | NTS | S0 |

| Client Project Number | Originator | Volume/System | Level/Location | Type/Code | Role | Number | Revision |
|---|---|---|---|---|---|---|---|
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**Figure 3 – Mine Shaft Location Plan**

# Figure 3 . Shafts and Adits on or in proximity to the site

Rydycar West

Marvel Limited

**Legend**

- Development Site Boundary
- Site Ownership Boundary
- Zone Boundaries
- Adit
- Shaft

0 140 280 420 Meters

Scale: 1:10,000 @A3

09 December 2021

NGR: 303,838 E / 205,235 N

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Notes:

Drawn by: TH

Checked by: AJ

Office: Belfast

Revision No. 001

Project No. B023905

TETRA TECH

Locksley Business Park
Montgomery Road
Belfast
BT6 9UP

Tel: 028 9070 6000
Email: ireland@tetratech.com

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**Figure 4 – Historical Monitoring Boreholes**

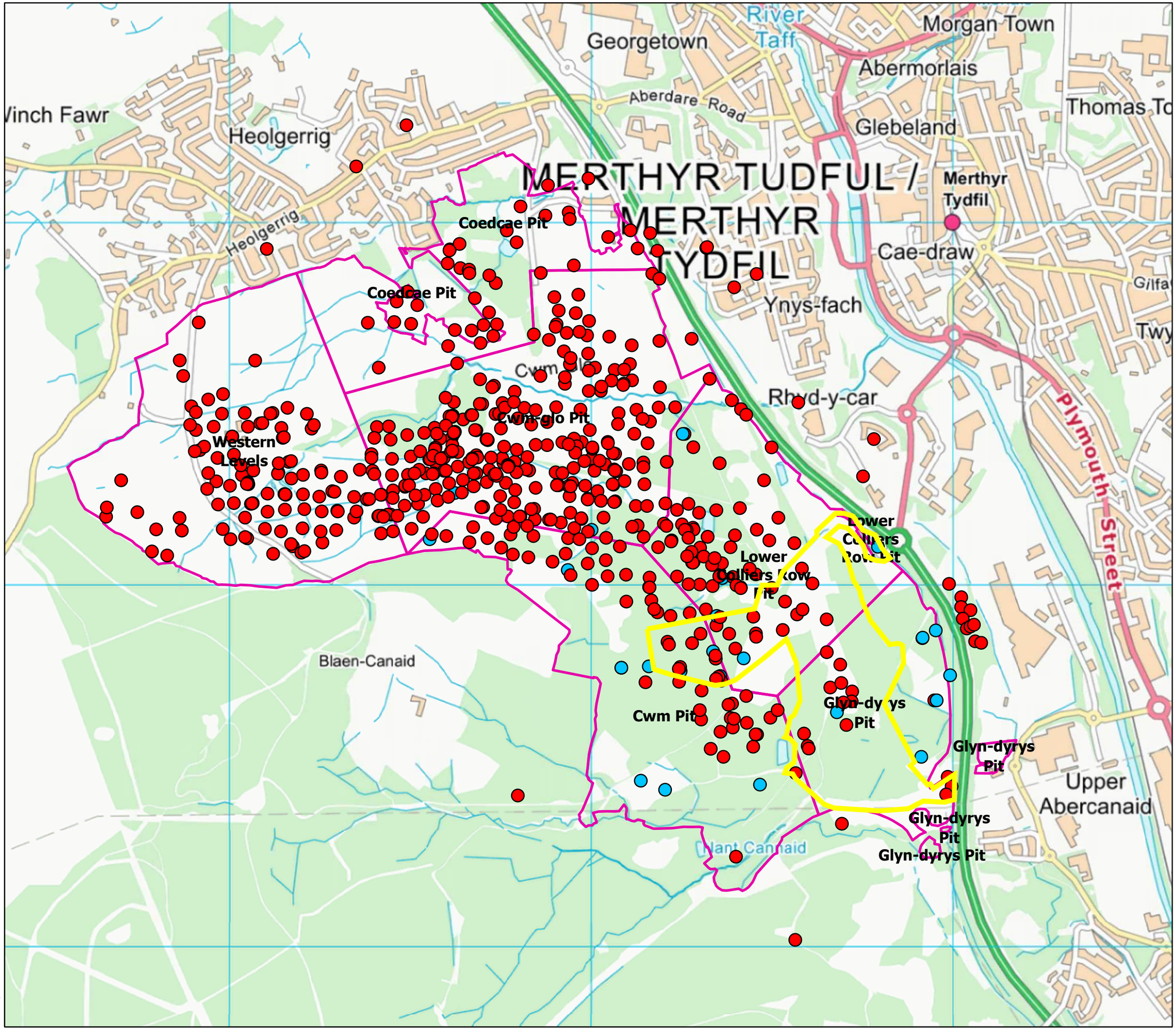
Marvel Limited

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Rhydycar West

**Figure 4**
**Historical Exploratory Locations**




**Historic Rhydycar Boreholes and Trial Pits. Installed with Gas and Groundwater Monitoring Standpipes**

- No
- Yes
- Site Zones

0 100 200 400 m

Scale @ A3 - 1:9,856

North

Print date: 2018/02/02

Drawn by:

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**Figure 5 – Conceptual Site Model**

KEY

- MADE GROUND (SPOIL TIPS)
- MADE GROUND (PREVIOUS DEVELOPMENT)
- GLACIAL STRATA
- LOWER & MIDDLE COAL MEASURES
- COAL SEAM
- COAL WORKINGS
- GROUNDWATER TABLE

SOURCES

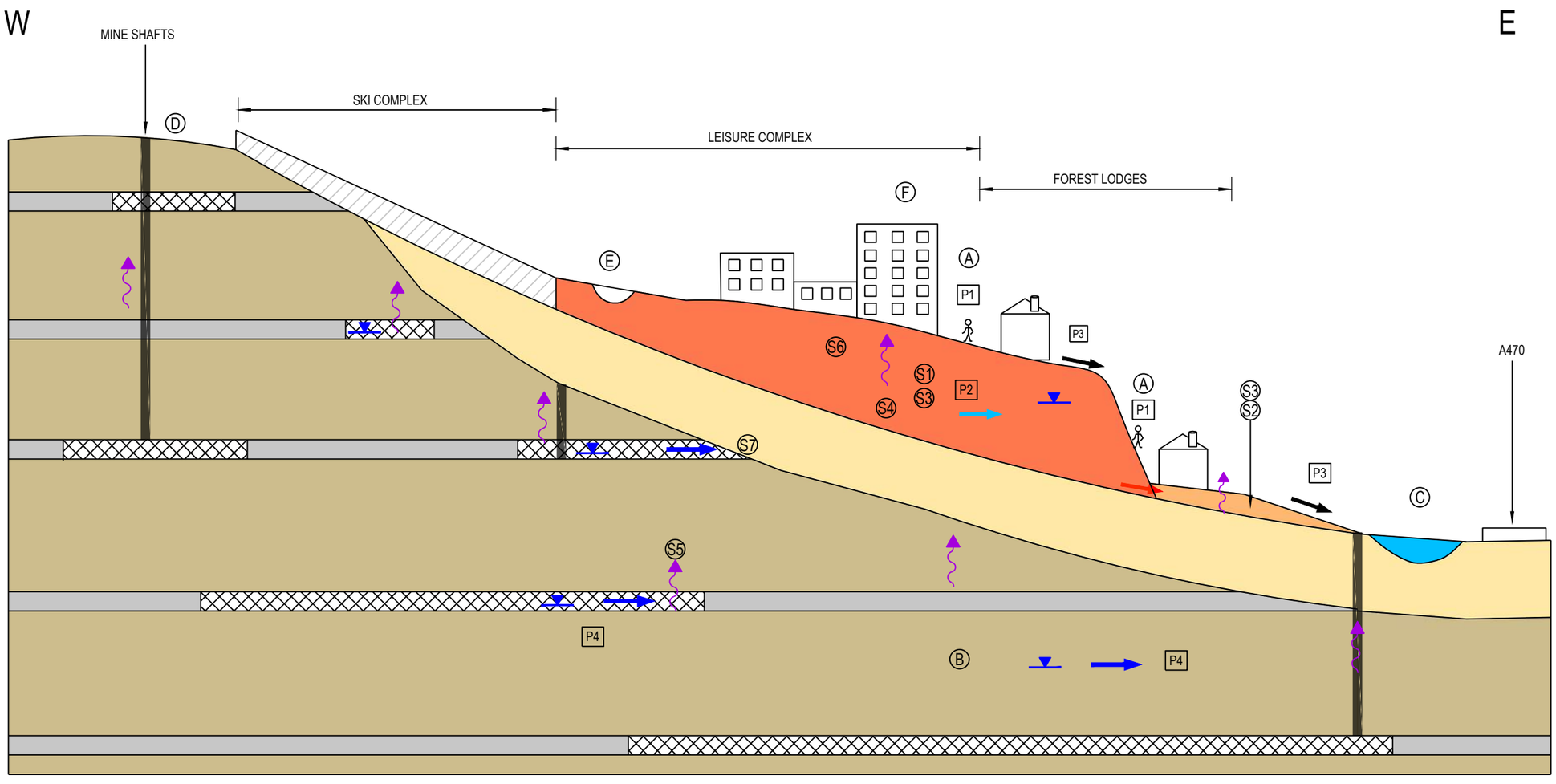
- S1 MADE GROUND SPOIL TIP
- S2 GENERAL MADE GROUND
- S3 ASBESTOS
- S4 GROUND GAS - MADE GROUND
- S5 GROUND GAS - COAL WORKING
- S6 MOBILE CONTAMINATION
- S7 MINE WATER DISCHARGE

RECEPTORS

- A SITE USERS
- B SECONDARY A AQUIFERS
- C SURFACE WATER
- D ECOLOGICAL SSSI
- E SCHEDULED ANCIENT MONUMENT AND ARCHAEOLOGICAL FEATURES
- F BUILDING INFRASTRUCTURE

PATHWAYS

- P1 DIRECT DERMAL CONTACT INHALATION, INGESTION
- P2 LEACHING & LATERAL MIGRATION
- P3 SURFACE WATER RUN OFF
- P4 GROUNDWATER FLOWS
- P5 GROUND GAS MIGRATION




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Sheet Title

CONCEPTUAL SITE MODEL

| TTE Project Number | Drawn By | Date | Checked By | Date | Approved By | Date | Scale @ A3 | Suitability |
|---|---|---|---|---|---|---|---|---|
| 784-B023905 | PP | 01.12.21 | SR | 01.12.21 | - | 01.12.21 | As Shown | S0 |

| Client Project Number | Originator | Volume/System | Level/Location | Type/Code | Role | Number | Revision |
|---|---|---|---|---|---|---|---|
| B023905 | TTE | 00 | XX | DR | U | 0005 | P01 |


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TTE_MT_v1

# APPENDICES

# APPENDIX A – REPORT CONDITIONS

## APPENDIX A - REPORT CONDITIONS

## GEO-ENVIRONMENTAL DESK TOP REVIEW

This report is produced solely for the benefit of *Marvel Limited* and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise.

This report refers, within the limitations stated, to the condition of the site at the time of the inspections. No warranty is given as to the possibility of future changes in the condition of the site.

This report is based on a study of readily accessible referenced historical records. Some of the opinions are based on unconfirmed data and information and are presented in good faith without exhaustive clarification. Where ground conditions are discussed but no physical site test results are available to confirm this, the report must be regarded as initial advice only, and further assessment should be undertaken prior to detailed activities related to the site. Where test results undertaken by others have been made available these can only be regarded as a limited sample.

Whilst confident in the findings detailed within this report because there are no exact UK definitions of these matters, we are unable to give categorical assurances that they will be accepted by Authorities or Funds etc. without question, as such bodies may have unpublished, often more stringent objectives. This report is prepared for the proposed uses stated in the report and should not be used in a different context without reference to Tetra Tech. In time improved practices or amended guidance may necessitate a re-assessment. The opinions expressed cannot be absolute due to the limitations of time and resources within the context of the agreed brief and the possibility of unrecorded previous use and abuse of the site and adjacent sites. The report concentrates on the site as defined in the report and provides an opinion on surrounding sites.

# APPENDIX B – CUT AND FILL SUMMARY REPORT

# B023905 - RHYDYCAR WEST

# MASS BALANCE CALCULATION SUMMARY NOTE

## 1.1 INTRODUCTION

This summary document provides the output of a mass balance calculation for the Rhydycar West site, Merthyr Tydfil.

This document represents the updated masterplan documents issues September 2021. Relevant Experience and allowance for construction derived materials as part of the earthworks balance.

Notably this assessment is presented for the development in one design rather than separate development areas.

### 1.1.1 Instruction

Tetra Tech (Tt) was instructed by Rhydycar West to report on the mass balance calculations of a Ski Slope and Leisure Complex proposed in Rhydycar West, Merthyr Tydfil, South Wales.

## 1.2 MASS BALANCE CALCULATION

### 1.2.1 Documentation

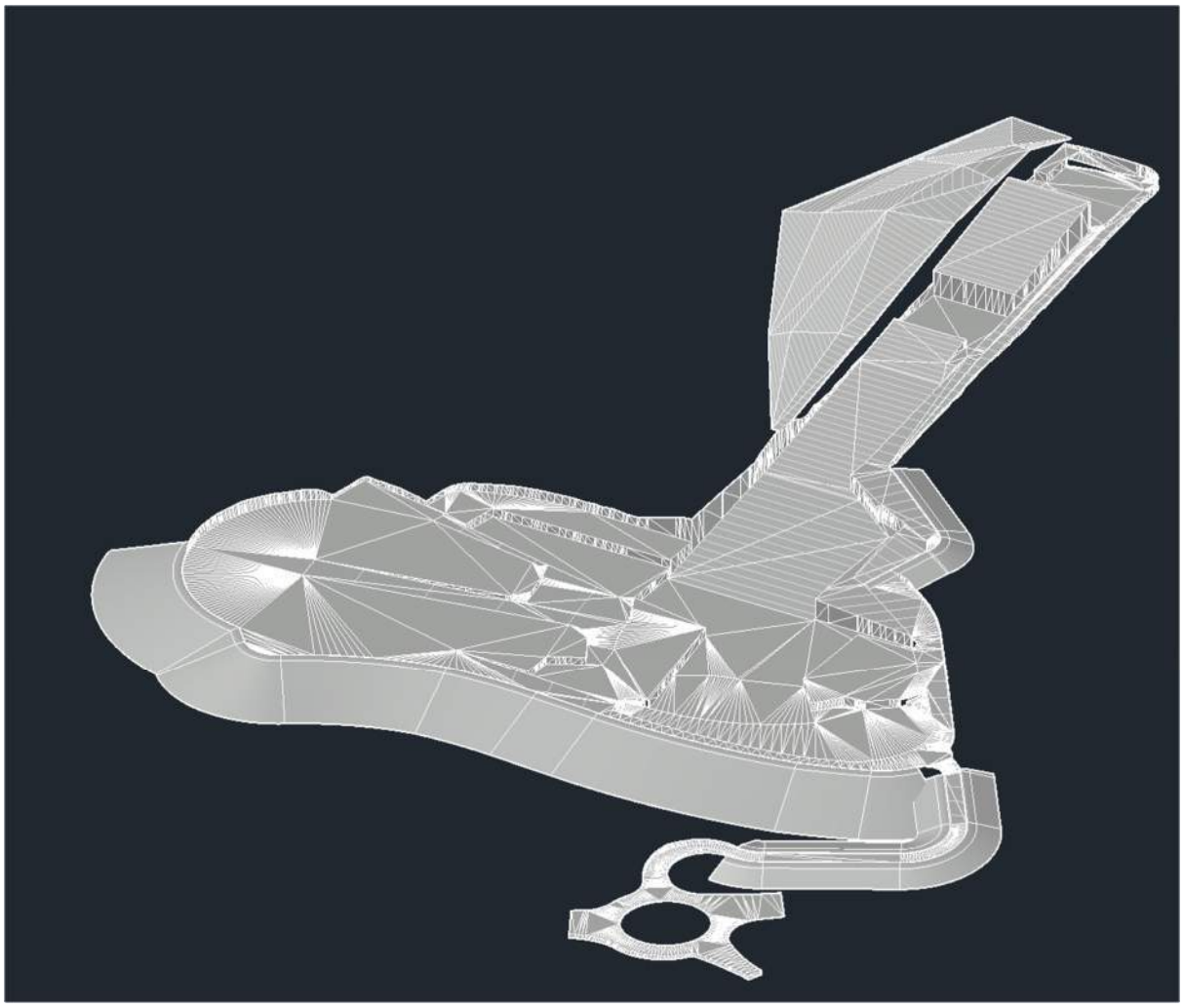
LiDAR data has been used to derive the contours for the pre-commencement surface. Holder Mathias Architects (HMA) have provided the following information:

- 90 and 91 series plans in PDF and AutoCAD format
- 3d surface models of the Current Masterplan, Stage 1 in mm and m units. An extract of the model surface is presented below as Insert 1.

The calculation has been undertaken based on information associated with the initial Master Plan for the site (HMA drawing reference RHDR-HMA- LE-ZZ- DR -A-PL-010. S0 P2) issued on 10/09/21.

All information provided to Tetra Tech has been taken in good faith.

**Insert 1 – Proposed Development Plan**



## 1.2.2 Methodology

Causeway Professional Design Suite (PDS) Version 22 has been used to produce a digital ground model (DGM) of the existing and proposed surface. A DGM is a numerical representation of a solid surface in a form that can be accessed by analysis and design programs. This type of digital model allows an irregular set of three-dimensional points and string break lines to be combined to form a triangular network. These triangles are assumed to be planar so that PDS can obtain a level at any location within the extents of that triangle data by interpolation between the vertices of the triangle containing the location. The triangles between different surfaces are compared and the volume difference is reported as either 'cut' or 'fill'. Cut being when the commencement surface is above the completion surface and fill when the completion surface is above the commencement surface.

## 1.2.3 Analysis of Information

The 3d m unit data provided by Holder Mathias was remodelled and the volumes reported are based on that remodelling exercise. The remodelling of this data showed the limit of disturbance of the development to be in broad agreement within both designs and it can therefore be confirmed that the design parameters are consistent.

## 1.2.4 Modelling Process

As part of the modelling process the design has been subdivided into four areas. These areas are defined as:

- Indoor Snowcentre. This is limited to the footprint of the ski slope structure only and assumes ground level is built up to achieve development levels;
- Proposed bund feature adjacent to the southern face of the indoor snowcentre slope, based on a 3 in 1 slope as per HMA design;
- Leisure centre complex including car parks, waterpark, indoor adventure centre, hotels, and all other buildings, with the exception of the indoor snowcentre;
- Access road from the A470.

It should be noted that the volume calculations are taken to a floor or pavement level and not top of earthworks or formation level.

## 1.2.5 Volumetric Modelling

The following table presents the output from the volumetric calculation for the masterplan outlined above as well as a net balance of material.

Table 1 – Volumetric Analysis including bund.

| Area | Volume of Cut Required ($m^3$) | Volume of Fill Required ($m^3$) | Net Balance ($m^3$) |
|---|---|---|---|
| Combined area including<br>• Indoor Snowcentre<br>• Bund (1 in 3 slope)<br>• Leisure Complex<br>• Access road from A470 access point | 320,000$m^3$ | 450,000$m^3$ | |
| Allowance for Contamination to go off site – assume 1% of cut volume | | 3,200 $m^3$ | |
| Allowance for Construction thickness – assume average of 0.5 m across developable areas | 31,200 $m^3$ | | |
| Allowance for drainage arisings | 16,750 $m^3$ | | |
| Allowance for bulking, assuming 70% rock and 30 % soil excavation | 54,400 $m^3$ | | |
| Allowance for ground beams and foundation strips (assume pile arisings to go off site) | 4,500 $m^3$ | | |
| Assume Car Park at level of 197.10mAOD | 17,500 $m^3$ | | |
| Total | 444,350 $m^3$ | 453,200 $m^3$ | 8,850 $m^3$ of fill required |

## 1.2.6 Summary

### 1.2.6.1 General Observations

- An estimate has been made of the fill requirements for the masterplan shown in HMA drawing reference RHDR-HMA- LE-ZZ- DR -A-PL-010. S0 P2. As part of this assessment allowances have been made for construction related activities that will generate fill materials.
- Based on these indicative volumes and allowances a nominal cut and fill balance of 8,850m$^3$ of fill has been calculated which represents approximately 2% of the fill volume required by the ground models.
- The compaction of materials re-used on site will be subject to material properties and engineering practices adopted on site and have not been accounted for at this stage and this will also be dealt with as part of the overall development with minor amendments to the earthworks programme.
- To minimise off site disposal of materials our objective is to achieve a neutral position regarding cut and fill and we will achieve that objective as part of the overall development with minor amendments to the site levels of angles of proposed slopes and this can be undertaken at detailed design stage.

# APPENDIX C – GROUNDSURE REPORT

Notwithstanding an amendment in the red line site area since the Groundsure report was commissioned, no substantive built development is proposed in the additional area of site (maintenance works to an Ancient Monument and a heritage trail footpath only) and so the Groundsure report is considered appropriate to rely on for the assessment presented in this report.

Data presented in the text has been reviewed and is considered to be relevant to the current red line site area,

Groundsure
LOCATION INTELLIGENCE

# Enviro+Geo Insight

304716, 204780

## Order Details

**Date:** 19/07/2021

**Your ref:** 7002094_-_Rhyd_y_Car_

**Our Ref:** GS-8054802

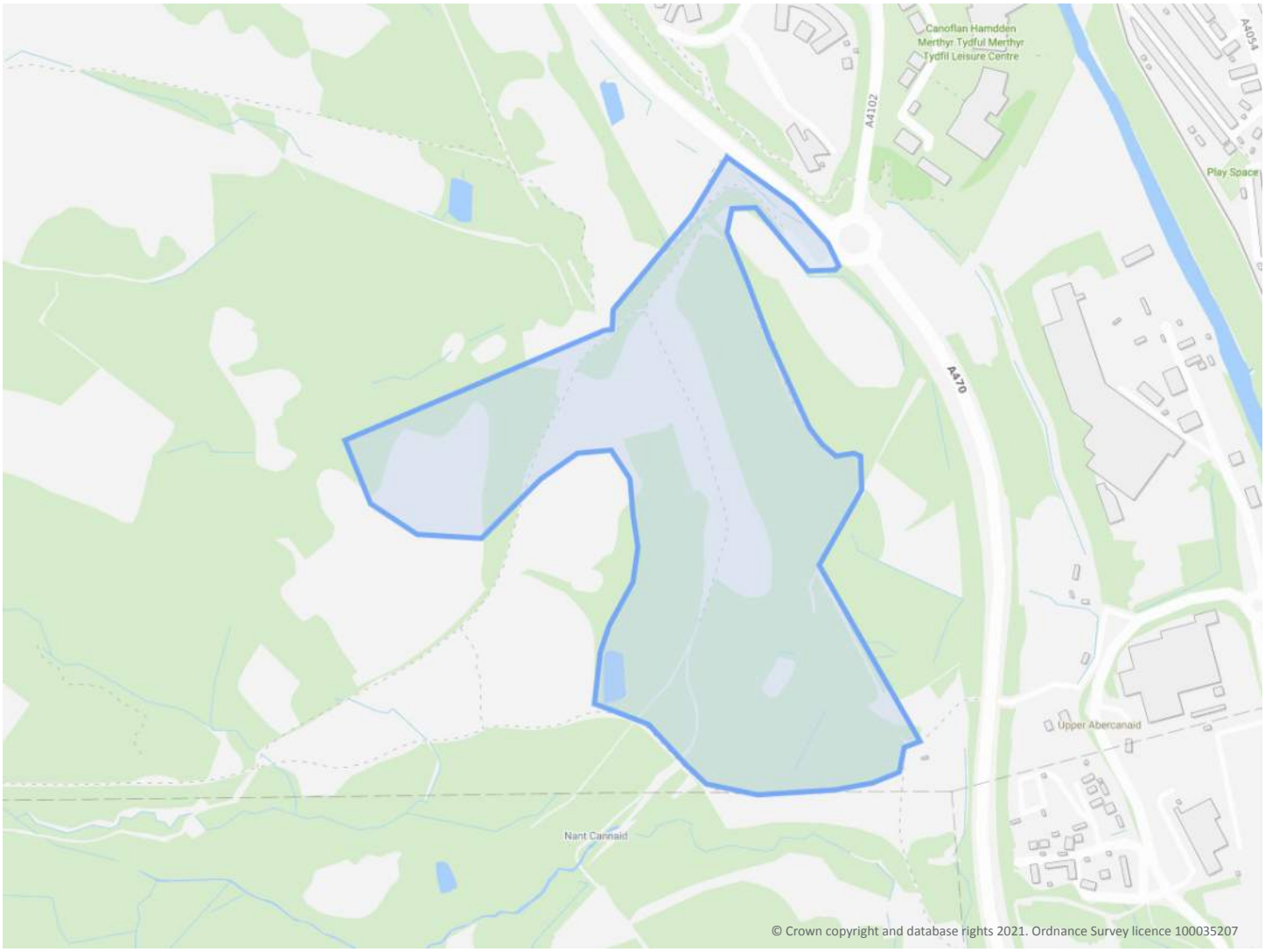
**Client:** WYG Environment Planning Transport Limited

## Site Details

**Location:** 304660 204824

**Area:** 26.63 ha

**Authority:** Merthyr Tudful - Merthyr Tydfil County Borough Council





**Summary of findings** p. 2

**OS MasterMap site plan** N/A: >10ha

**Aerial image** p. 8

**groundsure.com/insightuserguide**



Contact us with any questions at:
info@groundsure.com
08444 159 000

# Summary of findings

| Page | Section | Past land use | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
|---|---|---|---|---|---|---|---|
| 13 | 1.1 | Historical industrial land uses | 175 | 77 | 232 | 294 | - |
| 41 | 1.2 | Historical tanks | 0 | 0 | 1 | 27 | - |
| 43 | 1.3 | Historical energy features | 0 | 0 | 0 | 19 | - |
| 44 | 1.4 | Historical petrol stations | 0 | 0 | 0 | 0 | - |
| 44 | 1.5 | Historical garages | 0 | 0 | 0 | 0 | - |
| 44 | 1.6 | Historical military land | 0 | 0 | 0 | 0 | - |
| Page | Section | Past land use - un-grouped | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 45 | 2.1 | Historical industrial land uses | 221 | 106 | 307 | 388 | - |
| 82 | 2.2 | Historical tanks | 0 | 0 | 1 | 42 | - |
| 84 | 2.3 | Historical energy features | 0 | 0 | 0 | 36 | - |
| 85 | 2.4 | Historical petrol stations | 0 | 0 | 0 | 0 | - |
| 86 | 2.5 | Historical garages | 0 | 0 | 0 | 0 | - |
| Page | Section | Waste and landfill | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 87 | 3.1 | Active or recent landfill | 0 | 0 | 0 | 0 | - |
| 87 | 3.2 | Historical landfill (BGS records) | 0 | 0 | 0 | 0 | - |
| 88 | 3.3 | Historical landfill (LA/mapping records) | 0 | 0 | 0 | 0 | - |
| 88 | 3.4 | Historical landfill (EA/NRW records) | 0 | 0 | 0 | 0 | - |
| 88 | 3.5 | Historical waste sites | 0 | 0 | 0 | 0 | - |
| 88 | 3.6 | Licensed waste sites | 0 | 0 | 0 | 0 | - |
| 88 | 3.7 | Waste exemptions | 0 | 0 | 4 | 11 | - |
| Page | Section | Current industrial land use | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 91 | 4.1 | Recent industrial land uses | 0 | 0 | 7 | - | - |
| 92 | 4.2 | Current or recent petrol stations | 0 | 0 | 0 | 0 | - |
| 92 | 4.3 | Electricity cables | 0 | 0 | 0 | 0 | - |
| 92 | 4.4 | Gas pipelines | 0 | 0 | 0 | 0 | - |
| 93 | 4.5 | Sites determined as Contaminated Land | 0 | 0 | 0 | 0 | - |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 93 | 4.6 | Control of Major Accident Hazards (COMAH) | 0 | 0 | 0 | 0 | - |
| 93 | 4.7 | Regulated explosive sites | 0 | 0 | 0 | 0 | - |
| 93 | 4.8 | Hazardous substance storage/usage | 0 | 0 | 0 | 0 | - |
| 93 | 4.9 | Historical licensed industrial activities (IPC) | 0 | 0 | 0 | 0 | - |
| 94 | 4.10 | Licensed industrial activities (Part A(1)) | 0 | 0 | 0 | 0 | - |
| **94** | **4.11** | **Licensed pollutant release (Part A(2)/B)** | 0 | 0 | 0 | 2 | - |
| 94 | 4.12 | Radioactive Substance Authorisations | 0 | 0 | 0 | 0 | - |
| **94** | **4.13** | **Licensed Discharges to controlled waters** | 0 | 0 | 1 | 5 | - |
| 95 | 4.14 | Pollutant release to surface waters (Red List) | 0 | 0 | 0 | 0 | - |
| 96 | 4.15 | Pollutant release to public sewer | 0 | 0 | 0 | 0 | - |
| 96 | 4.16 | List 1 Dangerous Substances | 0 | 0 | 0 | 0 | - |
| **96** | **4.17** | **List 2 Dangerous Substances** | 0 | 0 | 0 | 1 | - |
| **96** | **4.18** | **Pollution Incidents (EA/NRW)** | 0 | 0 | 2 | 7 | - |
| 97 | 4.19 | Pollution inventory substances | 0 | 0 | 0 | 0 | - |
| 98 | 4.20 | Pollution inventory waste transfers | 0 | 0 | 0 | 0 | - |
| 98 | 4.21 | Pollution inventory radioactive waste | 0 | 0 | 0 | 0 | - |

| Page | Section | Hydrogeology | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
|---|---|---|---|---|---|---|---|
| **99** | **5.1** | **Superficial aquifer** | Identified (within 500m) | | | | |
| **101** | **5.2** | **Bedrock aquifer** | Identified (within 500m) | | | | |
| **103** | **5.3** | **Groundwater vulnerability** | Identified (within 50m) | | | | |
| 104 | 5.4 | Groundwater vulnerability- soluble rock risk | None (within 0m) | | | | |
| 104 | 5.5 | Groundwater vulnerability- local information | None (within 0m) | | | | |
| **105** | **5.6** | **Groundwater abstractions** | 0 | 0 | 0 | 1 | 0 |
| **106** | **5.7** | **Surface water abstractions** | 0 | 0 | 0 | 2 | 0 |
| 107 | 5.8 | Potable abstractions | 0 | 0 | 0 | 0 | 0 |
| 107 | 5.9 | Source Protection Zones | 0 | 0 | 0 | 0 | - |
| 107 | 5.10 | Source Protection Zones (confined aquifer) | 0 | 0 | 0 | 0 | - |

| Page | Section | Hydrology | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
|---|---|---|---|---|---|---|---|
| **108** | **6.1** | **Water Network (OS MasterMap)** | 28 | 10 | 53 | - | - |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 116 | 6.2 | Surface water features | 1 | 4 | 28 | - | - |
| 116 | 6.3 | WFD Surface water body catchments | 1 | - | - | - | - |
| 116 | 6.4 | WFD Surface water bodies | 0 | 0 | 0 | - | - |
| 117 | 6.5 | WFD Groundwater bodies | 1 | - | - | - | - |

| Page | Section | River and coastal flooding | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
|---|---|---|---|---|---|---|---|
| 118 | 7.1 | Risk of Flooding from Rivers and Sea (RoFRaS) | None (within 50m) | | | | |
| 118 | 7.2 | Historical Flood Events | 0 | 0 | 0 | - | - |
| 118 | 7.3 | Flood Defences | 0 | 0 | 0 | - | - |
| 118 | 7.4 | Areas Benefiting from Flood Defences | 0 | 0 | 0 | - | - |
| 119 | 7.5 | Flood Storage Areas | 0 | 0 | 0 | - | - |
| 120 | 7.6 | Flood Zone 2 | None (within 50m) | | | | |
| 120 | 7.7 | Flood Zone 3 | None (within 50m) | | | | |

| Page | Section | Surface water flooding | |
|---|---|---|---|
| 121 | 8.1 | Surface water flooding | 1 in 30 year, Greater than 1.0m (within 50m) |

| Page | Section | Groundwater flooding | |
|---|---|---|---|
| 123 | 9.1 | Groundwater flooding | Low (within 50m) |

| Page | Section | Environmental designations | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
|---|---|---|---|---|---|---|---|
| 124 | 10.1 | Sites of Special Scientific Interest (SSSI) | 1 | 0 | 0 | 0 | 0 |
| 125 | 10.2 | Conserved wetland sites (Ramsar sites) | 0 | 0 | 0 | 0 | 0 |
| 125 | 10.3 | Special Areas of Conservation (SAC) | 0 | 0 | 0 | 0 | 0 |
| 125 | 10.4 | Special Protection Areas (SPA) | 0 | 0 | 0 | 0 | 0 |
| 125 | 10.5 | National Nature Reserves (NNR) | 0 | 0 | 0 | 0 | 0 |
| 126 | 10.6 | Local Nature Reserves (LNR) | 0 | 0 | 0 | 0 | 0 |
| 126 | 10.7 | Designated Ancient Woodland | 1 | 0 | 2 | 4 | 47 |
| 128 | 10.8 | Biosphere Reserves | 0 | 0 | 0 | 0 | 0 |
| 128 | 10.9 | Forest Parks | 0 | 0 | 0 | 0 | 0 |
| 129 | 10.10 | Marine Conservation Zones | 0 | 0 | 0 | 0 | 0 |
| 129 | 10.11 | Green Belt | 0 | 0 | 0 | 0 | 0 |
| 129 | 10.12 | Proposed Ramsar sites | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 129 | 10.13 | Possible Special Areas of Conservation (pSAC) | 0 | 0 | 0 | 0 | 0 |
| 129 | 10.14 | Potential Special Protection Areas (pSPA) | 0 | 0 | 0 | 0 | 0 |
| 130 | 10.15 | Nitrate Sensitive Areas | 0 | 0 | 0 | 0 | 0 |
| 130 | 10.16 | Nitrate Vulnerable Zones | 0 | 0 | 0 | 0 | 0 |
| 131 | 10.17 | SSSI Impact Risk Zones | 0 | - | - | - | - |
| 131 | 10.18 | SSSI Units | 0 | 0 | 0 | 0 | 0 |
| Page | Section | Visual and cultural designations | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 132 | 11.1 | World Heritage Sites | 0 | 0 | 0 | - | - |
| 133 | 11.2 | Area of Outstanding Natural Beauty | 0 | 0 | 0 | - | - |
| 133 | 11.3 | National Parks | 0 | 0 | 0 | - | - |
| **133** | **11.4** | **Listed Buildings** | 0 | 0 | 2 | - | - |
| 134 | 11.5 | Conservation Areas | 0 | 0 | 0 | - | - |
| **134** | **11.6** | **Scheduled Ancient Monuments** | 1 | 1 | 2 | - | - |
| 134 | 11.7 | Registered Parks and Gardens | 0 | 0 | 0 | - | - |
| Page | Section | Agricultural designations | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| **135** | **12.1** | **Agricultural Land Classification** | Grade 4 (within 250m) | | | | |
| **136** | **12.2** | **Open Access Land** | 0 | 0 | 1 | - | - |
| 136 | 12.3 | Tree Felling Licences | 0 | 0 | 0 | - | - |
| 137 | 12.4 | Environmental Stewardship Schemes | 0 | 0 | 0 | - | - |
| 137 | 12.5 | Countryside Stewardship Schemes | 0 | 0 | 0 | - | - |
| Page | Section | Habitat designations | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 138 | 13.1 | Priority Habitat Inventory | 0 | 0 | 0 | - | - |
| 138 | 13.2 | Habitat Networks | 0 | 0 | 0 | - | - |
| 138 | 13.3 | Open Mosaic Habitat | 0 | 0 | 0 | - | - |
| 138 | 13.4 | Limestone Pavement Orders | 0 | 0 | 0 | - | - |
| Page | Section | Geology 1:10,000 scale | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| **139** | **14.1** | **10k Availability** | Identified (within 500m) | | | | |
| 140 | 14.2 | Artificial and made ground (10k) | 0 | 0 | 0 | 0 | - |
| 141 | 14.3 | Superficial geology (10k) | 0 | 0 | 0 | 0 | - |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 141 | 14.4 | Landslip (10k) | 0 | 0 | 0 | 0 | - |
| 142 | 14.5 | Bedrock geology (10k) | 0 | 0 | 0 | 0 | - |
| 142 | 14.6 | Bedrock faults and other linear features (10k) | 0 | 0 | 0 | 0 | - |
| Page | Section | Geology 1:50,000 scale | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 143 | 15.1 | 50k Availability | Identified (within 500m) | | | | |
| 144 | 15.2 | Artificial and made ground (50k) | 2 | 0 | 1 | 1 | - |
| 145 | 15.3 | Artificial ground permeability (50k) | 3 | 0 | - | - | - |
| 146 | 15.4 | Superficial geology (50k) | 1 | 0 | 1 | 0 | - |
| 147 | 15.5 | Superficial permeability (50k) | Identified (within 50m) | | | | |
| 147 | 15.6 | Landslip (50k) | 0 | 0 | 0 | 0 | - |
| 147 | 15.7 | Landslip permeability (50k) | None (within 50m) | | | | |
| 148 | 15.8 | Bedrock geology (50k) | 2 | 0 | 0 | 2 | - |
| 149 | 15.9 | Bedrock permeability (50k) | Identified (within 50m) | | | | |
| 149 | 15.10 | Bedrock faults and other linear features (50k) | 11 | 1 | 6 | 7 | - |
| Page | Section | Boreholes | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 151 | 16.1 | BGS Boreholes | 2 | 17 | 144 | - | - |
| Page | Section | Natural ground subsidence | | | | | |
| 158 | 17.1 | Shrink swell clays | Very low (within 50m) | | | | |
| 159 | 17.2 | Running sands | Very low (within 50m) | | | | |
| 161 | 17.3 | Compressible deposits | Very low (within 50m) | | | | |
| 163 | 17.4 | Collapsible deposits | Very low (within 50m) | | | | |
| 164 | 17.5 | Landslides | Low (within 50m) | | | | |
| 166 | 17.6 | Ground dissolution of soluble rocks | Negligible (within 50m) | | | | |
| Page | Section | Mining, ground workings and natural cavities | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 168 | 18.1 | Natural cavities | 0 | 0 | 0 | 0 | - |
| 169 | 18.2 | BritPits | 4 | 0 | 7 | 15 | - |
| 174 | 18.3 | Surface ground workings | 196 | 100 | 281 | - | - |
| 195 | 18.4 | Underground workings | 6 | 5 | 22 | 30 | 128 |
| 202 | 18.5 | Historical Mineral Planning Areas | 0 | 0 | 0 | 0 | - |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **202** | **18.6** | **Non-coal mining** | 2 | 0 | 2 | 0 | 1 |
| 203 | 18.7 | Mining cavities | 0 | 0 | 0 | 0 | 0 |
| 203 | 18.8 | JPB mining areas | None (within 0m) | | | | |
| **203** | **18.9** | **Coal mining** | Identified (within 0m) | | | | |
| 204 | 18.10 | Brine areas | None (within 0m) | | | | |
| 204 | 18.11 | Gypsum areas | None (within 0m) | | | | |
| 204 | 18.12 | Tin mining | None (within 0m) | | | | |
| 204 | 18.13 | Clay mining | None (within 0m) | | | | |

| Page | Section | Radon | |
|---|---|---|---|
| **205** | **19.1** | **Radon** | Less than 1% (within 0m) |

| Page | Section | Soil chemistry | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
|---|---|---|---|---|---|---|---|
| **206** | **20.1** | **BGS Estimated Background Soil Chemistry** | 9 | 3 | - | - | - |
| 207 | 20.2 | BGS Estimated Urban Soil Chemistry | 0 | 0 | - | - | - |
| 207 | 20.3 | BGS Measured Urban Soil Chemistry | 0 | 0 | - | - | - |

| Page | Section | Railway infrastructure and projects | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
|---|---|---|---|---|---|---|---|
| 208 | 21.1 | Underground railways (London) | 0 | 0 | 0 | - | - |
| 208 | 21.2 | Underground railways (Non-London) | 0 | 0 | 0 | - | - |
| 209 | 21.3 | Railway tunnels | 0 | 0 | 0 | - | - |
| **209** | **21.4** | **Historical railway and tunnel features** | 19 | 1 | 30 | - | - |
| 211 | 21.5 | Royal Mail tunnels | 0 | 0 | 0 | - | - |
| **211** | **21.6** | **Historical railways** | 5 | 1 | 2 | - | - |
| 212 | 21.7 | Railways | 0 | 0 | 0 | - | - |
| 212 | 21.8 | Crossrail 1 | 0 | 0 | 0 | 0 | - |
| 212 | 21.9 | Crossrail 2 | 0 | 0 | 0 | 0 | - |
| 212 | 21.10 | HS2 | 0 | 0 | 0 | 0 | - |

## Recent aerial photograph




Capture Date: 14/04/2020

Site Area: 26.63ha

## Recent site history - 2017 aerial photograph




Capture Date: 17/06/2017

Site Area: 26.63ha

# Recent site history - 2010 aerial photograph




Capture Date: 22/05/2010

Site Area: 26.63ha

## Recent site history - 2008 aerial photograph




Capture Date: 12/05/2008

Site Area: 26.63ha

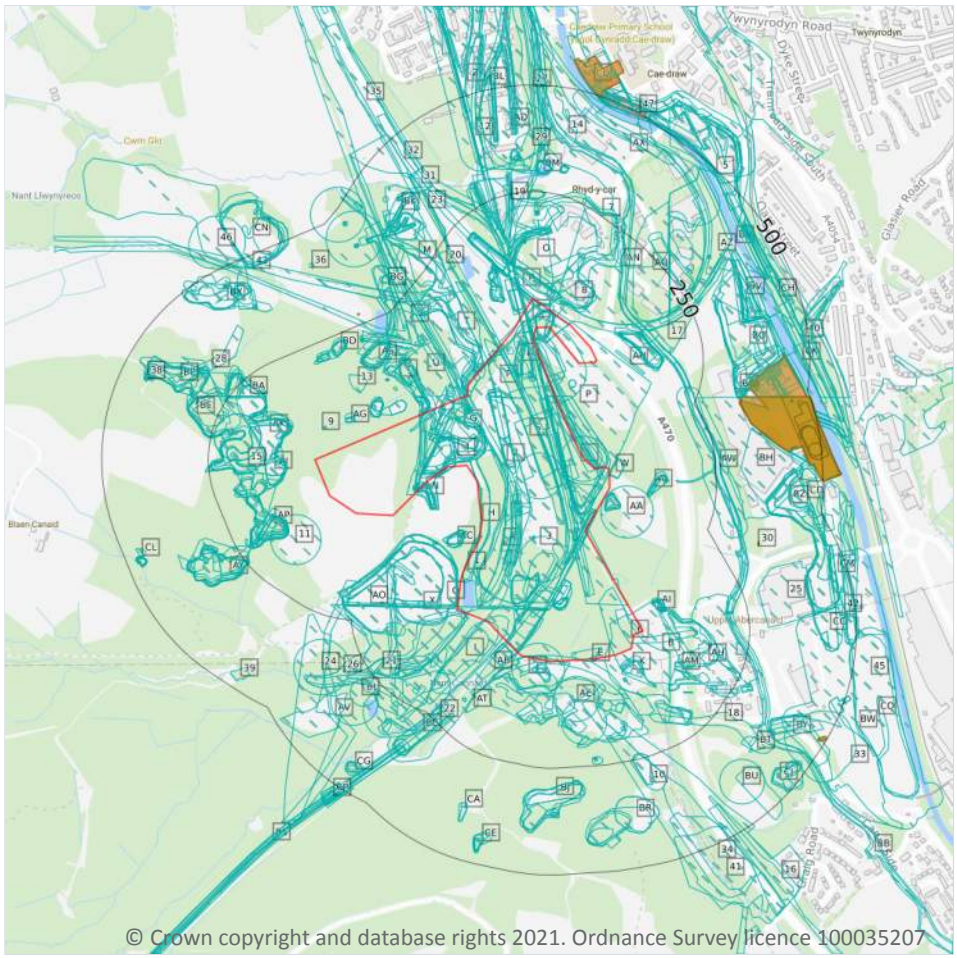
# Recent site history - 2000 aerial photograph




Capture Date: 18/06/2000

Site Area: 26.63ha

# 1 Past land use




Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

## 1.1 Historical industrial land uses

| Records within 500m | 778 |
|---|---|

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

Features are displayed on the Past land use map on **page 13**

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| **1** | **On site** | **Unspecified Disused Pit** | **1903** | **1015558** |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| 2 | On site | Unspecified Pit | 1979 | 1028172 |
| 3 | On site | Railway Sidings | 1875 | 1033899 |
| 4 | On site | Unspecified Ground Workings and Heaps | 1922 | 1104141 |
| 5 | On site | Railway Sidings | 1948 | 1124869 |
| 6 | On site | Railway Sidings | 1875 | 993781 |
| A | On site | Smithy | 1875 | 1032871 |
| A | On site | Unspecified Ground Workings | 1921 | 996784 |
| A | On site | Ironstone Pit | 1875 | 1000020 |
| A | On site | Unspecified Disused Tip | 1988 | 1005152 |
| A | On site | Unspecified Disused Tip | 1979 | 1005153 |
| A | On site | Unspecified Disused Tips | 1979 | 1007175 |
| A | On site | Railway Building | 1948 | 1013034 |
| A | On site | Railway Building | 1903 | 1013035 |
| A | On site | Railway Building | 1948 | 1013036 |
| A | On site | Unspecified Disused Pits | 1948 | 1015867 |
| A | On site | Refuse Heap | 1903 | 1019512 |
| A | On site | Unspecified Heaps | 1875 | 1021406 |
| A | On site | Unspecified Pit | 1875 | 1028171 |
| A | On site | Railway Sidings | 1903 | 1086041 |
| A | On site | Railway Sidings | 1903 | 1033891 |
| A | On site | Railway Sidings | 1901 | 1036848 |
| A | On site | Unspecified Ground Workings | 1921 - 1922 | 1037110 |
| A | On site | Unspecified Disused Pit | 1938 | 1039038 |
| A | On site | Cuttings | 1915 - 1948 | 1039665 |
| A | On site | Railway Sidings | 1901 | 1042451 |
| A | On site | Railway Sidings | 1922 | 1043546 |
| A | On site | Unspecified Heap | 1938 | 1044825 |
| A | On site | Unspecified Disused Tip | 1988 | 1046349 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| A | On site | Railway Sidings | 1915 | 1047287 |
| A | On site | Cuttings | 1964 - 1979 | 1054716 |
| A | On site | Unspecified Heap | 1915 | 1056034 |
| A | On site | Unspecified Heap | 1969 | 1056064 |
| A | On site | Cuttings | 1922 | 1059135 |
| A | On site | Unspecified Heap | 1948 | 1060387 |
| A | On site | Unspecified Disused Pit | 1938 | 1073595 |
| A | On site | Cuttings | 1875 | 1080217 |
| A | On site | Unspecified Ground Workings | 1969 | 1081827 |
| A | On site | Unspecified Heap | 1938 | 1084830 |
| A | On site | Railway Sidings | 1915 | 1085105 |
| A | On site | Cuttings | 1915 | 1087226 |
| A | On site | Unspecified Heap | 1922 | 1089836 |
| A | On site | Railway Sidings | 1901 | 1091710 |
| A | On site | Railway Sidings | 1922 | 1095333 |
| A | On site | Railway Sidings | 1915 | 1103307 |
| A | On site | Unspecified Heap | 1922 | 1103662 |
| A | On site | Railway Sidings | 1922 | 1104396 |
| A | On site | Unspecified Disused Tip | 1979 | 1105577 |
| A | On site | Cuttings | 1938 | 1107707 |
| A | On site | Unspecified Heap | 1948 | 1109398 |
| A | On site | Unspecified Ground Workings | 1915 | 1109769 |
| A | On site | Cuttings | 1922 | 1116008 |
| A | On site | Unspecified Heap | 1875 | 1116017 |
| A | On site | Cuttings | 1915 | 1116337 |
| A | On site | Unspecified Disused Pit | 1915 | 1118061 |
| A | On site | Cuttings | 1901 | 1120167 |
| A | On site | Cuttings | 1901 | 1121045 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| A | On site | Railway Sidings | 1922 | 1123439 |
| A | On site | Cuttings | 1948 | 1131785 |
| A | On site | Unspecified Heap | 1948 | 1135709 |
| A | On site | Railway Sidings | 1903 | 1137091 |
| A | On site | Railway Sidings | 1921 | 1144925 |
| A | On site | Cuttings | 1903 | 1145203 |
| A | On site | Unspecified Disused Pit | 1901 | 1151278 |
| A | On site | Unspecified Heap | 1915 - 1921 | 1152727 |
| A | On site | Cuttings | 1922 | 1154228 |
| B | On site | Ironstone Level | 1875 | 992436 |
| C | On site | Cuttings | 1965 | 994294 |
| C | On site | Unspecified Disused Tip | 1976 - 1992 | 1048476 |
| C | On site | Unspecified Heap | 1948 | 1060988 |
| C | On site | Unspecified Heap | 1922 | 1072959 |
| C | On site | Unspecified Heap | 1921 | 1130093 |
| C | On site | Unspecified Heap | 1915 | 1150461 |
| D | On site | Unspecified Ground Workings | 1948 | 996782 |
| D | On site | Unspecified Heaps | 1875 | 1021408 |
| D | On site | Old Ironstone Level | 1938 | 1055971 |
| D | On site | Railway Sidings | 1915 | 1059781 |
| D | On site | Unspecified Pit | 1965 - 1992 | 1065060 |
| D | On site | Cuttings | 1938 | 1066852 |
| D | On site | Old Ironstone Level | 1915 | 1102750 |
| D | On site | Old Ironstone Level | 1948 | 1130693 |
| D | On site | Old Ironstone Level | 1921 | 1134202 |
| D | On site | Cuttings | 1915 | 1147521 |
| D | On site | Cuttings | 1922 | 1149662 |
| E | On site | Unspecified Ground Workings | 1901 | 996786 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| E | On site | Unspecified Pit | 1988 | 1028164 |
| F | On site | Unspecified Heap | 1965 | 1000217 |
| F | On site | Unspecified Disused Tip | 1976 | 1038024 |
| F | On site | Unspecified Disused Tip | 1992 | 1041228 |
| F | On site | Railway Sidings | 1875 | 1044359 |
| F | On site | Unspecified Pit | 1979 | 1055190 |
| F | On site | Unspecified Pit | 1988 | 1055608 |
| F | On site | Cuttings | 1969 | 1078168 |
| F | On site | Cuttings | 1938 | 1105830 |
| F | On site | Cuttings | 1922 | 1127303 |
| F | On site | Cuttings | 1964 | 1135317 |
| F | On site | Cuttings | 1915 | 1135443 |
| G | On site | Unspecified Heap | 1875 | 1000278 |
| G | On site | Ground Workings and Refuse Heap | 1915 | 1007275 |
| G | On site | Old Coal Drift | 1948 | 1008428 |
| G | On site | Drift | 1921 | 1012105 |
| G | On site | Refuse Heap | 1921 | 1019513 |
| G | On site | Unspecified Pit | 1875 | 1028174 |
| G | On site | Cuttings | 1964 - 1969 | 1034745 |
| G | On site | Unspecified Ground Workings | 1938 | 1039188 |
| G | On site | Unspecified Heap | 1903 | 1042212 |
| G | On site | Unspecified Heap | 1921 | 1043908 |
| G | On site | Unspecified Disused Tip | 1979 | 1044490 |
| G | On site | Coal Drift | 1915 | 1044959 |
| G | On site | Unspecified Disused Tip | 1988 | 1046840 |
| G | On site | Unspecified Heap | 1964 - 1969 | 1049359 |
| G | On site | Unspecified Heap | 1875 | 1052252 |
| G | On site | Unspecified Disused Tips | 1988 | 1064203 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| G | On site | Unspecified Heaps | 1964 - 1969 | 1072298 |
| G | On site | Cuttings | 1948 | 1076637 |
| G | On site | Coal Drift | 1922 - 1938 | 1085212 |
| G | On site | Unspecified Heap | 1901 | 1090330 |
| G | On site | Cuttings | 1965 | 1101787 |
| G | On site | Cuttings | 1903 - 1915 | 1104895 |
| G | On site | Unspecified Disused Tips | 1979 | 1122640 |
| G | On site | Tramway Sidings | 1948 | 1128517 |
| G | On site | Unspecified Heap | 1875 | 1137363 |
| G | On site | Railway Sidings | 1901 | 1152497 |
| H | On site | Unspecified Heap | 1948 | 1000279 |
| H | On site | Old Canal | 1901 | 1004658 |
| I | On site | Unspecified Heap | 1948 | 1000280 |
| I | On site | Coal Pit | 1875 | 1005027 |
| I | On site | Unspecified Disused Tip | 1979 | 1005154 |
| I | On site | Railway Sidings | 1922 | 1058699 |
| I | On site | Unspecified Pit | 1922 | 1063007 |
| I | On site | Unspecified Heap | 1948 | 1123875 |
| J | On site | Unspecified Disused Tip | 1979 | 1005155 |
| J | On site | Unspecified Disused Workings | 1988 | 1032158 |
| J | On site | Refuse Heap | 1964 - 1969 | 1071881 |
| J | On site | Railway Sidings | 1901 - 1922 | 1126283 |
| K | On site | Unspecified Disused Tip | 1979 | 1005160 |
| L | On site | Unspecified Disused Tip | 1979 | 1005164 |
| L | On site | Unspecified Heap | 1969 | 1054370 |
| L | On site | Unspecified Heap | 1964 | 1084558 |
| M | On site | Unspecified Disused Tip | 1992 | 1005165 |
| M | On site | Unspecified Disused Tips | 1976 | 1007176 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| N | On site | Refuse Heap | 1921 | 1019517 |
| N | On site | Old Coal Level | 1948 | 1032272 |
| N | On site | Unspecified Disused Tip | 1979 | 1048969 |
| N | On site | Railway Sidings | 1922 | 1049687 |
| N | On site | Coal Level | 1922 | 1052454 |
| N | On site | Coal Level | 1938 | 1068974 |
| N | On site | Coal Level | 1921 | 1093342 |
| N | On site | Unspecified Disused Tip | 1988 | 1110675 |
| N | On site | Coal Level | 1915 | 1121071 |
| N | On site | Railway Sidings | 1922 | 1125393 |
| N | On site | Unspecified Heap | 1964 - 1969 | 1131412 |
| O | On site | Railway Sidings | 1875 | 1033887 |
| P | On site | Railway Land | 1922 | 1034338 |
| P | On site | Refuse Heap | 1938 | 1068317 |
| P | On site | Old Ironstone Level | 1903 | 1086239 |
| P | On site | Old Ironstone Level | 1901 | 1092266 |
| P | On site | Railway Sidings | 1922 | 1114667 |
| Q | On site | Refuse Heap | 1922 | 1039946 |
| Q | On site | Unspecified Disused Tip | 1988 | 1152975 |
| R | On site | Cuttings | 1976 - 1992 | 1043912 |
| R | On site | Cuttings | 1938 | 1076223 |
| R | On site | Cuttings | 1915 - 1922 | 1139704 |
| R | On site | Cuttings | 1976 | 1142556 |
| R | On site | Cuttings | 1965 | 1150367 |
| S | On site | Refuse Heap | 1903 | 1067553 |
| S | On site | Cuttings | 1922 | 1077917 |
| T | On site | Railway Sidings | 1921 - 1938 | 1070413 |
| U | On site | Tramway Sidings | 1915 | 1080646 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| **U** | **On site** | **Tramway Sidings** | **1921 - 1922** | **1110190** |
| **V** | **On site** | **Railway Sidings** | **1901 - 1903** | **1086272** |
| **W** | **On site** | **Cuttings** | **1922** | **1125692** |
| **X** | **On site** | **Unspecified Disused Tip** | **1979** | **1127944** |
| **Y** | **On site** | **Refuse Heap** | **1922** | **1146050** |
| **Z** | **On site** | **Railway Sidings** | **1921** | **1148132** |
| T | 0m NW | Refuse Heap | 1965 | 1123696 |
| W | 1m E | Cuttings | 1915 | 1082902 |
| G | 1m NW | Unspecified Disused Tips | 1979 | 1078703 |
| G | 1m NW | Unspecified Disused Tips | 1988 | 1130456 |
| M | 2m NW | Unspecified Ground Workings | 1938 | 1108754 |
| W | 2m E | Cuttings | 1948 | 1128482 |
| AA | 2m SE | Unspecified Disused Workings | 1988 | 1032165 |
| Q | 2m W | Refuse Heap | 1915 | 1078179 |
| Q | 2m W | Refuse Heap | 1938 - 1948 | 1067431 |
| M | 3m NW | Unspecified Ground Workings | 1915 | 1115641 |
| I | 4m S | Refuse Heap | 1901 | 1108349 |
| Q | 5m W | Refuse Heap | 1921 | 1086223 |
| R | 5m NE | Cuttings | 1901 - 1903 | 1143978 |
| AA | 5m SE | Unspecified Heap | 1921 | 1101253 |
| M | 5m W | Unspecified Ground Workings | 1921 | 1155965 |
| Q | 6m W | Unspecified Heap | 1964 - 1969 | 1063738 |
| R | 6m NW | Cuttings | 1965 | 1101162 |
| AA | 6m SE | Unspecified Disused Tip | 1979 | 1005161 |
| R | 7m NW | Cuttings | 1992 | 1034286 |
| M | 7m W | Unspecified Ground Workings | 1901 | 1087268 |
| AB | 8m SW | Cuttings | 1875 | 1087690 |
| X | 8m W | Refuse Heap | 1948 | 1090500 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| AA | 8m SE | Unspecified Heap | 1922 - 1938 | 1134220 |
| AA | 9m SE | Unspecified Heap | 1915 | 1072318 |
| AA | 9m SE | Unspecified Heap | 1948 | 1070667 |
| AB | 9m SW | Cuttings | 1948 | 1110337 |
| AB | 9m SW | Cuttings | 1901 | 1130024 |
| J | 11m S | Unspecified Pit | 1948 | 1057144 |
| G | 11m NW | Coal Shaft | 1875 | 1021191 |
| J | 18m S | Unspecified Pit | 1922 | 1049582 |
| 7 | 19m NE | Railway Sidings | 1901 - 1903 | 1099240 |
| R | 19m NE | Cuttings | 1948 | 1039592 |
| K | 19m SE | Unspecified Heap | 1948 | 1082574 |
| J | 20m S | Unspecified Pit | 1875 | 1102362 |
| I | 21m S | Refuse Heap | 1901 | 1019516 |
| O | 22m NE | Ironstone Pit | 1875 | 1000019 |
| Y | 24m NW | Unspecified Disused Tips | 1979 | 1066356 |
| Y | 24m NW | Unspecified Disused Tips | 1988 | 1114217 |
| Y | 24m NW | Unspecified Heaps | 1964 - 1969 | 1147236 |
| K | 24m S | Unspecified Ground Workings | 1901 | 996785 |
| M | 25m NW | Unspecified Ground Workings | 1903 | 1143595 |
| K | 28m S | Unspecified Heap | 1922 | 1103151 |
| Y | 28m NW | Refuse Heap | 1921 | 1143593 |
| K | 31m S | Unspecified Disused Workings | 1988 | 1032163 |
| AC | 31m NW | Unspecified Ground Workings | 1938 | 1094353 |
| Y | 32m NW | Unspecified Heap | 1938 | 1066299 |
| O | 32m NE | Unspecified Disused Pit | 1948 | 1085717 |
| AC | 32m NW | Ground Workings and Refuse Heap | 1915 | 1007277 |
| AC | 33m NW | Disused Pits | 1921 | 1004672 |
| AC | 34m NW | Unspecified Disused Tip | 1979 | 1111837 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| AC | 34m NW | Unspecified Disused Tip | 1988 | 1126772 |
| 8 | 34m NE | Unspecified Heap | 1922 - 1938 | 1076026 |
| Y | 34m NW | Unspecified Heap | 1915 - 1921 | 1127734 |
| AD | 34m NE | Railway Land | 1922 | 1119885 |
| Y | 35m NW | Unspecified Heap | 1948 | 1037887 |
| AC | 35m W | Unspecified Pit | 1948 | 1028173 |
| Y | 36m NW | Unspecified Heap | 1922 | 1129206 |
| Y | 36m NW | Unspecified Heap | 1965 | 1120786 |
| AC | 36m NW | Refuse Heap | 1922 | 1127337 |
| AC | 37m W | Unspecified Disused Pits | 1922 | 1141697 |
| AE | 38m S | Disused Quarries and Tips | 1979 | 1003946 |
| AC | 39m NW | Unspecified Heap | 1964 - 1969 | 1101936 |
| Q | 40m W | Shale Tip | 1922 | 1040516 |
| Q | 40m W | Shale Tip | 1915 | 1071795 |
| AF | 41m E | Old Ironstone Level | 1922 | 1096717 |
| AF | 41m E | Old Ironstone Level | 1922 | 1154402 |
| O | 42m NE | Unspecified Disused Pit | 1903 | 1125751 |
| O | 42m NE | Unspecified Disused Pit | 1901 | 1087565 |
| AE | 43m S | Unspecified Ground Workings | 1875 | 1139496 |
| Y | 44m NW | Unspecified Disused Tips | 1988 | 1040232 |
| Y | 44m NW | Unspecified Disused Tips | 1979 | 1056217 |
| AG | 47m NW | Old Coal Level | 1915 | 1081065 |
| AG | 47m NW | Old Coal Level | 1922 | 1132309 |
| AG | 47m NW | Unspecified Pit | 1938 | 1144734 |
| AG | 48m NW | Old Coal Level | 1948 | 1065571 |
| AH | 48m NE | Unspecified Pit | 1875 | 1028169 |
| AI | 49m NE | Unspecified Heap | 1938 | 1083279 |
| AI | 52m NE | Unspecified Heap | 1915 - 1921 | 1067261 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| B | 53m NE | Unspecified Ground Workings | 1948 | 1132095 |
| AI | 53m NE | Unspecified Heap | 1901 | 1151616 |
| R | 54m NW | Unspecified Ground Workings | 1948 | 1126624 |
| AI | 54m NE | Unspecified Heap | 1948 | 1061273 |
| AI | 54m NE | Unspecified Ground Workings | 1922 | 1044044 |
| AI | 54m NE | Unspecified Ground Workings | 1922 | 1153151 |
| R | 55m NW | Unspecified Ground Workings | 1915 | 1142082 |
| R | 55m NW | Unspecified Ground Workings | 1922 - 1938 | 1058669 |
| AG | 56m NW | Old Coal Level | 1921 | 1137867 |
| R | 56m NW | Unspecified Ground Workings | 1921 | 1136591 |
| 9 | 57m NW | Old Coal Level | 1938 | 1091862 |
| K | 58m S | Railway Building | 1948 | 1013038 |
| B | 58m NE | Unspecified Heaps | 1922 | 1111091 |
| AI | 60m NE | Unspecified Pit | 1964 - 1969 | 1147188 |
| 10 | 60m S | Tramway Sidings | 1922 - 1948 | 1085211 |
| O | 64m NE | Unspecified Ground Workings | 1965 | 996768 |
| AH | 65m NE | Railway Sidings | 1875 | 1065269 |
| AJ | 66m W | Unspecified Disused Tip | 1979 | 1059535 |
| AK | 67m W | Unspecified Old Quarries | 1901 - 1903 | 1040580 |
| R | 67m NW | Unspecified Ground Workings | 1965 | 1065459 |
| AK | 68m W | Old Quarries | 1921 | 1018526 |
| AH | 68m NE | Unspecified Disused Tip | 1976 - 1992 | 1040689 |
| AK | 69m W | Unspecified Disused Tip | 1988 | 1112440 |
| AK | 70m W | Unspecified Old Quarries | 1922 | 1103298 |
| B | 70m NE | Unspecified Heap | 1964 - 1968 | 1082234 |
| B | 71m NE | Unspecified Ground Workings | 1901 | 1083335 |
| AK | 71m W | Unspecified Old Quarries | 1915 | 1110999 |
| Y | 71m NW | Unspecified Heap | 1875 | 1099619 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| 11 | 71m SW | Unspecified Disused Workings | 1988 | 1032164 |
| X | 72m W | Refuse Heap | 1915 | 1053952 |
| AH | 72m NE | Unspecified Heap | 1915 | 1130160 |
| AJ | 73m W | Unspecified Old Quarries | 1948 | 1098491 |
| AK | 73m W | Unspecified Old Quarries | 1938 | 1063618 |
| AH | 73m NE | Unspecified Heap | 1965 | 1115229 |
| Y | 74m NW | Coal Level | 1901 | 1007515 |
| AE | 74m S | Unspecified Heap | 1964 - 1969 | 1104636 |
| AH | 74m NE | Unspecified Heap | 1948 | 1045692 |
| AH | 75m NE | Unspecified Heap | 1922 | 1055353 |
| Y | 75m NW | Old Coal Drift | 1921 | 1008426 |
| AH | 75m NE | Unspecified Heap | 1921 | 1122578 |
| AE | 75m S | Unspecified Ground Workings | 1922 - 1948 | 1138979 |
| AE | 76m S | Unspecified Ground Workings | 1922 | 1126823 |
| R | 78m NW | Cuttings | 1948 | 1131895 |
| R | 78m NW | Cuttings | 1922 | 1134767 |
| AK | 78m W | Unspecified Ground Workings | 1875 | 1065712 |
| AE | 79m S | Unspecified Heap | 1988 | 1000286 |
| AE | 79m S | Unspecified Ground Workings | 1901 | 1050638 |
| R | 82m NW | Cuttings | 1921 | 1149278 |
| U | 82m NW | Railway Sidings | 1901 | 1151632 |
| AC | 82m NW | Coal Level | 1922 - 1938 | 1140192 |
| AC | 83m NW | Coal Level | 1915 - 1921 | 1062391 |
| AC | 85m NW | Old Coal Level | 1948 | 1032273 |
| AK | 85m NW | Unspecified Old Quarries | 1948 | 1081609 |
| AL | 89m E | Unspecified Ground Workings | 1922 | 1115558 |
| AL | 89m E | Unspecified Ground Workings | 1921 | 1043796 |
| Z | 89m NW | Railway Sidings | 1922 | 1042019 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| Z | 89m NW | Railway Sidings | 1922 | 1134725 |
| 12 | 91m NW | Railway Sidings | 1915 | 1040352 |
| AL | 91m E | Unspecified Pit | 1938 | 1080102 |
| AL | 91m E | Unspecified Pit | 1948 | 1142608 |
| AL | 91m E | Unspecified Ground Workings | 1915 | 1135175 |
| AK | 92m NW | Unspecified Ground Workings | 1964 | 1060290 |
| AK | 92m NW | Unspecified Ground Workings | 1969 | 1131396 |
| AE | 93m S | Unspecified Disused Tip | 1979 | 1005156 |
| R | 94m NW | Cuttings | 1875 | 1036589 |
| I | 94m S | Railway Sidings | 1901 | 1117518 |
| R | 94m NW | Cuttings | 1915 | 1128831 |
| R | 98m NW | Unspecified Ground Workings | 1922 | 1044131 |
| R | 98m NW | Unspecified Ground Workings | 1922 | 1102942 |
| Z | 100m NW | Railway Sidings | 1901 | 1107057 |
| AE | 100m S | Unspecified Heap | 1969 | 1000285 |
| AE | 100m S | Unspecified Heaps | 1964 | 1021419 |
| Q | 102m S | Railway Sidings | 1903 | 1066071 |
| 13 | 103m NW | Unspecified Heap | 1965 | 1000216 |
| Y | 103m NW | Old Coal Drift | 1915 | 1140554 |
| Y | 103m NW | Old Coal Drift | 1938 - 1948 | 1036251 |
| Y | 104m NW | Old Coal Drift | 1922 | 1093659 |
| AM | 105m SE | Unspecified Ground Workings | 1968 | 1135647 |
| Q | 105m W | Railway Sidings | 1901 | 1072484 |
| Z | 106m NW | Railway Sidings | 1901 | 1114666 |
| AM | 107m SE | Unspecified Ground Workings | 1964 | 1122173 |
| 14 | 111m NE | Disused Canal | 1938 - 1948 | 1106578 |
| AN | 111m NE | Old Canal | 1901 | 1004655 |
| AE | 111m S | Unspecified Heap | 1969 | 1000284 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| AN | 112m NE | Disused Canal | 1915 - 1921 | 1054695 |
| AM | 113m SE | Unspecified Ground Workings | 1901 | 1065867 |
| AM | 113m SE | Unspecified Heap | 1964 | 1000287 |
| AE | 114m S | Unspecified Ground Workings | 1901 | 1058430 |
| AO | 115m S | Unspecified Disused Tip | 1979 | 1128391 |
| AH | 115m NE | Cuttings | 1901 | 994293 |
| I | 116m SW | Unspecified Pit | 1875 | 1103078 |
| AP | 117m SW | Old Ironstone Levels | 1903 | 1084636 |
| AP | 119m SW | Unspecified Ground Workings | 1921 | 1103864 |
| AP | 119m SW | Old Ironstone Levels | 1922 | 1034946 |
| AP | 121m SW | Unspecified Disused Tip | 1979 | 1005169 |
| AE | 122m S | Unspecified Pit | 1964 - 1969 | 1040296 |
| AP | 122m SW | Old Ironstone Levels | 1948 | 1151111 |
| AP | 123m SW | Unspecified Ground Workings | 1969 | 1065270 |
| AP | 123m SW | Unspecified Heap | 1964 | 1149090 |
| AP | 123m W | Unspecified Ground Workings | 1921 | 1113494 |
| Q | 124m W | Refuse Heap | 1915 | 1139052 |
| M | 125m NW | Unspecified Ground Workings | 1965 | 1039498 |
| AP | 125m SW | Unspecified Heap | 1901 | 1084889 |
| 15 | 126m W | Unspecified Old Quarries | 1903 | 1077391 |
| AP | 127m W | Unspecified Old Quarries | 1948 | 1100275 |
| 16 | 129m S | Railway Sidings | 1948 | 1063682 |
| AO | 130m W | Unspecified Heaps | 1948 | 1021418 |
| Z | 131m N | Unspecified Disused Pit | 1922 - 1938 | 1097315 |
| Z | 131m N | Unspecified Disused Pit | 1915 | 1119918 |
| Z | 131m N | Disused Pit | 1921 | 993633 |
| AQ | 132m NE | Unspecified Pit | 1976 - 1992 | 1094811 |
| AR | 132m NW | Unspecified Disused Tips | 1976 - 1992 | 1046508 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| I | 132m SW | Unspecified Disused Mine | 1969 - 1979 | 1093159 |
| AK | 134m W | Unspecified Disused Quarries | 1988 | 1100628 |
| AK | 134m W | Unspecified Disused Quarries | 1979 | 1124891 |
| I | 135m SW | Railway Sidings | 1875 | 1047572 |
| AM | 137m SE | Unspecified Heap | 1948 | 1086810 |
| AP | 137m W | Unspecified Ground Workings | 1875 | 1068136 |
| AE | 138m S | Unspecified Ground Workings | 1901 | 1118673 |
| AS | 139m NW | Unspecified Heap | 1965 | 1072408 |
| AS | 140m NW | Unspecified Ground Workings | 1875 | 996783 |
| 17 | 140m NE | Unspecified Heap | 1875 | 1000221 |
| AR | 141m NW | Unspecified Heap | 1965 | 1000222 |
| AS | 141m NW | Unspecified Heap | 1938 - 1948 | 1136495 |
| AM | 142m SE | Unspecified Heap | 1922 | 1120722 |
| AT | 142m SW | Unspecified Pit | 1922 | 1037093 |
| U | 142m NW | Railway Building | 1901 | 1013436 |
| AS | 143m NW | Unspecified Heap | 1915 | 1068686 |
| AS | 144m NW | Unspecified Heap | 1922 | 1117869 |
| Z | 145m NW | Railway Sidings | 1922 | 1063208 |
| AS | 148m NW | Unspecified Heap | 1901 | 1104246 |
| AU | 150m SE | Unspecified Ground Workings | 1968 | 1082735 |
| AK | 150m W | Unspecified Old Quarries | 1948 | 1048051 |
| AS | 151m NW | Unspecified Heap | 1921 | 1128542 |
| I | 153m SW | Unspecified Pit | 1964 | 1130368 |
| Z | 153m N | Unspecified Ground Workings | 1915 | 996769 |
| AP | 154m W | Unspecified Pit | 1964 - 1969 | 1061112 |
| AE | 155m S | Unspecified Ground Workings | 1901 | 1152630 |
| AP | 155m W | Unspecified Pit | 1901 - 1903 | 1056835 |
| AV | 159m S | Rifle Range | 1875 | 1039179 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| AM | 160m SE | Coal Level | 1922 | 1131272 |
| AP | 160m SW | Unspecified Pit | 1875 | 1028181 |
| 18 | 161m S | Railway Sidings | 1948 | 993782 |
| Z | 162m N | Engine House | 1938 | 1019155 |
| AM | 162m SE | Unspecified Ground Workings | 1901 | 996797 |
| AT | 163m SW | Railway Building | 1901 | 1041388 |
| AT | 163m SW | Railway Building | 1948 | 1068694 |
| AS | 164m NW | Coal Level | 1903 | 1007516 |
| AM | 168m SE | Unspecified Heap | 1964 - 1968 | 1099556 |
| AE | 168m S | Old Coal Shaft | 1901 | 992175 |
| AQ | 173m NE | Railway Sidings | 1921 | 1058826 |
| AE | 175m S | Old Coal Shaft | 1922 | 992178 |
| AU | 176m E | Unspecified Ground Workings | 1875 | 1130993 |
| AE | 178m S | Unspecified Ground Workings | 1901 | 1143343 |
| Z | 180m NW | Refuse Heap | 1938 | 1143827 |
| AU | 181m E | Railway Sidings | 1901 - 1922 | 1059733 |
| AW | 181m E | Disused Canal | 1922 | 1052971 |
| 19 | 184m N | Railway Sidings | 1922 | 1095622 |
| AX | 184m NE | Unspecified Tip | 1875 | 1018882 |
| AY | 188m SW | Railway Sidings | 1875 | 993777 |
| AY | 188m SW | Ironstone Levels | 1875 | 1003934 |
| AZ | 191m NE | Railway Sidings | 1875 | 1048921 |
| 20 | 193m NW | Cuttings | 1922 | 1082656 |
| AU | 194m SE | Tramway Sidings | 1901 | 1014625 |
| BA | 194m NW | Unspecified Disused Tip | 1992 | 1005167 |
| 21 | 194m SW | Unspecified Heap | 1948 - 1964 | 1097666 |
| BB | 194m E | Disused Canal | 1948 | 1153257 |
| Z | 194m N | Engine House | 1875 | 1113222 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| I | 195m SW | Railway Buildings | 1901 | 1024166 |
| Z | 196m N | Engine House | 1921 | 1035910 |
| BA | 196m NW | Unspecified Heaps | 1965 | 1021409 |
| AR | 197m NW | Railway Building | 1938 | 1013435 |
| Z | 197m N | Engine House | 1915 | 1078427 |
| Z | 198m N | Engine House | 1922 | 1086032 |
| Z | 198m N | Engine House | 1922 | 1133708 |
| BB | 200m E | Disused Canal | 1922 | 1090618 |
| BC | 200m SW | Cuttings | 1988 | 1095043 |
| BC | 200m SW | Cuttings | 1979 | 1103781 |
| BD | 201m NW | Unspecified Heap | 1922 | 1088409 |
| BD | 201m NW | Unspecified Ground Workings | 1938 | 1081565 |
| AQ | 201m NE | Unspecified Ground Workings | 1975 | 1119321 |
| AQ | 201m NE | Unspecified Ground Workings | 1982 - 1992 | 1139042 |
| BD | 201m NW | Old Coal Level | 1948 | 1032265 |
| BD | 201m NW | Unspecified Heap | 1875 - 1965 | 1080952 |
| BD | 202m NW | Unspecified Heap | 1915 | 1050608 |
| Z | 203m N | Engine House | 1901 | 1087326 |
| BD | 204m NW | Unspecified Pit | 1875 | 1054426 |
| AU | 204m SE | Engine House | 1875 | 1019123 |
| AW | 204m E | Disused Canal | 1988 | 1063494 |
| BD | 205m NW | Unspecified Pit | 1922 | 1044504 |
| BD | 205m NW | Unspecified Pit | 1948 | 1079651 |
| BD | 206m NW | Unspecified Pit | 1915 | 1094449 |
| I | 208m SW | Chimney | 1964 - 1969 | 1137776 |
| Z | 209m N | Unspecified Heap | 1938 | 1108220 |
| AS | 209m NW | Coal Level | 1938 | 1074359 |
| BC | 209m SW | Cuttings | 1922 | 1088116 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| BD | 211m NW | Unspecified Heap | 1921 | 1112171 |
| AS | 211m NW | Coal Level | 1915 | 1111760 |
| AS | 212m NW | Coal Level | 1922 | 1131959 |
| BD | 212m NW | Unspecified Pit | 1921 | 1053826 |
| 22 | 213m SW | Cuttings | 1964 - 1969 | 1111484 |
| AU | 214m SE | Tramway Sidings | 1901 | 1014624 |
| BE | 216m NW | Unspecified Old Quarries | 1901 | 1134536 |
| AU | 216m SE | Old Air Shaft | 1922 | 1003774 |
| Z | 217m N | Engine House | 1948 | 1130716 |
| Z | 217m N | Engine House | 1903 | 1156822 |
| AS | 217m NW | Coal Level | 1921 | 1108286 |
| AU | 220m E | Unspecified Heap | 1875 | 1000288 |
| BC | 222m SW | Cuttings | 1948 | 1035629 |
| AE | 229m S | Unspecified Heap | 1875 | 1000283 |
| BE | 231m NW | Unspecified Old Quarries | 1903 | 1111338 |
| AE | 231m S | Unspecified Disused Shaft | 1964 - 1969 | 1136891 |
| Z | 232m N | Unspecified Heap | 1915 - 1921 | 1132319 |
| AE | 232m S | Unspecified Disused Shaft | 1988 | 1046067 |
| AE | 232m S | Unspecified Disused Shaft | 1979 | 1090658 |
| AY | 233m SW | Old Ironstone Levels | 1901 - 1903 | 1109356 |
| Z | 234m N | Unspecified Heap | 1922 - 1938 | 1136604 |
| Z | 235m N | Unspecified Heap | 1948 | 1044314 |
| BC | 235m SW | Cuttings | 1875 | 1081927 |
| BF | 238m S | Unspecified Disused Tip | 1979 | 1005159 |
| BF | 238m S | Unspecified Heap | 1964 - 1969 | 1136105 |
| BG | 238m NW | Unspecified Disused Tips | 1976 - 1992 | 1136357 |
| BF | 239m S | Unspecified Heap | 1948 | 1131796 |
| BG | 239m NW | Unspecified Heap | 1965 | 1110299 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| 23 | 240m NW | Refuse Heap | 1965 | 1019511 |
| AY | 243m SW | Old Ironstone Levels | 1922 | 1052229 |
| AY | 244m SW | Unspecified Ground Workings | 1915 - 1921 | 1082491 |
| I | 244m SW | Railway Building | 1901 | 1013033 |
| AY | 246m SW | Old Ironstone Levels | 1948 | 1083931 |
| AY | 247m SW | Old Ironstone Levels | 1938 | 1129491 |
| BG | 248m NW | Refuse Heap | 1922 | 1058889 |
| BH | 251m E | Unspecified Factory | 1988 | 1078765 |
| BA | 253m NW | Unspecified Old Quarries | 1903 | 1147692 |
| AY | 255m SW | Unspecified Ground Workings | 1964 - 1969 | 1119255 |
| AV | 257m SW | Rifle Range | 1901 | 1100764 |
| AQ | 257m NE | Unspecified Pit | 1875 | 1139609 |
| AQ | 259m NE | Unspecified Pit | 1901 | 1067163 |
| I | 259m SW | Railway Building | 1901 | 1013032 |
| BI | 262m SW | Unspecified Pit | 1901 | 1148515 |
| AU | 265m SE | Engine House | 1875 | 1089555 |
| AU | 266m SE | Engine House | 1922 | 1095387 |
| BI | 267m SW | Unspecified Pit | 1948 | 1082099 |
| 24 | 280m SW | Unspecified Drift | 1948 | 1081583 |
| BJ | 281m S | Unspecified Disused Tips | 1988 | 1048289 |
| BJ | 281m S | Unspecified Disused Tips | 1979 | 1093910 |
| BK | 284m NW | Unspecified Heap | 1965 | 1046818 |
| AY | 284m SW | Old Ironstone Level | 1915 | 1007776 |
| BJ | 285m S | Unspecified Old Quarries | 1901 | 1112653 |
| BJ | 285m S | Unspecified Old Quarries | 1948 | 1131664 |
| AY | 285m SW | Old Ironstone Levels | 1921 | 1147256 |
| 25 | 286m E | Unspecified Factory | 1988 | 1153714 |
| BL | 289m N | Railway Sidings | 1875 | 1093098 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| BJ | 289m S | Unspecified Ground Workings | 1875 | 996795 |
| BJ | 290m S | Unspecified Old Quarries | 1922 | 1153887 |
| BM | 291m N | Unspecified Heap | 1921 | 1062975 |
| AY | 291m SW | Unspecified Disused Levels | 1988 | 1004157 |
| AY | 291m SW | Unspecified Disused Level | 1979 | 1046608 |
| BG | 293m NW | Unspecified Heap | 1915 | 1062222 |
| AD | 293m N | Unspecified Pit | 1965 | 1146355 |
| AQ | 293m NE | Junction Station | 1901 | 1008289 |
| BM | 294m N | Unspecified Heap | 1976 - 1992 | 1109320 |
| AD | 294m N | Unspecified Pit | 1976 | 1090058 |
| BM | 295m N | Unspecified Heap | 1915 | 1090795 |
| BN | 295m NE | Railway Sidings | 1938 | 1043509 |
| BM | 296m N | Unspecified Heap | 1965 | 1124933 |
| BM | 296m N | Unspecified Heap | 1948 | 1085977 |
| AY | 296m SW | Unspecified Disused Level | 1964 - 1969 | 1120513 |
| BG | 296m NW | Unspecified Heap | 1948 | 1046170 |
| 26 | 297m SW | Unspecified Drift | 1922 | 1140009 |
| AY | 297m SW | Old Ironstone Levels | 1921 | 1048441 |
| 27 | 298m N | Railway Sidings | 1901 | 1070631 |
| BL | 298m N | Disused Iron Works | 1901 | 1090362 |
| I | 299m SW | Unspecified Ground Workings | 1901 | 996787 |
| AD | 301m N | Refuse Heap | 1901 | 1019510 |
| BC | 301m S | Cuttings | 1964 - 1969 | 1076118 |
| BM | 301m N | Unspecified Pit | 1915 - 1921 | 1152815 |
| AQ | 301m NE | Unspecified Heap | 1948 | 1000218 |
| BO | 302m E | Unspecified Ground Workings | 1915 - 1921 | 1132624 |
| BM | 303m N | Unspecified Pit | 1938 | 1126058 |
| BO | 303m NE | Unspecified Ground Workings | 1922 | 1041286 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| BO | 303m E | Unspecified Heap | 1903 | 1153316 |
| BO | 303m E | Unspecified Ground Workings | 1938 | 1112327 |
| I | 304m SW | Unspecified Heap | 1948 | 1000281 |
| BO | 304m NE | Unspecified Heap | 1901 | 1146659 |
| BO | 304m E | Unspecified Ground Workings | 1875 | 1095216 |
| BM | 305m N | Unspecified Pit | 1948 | 1109773 |
| BM | 305m N | Unspecified Pit | 1922 | 1109130 |
| BK | 306m NW | Refuse Heap | 1915 | 1100241 |
| 28 | 306m NW | Railway Sidings | 1875 | 993897 |
| BH | 309m E | Unspecified Factory | 1964 - 1968 | 1140854 |
| BK | 309m NW | Refuse Heap | 1922 | 1143927 |
| BP | 311m NW | Unspecified Old Quarries | 1948 | 1035931 |
| BP | 311m NW | Unspecified Ground Workings | 1965 | 1130283 |
| BP | 313m NW | Unspecified Ground Workings | 1875 | 1122860 |
| BM | 316m N | Old Coal Level | 1921 | 1032285 |
| BK | 316m NW | Old Canal | 1901 | 1004657 |
| BL | 318m N | Old Gas Works | 1948 | 1019102 |
| BL | 319m N | Railway Sidings | 1901 | 1155827 |
| BQ | 321m E | Unspecified Ground Workings | 1921 | 1101754 |
| BK | 324m NW | Railway Sidings | 1922 | 1045216 |
| BK | 324m NW | Railway Sidings | 1922 | 1098531 |
| 29 | 324m N | Unspecified Ground Workings | 1901 | 996773 |
| AD | 324m N | Unspecified Pit | 1921 | 1108590 |
| AD | 324m N | Old Coal Level | 1938 - 1948 | 1093562 |
| AV | 324m SW | Unspecified Disused Mine | 1964 | 1007736 |
| AD | 326m N | Old Coal Level | 1915 | 1099019 |
| AD | 326m N | Old Coal Level | 1922 | 1101742 |
| BC | 329m S | Cuttings | 1901 | 1059841 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| BQ | 331m E | Unspecified Heap | 1922 | 1063078 |
| BQ | 331m E | Unspecified Heap | 1922 | 1115001 |
| BR | 332m S | Unspecified Disused Tip | 1979 | 1005157 |
| BR | 332m S | Refuse Heap | 1964 - 1969 | 1101578 |
| BJ | 335m S | Unspecified Pit | 1964 - 1969 | 1034867 |
| BS | 336m SW | Tunnel | 1964 - 1969 | 1144393 |
| BP | 337m NW | Unspecified Old Quarries | 1903 | 1044064 |
| BT | 339m SE | Unspecified Ground Workings | 1875 | 996798 |
| BQ | 340m E | Disused Wire Works | 1903 | 1022160 |
| BQ | 342m E | Wire Works | 1901 | 993624 |
| BS | 343m S | Tunnel | 1922 | 1098464 |
| BS | 344m SW | Tunnel | 1948 | 1127139 |
| BS | 344m SW | Tunnel | 1901 | 1131291 |
| AQ | 344m NE | Unspecified Ground Workings | 1948 | 1151511 |
| BK | 345m NW | Coal Level | 1901 | 1007523 |
| AZ | 345m NE | Railway Station | 1903 | 1016056 |
| BJ | 345m S | Unspecified Disused Tips | 1979 | 1052273 |
| BJ | 345m S | Unspecified Disused Tips | 1988 | 1077460 |
| BQ | 345m NE | Gas Works | 1938 | 1148777 |
| BQ | 346m NE | Unspecified Works | 1964 - 1968 | 1119117 |
| BS | 346m SW | Tunnel | 1875 - 1878 | 1126136 |
| BQ | 346m NE | Gas Works | 1921 - 1922 | 1088206 |
| BQ | 347m NE | Gas Works | 1915 | 1078041 |
| 31 | 352m NW | Cuttings | 1915 | 1039895 |
| 32 | 353m NW | Cuttings | 1875 | 1110154 |
| BT | 354m SE | Unspecified Pit | 1922 | 1091995 |
| BU | 354m SE | Old Coal Shaft | 1948 | 992171 |
| BR | 354m S | Unspecified Old Quarries | 1948 | 1057882 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| BV | 355m E | Railway Sidings | 1922 | 1035040 |
| BV | 355m E | Railway Sidings | 1922 | 1128475 |
| BK | 356m NW | Unspecified Heap | 1903 | 1070229 |
| BR | 359m S | Unspecified Old Quarries | 1901 - 1922 | 1066553 |
| BK | 359m NW | Coal Level | 1903 | 1152492 |
| BW | 359m E | Unspecified Factory | 1988 | 1049427 |
| BQ | 360m E | Dairy | 1982 | 1131358 |
| BV | 360m E | Railway Sidings | 1915 | 1109620 |
| 33 | 363m SE | Mineral Railway Sidings | 1901 | 1024460 |
| BQ | 363m E | Unspecified Depot | 1992 | 1012586 |
| BX | 363m NW | Unspecified Ground Workings | 1938 | 1118153 |
| BR | 364m S | Unspecified Ground Workings | 1875 | 996799 |
| BY | 364m SE | Old Dock | 1948 | 1138051 |
| BY | 365m SE | Railway Sidings | 1875 | 993783 |
| BT | 365m SE | Old Coal Shaft | 1922 | 992174 |
| BZ | 366m E | Unspecified Ground Workings | 1938 | 1056607 |
| BZ | 366m E | Unspecified Ground Workings | 1938 | 1147908 |
| BV | 367m E | Railway Sidings | 1901 | 1041212 |
| CA | 369m S | Unspecified Disused Tip | 1979 | 1005151 |
| BK | 369m NW | Coal Drift | 1922 | 1108079 |
| CA | 369m S | Coal Level | 1948 | 1007492 |
| BY | 370m SE | Old Dock | 1922 | 1044153 |
| BZ | 370m E | Unspecified Ground Workings | 1922 | 1035343 |
| BZ | 370m E | Unspecified Ground Workings | 1922 | 1097065 |
| BZ | 370m E | Ground Workings and Refuse Heap | 1915 - 1921 | 1115187 |
| BZ | 370m E | Unspecified Heap | 1968 | 1118423 |
| BZ | 370m E | Unspecified Heap | 1964 | 1147021 |
| BQ | 371m E | Unspecified Tank | 1921 | 1045928 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| BQ | 374m E | Unspecified Tank | 1922 - 1948 | 1139757 |
| CA | 375m S | Old Coal Level | 1922 | 1083728 |
| BQ | 375m E | Railway Sidings | 1922 | 1077814 |
| BQ | 375m E | Railway Sidings | 1922 | 1118808 |
| BQ | 376m E | Unspecified Tank | 1915 | 1057447 |
| BL | 377m N | Railway Sidings | 1922 | 1041084 |
| BO | 377m E | Unspecified Pit | 1948 | 1028168 |
| BK | 378m NW | Coal Drift | 1938 | 1143307 |
| BX | 378m NW | Unspecified Disused Tips | 1976 - 1992 | 1098142 |
| BX | 381m NW | Coal Level | 1922 - 1938 | 1046970 |
| BX | 381m NW | Coal Level | 1915 | 1134575 |
| BX | 385m NW | Coal Level | 1921 | 1058037 |
| BU | 387m SE | Unspecified Heap | 1948 | 1000292 |
| BK | 388m NW | Unspecified Disused Drift | 1976 - 1992 | 1049432 |
| BK | 388m NW | Coal Drift | 1915 - 1921 | 1097136 |
| CB | 392m SE | Railway Sidings | 1901 | 1085460 |
| BQ | 393m E | Railway Sidings | 1901 | 1111455 |
| BK | 394m NW | Coal Drift | 1921 | 1027756 |
| BX | 396m NW | Unspecified Heaps | 1965 | 1021407 |
| 34 | 397m S | Refuse Heap | 1948 | 1118243 |
| BR | 397m S | Unspecified Pit | 1964 - 1969 | 1089999 |
| BQ | 400m E | Dairy | 1975 | 1124568 |
| CC | 401m E | Unspecified Heaps | 1948 | 1021417 |
| 35 | 401m NW | Railway Sidings | 1901 | 1143836 |
| BQ | 401m E | Railway Sidings | 1921 | 1112415 |
| BX | 402m NW | Unspecified Disused Tips | 1976 - 1992 | 1136218 |
| BK | 405m NW | Coal Drift | 1922 - 1938 | 1135105 |
| BK | 406m NW | Coal Drift | 1915 | 1050984 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| BY | 406m SE | Dock | 1875 | 1012556 |
| BK | 407m NW | Old Coal Drift | 1948 | 1008429 |
| BQ | 407m E | Railway Sidings | 1915 | 1051677 |
| BX | 409m NW | Unspecified Ground Workings | 1901 - 1922 | 1069062 |
| BU | 409m SE | Old Air Shafts | 1922 | 1010434 |
| BK | 410m NW | Coal Drift | 1922 | 1071505 |
| BX | 411m NW | Unspecified Ground Workings | 1948 - 1965 | 1075296 |
| BX | 411m NW | Unspecified Ground Workings | 1875 | 1078234 |
| BX | 415m NW | Unspecified Ground Workings | 1875 | 1095924 |
| 36 | 417m NW | Disused Air Shaft | 1976 - 1992 | 1106969 |
| CB | 417m SE | Railway Sidings | 1922 | 1114202 |
| CC | 418m E | Unspecified Heap | 1922 | 1097034 |
| CC | 418m E | Unspecified Heap | 1922 | 1152798 |
| BX | 418m NW | Unspecified Heap | 1915 - 1921 | 1057452 |
| BX | 420m NW | Coal Level | 1948 | 1007527 |
| BK | 420m NW | Disused Coal Drift | 1948 | 1003944 |
| CD | 420m E | Unspecified Ground Workings | 1901 | 1110573 |
| CE | 421m S | Unspecified Old Quarry | 1922 - 1948 | 1117856 |
| CD | 422m E | Unspecified Heap | 1903 | 1060640 |
| CE | 423m S | Unspecified Ground Workings | 1964 - 1969 | 1064131 |
| BK | 425m NW | Old Coal Level | 1948 | 1079051 |
| CF | 427m E | Unspecified Ground Workings | 1875 | 1118814 |
| 37 | 428m N | Engine House | 1875 | 1019153 |
| CG | 429m SW | Unspecified Disused Tip | 1979 | 1005168 |
| CG | 429m SW | Unspecified Heap | 1948 | 1123369 |
| AX | 429m NE | Railway Sidings | 1901 | 1125503 |
| BN | 431m NE | Railway Sidings | 1901 | 1138033 |
| CE | 432m S | Unspecified Old Quarry | 1901 | 1042250 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| CG | 433m SW | Unspecified Heap | 1964 | 1107388 |
| CG | 434m SW | Unspecified Heap | 1922 | 1042424 |
| 38 | 435m NW | Unspecified Pit | 1875 | 1028180 |
| CH | 435m NE | Railway Sidings | 1901 | 1072885 |
| BN | 439m NE | Railway Sidings | 1922 | 1072560 |
| BN | 439m NE | Railway Sidings | 1922 | 1122715 |
| CE | 439m S | Unspecified Heap | 1875 | 1000282 |
| CI | 439m NE | Railway Sidings | 1915 | 1149378 |
| CJ | 440m SE | Unspecified Pit | 1948 | 1028158 |
| CJ | 442m SE | Unspecified Ground Workings | 1875 | 1142951 |
| CE | 444m S | Unspecified Pit | 1988 | 1054105 |
| CE | 444m S | Unspecified Pit | 1979 | 1069966 |
| CJ | 444m SE | Unspecified Old Quarry | 1922 | 1022758 |
| CK | 445m E | Railway Sidings | 1901 | 1077181 |
| 39 | 445m SW | Unspecified Mill | 1948 | 1006426 |
| CD | 447m E | Unspecified Heap | 1901 | 1113406 |
| 40 | 448m NE | Railway Sidings | 1921 | 1058827 |
| 41 | 449m S | Refuse Heap | 1964 - 1968 | 1034438 |
| CI | 449m NE | Railway Sidings | 1965 | 1035791 |
| CL | 449m W | Unspecified Old Quarry | 1903 - 1915 | 1055916 |
| BQ | 450m E | Unspecified Tank | 1921 | 1016568 |
| CJ | 450m SE | Old Coal Shaft | 1948 | 992173 |
| CI | 451m NE | Unspecified Commercial/Industrial | 1948 | 1045433 |
| CI | 452m NE | Unspecified Commercial/Industrial | 1903 - 1915 | 1059225 |
| BK | 452m NW | Old Canal | 1903 | 1004656 |
| BK | 452m NW | Coal Level | 1938 | 1101472 |
| BX | 453m NW | Coal Level | 1922 - 1938 | 1071146 |
| BX | 453m NW | Coal Level | 1915 | 1038014 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| CH | 453m NE | Railway Sidings | 1922 | 1089749 |
| CH | 453m NE | Railway Sidings | 1922 | 1090053 |
| BQ | 453m E | Gas Holder Station | 1988 | 1006107 |
| CJ | 453m SE | Unspecified Ground Workings | 1948 | 1095474 |
| CL | 454m W | Unspecified Old Quarry | 1922 | 1096307 |
| CL | 455m W | Unspecified Pit | 1988 | 1084815 |
| CL | 455m W | Unspecified Pit | 1964 - 1969 | 1151823 |
| CJ | 455m SE | Old Air Shafts | 1922 | 1010436 |
| BQ | 455m E | Unspecified Tanks | 1964 - 1988 | 1148631 |
| BQ | 456m E | Gasometer | 1922 | 1141690 |
| CJ | 456m SE | Unspecified Pit | 1901 | 1028162 |
| BQ | 456m E | Unspecified Tank | 1921 | 1016566 |
| BQ | 456m E | Unspecified Tank | 1938 | 1121910 |
| CL | 456m W | Unspecified Old Quarry | 1901 | 1093831 |
| CL | 456m W | Old Quarry | 1921 | 1007869 |
| CL | 457m W | Unspecified Old Quarry | 1938 - 1948 | 1132836 |
| BQ | 458m E | Gasometer | 1922 | 1120778 |
| CM | 458m E | Cuttings | 1938 - 1948 | 1130408 |
| BX | 458m NW | Coal Level | 1921 | 1045462 |
| BQ | 458m E | Unspecified Tank | 1915 | 1118158 |
| BK | 458m NW | Coal Level | 1915 | 1128399 |
| BQ | 458m E | Gasometers | 1938 | 1142083 |
| BQ | 458m E | Gasometers | 1915 - 1921 | 1073226 |
| CI | 459m NE | Unspecified Commercial/Industrial | 1938 | 1148530 |
| BQ | 459m E | Unspecified Tanks | 1948 | 1009924 |
| BQ | 460m E | Unspecified Tanks | 1948 | 1091755 |
| BK | 460m NW | Coal Level | 1921 | 1155474 |
| CK | 460m E | Railway Sidings | 1965 | 1033994 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| BK | 462m NW | Coal Level | 1922 | 1042457 |
| BK | 462m NW | Coal Level | 1922 | 1060736 |
| 42 | 462m E | Cuttings | 1948 | 994288 |
| BW | 469m E | Engine Houses | 1901 | 1023913 |
| CI | 469m NE | Railway Sidings | 1875 | 1137826 |
| CM | 469m E | Unspecified Ground Workings | 1901 | 1077068 |
| CC | 470m E | Unspecified Heap | 1901 | 1047935 |
| CC | 470m E | Unspecified Heap | 1948 | 1102635 |
| BQ | 470m E | Unspecified Tank | 1921 | 1128118 |
| 43 | 471m NW | Old Coal Level | 1922 - 1938 | 1064811 |
| BQ | 471m E | Gasometer | 1922 | 1074178 |
| CN | 471m NW | Coal Level | 1875 | 1007528 |
| BQ | 471m E | Unspecified Tank | 1938 | 1102073 |
| 44 | 471m NW | Unspecified Ground Workings | 1965 | 1144166 |
| CN | 472m NW | Unspecified Ground Workings | 1915 | 1117363 |
| CF | 472m NE | Unspecified Heap | 1901 | 1065056 |
| CN | 472m NW | Unspecified Disused Tips | 1976 - 1992 | 1091464 |
| BQ | 472m E | Gasometer | 1915 | 1057691 |
| CN | 473m NW | Unspecified Ground Workings | 1921 - 1938 | 1113763 |
| BQ | 473m E | Gasometer | 1922 | 1137843 |
| CO | 475m E | Unspecified Heaps | 1922 | 1050184 |
| CI | 477m NE | Railway Sidings | 1921 - 1922 | 1058825 |
| 45 | 477m E | Unspecified Heaps | 1964 - 1968 | 1122836 |
| CN | 481m NW | Unspecified Heap | 1901 - 1903 | 1058989 |
| CN | 482m NW | Unspecified Ground Workings | 1948 | 1136970 |
| CP | 484m SW | Unspecified Pit | 1948 | 1085235 |
| CI | 484m NE | Unspecified Commercial/Industrial | 1922 | 1069815 |
| CP | 484m SW | Unspecified Pit | 1875 | 1095624 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| CQ | 484m N | Old Gas Works | 1915 - 1921 | 1060355 |
| CI | 485m NE | Railway Sidings | 1901 | 1153434 |
| CK | 486m E | Railway Sidings | 1901 | 1118353 |
| CQ | 486m NE | Gas Works | 1938 | 1105116 |
| CQ | 486m N | Unspecified Commercial/Industrial | 1915 | 1128473 |
| CQ | 486m N | Gas Works | 1875 | 1128486 |
| CO | 487m E | Unspecified Heap | 1948 | 1121737 |
| BX | 487m NW | Unspecified Heap | 1875 | 1000206 |
| CK | 487m E | Railway Sidings | 1915 | 1108636 |
| CP | 488m SW | Cuttings | 1922 | 1141938 |
| CQ | 488m NE | Gas Works | 1922 | 1055592 |
| CM | 488m E | Unspecified Ground Workings | 1903 | 1126850 |
| CF | 489m NE | Cuttings | 1938 - 1948 | 1156503 |
| CP | 491m SW | Cuttings | 1964 | 1144229 |
| CP | 491m SW | Unspecified Pit | 1969 - 1979 | 1157092 |
| 46 | 492m NW | Old Coal Level | 1948 | 1154190 |
| BW | 493m E | Unspecified Old Shaft | 1948 | 1064643 |
| CQ | 494m N | Unspecified Commercial/Industrial | 1901 | 1116591 |
| BW | 497m E | Unspecified Old Shaft | 1922 | 1041001 |
| CJ | 497m SE | Unspecified Heap | 1948 | 1000289 |
| 47 | 499m NE | Railway Building | 1901 | 1013440 |

*This data is sourced from Ordnance Survey / Groundsure.*

## 1.2 Historical tanks

| **Records within 500m** | **28** |
|---|---|

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

Features are displayed on the Past land use map on **page 13**

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| Z | 216m N | Unspecified Tank | 1875 | 149702 |
| V | 272m NW | Unspecified Tank | 1875 | 149710 |
| 30 | 334m NE | Unspecified Tank | 1998 | 149666 |
| BQ | 342m NE | Gas Works | 1919 | 158867 |
| BQ | 344m NE | Gas Works | 1971 | 162383 |
| BQ | 345m NE | Gas Holder Station | 1984 | 167846 |
| BQ | 371m E | Unspecified Tank | 1919 | 149694 |
| BQ | 438m NE | Gas Works | 1979 | 158805 |
| CD | 446m E | Unspecified Tank | 1988 - 1992 | 165740 |
| BQ | 450m E | Gas Works | 1984 | 166108 |
| BQ | 450m E | Gas Holder Station | 1988 - 1992 | 167258 |
| BQ | 453m E | Gasometers | 1919 | 168337 |
| BQ | 453m E | Gas Holder Station | 1998 | 158552 |
| BQ | 454m E | Unspecified Tank | 1919 | 149674 |
| BQ | 456m E | Unspecified Tank | 1962 | 149675 |
| BQ | 456m E | Gasometer | 1971 | 155801 |
| BQ | 456m E | Gas Holder | 1984 - 1998 | 160835 |
| BQ | 459m E | Gasholders | 1988 - 1992 | 158129 |
| BQ | 459m E | Tanks | 1979 | 156234 |
| BQ | 459m E | Gasometers | 1979 - 1984 | 166420 |
| BQ | 467m E | Gasometer | 1919 | 155800 |
| BQ | 471m E | Unspecified Tank | 1962 | 149676 |
| BQ | 471m E | Gasometer | 1971 | 155799 |
| BQ | 471m E | Gas Holder | 1984 - 1998 | 168061 |
| BY | 482m SE | Tanks | 1984 - 1992 | 162846 |
| BY | 484m SE | Tanks | 1998 | 161436 |
| BY | 484m SE | Tanks | 1984 | 163886 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| CQ | 495m N | Gas Works | 1875 - 1900 | 166709 |

*This data is sourced from Ordnance Survey / Groundsure.*

## 1.3 Historical energy features

| **Records within 500m** | **19** |
|---|---|

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

Features are displayed on the Past land use map on **page 13**

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| BQ | 342m NE | Gas Works | 1919 | 93005 |
| BQ | 344m NE | Gas Works | 1971 - 1979 | 96102 |
| BQ | 345m NE | Gas Holder Station | 1984 | 89850 |
| BQ | 363m E | Electricity Substation | 1979 - 1984 | 91168 |
| BQ | 379m E | Electricity Substation | 1984 | 85723 |
| BQ | 398m NE | Electricity Substation | 1979 - 1984 | 94037 |
| BQ | 400m NE | Electricity Transformer | 1971 | 87769 |
| BQ | 450m E | Gas Holder Station | 1988 - 1998 | 91307 |
| BQ | 450m E | Gas Works | 1984 | 95338 |
| BQ | 453m E | Gasometers | 1919 | 91846 |
| BQ | 456m E | Gasometer | 1971 | 87296 |
| BQ | 456m E | Gas Holder | 1984 - 1998 | 89492 |
| BQ | 459m E | Gasholders | 1988 - 1992 | 90201 |
| BQ | 459m E | Gasometers | 1979 - 1984 | 94333 |
| BQ | 467m E | Gasometer | 1919 | 87295 |
| BQ | 471m E | Gasometer | 1971 | 87294 |
| BQ | 471m E | Gas Holder | 1984 - 1998 | 95078 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| CQ | 488m NE | Old Gas Works | 1919 | 87504 |
| CQ | 495m N | Gas Works | 1875 - 1900 | 91219 |

*This data is sourced from Ordnance Survey / Groundsure.*

## 1.4 Historical petrol stations

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

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

*This data is sourced from Ordnance Survey / Groundsure.*

## 1.5 Historical garages

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

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

*This data is sourced from Ordnance Survey / Groundsure.*

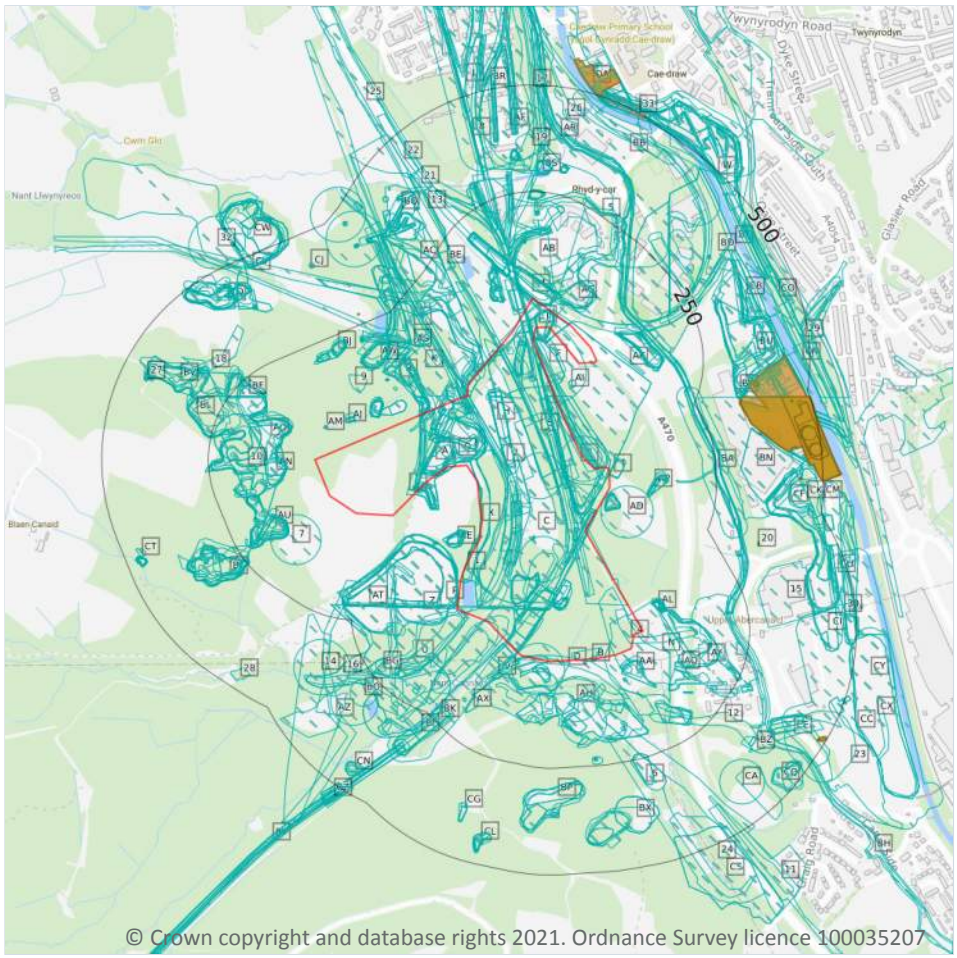
## 1.6 Historical military land

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

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

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

# 2 Past land use - un-grouped




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Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

## 2.1 Historical industrial land uses

| Records within 500m | 1022 |
|---|---|

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

Features are displayed on the Past land use - un-grouped map on **page 45**

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| **1** | **On site** | **Unspecified Disused Pit** | **1903** | **1015558** |
| **2** | **On site** | **Unspecified Pit** | **1979** | **1028172** |
| **3** | **On site** | **Railway Sidings** | **1875** | **1033899** |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| 4 | On site | Railway Sidings | 1875 | 993781 |
| A | On site | Unspecified Heap | 1901 | 1090330 |
| A | On site | Railway Sidings | 1901 | 1152497 |
| A | On site | Unspecified Disused Tip | 1979 | 1044490 |
| A | On site | Cuttings | 1948 | 1076637 |
| A | On site | Cuttings | 1903 | 1104895 |
| A | On site | Cuttings | 1969 | 1034745 |
| A | On site | Cuttings | 1964 | 1034745 |
| A | On site | Unspecified Heap | 1921 | 1043908 |
| A | On site | Refuse Heap | 1921 | 1019513 |
| A | On site | Drift | 1921 | 1012105 |
| A | On site | Coal Drift | 1915 | 1044959 |
| A | On site | Ground Workings and Refuse Heap | 1915 | 1007275 |
| A | On site | Cuttings | 1915 | 1104895 |
| A | On site | Cuttings | 1965 | 1101787 |
| A | On site | Coal Drift | 1922 | 1085212 |
| A | On site | Coal Drift | 1922 | 1085212 |
| A | On site | Tramway Sidings | 1948 | 1128517 |
| A | On site | Old Coal Drift | 1948 | 1008428 |
| A | On site | Unspecified Heap | 1903 | 1042212 |
| A | On site | Unspecified Disused Tips | 1988 | 1064203 |
| A | On site | Unspecified Disused Tip | 1988 | 1046840 |
| A | On site | Unspecified Disused Tips | 1979 | 1122640 |
| A | On site | Unspecified Heap | 1969 | 1049359 |
| A | On site | Unspecified Heaps | 1969 | 1072298 |
| A | On site | Unspecified Heaps | 1964 | 1072298 |
| A | On site | Unspecified Heap | 1964 | 1049359 |
| A | On site | Unspecified Heap | 1875 | 1052252 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| A | On site | Unspecified Heap | 1875 | 1137363 |
| A | On site | Unspecified Heap | 1875 | 1000278 |
| A | On site | Unspecified Pit | 1875 | 1028174 |
| A | On site | Coal Drift | 1938 | 1085212 |
| A | On site | Unspecified Ground Workings | 1938 | 1039188 |
| A | On site | Coal Drift | 1938 | 1085212 |
| A | On site | Unspecified Ground Workings | 1938 | 1039188 |
| B | On site | Unspecified Ground Workings | 1901 | 996786 |
| B | On site | Unspecified Pit | 1988 | 1028164 |
| C | On site | Unspecified Disused Pit | 1901 | 1151278 |
| C | On site | Railway Sidings | 1901 | 1036848 |
| C | On site | Railway Sidings | 1901 | 1091710 |
| C | On site | Railway Sidings | 1901 | 1042451 |
| C | On site | Unspecified Disused Tips | 1979 | 1007175 |
| C | On site | Unspecified Disused Tip | 1979 | 1005153 |
| C | On site | Cuttings | 1948 | 1039665 |
| C | On site | Cuttings | 1903 | 1145203 |
| C | On site | Cuttings | 1979 | 1054716 |
| C | On site | Cuttings | 1969 | 1054716 |
| C | On site | Cuttings | 1964 | 1054716 |
| C | On site | Cuttings | 1948 | 1131785 |
| C | On site | Unspecified Heap | 1921 | 1152727 |
| C | On site | Unspecified Ground Workings | 1921 | 996784 |
| C | On site | Unspecified Ground Workings | 1921 | 1037110 |
| C | On site | Cuttings | 1921 | 1039665 |
| C | On site | Railway Sidings | 1921 | 1144925 |
| C | On site | Ironstone Pit | 1875 | 1000020 |
| C | On site | Cuttings | 1875 | 1080217 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| C | On site | Unspecified Disused Pit | 1915 | 1118061 |
| C | On site | Unspecified Ground Workings | 1915 | 1109769 |
| C | On site | Cuttings | 1915 | 1039665 |
| C | On site | Unspecified Heap | 1915 | 1152727 |
| C | On site | Unspecified Heap | 1915 | 1056034 |
| C | On site | Cuttings | 1915 | 1116337 |
| C | On site | Cuttings | 1915 | 1087226 |
| C | On site | Railway Sidings | 1915 | 1103307 |
| C | On site | Railway Sidings | 1915 | 1047287 |
| C | On site | Railway Sidings | 1915 | 1085105 |
| C | On site | Railway Sidings | 1922 | 1123439 |
| C | On site | Unspecified Heap | 1922 | 1089836 |
| C | On site | Unspecified Ground Workings | 1922 | 1037110 |
| C | On site | Railway Sidings | 1922 | 1104396 |
| C | On site | Cuttings | 1922 | 1039665 |
| C | On site | Cuttings | 1922 | 1059135 |
| C | On site | Cuttings | 1922 | 1116008 |
| C | On site | Railway Sidings | 1922 | 1043546 |
| C | On site | Unspecified Heap | 1922 | 1089836 |
| C | On site | Unspecified Ground Workings | 1922 | 1037110 |
| C | On site | Railway Sidings | 1922 | 1095333 |
| C | On site | Cuttings | 1922 | 1039665 |
| C | On site | Cuttings | 1922 | 1059135 |
| C | On site | Cuttings | 1922 | 1116008 |
| C | On site | Unspecified Heap | 1922 | 1103662 |
| C | On site | Unspecified Heap | 1948 | 1109398 |
| C | On site | Unspecified Disused Pits | 1948 | 1015867 |
| C | On site | Unspecified Heap | 1948 | 1060387 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| C | On site | Railway Building | 1948 | 1013034 |
| C | On site | Railway Building | 1948 | 1013036 |
| C | On site | Railway Sidings | 1903 | 1033891 |
| C | On site | Railway Sidings | 1903 | 1137091 |
| C | On site | Railway Sidings | 1903 | 1086041 |
| C | On site | Railway Building | 1903 | 1013035 |
| C | On site | Refuse Heap | 1903 | 1019512 |
| C | On site | Unspecified Disused Tip | 1988 | 1005152 |
| C | On site | Unspecified Disused Tip | 1988 | 1046349 |
| C | On site | Unspecified Disused Tip | 1979 | 1105577 |
| C | On site | Unspecified Heap | 1969 | 1056064 |
| C | On site | Unspecified Ground Workings | 1969 | 1081827 |
| C | On site | Unspecified Heap | 1948 | 1135709 |
| C | On site | Smithy | 1875 | 1032871 |
| C | On site | Unspecified Heaps | 1875 | 1021406 |
| C | On site | Unspecified Heap | 1875 | 1116017 |
| C | On site | Unspecified Pit | 1875 | 1028171 |
| C | On site | Unspecified Disused Pit | 1938 | 1073595 |
| C | On site | Unspecified Heap | 1938 | 1084830 |
| C | On site | Unspecified Heap | 1938 | 1044825 |
| C | On site | Cuttings | 1922 | 1154228 |
| C | On site | Unspecified Heap | 1922 | 1103662 |
| C | On site | Cuttings | 1901 | 1121045 |
| C | On site | Cuttings | 1901 | 1120167 |
| C | On site | Unspecified Disused Pit | 1938 | 1039038 |
| C | On site | Cuttings | 1938 | 1107707 |
| C | On site | Unspecified Heap | 1938 | 1084830 |
| C | On site | Unspecified Heap | 1938 | 1044825 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| D | On site | Railway Sidings | 1901 | 1126283 |
| D | On site | Unspecified Disused Workings | 1988 | 1032158 |
| D | On site | Unspecified Disused Tip | 1979 | 1005155 |
| D | On site | Refuse Heap | 1969 | 1071881 |
| D | On site | Refuse Heap | 1964 | 1071881 |
| E | On site | Unspecified Disused Tip | 1979 | 1005164 |
| E | On site | Unspecified Heap | 1969 | 1054370 |
| E | On site | Unspecified Heap | 1964 | 1084558 |
| F | On site | Old Ironstone Level | 1948 | 1130693 |
| F | On site | Old Ironstone Level | 1921 | 1134202 |
| F | On site | Old Ironstone Level | 1915 | 1102750 |
| F | On site | Cuttings | 1915 | 1147521 |
| F | On site | Railway Sidings | 1915 | 1059781 |
| F | On site | Cuttings | 1922 | 1149662 |
| F | On site | Cuttings | 1922 | 1149662 |
| F | On site | Unspecified Ground Workings | 1948 | 996782 |
| F | On site | Unspecified Heaps | 1875 | 1021408 |
| F | On site | Unspecified Pit | 1992 | 1065060 |
| F | On site | Unspecified Pit | 1976 | 1065060 |
| F | On site | Unspecified Pit | 1965 | 1065060 |
| F | On site | Cuttings | 1938 | 1066852 |
| F | On site | Old Ironstone Level | 1938 | 1055971 |
| G | On site | Old Ironstone Level | 1903 | 1086239 |
| G | On site | Railway Sidings | 1922 | 1114667 |
| G | On site | Railway Land | 1922 | 1034338 |
| G | On site | Railway Sidings | 1922 | 1114667 |
| G | On site | Railway Land | 1922 | 1034338 |
| G | On site | Refuse Heap | 1938 | 1068317 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| G | On site | Old Ironstone Level | 1901 | 1092266 |
| G | On site | Refuse Heap | 1938 | 1068317 |
| H | On site | Cuttings | 1969 | 1078168 |
| H | On site | Cuttings | 1964 | 1135317 |
| H | On site | Cuttings | 1915 | 1135443 |
| H | On site | Cuttings | 1922 | 1127303 |
| H | On site | Cuttings | 1922 | 1127303 |
| H | On site | Unspecified Pit | 1988 | 1055608 |
| H | On site | Unspecified Pit | 1979 | 1055190 |
| H | On site | Railway Sidings | 1875 | 1044359 |
| H | On site | Unspecified Disused Tip | 1992 | 1041228 |
| H | On site | Unspecified Disused Tip | 1976 | 1038024 |
| H | On site | Unspecified Heap | 1965 | 1000217 |
| H | On site | Cuttings | 1938 | 1105830 |
| I | On site | Coal Level | 1921 | 1093342 |
| I | On site | Refuse Heap | 1921 | 1019517 |
| I | On site | Coal Level | 1915 | 1121071 |
| I | On site | Coal Level | 1922 | 1052454 |
| I | On site | Railway Sidings | 1922 | 1049687 |
| I | On site | Coal Level | 1922 | 1052454 |
| I | On site | Railway Sidings | 1922 | 1125393 |
| I | On site | Old Coal Level | 1948 | 1032272 |
| I | On site | Unspecified Disused Tip | 1988 | 1110675 |
| I | On site | Unspecified Disused Tip | 1979 | 1048969 |
| I | On site | Unspecified Heap | 1969 | 1131412 |
| I | On site | Unspecified Heap | 1964 | 1131412 |
| I | On site | Coal Level | 1938 | 1068974 |
| I | On site | Coal Level | 1938 | 1068974 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| J | On site | Unspecified Heap | 1921 | 1130093 |
| J | On site | Unspecified Heap | 1915 | 1150461 |
| J | On site | Cuttings | 1965 | 994294 |
| J | On site | Unspecified Heap | 1922 | 1072959 |
| J | On site | Unspecified Heap | 1922 | 1072959 |
| J | On site | Unspecified Heap | 1948 | 1060988 |
| J | On site | Unspecified Disused Tip | 1992 | 1048476 |
| J | On site | Unspecified Disused Tip | 1976 | 1048476 |
| K | On site | Tramway Sidings | 1921 | 1110190 |
| K | On site | Tramway Sidings | 1915 | 1080646 |
| L | On site | Railway Sidings | 1921 | 1148132 |
| M | On site | Cuttings | 1921 | 1139704 |
| M | On site | Cuttings | 1992 | 1043912 |
| M | On site | Cuttings | 1976 | 1043912 |
| M | On site | Cuttings | 1976 | 1142556 |
| M | On site | Cuttings | 1965 | 1150367 |
| M | On site | Railway Sidings | 1938 | 1070413 |
| M | On site | Cuttings | 1938 | 1076223 |
| N | On site | Ironstone Level | 1875 | 992436 |
| O | On site | Unspecified Ground Workings and Heaps | 1922 | 1104141 |
| O | On site | Unspecified Ground Workings and Heaps | 1922 | 1104141 |
| P | On site | Refuse Heap | 1922 | 1039946 |
| P | On site | Refuse Heap | 1922 | 1039946 |
| P | On site | Unspecified Disused Tip | 1988 | 1152975 |
| Q | On site | Tramway Sidings | 1922 | 1110190 |
| Q | On site | Tramway Sidings | 1922 | 1110190 |
| R | On site | Refuse Heap | 1922 | 1146050 |
| R | On site | Refuse Heap | 1922 | 1146050 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| **S** | **On site** | **Cuttings** | **1922** | **1077917** |
| **S** | **On site** | **Cuttings** | **1922** | **1077917** |
| **S** | **On site** | **Refuse Heap** | **1903** | **1067553** |
| **T** | **On site** | **Cuttings** | **1922** | **1125692** |
| **T** | **On site** | **Cuttings** | **1922** | **1125692** |
| **U** | **On site** | **Unspecified Pit** | **1922** | **1063007** |
| **U** | **On site** | **Railway Sidings** | **1922** | **1058699** |
| **U** | **On site** | **Unspecified Disused Tip** | **1979** | **1005154** |
| **U** | **On site** | **Unspecified Heap** | **1948** | **1123875** |
| **U** | **On site** | **Unspecified Heap** | **1948** | **1000280** |
| **U** | **On site** | **Coal Pit** | **1875** | **1005027** |
| **U** | **On site** | **Unspecified Pit** | **1922** | **1063007** |
| **V** | **On site** | **Railway Sidings** | **1922** | **1126283** |
| **W** | **On site** | **Railway Sidings** | **1948** | **1124869** |
| **X** | **On site** | **Unspecified Heap** | **1948** | **1000279** |
| **X** | **On site** | **Old Canal** | **1901** | **1004658** |
| **Y** | **On site** | **Railway Sidings** | **1903** | **1086272** |
| **Z** | **On site** | **Unspecified Disused Tip** | **1979** | **1127944** |
| **AA** | **On site** | **Unspecified Disused Tip** | **1979** | **1005160** |
| **AB** | **On site** | **Railway Sidings** | **1875** | **1033887** |
| **AC** | **On site** | **Unspecified Disused Tip** | **1992** | **1005165** |
| **AC** | **On site** | **Unspecified Disused Tips** | **1976** | **1007176** |
| M | 0m NE | Cuttings | 1915 | 1139704 |
| M | 0m NE | Cuttings | 1922 | 1139704 |
| M | 0m NE | Cuttings | 1922 | 1139704 |
| M | 0m NW | Refuse Heap | 1965 | 1123696 |
| T | 1m E | Cuttings | 1915 | 1082902 |
| A | 1m NW | Unspecified Disused Tips | 1988 | 1130456 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| A | 1m NW | Unspecified Disused Tips | 1979 | 1078703 |
| T | 2m E | Cuttings | 1948 | 1128482 |
| AC | 2m NW | Unspecified Ground Workings | 1938 | 1108754 |
| AC | 2m NW | Unspecified Ground Workings | 1938 | 1108754 |
| AD | 2m SE | Unspecified Disused Workings | 1988 | 1032165 |
| P | 2m W | Refuse Heap | 1915 | 1078179 |
| P | 2m W | Refuse Heap | 1938 | 1067431 |
| P | 2m W | Refuse Heap | 1938 | 1067431 |
| AC | 3m NW | Unspecified Ground Workings | 1915 | 1115641 |
| U | 4m S | Refuse Heap | 1901 | 1108349 |
| P | 5m W | Refuse Heap | 1921 | 1086223 |
| M | 5m NE | Cuttings | 1901 | 1143978 |
| AD | 5m SE | Unspecified Heap | 1921 | 1101253 |
| AC | 5m W | Unspecified Ground Workings | 1921 | 1155965 |
| P | 6m W | Refuse Heap | 1948 | 1067431 |
| P | 6m W | Unspecified Heap | 1969 | 1063738 |
| P | 6m W | Unspecified Heap | 1964 | 1063738 |
| M | 6m NW | Cuttings | 1965 | 1101162 |
| AD | 6m SE | Unspecified Disused Tip | 1979 | 1005161 |
| M | 7m NW | Cuttings | 1992 | 1034286 |
| AC | 7m W | Unspecified Ground Workings | 1901 | 1087268 |
| V | 8m SW | Cuttings | 1875 | 1087690 |
| Z | 8m W | Refuse Heap | 1948 | 1090500 |
| AD | 8m SE | Unspecified Heap | 1922 | 1134220 |
| AD | 8m SE | Unspecified Heap | 1922 | 1134220 |
| AD | 9m SE | Unspecified Heap | 1915 | 1072318 |
| AD | 9m SE | Unspecified Heap | 1948 | 1070667 |
| AD | 9m SE | Unspecified Heap | 1938 | 1134220 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| AD | 9m SE | Unspecified Heap | 1938 | 1134220 |
| V | 9m SW | Cuttings | 1948 | 1110337 |
| V | 9m SW | Cuttings | 1901 | 1130024 |
| D | 11m S | Unspecified Pit | 1948 | 1057144 |
| A | 11m NW | Coal Shaft | 1875 | 1021191 |
| D | 18m S | Unspecified Pit | 1922 | 1049582 |
| D | 18m S | Unspecified Pit | 1922 | 1049582 |
| 5 | 19m NE | Railway Sidings | 1903 | 1099240 |
| M | 19m NE | Cuttings | 1948 | 1039592 |
| M | 19m NE | Cuttings | 1903 | 1143978 |
| AA | 19m SE | Unspecified Heap | 1948 | 1082574 |
| D | 20m S | Unspecified Pit | 1875 | 1102362 |
| U | 21m S | Refuse Heap | 1901 | 1019516 |
| AB | 22m NE | Ironstone Pit | 1875 | 1000019 |
| R | 24m NW | Unspecified Disused Tips | 1988 | 1114217 |
| R | 24m NW | Unspecified Disused Tips | 1979 | 1066356 |
| R | 24m NW | Unspecified Heaps | 1969 | 1147236 |
| R | 24m NW | Unspecified Heaps | 1964 | 1147236 |
| AA | 24m S | Unspecified Ground Workings | 1901 | 996785 |
| AC | 25m NW | Unspecified Ground Workings | 1903 | 1143595 |
| AA | 28m S | Unspecified Heap | 1922 | 1103151 |
| AA | 28m S | Unspecified Heap | 1922 | 1103151 |
| R | 28m NW | Refuse Heap | 1921 | 1143593 |
| AA | 31m S | Unspecified Disused Workings | 1988 | 1032163 |
| AE | 31m NW | Unspecified Ground Workings | 1938 | 1094353 |
| AE | 31m NW | Unspecified Ground Workings | 1938 | 1094353 |
| R | 32m NW | Unspecified Heap | 1938 | 1066299 |
| R | 32m NW | Unspecified Heap | 1938 | 1066299 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| AB | 32m NE | Unspecified Disused Pit | 1948 | 1085717 |
| AE | 32m NW | Ground Workings and Refuse Heap | 1915 | 1007277 |
| AE | 33m NW | Disused Pits | 1921 | 1004672 |
| AE | 34m NW | Unspecified Disused Tip | 1988 | 1126772 |
| AE | 34m NW | Unspecified Disused Tip | 1979 | 1111837 |
| R | 34m NW | Unspecified Heap | 1915 | 1127734 |
| AF | 34m NE | Railway Land | 1922 | 1119885 |
| AF | 34m NE | Railway Land | 1922 | 1119885 |
| AG | 34m NE | Unspecified Heap | 1922 | 1076026 |
| AG | 34m NE | Unspecified Heap | 1922 | 1076026 |
| R | 35m NW | Unspecified Heap | 1948 | 1037887 |
| AE | 35m W | Unspecified Pit | 1948 | 1028173 |
| R | 36m NW | Unspecified Heap | 1922 | 1129206 |
| R | 36m NW | Unspecified Heap | 1922 | 1129206 |
| AG | 36m NE | Unspecified Heap | 1938 | 1076026 |
| AG | 36m NE | Unspecified Heap | 1938 | 1076026 |
| R | 36m NW | Unspecified Heap | 1965 | 1120786 |
| AE | 36m NW | Refuse Heap | 1922 | 1127337 |
| AE | 36m NW | Refuse Heap | 1922 | 1127337 |
| AE | 37m W | Unspecified Disused Pits | 1922 | 1141697 |
| AE | 37m W | Unspecified Disused Pits | 1922 | 1141697 |
| AH | 38m S | Disused Quarries and Tips | 1979 | 1003946 |
| AE | 39m NW | Unspecified Heap | 1969 | 1101936 |
| AE | 39m NW | Unspecified Heap | 1964 | 1101936 |
| P | 40m W | Shale Tip | 1922 | 1040516 |
| P | 40m W | Shale Tip | 1922 | 1040516 |
| P | 40m W | Shale Tip | 1915 | 1071795 |
| AI | 41m E | Old Ironstone Level | 1922 | 1096717 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| AI | 41m E | Old Ironstone Level | 1922 | 1154402 |
| AB | 42m NE | Unspecified Disused Pit | 1903 | 1125751 |
| AB | 42m NE | Unspecified Disused Pit | 1901 | 1087565 |
| AH | 43m S | Unspecified Ground Workings | 1875 | 1139496 |
| R | 44m NW | Unspecified Heap | 1921 | 1127734 |
| R | 44m NW | Unspecified Disused Tips | 1988 | 1040232 |
| R | 44m NW | Unspecified Disused Tips | 1979 | 1056217 |
| AJ | 47m NW | Old Coal Level | 1915 | 1081065 |
| AJ | 47m NW | Old Coal Level | 1922 | 1132309 |
| AJ | 47m NW | Old Coal Level | 1922 | 1132309 |
| AJ | 47m NW | Unspecified Pit | 1938 | 1144734 |
| AJ | 47m NW | Unspecified Pit | 1938 | 1144734 |
| AJ | 48m NW | Old Coal Level | 1948 | 1065571 |
| AK | 48m NE | Unspecified Pit | 1875 | 1028169 |
| AL | 49m NE | Unspecified Heap | 1938 | 1083279 |
| AL | 49m NE | Unspecified Heap | 1938 | 1083279 |
| AL | 52m NE | Unspecified Heap | 1921 | 1067261 |
| N | 53m NE | Unspecified Ground Workings | 1948 | 1132095 |
| AL | 53m NE | Unspecified Heap | 1901 | 1151616 |
| AL | 54m NE | Unspecified Heap | 1915 | 1067261 |
| M | 54m NW | Unspecified Ground Workings | 1948 | 1126624 |
| AL | 54m NE | Unspecified Heap | 1948 | 1061273 |
| AL | 54m NE | Unspecified Ground Workings | 1922 | 1044044 |
| AL | 54m NE | Unspecified Ground Workings | 1922 | 1153151 |
| M | 55m NW | Unspecified Ground Workings | 1915 | 1142082 |
| M | 55m NW | Unspecified Ground Workings | 1938 | 1058669 |
| M | 55m NW | Unspecified Ground Workings | 1938 | 1058669 |
| AJ | 56m NW | Old Coal Level | 1921 | 1137867 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| M | 56m NW | Unspecified Ground Workings | 1921 | 1136591 |
| M | 57m NW | Unspecified Ground Workings | 1922 | 1058669 |
| M | 57m NW | Unspecified Ground Workings | 1922 | 1058669 |
| AM | 57m NW | Old Coal Level | 1938 | 1091862 |
| AM | 57m NW | Old Coal Level | 1938 | 1091862 |
| AA | 58m S | Railway Building | 1948 | 1013038 |
| N | 58m NE | Unspecified Heaps | 1922 | 1111091 |
| N | 58m NE | Unspecified Heaps | 1922 | 1111091 |
| AL | 60m NE | Unspecified Pit | 1969 | 1147188 |
| AL | 60m NE | Unspecified Pit | 1964 | 1147188 |
| 6 | 60m S | Tramway Sidings | 1948 | 1085211 |
| AB | 64m NE | Unspecified Ground Workings | 1965 | 996768 |
| AK | 65m NE | Railway Sidings | 1875 | 1065269 |
| AN | 66m W | Unspecified Disused Tip | 1979 | 1059535 |
| AO | 67m W | Unspecified Old Quarries | 1901 | 1040580 |
| M | 67m NW | Unspecified Ground Workings | 1965 | 1065459 |
| AO | 68m W | Old Quarries | 1921 | 1018526 |
| AK | 68m NE | Unspecified Disused Tip | 1992 | 1040689 |
| AK | 68m NE | Unspecified Disused Tip | 1976 | 1040689 |
| AO | 69m W | Unspecified Disused Tip | 1988 | 1112440 |
| AO | 69m W | Unspecified Old Quarries | 1903 | 1040580 |
| AO | 70m W | Unspecified Old Quarries | 1922 | 1103298 |
| AO | 70m W | Unspecified Old Quarries | 1922 | 1103298 |
| N | 70m NE | Unspecified Heap | 1968 | 1082234 |
| N | 70m NE | Unspecified Heap | 1964 | 1082234 |
| N | 71m NE | Unspecified Ground Workings | 1901 | 1083335 |
| AO | 71m W | Unspecified Old Quarries | 1915 | 1110999 |
| R | 71m NW | Unspecified Heap | 1875 | 1099619 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| 7 | 71m SW | Unspecified Disused Workings | 1988 | 1032164 |
| Z | 72m W | Refuse Heap | 1915 | 1053952 |
| AK | 72m NE | Unspecified Heap | 1915 | 1130160 |
| AN | 73m W | Unspecified Old Quarries | 1948 | 1098491 |
| AO | 73m W | Unspecified Old Quarries | 1938 | 1063618 |
| AK | 73m NE | Unspecified Heap | 1965 | 1115229 |
| R | 74m NW | Coal Level | 1901 | 1007515 |
| AH | 74m S | Unspecified Heap | 1969 | 1104636 |
| AH | 74m S | Unspecified Heap | 1964 | 1104636 |
| AK | 74m NE | Unspecified Heap | 1948 | 1045692 |
| AK | 75m NE | Unspecified Heap | 1922 | 1055353 |
| AK | 75m NE | Unspecified Heap | 1922 | 1055353 |
| R | 75m NW | Old Coal Drift | 1921 | 1008426 |
| AK | 75m NE | Unspecified Heap | 1921 | 1122578 |
| AH | 75m S | Unspecified Ground Workings | 1948 | 1138979 |
| AH | 76m S | Unspecified Ground Workings | 1922 | 1126823 |
| AH | 76m S | Unspecified Ground Workings | 1922 | 1126823 |
| M | 78m NW | Cuttings | 1948 | 1131895 |
| M | 78m NW | Cuttings | 1922 | 1134767 |
| M | 78m NW | Cuttings | 1922 | 1134767 |
| AO | 78m W | Unspecified Ground Workings | 1875 | 1065712 |
| AH | 79m S | Unspecified Heap | 1988 | 1000286 |
| AH | 79m S | Unspecified Ground Workings | 1901 | 1050638 |
| K | 82m NW | Railway Sidings | 1901 | 1151632 |
| M | 82m NW | Cuttings | 1921 | 1149278 |
| AE | 82m NW | Coal Level | 1922 | 1140192 |
| AE | 82m NW | Coal Level | 1922 | 1140192 |
| AE | 83m NW | Coal Level | 1921 | 1062391 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| AE | 85m NW | Coal Level | 1938 | 1140192 |
| AE | 85m NW | Coal Level | 1938 | 1140192 |
| AH | 85m S | Unspecified Ground Workings | 1922 | 1138979 |
| AH | 85m S | Unspecified Ground Workings | 1922 | 1138979 |
| AE | 85m NW | Old Coal Level | 1948 | 1032273 |
| AO | 85m NW | Unspecified Old Quarries | 1948 | 1081609 |
| AE | 85m NW | Coal Level | 1915 | 1062391 |
| AP | 89m E | Unspecified Ground Workings | 1922 | 1115558 |
| AP | 89m E | Unspecified Ground Workings | 1922 | 1115558 |
| AP | 89m E | Unspecified Ground Workings | 1921 | 1043796 |
| L | 89m NW | Railway Sidings | 1922 | 1042019 |
| L | 89m NW | Railway Sidings | 1922 | 1134725 |
| 8 | 91m NW | Railway Sidings | 1915 | 1040352 |
| AP | 91m E | Unspecified Pit | 1938 | 1080102 |
| AP | 91m E | Unspecified Pit | 1938 | 1080102 |
| AP | 91m E | Unspecified Pit | 1948 | 1142608 |
| AP | 91m E | Unspecified Ground Workings | 1915 | 1135175 |
| AO | 92m NW | Unspecified Ground Workings | 1969 | 1131396 |
| AO | 92m NW | Unspecified Ground Workings | 1964 | 1060290 |
| AH | 93m S | Unspecified Disused Tip | 1979 | 1005156 |
| M | 94m NW | Cuttings | 1875 | 1036589 |
| M | 94m NW | Cuttings | 1915 | 1128831 |
| U | 94m S | Railway Sidings | 1901 | 1117518 |
| M | 98m NW | Unspecified Ground Workings | 1922 | 1102942 |
| M | 98m NW | Unspecified Ground Workings | 1922 | 1044131 |
| L | 100m NW | Railway Sidings | 1901 | 1107057 |
| AH | 100m S | Unspecified Heap | 1969 | 1000285 |
| AH | 100m S | Unspecified Heaps | 1964 | 1021419 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| P | 102m S | Railway Sidings | 1903 | 1066071 |
| 9 | 103m NW | Unspecified Heap | 1965 | 1000216 |
| R | 103m NW | Old Coal Drift | 1915 | 1140554 |
| R | 103m NW | Old Coal Drift | 1948 | 1036251 |
| R | 104m NW | Old Coal Drift | 1922 | 1093659 |
| R | 104m NW | Old Coal Drift | 1922 | 1093659 |
| R | 104m NW | Old Coal Drift | 1938 | 1036251 |
| R | 104m NW | Old Coal Drift | 1938 | 1036251 |
| AQ | 105m SE | Unspecified Ground Workings | 1968 | 1135647 |
| P | 105m W | Railway Sidings | 1901 | 1072484 |
| L | 106m NW | Railway Sidings | 1901 | 1114666 |
| AQ | 107m SE | Unspecified Ground Workings | 1964 | 1122173 |
| W | 111m NE | Disused Canal | 1938 | 1106578 |
| AK | 111m NE | Old Canal | 1901 | 1004655 |
| AH | 111m S | Unspecified Heap | 1969 | 1000284 |
| AK | 112m NE | Disused Canal | 1921 | 1054695 |
| AK | 112m NE | Disused Canal | 1915 | 1054695 |
| AR | 112m NE | Disused Canal | 1948 | 1106578 |
| AQ | 113m SE | Unspecified Ground Workings | 1901 | 1065867 |
| AQ | 113m SE | Unspecified Heap | 1964 | 1000287 |
| AS | 113m NW | Railway Sidings | 1901 | 1086272 |
| AH | 114m S | Unspecified Ground Workings | 1901 | 1058430 |
| AT | 115m S | Unspecified Disused Tip | 1979 | 1128391 |
| AK | 115m NE | Cuttings | 1901 | 994293 |
| U | 116m SW | Unspecified Pit | 1875 | 1103078 |
| AU | 117m SW | Old Ironstone Levels | 1903 | 1084636 |
| AU | 119m SW | Unspecified Ground Workings | 1921 | 1103864 |
| AU | 119m SW | Old Ironstone Levels | 1922 | 1034946 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| AU | 119m SW | Old Ironstone Levels | 1922 | 1034946 |
| AU | 121m SW | Unspecified Disused Tip | 1979 | 1005169 |
| AH | 122m S | Unspecified Pit | 1969 | 1040296 |
| AH | 122m S | Unspecified Pit | 1964 | 1040296 |
| AU | 122m SW | Old Ironstone Levels | 1948 | 1151111 |
| AU | 123m SW | Unspecified Ground Workings | 1969 | 1065270 |
| AU | 123m SW | Unspecified Heap | 1964 | 1149090 |
| AU | 123m W | Unspecified Ground Workings | 1921 | 1113494 |
| P | 124m W | Refuse Heap | 1915 | 1139052 |
| AC | 125m NW | Unspecified Ground Workings | 1965 | 1039498 |
| AU | 125m SW | Unspecified Heap | 1901 | 1084889 |
| L | 125m NW | Railway Sidings | 1901 | 1114666 |
| 10 | 126m W | Unspecified Old Quarries | 1903 | 1077391 |
| AU | 127m W | Unspecified Old Quarries | 1948 | 1100275 |
| 11 | 129m S | Railway Sidings | 1948 | 1063682 |
| AT | 130m W | Unspecified Heaps | 1948 | 1021418 |
| L | 131m N | Unspecified Disused Pit | 1938 | 1097315 |
| L | 131m N | Unspecified Disused Pit | 1938 | 1097315 |
| L | 131m N | Unspecified Disused Pit | 1915 | 1119918 |
| L | 131m N | Disused Pit | 1921 | 993633 |
| AR | 132m NE | Unspecified Pit | 1992 | 1094811 |
| AR | 132m NE | Unspecified Pit | 1976 | 1094811 |
| AV | 132m NW | Unspecified Disused Tips | 1992 | 1046508 |
| AV | 132m NW | Unspecified Disused Tips | 1976 | 1046508 |
| U | 132m SW | Unspecified Disused Mine | 1979 | 1093159 |
| U | 132m SW | Unspecified Disused Mine | 1969 | 1093159 |
| L | 133m N | Unspecified Disused Pit | 1922 | 1097315 |
| L | 133m N | Unspecified Disused Pit | 1922 | 1097315 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| AO | 134m W | Unspecified Disused Quarries | 1988 | 1100628 |
| AO | 134m W | Unspecified Disused Quarries | 1979 | 1124891 |
| U | 135m SW | Railway Sidings | 1875 | 1047572 |
| AQ | 137m SE | Unspecified Heap | 1948 | 1086810 |
| AU | 137m W | Unspecified Ground Workings | 1875 | 1068136 |
| AH | 138m S | Unspecified Ground Workings | 1901 | 1118673 |
| AW | 139m NW | Unspecified Heap | 1965 | 1072408 |
| AW | 140m NW | Unspecified Ground Workings | 1875 | 996783 |
| AK | 140m NE | Unspecified Heap | 1875 | 1000221 |
| AV | 141m NW | Unspecified Heap | 1965 | 1000222 |
| AW | 141m NW | Unspecified Heap | 1938 | 1136495 |
| AW | 141m NW | Unspecified Heap | 1938 | 1136495 |
| AQ | 142m SE | Unspecified Heap | 1922 | 1120722 |
| AQ | 142m SE | Unspecified Heap | 1922 | 1120722 |
| AX | 142m SW | Unspecified Pit | 1922 | 1037093 |
| AX | 142m SW | Unspecified Pit | 1922 | 1037093 |
| K | 142m NW | Railway Building | 1901 | 1013436 |
| AW | 143m NW | Unspecified Heap | 1948 | 1136495 |
| AW | 143m NW | Unspecified Heap | 1915 | 1068686 |
| AW | 144m NW | Unspecified Heap | 1922 | 1117869 |
| AW | 144m NW | Unspecified Heap | 1922 | 1117869 |
| L | 145m NW | Railway Sidings | 1922 | 1063208 |
| L | 145m NW | Railway Sidings | 1922 | 1063208 |
| AW | 148m NW | Unspecified Heap | 1901 | 1104246 |
| AY | 150m SE | Unspecified Ground Workings | 1968 | 1082735 |
| AO | 150m W | Unspecified Old Quarries | 1948 | 1048051 |
| AW | 151m NW | Unspecified Heap | 1921 | 1128542 |
| U | 153m SW | Unspecified Pit | 1964 | 1130368 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| L | 153m N | Unspecified Ground Workings | 1915 | 996769 |
| AU | 154m W | Unspecified Pit | 1969 | 1061112 |
| AU | 154m W | Unspecified Pit | 1964 | 1061112 |
| AH | 155m S | Unspecified Ground Workings | 1901 | 1152630 |
| AU | 155m W | Unspecified Pit | 1903 | 1056835 |
| AU | 159m W | Unspecified Pit | 1901 | 1056835 |
| AZ | 159m S | Rifle Range | 1875 | 1039179 |
| AQ | 160m SE | Coal Level | 1922 | 1131272 |
| AQ | 160m SE | Coal Level | 1922 | 1131272 |
| AU | 160m SW | Unspecified Pit | 1875 | 1028181 |
| 12 | 161m S | Railway Sidings | 1948 | 993782 |
| L | 162m N | Engine House | 1938 | 1019155 |
| AQ | 162m SE | Unspecified Ground Workings | 1901 | 996797 |
| AX | 163m SW | Railway Building | 1901 | 1041388 |
| AX | 163m SW | Railway Building | 1948 | 1068694 |
| AW | 164m NW | Coal Level | 1903 | 1007516 |
| AQ | 168m SE | Unspecified Heap | 1968 | 1099556 |
| AH | 168m S | Old Coal Shaft | 1901 | 992175 |
| AR | 173m NE | Railway Sidings | 1921 | 1058826 |
| AH | 175m S | Old Coal Shaft | 1922 | 992178 |
| AY | 176m E | Unspecified Ground Workings | 1875 | 1130993 |
| AH | 178m S | Unspecified Ground Workings | 1901 | 1143343 |
| L | 180m NW | Refuse Heap | 1938 | 1143827 |
| L | 180m NW | Refuse Heap | 1938 | 1143827 |
| AY | 181m E | Railway Sidings | 1901 | 1059733 |
| BA | 181m E | Disused Canal | 1922 | 1052971 |
| BA | 181m E | Disused Canal | 1922 | 1052971 |
| L | 184m N | Railway Sidings | 1922 | 1095622 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| L | 184m N | Railway Sidings | 1922 | 1095622 |
| BB | 184m NE | Unspecified Tip | 1875 | 1018882 |
| AQ | 186m SE | Unspecified Heap | 1964 | 1099556 |
| BC | 188m SW | Railway Sidings | 1875 | 993777 |
| BC | 188m SW | Ironstone Levels | 1875 | 1003934 |
| BD | 191m NE | Railway Sidings | 1875 | 1048921 |
| BE | 193m NW | Cuttings | 1922 | 1082656 |
| BE | 193m NW | Cuttings | 1922 | 1082656 |
| AY | 194m SE | Tramway Sidings | 1901 | 1014625 |
| BF | 194m NW | Unspecified Disused Tip | 1992 | 1005167 |
| BG | 194m SW | Unspecified Heap | 1948 | 1097666 |
| BH | 194m E | Disused Canal | 1948 | 1153257 |
| L | 194m N | Engine House | 1875 | 1113222 |
| U | 195m SW | Railway Buildings | 1901 | 1024166 |
| L | 196m N | Engine House | 1921 | 1035910 |
| BF | 196m NW | Unspecified Heaps | 1965 | 1021409 |
| AV | 197m NW | Railway Building | 1938 | 1013435 |
| L | 197m N | Engine House | 1915 | 1078427 |
| L | 198m N | Engine House | 1922 | 1133708 |
| L | 198m N | Engine House | 1922 | 1086032 |
| BH | 200m E | Disused Canal | 1922 | 1090618 |
| BI | 200m SW | Cuttings | 1988 | 1095043 |
| BI | 200m SW | Cuttings | 1979 | 1103781 |
| BJ | 201m NW | Unspecified Heap | 1922 | 1088409 |
| BJ | 201m NW | Unspecified Heap | 1922 | 1088409 |
| BJ | 201m NW | Unspecified Ground Workings | 1938 | 1081565 |
| BJ | 201m NW | Unspecified Ground Workings | 1938 | 1081565 |
| AR | 201m NE | Unspecified Ground Workings | 1975 | 1119321 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| AR | 201m NE | Unspecified Ground Workings | 1982 | 1139042 |
| AR | 201m NE | Unspecified Ground Workings | 1992 | 1139042 |
| BJ | 201m NW | Old Coal Level | 1948 | 1032265 |
| BJ | 201m NW | Unspecified Heap | 1965 | 1080952 |
| BJ | 202m NW | Unspecified Heap | 1915 | 1050608 |
| L | 203m N | Engine House | 1901 | 1087326 |
| BG | 203m SW | Unspecified Heap | 1964 | 1097666 |
| BJ | 204m NW | Unspecified Pit | 1875 | 1054426 |
| BA | 204m E | Disused Canal | 1988 | 1063494 |
| AY | 204m SE | Engine House | 1875 | 1019123 |
| BJ | 205m NW | Unspecified Pit | 1922 | 1044504 |
| BJ | 205m NW | Unspecified Pit | 1922 | 1044504 |
| BJ | 205m NW | Unspecified Pit | 1948 | 1079651 |
| BJ | 206m NW | Unspecified Pit | 1915 | 1094449 |
| BJ | 206m NW | Unspecified Heap | 1875 | 1080952 |
| U | 208m SW | Chimney | 1969 | 1137776 |
| U | 208m SW | Chimney | 1964 | 1137776 |
| L | 209m N | Unspecified Heap | 1938 | 1108220 |
| L | 209m N | Unspecified Heap | 1938 | 1108220 |
| AW | 209m NW | Coal Level | 1938 | 1074359 |
| AW | 209m NW | Coal Level | 1938 | 1074359 |
| AY | 209m E | Railway Sidings | 1922 | 1059733 |
| BI | 209m SW | Cuttings | 1922 | 1088116 |
| BJ | 211m NW | Unspecified Heap | 1921 | 1112171 |
| AW | 211m NW | Coal Level | 1915 | 1111760 |
| AW | 212m NW | Coal Level | 1922 | 1131959 |
| AW | 212m NW | Coal Level | 1922 | 1131959 |
| BJ | 212m NW | Unspecified Pit | 1921 | 1053826 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| BK | 213m SW | Cuttings | 1969 | 1111484 |
| BK | 213m SW | Cuttings | 1964 | 1111484 |
| AY | 214m SE | Tramway Sidings | 1901 | 1014624 |
| BL | 216m NW | Unspecified Old Quarries | 1901 | 1134536 |
| AY | 216m SE | Old Air Shaft | 1922 | 1003774 |
| L | 217m N | Engine House | 1948 | 1130716 |
| L | 217m N | Engine House | 1903 | 1156822 |
| AW | 217m NW | Coal Level | 1921 | 1108286 |
| AY | 220m E | Unspecified Heap | 1875 | 1000288 |
| BI | 222m SW | Cuttings | 1948 | 1035629 |
| AH | 229m S | Unspecified Heap | 1875 | 1000283 |
| BL | 231m NW | Unspecified Old Quarries | 1903 | 1111338 |
| AH | 231m S | Unspecified Disused Shaft | 1969 | 1136891 |
| AH | 231m S | Unspecified Disused Shaft | 1964 | 1136891 |
| L | 232m N | Unspecified Heap | 1921 | 1132319 |
| AH | 232m S | Unspecified Disused Shaft | 1988 | 1046067 |
| AH | 232m S | Unspecified Disused Shaft | 1979 | 1090658 |
| BC | 233m SW | Old Ironstone Levels | 1903 | 1109356 |
| L | 234m N | Unspecified Heap | 1938 | 1136604 |
| L | 234m N | Unspecified Heap | 1938 | 1136604 |
| L | 235m N | Unspecified Heap | 1915 | 1132319 |
| L | 235m N | Unspecified Heap | 1948 | 1044314 |
| L | 235m N | Unspecified Heap | 1922 | 1136604 |
| L | 235m N | Unspecified Heap | 1922 | 1136604 |
| BI | 235m SW | Cuttings | 1875 | 1081927 |
| BM | 238m S | Unspecified Disused Tip | 1979 | 1005159 |
| BM | 238m S | Unspecified Heap | 1969 | 1136105 |
| BM | 238m S | Unspecified Heap | 1964 | 1136105 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| AS | 238m NW | Unspecified Disused Tips | 1992 | 1136357 |
| AS | 238m NW | Unspecified Disused Tips | 1976 | 1136357 |
| BM | 239m S | Unspecified Heap | 1948 | 1131796 |
| AS | 239m NW | Unspecified Heap | 1965 | 1110299 |
| BC | 240m SW | Old Ironstone Levels | 1901 | 1109356 |
| 13 | 240m NW | Refuse Heap | 1965 | 1019511 |
| BC | 243m SW | Old Ironstone Levels | 1922 | 1052229 |
| BC | 243m SW | Old Ironstone Levels | 1922 | 1052229 |
| BC | 244m SW | Unspecified Ground Workings | 1921 | 1082491 |
| U | 244m SW | Railway Building | 1901 | 1013033 |
| BC | 245m SW | Unspecified Ground Workings | 1915 | 1082491 |
| BC | 246m SW | Old Ironstone Levels | 1948 | 1083931 |
| BC | 247m SW | Old Ironstone Levels | 1938 | 1129491 |
| AS | 248m NW | Refuse Heap | 1922 | 1058889 |
| AS | 248m NW | Refuse Heap | 1922 | 1058889 |
| BN | 251m E | Unspecified Factory | 1988 | 1078765 |
| BF | 253m NW | Unspecified Old Quarries | 1903 | 1147692 |
| BC | 255m SW | Unspecified Ground Workings | 1969 | 1119255 |
| BC | 255m SW | Unspecified Ground Workings | 1964 | 1119255 |
| AZ | 257m SW | Rifle Range | 1901 | 1100764 |
| AR | 257m NE | Unspecified Pit | 1875 | 1139609 |
| AR | 259m NE | Unspecified Pit | 1901 | 1067163 |
| U | 259m SW | Railway Building | 1901 | 1013032 |
| BO | 262m SW | Unspecified Pit | 1901 | 1148515 |
| AY | 265m SE | Engine House | 1875 | 1089555 |
| AY | 266m SE | Engine House | 1922 | 1095387 |
| BO | 267m SW | Unspecified Pit | 1948 | 1082099 |
| 14 | 280m SW | Unspecified Drift | 1948 | 1081583 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| BP | 281m S | Unspecified Disused Tips | 1988 | 1048289 |
| BP | 281m S | Unspecified Disused Tips | 1979 | 1093910 |
| BQ | 284m NW | Unspecified Heap | 1965 | 1046818 |
| BC | 284m SW | Old Ironstone Level | 1915 | 1007776 |
| BP | 285m S | Unspecified Old Quarries | 1948 | 1131664 |
| BP | 285m S | Unspecified Old Quarries | 1901 | 1112653 |
| BC | 285m SW | Old Ironstone Levels | 1921 | 1147256 |
| 15 | 286m E | Unspecified Factory | 1988 | 1153714 |
| BR | 289m N | Railway Sidings | 1875 | 1093098 |
| BP | 289m S | Unspecified Ground Workings | 1875 | 996795 |
| BP | 290m S | Unspecified Old Quarries | 1922 | 1153887 |
| BC | 291m SW | Unspecified Disused Levels | 1988 | 1004157 |
| BC | 291m SW | Unspecified Disused Level | 1979 | 1046608 |
| BS | 291m N | Unspecified Heap | 1921 | 1062975 |
| AS | 293m NW | Unspecified Heap | 1915 | 1062222 |
| AF | 293m N | Unspecified Pit | 1965 | 1146355 |
| AR | 293m NE | Junction Station | 1901 | 1008289 |
| BS | 294m N | Unspecified Heap | 1992 | 1109320 |
| BS | 294m N | Unspecified Heap | 1976 | 1109320 |
| AF | 294m N | Unspecified Pit | 1976 | 1090058 |
| BS | 295m N | Unspecified Heap | 1915 | 1090795 |
| BT | 295m NE | Railway Sidings | 1938 | 1043509 |
| BS | 296m N | Unspecified Heap | 1965 | 1124933 |
| BS | 296m N | Unspecified Heap | 1948 | 1085977 |
| BC | 296m SW | Unspecified Disused Level | 1969 | 1120513 |
| BC | 296m SW | Unspecified Disused Level | 1964 | 1120513 |
| AS | 296m NW | Unspecified Heap | 1948 | 1046170 |
| 16 | 297m SW | Unspecified Drift | 1922 | 1140009 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| BC | 297m SW | Old Ironstone Levels | 1921 | 1048441 |
| 17 | 298m N | Railway Sidings | 1901 | 1070631 |
| BR | 298m N | Disused Iron Works | 1901 | 1090362 |
| U | 299m SW | Unspecified Ground Workings | 1901 | 996787 |
| AF | 301m N | Refuse Heap | 1901 | 1019510 |
| BI | 301m S | Cuttings | 1969 | 1076118 |
| BI | 301m S | Cuttings | 1964 | 1076118 |
| BS | 301m N | Unspecified Pit | 1921 | 1152815 |
| AR | 301m NE | Unspecified Heap | 1948 | 1000218 |
| BU | 302m E | Unspecified Ground Workings | 1921 | 1132624 |
| BS | 303m N | Unspecified Pit | 1938 | 1126058 |
| BS | 303m N | Unspecified Pit | 1938 | 1126058 |
| BU | 303m NE | Unspecified Ground Workings | 1922 | 1041286 |
| BU | 303m NE | Unspecified Ground Workings | 1922 | 1041286 |
| BU | 303m NE | Unspecified Ground Workings | 1915 | 1132624 |
| BU | 303m E | Unspecified Heap | 1903 | 1153316 |
| BS | 303m N | Unspecified Pit | 1915 | 1152815 |
| BU | 303m E | Unspecified Ground Workings | 1938 | 1112327 |
| BU | 303m E | Unspecified Ground Workings | 1938 | 1112327 |
| U | 304m SW | Unspecified Heap | 1948 | 1000281 |
| BU | 304m NE | Unspecified Heap | 1901 | 1146659 |
| BU | 304m E | Unspecified Ground Workings | 1875 | 1095216 |
| BS | 305m N | Unspecified Pit | 1948 | 1109773 |
| BS | 305m N | Unspecified Pit | 1922 | 1109130 |
| BS | 305m N | Unspecified Pit | 1922 | 1109130 |
| BQ | 306m NW | Refuse Heap | 1915 | 1100241 |
| 18 | 306m NW | Railway Sidings | 1875 | 993897 |
| BN | 309m E | Unspecified Factory | 1968 | 1140854 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| BN | 309m E | Unspecified Factory | 1964 | 1140854 |
| BQ | 309m NW | Refuse Heap | 1922 | 1143927 |
| BQ | 309m NW | Refuse Heap | 1922 | 1143927 |
| BV | 311m NW | Unspecified Old Quarries | 1948 | 1035931 |
| BV | 311m NW | Unspecified Ground Workings | 1965 | 1130283 |
| BV | 313m NW | Unspecified Ground Workings | 1875 | 1122860 |
| BS | 316m N | Old Coal Level | 1921 | 1032285 |
| BQ | 316m NW | Old Canal | 1901 | 1004657 |
| BR | 318m N | Old Gas Works | 1948 | 1019102 |
| BR | 319m N | Railway Sidings | 1901 | 1155827 |
| BW | 321m E | Unspecified Ground Workings | 1921 | 1101754 |
| BQ | 324m NW | Railway Sidings | 1922 | 1045216 |
| BQ | 324m NW | Railway Sidings | 1922 | 1098531 |
| 19 | 324m N | Unspecified Ground Workings | 1901 | 996773 |
| AF | 324m N | Unspecified Pit | 1921 | 1108590 |
| AF | 324m N | Old Coal Level | 1938 | 1093562 |
| AF | 324m N | Old Coal Level | 1938 | 1093562 |
| AZ | 324m SW | Unspecified Disused Mine | 1964 | 1007736 |
| AF | 326m N | Old Coal Level | 1915 | 1099019 |
| AF | 326m N | Old Coal Level | 1948 | 1093562 |
| AF | 326m N | Old Coal Level | 1922 | 1101742 |
| AF | 326m N | Old Coal Level | 1922 | 1101742 |
| BI | 329m S | Cuttings | 1901 | 1059841 |
| BW | 331m E | Unspecified Heap | 1922 | 1115001 |
| BW | 331m E | Unspecified Heap | 1922 | 1063078 |
| BX | 332m S | Unspecified Disused Tip | 1979 | 1005157 |
| BX | 332m S | Refuse Heap | 1969 | 1101578 |
| BX | 332m S | Refuse Heap | 1964 | 1101578 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| BP | 335m S | Unspecified Pit | 1969 | 1034867 |
| BP | 335m S | Unspecified Pit | 1964 | 1034867 |
| BY | 336m SW | Tunnel | 1969 | 1144393 |
| BY | 336m SW | Tunnel | 1969 | 1144393 |
| BY | 336m SW | Tunnel | 1964 | 1144393 |
| BV | 337m NW | Unspecified Old Quarries | 1903 | 1044064 |
| BZ | 339m SE | Unspecified Ground Workings | 1875 | 996798 |
| BW | 340m E | Disused Wire Works | 1903 | 1022160 |
| BW | 342m E | Wire Works | 1901 | 993624 |
| BY | 343m S | Tunnel | 1922 | 1098464 |
| BY | 344m SW | Tunnel | 1948 | 1127139 |
| BY | 344m SW | Tunnel | 1901 | 1131291 |
| AR | 344m NE | Unspecified Ground Workings | 1948 | 1151511 |
| BQ | 345m NW | Coal Level | 1901 | 1007523 |
| BD | 345m NE | Railway Station | 1903 | 1016056 |
| BP | 345m S | Unspecified Disused Tips | 1988 | 1077460 |
| BP | 345m S | Unspecified Disused Tips | 1979 | 1052273 |
| BW | 345m NE | Gas Works | 1938 | 1148777 |
| BW | 346m NE | Unspecified Works | 1968 | 1119117 |
| BW | 346m NE | Unspecified Works | 1964 | 1119117 |
| BY | 346m SW | Tunnel | 1875 | 1126136 |
| BW | 346m NE | Gas Works | 1922 | 1088206 |
| BW | 346m NE | Gas Works | 1922 | 1088206 |
| BW | 347m NE | Gas Works | 1915 | 1078041 |
| BW | 349m NE | Gas Works | 1921 | 1088206 |
| 21 | 352m NW | Cuttings | 1915 | 1039895 |
| 22 | 353m NW | Cuttings | 1875 | 1110154 |
| CA | 354m SE | Old Coal Shaft | 1948 | 992171 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| BZ | 354m SE | Unspecified Pit | 1922 | 1091995 |
| BZ | 354m SE | Unspecified Pit | 1922 | 1091995 |
| BX | 354m S | Unspecified Old Quarries | 1948 | 1057882 |
| CB | 355m E | Railway Sidings | 1922 | 1035040 |
| CB | 355m E | Railway Sidings | 1922 | 1128475 |
| BQ | 356m NW | Unspecified Heap | 1903 | 1070229 |
| BX | 359m S | Unspecified Old Quarries | 1901 | 1066553 |
| CC | 359m E | Unspecified Factory | 1988 | 1049427 |
| BQ | 359m NW | Coal Level | 1903 | 1152492 |
| BW | 360m E | Dairy | 1982 | 1131358 |
| CB | 360m E | Railway Sidings | 1915 | 1109620 |
| BX | 361m S | Unspecified Old Quarries | 1922 | 1066553 |
| 23 | 363m SE | Mineral Railway Sidings | 1901 | 1024460 |
| BW | 363m E | Unspecified Depot | 1992 | 1012586 |
| CD | 363m NW | Unspecified Ground Workings | 1938 | 1118153 |
| CD | 363m NW | Unspecified Ground Workings | 1938 | 1118153 |
| BX | 364m S | Unspecified Ground Workings | 1875 | 996799 |
| CE | 364m SE | Old Dock | 1948 | 1138051 |
| CE | 365m SE | Railway Sidings | 1875 | 993783 |
| BZ | 365m SE | Old Coal Shaft | 1922 | 992174 |
| CF | 366m E | Unspecified Ground Workings | 1938 | 1056607 |
| CF | 366m E | Unspecified Ground Workings | 1938 | 1147908 |
| CB | 367m E | Railway Sidings | 1901 | 1041212 |
| CG | 369m S | Unspecified Disused Tip | 1979 | 1005151 |
| BQ | 369m NW | Coal Drift | 1922 | 1108079 |
| BQ | 369m NW | Coal Drift | 1922 | 1108079 |
| CG | 369m S | Coal Level | 1948 | 1007492 |
| CE | 370m SE | Old Dock | 1922 | 1044153 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| CE | 370m SE | Old Dock | 1922 | 1044153 |
| CF | 370m E | Ground Workings and Refuse Heap | 1915 | 1115187 |
| CF | 370m E | Unspecified Ground Workings | 1922 | 1097065 |
| CF | 370m E | Unspecified Ground Workings | 1922 | 1035343 |
| CF | 370m E | Ground Workings and Refuse Heap | 1921 | 1115187 |
| CF | 370m E | Unspecified Heap | 1968 | 1118423 |
| CF | 370m E | Unspecified Heap | 1964 | 1147021 |
| BW | 371m E | Unspecified Tank | 1921 | 1045928 |
| BW | 374m E | Unspecified Tank | 1922 | 1139757 |
| BW | 374m E | Unspecified Tank | 1922 | 1139757 |
| CG | 375m S | Old Coal Level | 1922 | 1083728 |
| CG | 375m S | Old Coal Level | 1922 | 1083728 |
| BW | 375m E | Unspecified Tank | 1948 | 1139757 |
| BW | 375m E | Railway Sidings | 1922 | 1077814 |
| BW | 375m E | Railway Sidings | 1922 | 1118808 |
| BW | 376m E | Unspecified Tank | 1915 | 1057447 |
| BW | 376m E | Unspecified Tank | 1938 | 1139757 |
| BR | 377m N | Railway Sidings | 1922 | 1041084 |
| BR | 377m N | Railway Sidings | 1922 | 1041084 |
| BU | 377m E | Unspecified Pit | 1948 | 1028168 |
| BQ | 378m NW | Coal Drift | 1938 | 1143307 |
| BQ | 378m NW | Coal Drift | 1938 | 1143307 |
| CD | 378m NW | Unspecified Disused Tips | 1992 | 1098142 |
| CD | 378m NW | Unspecified Disused Tips | 1976 | 1098142 |
| CD | 381m NW | Coal Level | 1938 | 1046970 |
| CD | 381m NW | Coal Level | 1938 | 1046970 |
| CD | 381m NW | Coal Level | 1915 | 1134575 |
| CD | 382m NW | Coal Level | 1922 | 1046970 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| CD | 382m NW | Coal Level | 1922 | 1046970 |
| CD | 385m NW | Coal Level | 1921 | 1058037 |
| CA | 387m SE | Unspecified Heap | 1948 | 1000292 |
| BQ | 388m NW | Unspecified Disused Drift | 1992 | 1049432 |
| BQ | 388m NW | Unspecified Disused Drift | 1976 | 1049432 |
| BQ | 388m NW | Coal Drift | 1915 | 1097136 |
| BQ | 388m NW | Coal Drift | 1921 | 1097136 |
| CH | 392m SE | Railway Sidings | 1901 | 1085460 |
| BW | 393m E | Railway Sidings | 1901 | 1111455 |
| BQ | 394m NW | Coal Drift | 1921 | 1027756 |
| CD | 396m NW | Unspecified Heaps | 1965 | 1021407 |
| 24 | 397m S | Refuse Heap | 1948 | 1118243 |
| BX | 397m S | Unspecified Pit | 1969 | 1089999 |
| BX | 397m S | Unspecified Pit | 1964 | 1089999 |
| BW | 400m E | Dairy | 1975 | 1124568 |
| CI | 401m E | Unspecified Heaps | 1948 | 1021417 |
| 25 | 401m NW | Railway Sidings | 1901 | 1143836 |
| BW | 401m E | Railway Sidings | 1921 | 1112415 |
| CD | 402m NW | Unspecified Disused Tips | 1992 | 1136218 |
| CD | 402m NW | Unspecified Disused Tips | 1976 | 1136218 |
| BQ | 405m NW | Coal Drift | 1922 | 1135105 |
| BQ | 405m NW | Coal Drift | 1922 | 1135105 |
| BQ | 405m NW | Coal Drift | 1938 | 1135105 |
| BQ | 405m NW | Coal Drift | 1938 | 1135105 |
| BQ | 406m NW | Coal Drift | 1915 | 1050984 |
| CE | 406m SE | Dock | 1875 | 1012556 |
| BQ | 407m NW | Old Coal Drift | 1948 | 1008429 |
| BW | 407m E | Railway Sidings | 1915 | 1051677 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| CD | 409m NW | Unspecified Ground Workings | 1922 | 1069062 |
| CD | 409m NW | Unspecified Ground Workings | 1922 | 1069062 |
| CA | 409m SE | Old Air Shafts | 1922 | 1010434 |
| BQ | 410m NW | Coal Drift | 1922 | 1071505 |
| BQ | 410m NW | Coal Drift | 1922 | 1071505 |
| CD | 411m NW | Unspecified Ground Workings | 1965 | 1075296 |
| CD | 411m NW | Unspecified Ground Workings | 1948 | 1075296 |
| CD | 411m NW | Unspecified Ground Workings | 1875 | 1078234 |
| CD | 412m NW | Unspecified Ground Workings | 1915 | 1069062 |
| CD | 415m NW | Unspecified Ground Workings | 1875 | 1095924 |
| CD | 416m NW | Unspecified Ground Workings | 1921 | 1069062 |
| CJ | 417m NW | Disused Air Shaft | 1992 | 1106969 |
| CJ | 417m NW | Disused Air Shaft | 1976 | 1106969 |
| CH | 417m SE | Railway Sidings | 1922 | 1114202 |
| CI | 418m E | Unspecified Heap | 1922 | 1152798 |
| CI | 418m E | Unspecified Heap | 1922 | 1097034 |
| CD | 418m NW | Unspecified Heap | 1915 | 1057452 |
| CD | 419m NW | Unspecified Ground Workings | 1901 | 1069062 |
| CD | 420m NW | Coal Level | 1948 | 1007527 |
| BQ | 420m NW | Disused Coal Drift | 1948 | 1003944 |
| CK | 420m E | Unspecified Ground Workings | 1901 | 1110573 |
| CL | 421m S | Unspecified Old Quarry | 1948 | 1117856 |
| CK | 422m E | Unspecified Heap | 1903 | 1060640 |
| CD | 423m NW | Unspecified Heap | 1921 | 1057452 |
| CL | 423m S | Unspecified Ground Workings | 1969 | 1064131 |
| CL | 423m S | Unspecified Ground Workings | 1964 | 1064131 |
| BQ | 425m NW | Old Coal Level | 1948 | 1079051 |
| CL | 425m S | Unspecified Old Quarry | 1922 | 1117856 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| CM | 427m E | Unspecified Ground Workings | 1875 | 1118814 |
| 26 | 428m N | Engine House | 1875 | 1019153 |
| CN | 429m SW | Unspecified Disused Tip | 1979 | 1005168 |
| CN | 429m SW | Unspecified Heap | 1948 | 1123369 |
| BB | 429m NE | Railway Sidings | 1901 | 1125503 |
| BT | 431m NE | Railway Sidings | 1901 | 1138033 |
| CL | 432m S | Unspecified Old Quarry | 1901 | 1042250 |
| CN | 433m SW | Unspecified Heap | 1964 | 1107388 |
| CN | 434m SW | Unspecified Heap | 1922 | 1042424 |
| CN | 434m SW | Unspecified Heap | 1922 | 1042424 |
| 27 | 435m NW | Unspecified Pit | 1875 | 1028180 |
| CO | 435m NE | Railway Sidings | 1901 | 1072885 |
| BT | 439m NE | Railway Sidings | 1922 | 1122715 |
| BT | 439m NE | Railway Sidings | 1922 | 1072560 |
| CL | 439m S | Unspecified Heap | 1875 | 1000282 |
| CP | 439m NE | Railway Sidings | 1915 | 1149378 |
| CD | 440m NW | Unspecified Ground Workings | 1903 | 1069062 |
| CQ | 440m SE | Unspecified Pit | 1948 | 1028158 |
| CQ | 442m SE | Unspecified Ground Workings | 1875 | 1142951 |
| CL | 444m S | Unspecified Pit | 1988 | 1054105 |
| CL | 444m S | Unspecified Pit | 1979 | 1069966 |
| CQ | 444m SE | Unspecified Old Quarry | 1922 | 1022758 |
| CR | 445m E | Railway Sidings | 1901 | 1077181 |
| 28 | 445m SW | Unspecified Mill | 1948 | 1006426 |
| CK | 447m E | Unspecified Heap | 1901 | 1113406 |
| 29 | 448m NE | Railway Sidings | 1921 | 1058827 |
| CP | 449m NE | Railway Sidings | 1965 | 1035791 |
| CS | 449m S | Refuse Heap | 1968 | 1034438 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| CS | 449m S | Refuse Heap | 1964 | 1034438 |
| CT | 449m W | Unspecified Old Quarry | 1903 | 1055916 |
| BW | 450m E | Unspecified Tank | 1921 | 1016568 |
| CQ | 450m SE | Old Coal Shaft | 1948 | 992173 |
| CP | 451m NE | Unspecified Commercial/Industrial | 1948 | 1045433 |
| CP | 452m NE | Unspecified Commercial/Industrial | 1915 | 1059225 |
| BQ | 452m NW | Old Canal | 1903 | 1004656 |
| BQ | 452m NW | Coal Level | 1938 | 1101472 |
| BQ | 452m NW | Coal Level | 1938 | 1101472 |
| CD | 453m NW | Coal Level | 1938 | 1071146 |
| CD | 453m NW | Coal Level | 1938 | 1071146 |
| CD | 453m NW | Coal Level | 1915 | 1038014 |
| CO | 453m NE | Railway Sidings | 1922 | 1090053 |
| CO | 453m NE | Railway Sidings | 1922 | 1089749 |
| BW | 453m E | Gas Holder Station | 1988 | 1006107 |
| CQ | 453m SE | Unspecified Ground Workings | 1948 | 1095474 |
| CT | 454m W | Unspecified Old Quarry | 1922 | 1096307 |
| CT | 454m W | Unspecified Old Quarry | 1922 | 1096307 |
| CD | 455m NW | Coal Level | 1922 | 1071146 |
| CD | 455m NW | Coal Level | 1922 | 1071146 |
| CT | 455m W | Unspecified Pit | 1988 | 1084815 |
| CT | 455m W | Unspecified Pit | 1969 | 1151823 |
| CT | 455m W | Unspecified Pit | 1964 | 1151823 |
| CQ | 455m SE | Old Air Shafts | 1922 | 1010436 |
| BW | 455m E | Unspecified Tanks | 1988 | 1148631 |
| BW | 455m E | Unspecified Tanks | 1968 | 1148631 |
| BW | 455m E | Unspecified Tanks | 1964 | 1148631 |
| CT | 456m W | Unspecified Old Quarry | 1915 | 1055916 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| BW | 456m E | Gasometer | 1922 | 1141690 |
| BW | 456m E | Gasometer | 1922 | 1141690 |
| CQ | 456m SE | Unspecified Pit | 1901 | 1028162 |
| BW | 456m E | Unspecified Tank | 1921 | 1016566 |
| BW | 456m E | Unspecified Tank | 1938 | 1121910 |
| CT | 456m W | Unspecified Old Quarry | 1901 | 1093831 |
| CT | 456m W | Old Quarry | 1921 | 1007869 |
| CT | 457m W | Unspecified Old Quarry | 1948 | 1132836 |
| CT | 457m W | Unspecified Old Quarry | 1938 | 1132836 |
| BW | 458m E | Gasometer | 1922 | 1120778 |
| BW | 458m E | Gasometer | 1922 | 1120778 |
| CD | 458m NW | Coal Level | 1921 | 1045462 |
| CU | 458m E | Cuttings | 1948 | 1130408 |
| BW | 458m E | Unspecified Tank | 1915 | 1118158 |
| BQ | 458m NW | Coal Level | 1915 | 1128399 |
| BW | 458m E | Gasometers | 1938 | 1142083 |
| BW | 458m E | Gasometers | 1921 | 1073226 |
| CP | 459m NE | Unspecified Commercial/Industrial | 1938 | 1148530 |
| BW | 459m E | Unspecified Tanks | 1948 | 1009924 |
| BW | 459m E | Gasometers | 1915 | 1073226 |
| BW | 460m E | Unspecified Tanks | 1948 | 1091755 |
| BQ | 460m NW | Coal Level | 1921 | 1155474 |
| CR | 460m E | Railway Sidings | 1965 | 1033994 |
| BQ | 462m NW | Coal Level | 1922 | 1060736 |
| BQ | 462m NW | Coal Level | 1922 | 1042457 |
| 30 | 462m E | Cuttings | 1948 | 994288 |
| CU | 464m E | Cuttings | 1938 | 1130408 |
| CC | 469m E | Engine Houses | 1901 | 1023913 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| CP | 469m NE | Railway Sidings | 1875 | 1137826 |
| CU | 469m E | Unspecified Ground Workings | 1901 | 1077068 |
| CI | 470m E | Unspecified Heap | 1901 | 1047935 |
| CI | 470m E | Unspecified Heap | 1948 | 1102635 |
| BW | 470m E | Unspecified Tank | 1921 | 1128118 |
| CV | 471m NW | Old Coal Level | 1938 | 1064811 |
| CV | 471m NW | Old Coal Level | 1938 | 1064811 |
| BW | 471m E | Gasometer | 1922 | 1074178 |
| BW | 471m E | Gasometer | 1922 | 1074178 |
| CW | 471m NW | Coal Level | 1875 | 1007528 |
| CV | 471m NW | Old Coal Level | 1922 | 1064811 |
| CV | 471m NW | Old Coal Level | 1922 | 1064811 |
| BW | 471m E | Unspecified Tank | 1938 | 1102073 |
| 31 | 471m NW | Unspecified Ground Workings | 1965 | 1144166 |
| CW | 472m NW | Unspecified Ground Workings | 1915 | 1117363 |
| CM | 472m NE | Unspecified Heap | 1901 | 1065056 |
| CW | 472m NW | Unspecified Disused Tips | 1992 | 1091464 |
| CW | 472m NW | Unspecified Disused Tips | 1976 | 1091464 |
| BW | 472m E | Gasometer | 1915 | 1057691 |
| BW | 473m E | Gasometer | 1922 | 1137843 |
| BW | 473m E | Gasometer | 1922 | 1137843 |
| CW | 473m NW | Unspecified Ground Workings | 1938 | 1113763 |
| CW | 473m NW | Unspecified Ground Workings | 1938 | 1113763 |
| CX | 475m E | Unspecified Heaps | 1922 | 1050184 |
| CX | 475m E | Unspecified Heaps | 1922 | 1050184 |
| CW | 475m NW | Unspecified Ground Workings | 1921 | 1113763 |
| CP | 477m NE | Railway Sidings | 1922 | 1058825 |
| CP | 477m NE | Railway Sidings | 1922 | 1058825 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| CY | 477m E | Unspecified Heaps | 1968 | 1122836 |
| CY | 477m E | Unspecified Heaps | 1964 | 1122836 |
| CW | 480m NW | Unspecified Ground Workings | 1922 | 1113763 |
| CW | 480m NW | Unspecified Ground Workings | 1922 | 1113763 |
| CW | 481m NW | Unspecified Heap | 1901 | 1058989 |
| CW | 482m NW | Unspecified Ground Workings | 1948 | 1136970 |
| CZ | 484m SW | Unspecified Pit | 1948 | 1085235 |
| CP | 484m NE | Unspecified Commercial/Industrial | 1922 | 1069815 |
| CP | 484m NE | Unspecified Commercial/Industrial | 1922 | 1069815 |
| DA | 484m N | Old Gas Works | 1921 | 1060355 |
| CZ | 484m SW | Unspecified Pit | 1875 | 1095624 |
| CP | 485m NE | Railway Sidings | 1901 | 1153434 |
| DA | 486m NE | Gas Works | 1938 | 1105116 |
| CR | 486m E | Railway Sidings | 1901 | 1118353 |
| DA | 486m N | Unspecified Commercial/Industrial | 1915 | 1128473 |
| DA | 486m N | Gas Works | 1875 | 1128486 |
| CX | 487m E | Unspecified Heap | 1948 | 1121737 |
| CD | 487m NW | Unspecified Heap | 1875 | 1000206 |
| CR | 487m E | Railway Sidings | 1915 | 1108636 |
| DA | 488m NE | Gas Works | 1922 | 1055592 |
| DA | 488m NE | Gas Works | 1922 | 1055592 |
| CZ | 488m SW | Cuttings | 1922 | 1141938 |
| CU | 488m E | Unspecified Ground Workings | 1903 | 1126850 |
| CM | 489m NE | Cuttings | 1938 | 1156503 |
| CM | 490m NE | Cuttings | 1948 | 1156503 |
| CZ | 491m SW | Cuttings | 1964 | 1144229 |
| CZ | 491m SW | Unspecified Pit | 1979 | 1157092 |
| CZ | 491m SW | Unspecified Pit | 1969 | 1157092 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| 32 | 492m NW | Old Coal Level | 1948 | 1154190 |
| DA | 492m N | Old Gas Works | 1915 | 1060355 |
| CP | 493m NE | Unspecified Commercial/Industrial | 1903 | 1059225 |
| CC | 493m E | Unspecified Old Shaft | 1948 | 1064643 |
| DA | 494m N | Unspecified Commercial/Industrial | 1901 | 1116591 |
| CP | 495m NE | Railway Sidings | 1921 | 1058825 |
| CC | 497m E | Unspecified Old Shaft | 1922 | 1041001 |
| CC | 497m E | Unspecified Old Shaft | 1922 | 1041001 |
| CQ | 497m SE | Unspecified Heap | 1948 | 1000289 |
| CW | 498m NW | Unspecified Heap | 1903 | 1058989 |
| 33 | 499m NE | Railway Building | 1901 | 1013440 |

*This data is sourced from Ordnance Survey / Groundsure.*

## 2.2 Historical tanks

| **Records within 500m** | **43** |
|---|---|

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

Features are displayed on the Past land use - un-grouped map on **page 45**

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| L | 216m N | Unspecified Tank | 1875 | 149702 |
| Y | 272m NW | Unspecified Tank | 1875 | 149710 |
| 20 | 334m NE | Unspecified Tank | 1998 | 149666 |
| BW | 342m NE | Gas Works | 1919 | 158867 |
| BW | 344m NE | Gas Works | 1971 | 162383 |
| BW | 345m NE | Gas Holder Station | 1984 | 167846 |
| BW | 371m E | Unspecified Tank | 1919 | 149694 |
| BW | 438m NE | Gas Works | 1979 | 158805 |
| BW | 438m NE | Gas Works | 1979 | 158805 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| CK | 446m E | Unspecified Tank | 1988 | 165740 |
| CK | 446m E | Unspecified Tank | 1988 | 165740 |
| CK | 446m E | Unspecified Tank | 1992 | 165740 |
| BW | 450m E | Gas Works | 1984 | 166108 |
| BW | 450m E | Gas Holder Station | 1988 | 167258 |
| BW | 450m E | Gas Holder Station | 1988 | 167258 |
| BW | 450m E | Gas Holder Station | 1992 | 167258 |
| BW | 453m E | Gasometers | 1919 | 168337 |
| BW | 453m E | Gas Holder Station | 1998 | 158552 |
| BW | 454m E | Unspecified Tank | 1919 | 149674 |
| BW | 456m E | Gas Holder | 1984 | 160835 |
| BW | 456m E | Gasometer | 1971 | 155801 |
| BW | 456m E | Unspecified Tank | 1962 | 149675 |
| BW | 459m E | Gasometers | 1979 | 166420 |
| BW | 459m E | Gasometers | 1979 | 166420 |
| BW | 459m E | Tanks | 1979 | 156234 |
| BW | 459m E | Gasometers | 1984 | 166420 |
| BW | 459m E | Gasholders | 1988 | 158129 |
| BW | 459m E | Gasholders | 1988 | 158129 |
| BW | 459m E | Gasholders | 1992 | 158129 |
| BW | 460m E | Gas Holder | 1998 | 160835 |
| BW | 467m E | Gasometer | 1919 | 155800 |
| BW | 471m E | Gas Holder | 1984 | 168061 |
| BW | 471m E | Gasometer | 1971 | 155799 |
| BW | 471m E | Unspecified Tank | 1962 | 149676 |
| BW | 474m E | Gas Holder | 1998 | 168061 |
| CE | 482m SE | Tanks | 1984 | 162846 |
| CE | 482m SE | Tanks | 1988 | 162846 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| CE | 482m SE | Tanks | 1988 | 162846 |
| CE | 482m SE | Tanks | 1992 | 162846 |
| CE | 484m SE | Tanks | 1998 | 161436 |
| CE | 484m SE | Tanks | 1998 | 161436 |
| CE | 484m SE | Tanks | 1984 | 163886 |
| DA | 495m N | Gas Works | 1900 | 166709 |

*This data is sourced from Ordnance Survey / Groundsure.*

## 2.3 Historical energy features

| **Records within 500m** | **36** |
|---|---|

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

Features are displayed on the Past land use - un-grouped map on **page 45**

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| BW | 342m NE | Gas Works | 1919 | 93005 |
| BW | 344m NE | Gas Works | 1971 | 96102 |
| BW | 345m NE | Gas Holder Station | 1984 | 89850 |
| BW | 363m E | Electricity Substation | 1979 | 91168 |
| BW | 363m E | Electricity Substation | 1979 | 91168 |
| BW | 363m E | Electricity Substation | 1979 | 91168 |
| BW | 363m E | Electricity Substation | 1984 | 91168 |
| BW | 379m E | Electricity Substation | 1984 | 85723 |
| BW | 398m NE | Electricity Substation | 1979 | 94037 |
| BW | 398m NE | Electricity Substation | 1979 | 94037 |
| BW | 398m NE | Electricity Substation | 1979 | 94037 |
| BW | 398m NE | Electricity Substation | 1984 | 94037 |
| BW | 400m NE | Electricity Transformer | 1971 | 87769 |
| BW | 438m NE | Gas Works | 1979 | 96102 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| BW | 438m NE | Gas Works | 1979 | 96102 |
| BW | 450m E | Gas Works | 1984 | 95338 |
| BW | 450m E | Gas Holder Station | 1988 | 91307 |
| BW | 450m E | Gas Holder Station | 1988 | 91307 |
| BW | 450m E | Gas Holder Station | 1992 | 91307 |
| BW | 453m E | Gasometers | 1919 | 91846 |
| BW | 453m E | Gas Holder Station | 1998 | 91307 |
| BW | 456m E | Gas Holder | 1984 | 89492 |
| BW | 456m E | Gasometer | 1971 | 87296 |
| BW | 459m E | Gasometers | 1979 | 94333 |
| BW | 459m E | Gasometers | 1979 | 94333 |
| BW | 459m E | Gasometers | 1984 | 94333 |
| BW | 459m E | Gasholders | 1988 | 90201 |
| BW | 459m E | Gasholders | 1988 | 90201 |
| BW | 459m E | Gasholders | 1992 | 90201 |
| BW | 460m E | Gas Holder | 1998 | 89492 |
| BW | 467m E | Gasometer | 1919 | 87295 |
| BW | 471m E | Gas Holder | 1984 | 95078 |
| BW | 471m E | Gasometer | 1971 | 87294 |
| BW | 474m E | Gas Holder | 1998 | 95078 |
| DA | 488m NE | Old Gas Works | 1919 | 87504 |
| DA | 495m N | Gas Works | 1900 | 91219 |

*This data is sourced from Ordnance Survey / Groundsure.*

## 2.4 Historical petrol stations

| **Records within 500m** | **0** |
|---|---|

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

*This data is sourced from Ordnance Survey / Groundsure.*

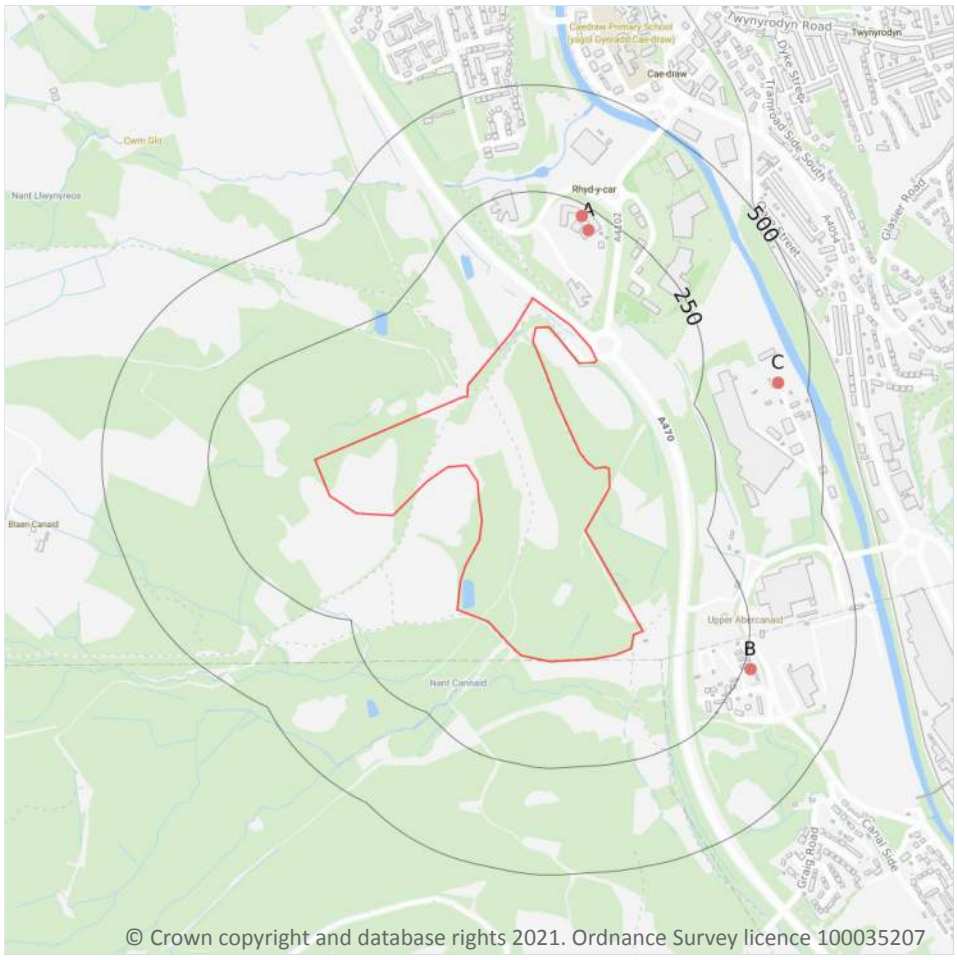
## 2.5 Historical garages

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

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

*This data is sourced from Ordnance Survey / Groundsure.*

# 3 Waste and landfill




## 3.1 Active or recent landfill

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

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

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

## 3.2 Historical landfill (BGS records)

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

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

*This data is sourced from the British Geological Survey.*

## 3.3 Historical landfill (LA/mapping records)

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

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

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

## 3.4 Historical landfill (EA/NRW records)

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

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

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

## 3.5 Historical waste sites

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

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

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

## 3.6 Licensed waste sites

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

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

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

## 3.7 Waste exemptions

| Records within 500m | 15 |
|---|---|

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

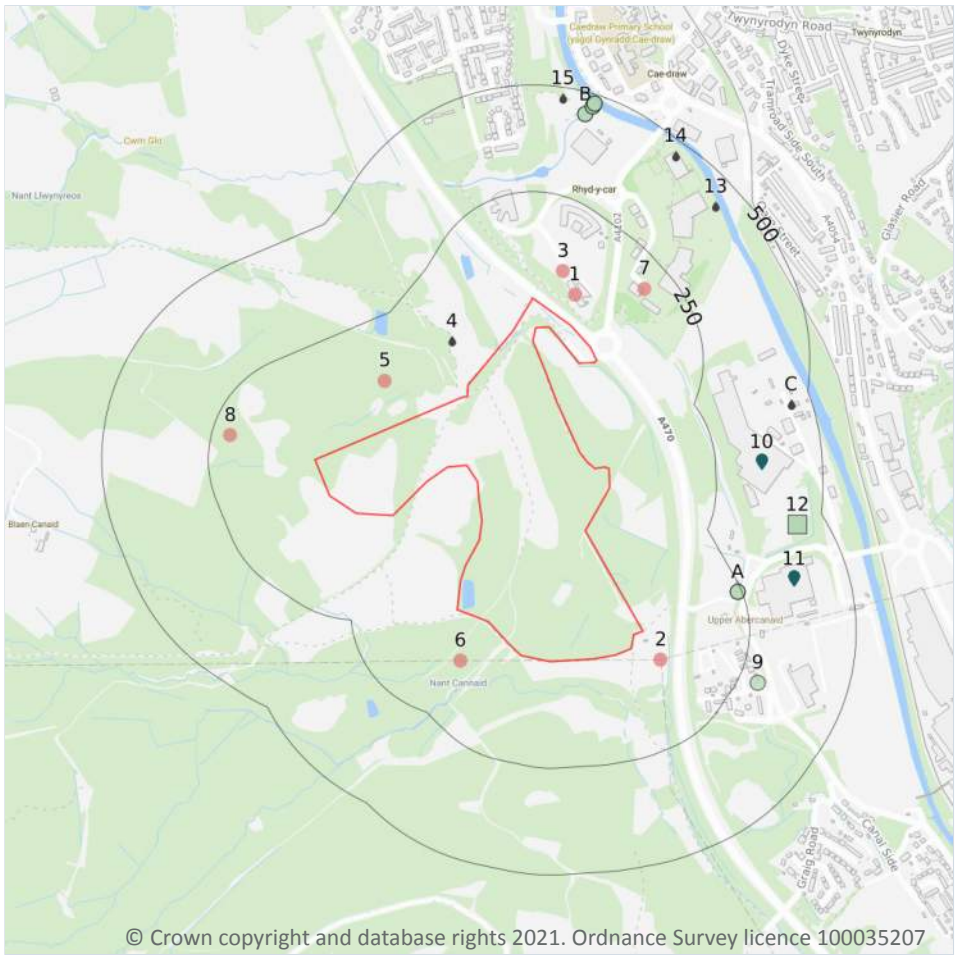
Features are displayed on the Waste and landfill map on **page 87**

| ID | Location | Site | Reference | Category | Sub-Category | Description |
|---|---|---|---|---|---|---|
| A | 205m NE | Mitie Technical Facilities Management Ltd, Welsh Government, Rhyd-y-Car, Merthyr Tydfil, Merthyr Tydfil, CF481UZ | NRW-WME025207 | Storing waste exemption | Not on a farm | Storage of waste in secure containers |
| A | 205m NE | Mitie Technical Facilities Management Ltd, Welsh Government, Rhyd-y-Car, Merthyr Tydfil, Merthyr Tydfil, CF481UZ | NRW-WME025207 | Storing waste exemption | Not on a farm | Storage of waste in a secure place |
| A | 223m NE | Mitie Technical Facilities Management Ltd, Welsh Government, Rhyd-y-Car, Merthyr Tydfil, Merthyr Tydfil, CF48 1UZ | NRW-WME054341 | Storing waste exemption | Not on a farm | Storage of waste in secure containers |
| A | 223m NE | Mitie Technical Facilities Management Ltd, Welsh Government, Rhyd-y-Car, Merthyr Tydfil, Merthyr Tydfil, CF48 1UZ | NRW-WME054341 | Storing waste exemption | Not on a farm | Storage of waste in a secure place |
| B | 267m E | Glynderus Farm Abercanaid Merthyr Tydfil Merthyr Tydfil CF481YL | NRW-WME024877 | Using waste exemption | Not on a farm | Use of waste in construction |
| B | 267m E | Glynderus Farm Abercanaid Merthyr Tydfil Merthyr Tydfil CF481YL | NRW-WME024877 | Using waste exemption | Not on a farm | Use of baled end-of-life tyres in construction |
| C | 428m E | THE WILLOWS, ABERCANAID INDUSTRIAL ESTATE, MERTHYR TYDFIL, CF48 1YF | WEX089880 | Storing waste exemption | Not on a farm | Storage of waste in a secure place |
| C | 428m E | THE WILLOWS, ABERCANAID INDUSTRIAL ESTATE, MERTHYR TYDFIL, CF48 1YF | WEX089880 | Treating waste exemption | Not on a farm | Sorting mixed waste |
| C | 428m E | THE WILLOWS, ABERCANAID INDUSTRIAL ESTATE, MERTHYR TYDFIL, CF48 1YF | WEX089880 | Treating waste exemption | Not on a farm | Manual treatment of waste |
| C | 428m E | THE WILLOWS, ABERCANAID INDUSTRIAL ESTATE, MERTHYR TYDFIL, CF48 1YF | WEX089880 | Treating waste exemption | Not on a farm | Preparatory treatments (baling, sorting, shredding etc) |

| ID | Location | Site | Reference | Category | Sub-Category | Description |
|---|---|---|---|---|---|---|
| C | 428m E | THE WILLOWS, ABERCANAID INDUSTRIAL ESTATE, MERTHYR TYDFIL, CF48 1YF | WEX089880 | Treating waste exemption | Not on a farm | Screening and blending of waste |
| C | 428m E | THE WILLOWS, ABERCANAID INDUSTRIAL ESTATE, MERTHYR TYDFIL, CF48 1YF | WEX089880 | Treating waste exemption | Not on a farm | Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising |
| C | 428m E | THE WILLOWS, ABERCANAID INDUSTRIAL ESTATE, MERTHYR TYDFIL, CF48 1YF | WEX089880 | Treating waste exemption | Not on a farm | Recovery of scrap metal |
| C | 428m E | THE WILLOWS, ABERCANAID INDUSTRIAL ESTATE, MERTHYR TYDFIL, CF48 1YF | WEX089880 | Using waste exemption | Not on a farm | Use of waste in construction |
| C | 428m E | THE WILLOWS, ABERCANAID INDUSTRIAL ESTATE, MERTHYR TYDFIL, CF48 1YF | WEX089880 | Using waste exemption | Not on a farm | Use of waste to manufacture finished goods |

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

# 4 Current industrial land use




## 4.1 Recent industrial land uses

**Records within 250m** **7**

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 91**

| ID | Location | Company | Address | Activity | Category |
|---|---|---|---|---|---|
| 1 | 64m NE | Orbit Business Centre | Rhydycar Business Park, Merthyr Tydfil, Mid Glamorgan, CF48 1DL | Business Parks and Industrial Estates | Industrial Features |
| 2 | 74m E | Pylon | Mid Glamorgan, CF48 | Electrical Features | Infrastructure and Facilities |

| ID | Location | Company | Address | Activity | Category |
|---|---|---|---|---|---|
| 3 | 93m NE | Electricity Sub Station | Mid Glamorgan, CF48 | Electrical Features | Infrastructure and Facilities |
| 5 | 107m NW | Adit (Dis) | Mid Glamorgan, CF48 | Unspecified Quarries Or Mines | Extractive Industries |
| 6 | 109m S | Pylon | Mid Glamorgan, CF48 | Electrical Features | Infrastructure and Facilities |
| 7 | 187m NE | Electricity Sub Station | Mid Glamorgan, CF48 | Electrical Features | Infrastructure and Facilities |
| 8 | 207m W | Quarries (Disused) | Mid Glamorgan, CF48 | Unspecified Quarries Or Mines | Extractive Industries |

*This data is sourced from Ordnance Survey.*

## 4.2 Current or recent petrol stations

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

Open, closed, under development and obsolete petrol stations.

*This data is sourced from Experian.*

## 4.3 Electricity cables

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

High voltage underground electricity transmission cables.

*This data is sourced from National Grid.*

## 4.4 Gas pipelines

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

High pressure underground gas transmission pipelines.

*This data is sourced from National Grid.*

## 4.5 Sites determined as Contaminated Land

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

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

*This data is sourced from Local Authority records.*

## 4.6 Control of Major Accident Hazards (COMAH)

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

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

*This data is sourced from the Health and Safety Executive.*

## 4.7 Regulated explosive sites

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

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

*This data is sourced from the Health and Safety Executive.*

## 4.8 Hazardous substance storage/usage

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

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

*This data is sourced from Local Authority records.*

## 4.9 Historical licensed industrial activities (IPC)

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

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

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

## 4.10 Licensed industrial activities (Part A(1))

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

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

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

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

| Records within 500m | 2 |
|---|---|

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

Features are displayed on the Current industrial land use map on **page 91**

| ID | Location | Address | Details | |
|---|---|---|---|---|
| 10 | 357m E | Triumph Business Systems, TBS (South Wales) Ltd., The Willows, Abercanaid, Merthyr Tydfill, Mid Glamorgan, CF47 0YD | Process: Coating Processes<br>Status: Current Permit<br>Permit Type: Part B | Enforcement: No Enforcements Notified<br>Date of enforcement: No Enforcements Notified<br>Comment: No Enforcements Notified |
| 11 | 374m E | Amnitec Ltd, Abercanaid, Merthyr Tydfil, Mid Glamorgan, CF48 1UX | Process: Surface Cleaning<br>Status: Pending<br>Permit Type: Part B | Enforcement: No Enforcements Notified<br>Date of enforcement: No Enforcements Notified<br>Comment: No Enforcements Notified |

*This data is sourced from Local Authority records.*

## 4.12 Radioactive Substance Authorisations

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

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

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

## 4.13 Licensed Discharges to controlled waters

| Records within 500m | 6 |
|---|---|

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

Features are displayed on the Current industrial land use map on **page 91**

| ID | Location | Address | Details | |
|---|---|---|---|---|
| 4 | 94m NW | GLYNDYRIS DISUSED MINE SHAFT | Effluent Type: UNSPECIFIED<br>Permit Number: AN0016201<br>Permit Version: 1<br>Receiving Water: TAFF RIVER | Status: CONSENT EXPIRED - TIME LIMIT<br>Issue date: 12/09/1986<br>Effective Date: 12/09/1986<br>Revocation Date: 18/09/1986 |
| 13 | 438m NE | RHYD-Y-CAR LEISURE CENTRE MT, RHYD-Y-CAR LEISURE CENTRE, RHYD-Y-CAR, Merthyr Tydfil, CF48 1UT | Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - NOT WATER COMPANY<br>Permit Number: AN0413101<br>Permit Version: 2<br>Receiving Water: RIVER TAFF | Status: Effective<br>Issue date: 28/11/2016<br>Effective Date: 12/12/2016<br>Revocation Date: - |
| C | 452m E | GROUNDWATER REMEDIATION TREATMENT @, FORMER WILLOWS GASWORKS, THE WILLOWS, ABERCANAID INDUSTRIAL ESTATE, MERTHYR TYDFIL, CF48 1YH | Effluent Type: GROUNDWATER - BOREHOLE<br>Permit Number: EPRNB3735AW<br>Permit Version: 1<br>Receiving Water: GROUNDWATER | Status: SURRENDERED UNDER EPR 2010<br>Issue date: 15/04/2013<br>Effective Date: 15/04/2013<br>Revocation Date: 23/12/2013 |
| C | 452m E | GROUNDWATER REMEDIATION TREATMENT @, FORMER WILLOWS GASWORKS, THE WILLOWS, ABERCANAID INDUSTRIAL ESTATE, MERTHYR TYDFIL, CF48 1YH | Effluent Type: GROUNDWATER - BOREHOLE<br>Permit Number: EPRNB3735AW<br>Permit Version: 1<br>Receiving Water: GROUNDWATER | Status: SURRENDERED UNDER EPR 2010<br>Issue date: 15/04/2013<br>Effective Date: 15/04/2013<br>Revocation Date: 23/12/2013 |
| 14 | 465m NE | RHYDYCAR SPORTS COMPLEX MERTHYR T, RHYDYCAR SPORTS COMPLEX MERTHY, MERTHYR TYDFIL | Effluent Type: TRADE DISCHARGES - SITE DRAINAGE<br>Permit Number: AF3031901<br>Permit Version: 1<br>Receiving Water: TAFF | Status: REVOKED (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV<br>Issue date: 02/10/1972<br>Effective Date: 02/10/1972<br>Revocation Date: 06/05/2004 |
| 15 | 474m N | MERTHYR - REAR OF EASTFIELD TE | Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY<br>Permit Number: AE2025309<br>Permit Version: 1<br>Receiving Water: TAFF | Status: Surrendered<br>Issue date: 15/04/1964<br>Effective Date: 15/04/1964<br>Revocation Date: - |

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

## 4.14 Pollutant release to surface waters (Red List)

| **Records within 500m** | **0** |
|---|---|

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

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

## 4.15 Pollutant release to public sewer

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

Discharges of Special Category Effluents to the public sewer.

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

## 4.16 List 1 Dangerous Substances

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

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

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

## 4.17 List 2 Dangerous Substances

| Records within 500m | 1 |
|---|---|

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

Features are displayed on the Current industrial land use map on **page 91**

| ID | Location | Name | Status | Receiving Water | Authorised Substances |
|---|---|---|---|---|---|
| 12 | 438m NE | Triumph Business Systems, The Willows, Abercanaid, Merthyr | Not Active | River Taff | Chromium, Copper, Lead, Nickel, Zinc |

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

## 4.18 Pollution Incidents (EA/NRW)

| Records within 500m | 9 |
|---|---|

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

Features are displayed on the Current industrial land use map on **page 91**

| ID | Location | Details | |
|---|---|---|---|
| A | 240m E | Incident Date: 04/05/2016<br>Incident Identification: 1602160<br>Pollutant: Oils and Fuels<br>Pollutant Description: Unidentified Oil | Water Impact: Category 3 (Minor)<br>Land Impact: No Details<br>Air Impact: No Details |

| ID | Location | Details | |
|---|---|---|---|
| A | 240m E | Incident Date: 04/05/2016<br>Incident Identification: 1602160<br>Pollutant: -<br>Pollutant Description: - | Water Impact: Category 3 (Minor)<br>Land Impact: No Details<br>Air Impact: No Details |
| 9 | 294m SE | Incident Date: 26/11/2002<br>Incident Identification: 123260<br>Pollutant: Inert Materials and Wastes<br>Pollutant Description: Rocks and Gravel | Water Impact: Category 3 (Minor)<br>Land Impact: Category 4 (No Impact)<br>Air Impact: Category 4 (No Impact) |
| B | 448m N | Incident Date: 10/03/2017<br>Incident Identification: 1701236<br>Pollutant: -<br>Pollutant Description: - | Water Impact: Category 3 (Minor)<br>Land Impact: Other<br>Air Impact: Other |
| B | 448m N | Incident Date: 10/03/2017<br>Incident Identification: 1701236<br>Pollutant: Inert Materials and Waste<br>Pollutant Description: Soils and Clay | Water Impact: Category 3 (Minor)<br>Land Impact: Other<br>Air Impact: Other |
| B | 470m N | Incident Date: 01/03/2017<br>Incident Identification: 1701047<br>Pollutant: -<br>Pollutant Description: - | Water Impact: Category 3 (Minor)<br>Land Impact: Other<br>Air Impact: Other |
| B | 470m N | Incident Date: 01/03/2017<br>Incident Identification: 1701047<br>Pollutant: Inert Materials and Waste<br>Pollutant Description: Soils and Clay | Water Impact: Category 3 (Minor)<br>Land Impact: Other<br>Air Impact: Other |
| B | 478m N | Incident Date: 30/01/2017<br>Incident Identification: 1700454<br>Pollutant: -<br>Pollutant Description: - | Water Impact: Category 3 (Minor)<br>Land Impact: Other<br>Air Impact: Other |
| B | 478m N | Incident Date: 30/01/2017<br>Incident Identification: 1700454<br>Pollutant: Inert Materials and Waste<br>Pollutant Description: Soils and Clay | Water Impact: Category 3 (Minor)<br>Land Impact: Other<br>Air Impact: Other |

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

## 4.19 Pollution inventory substances

| **Records within 500m** | **0** |
|---|---|

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

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

## 4.20 Pollution inventory waste transfers

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

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

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

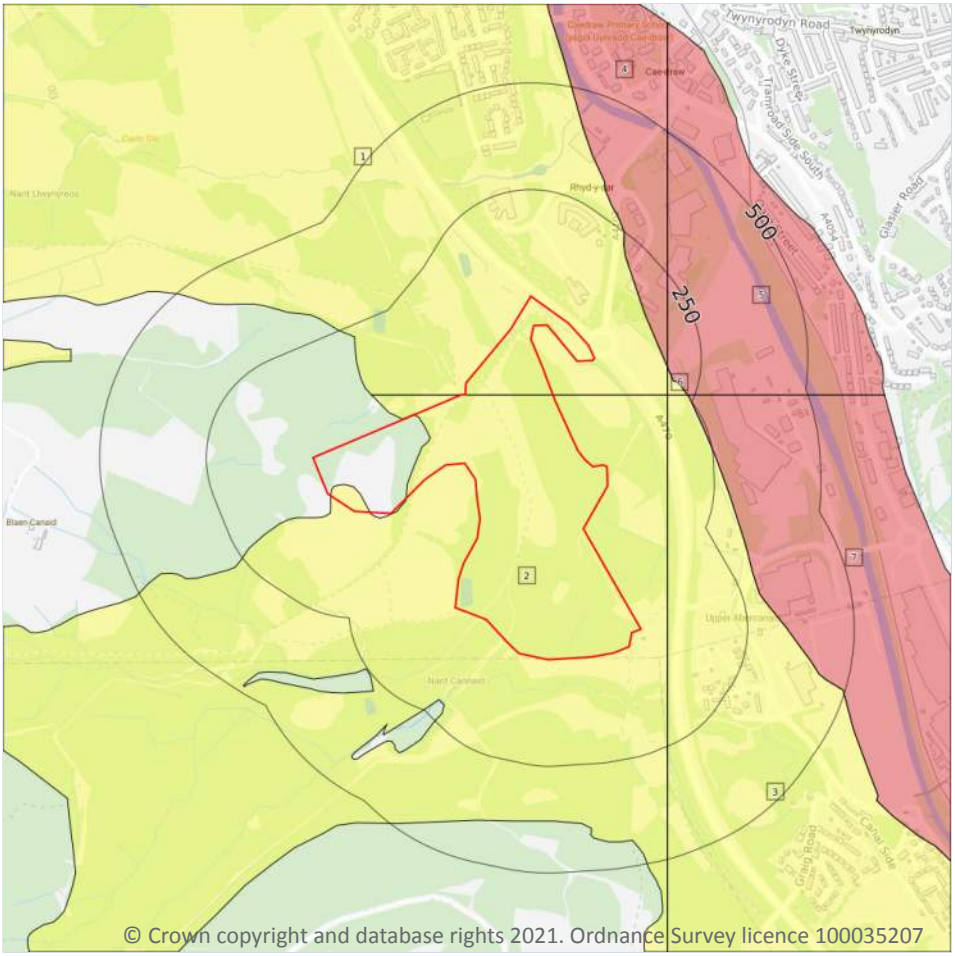
## 4.21 Pollution inventory radioactive waste

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

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

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

# 5 Hydrogeology - Superficial aquifer




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Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive
- Unknown

## 5.1 Superficial aquifer

| Records within 500m | 7 |
|---|---|

Aquifer status of groundwater held within superficial geology.

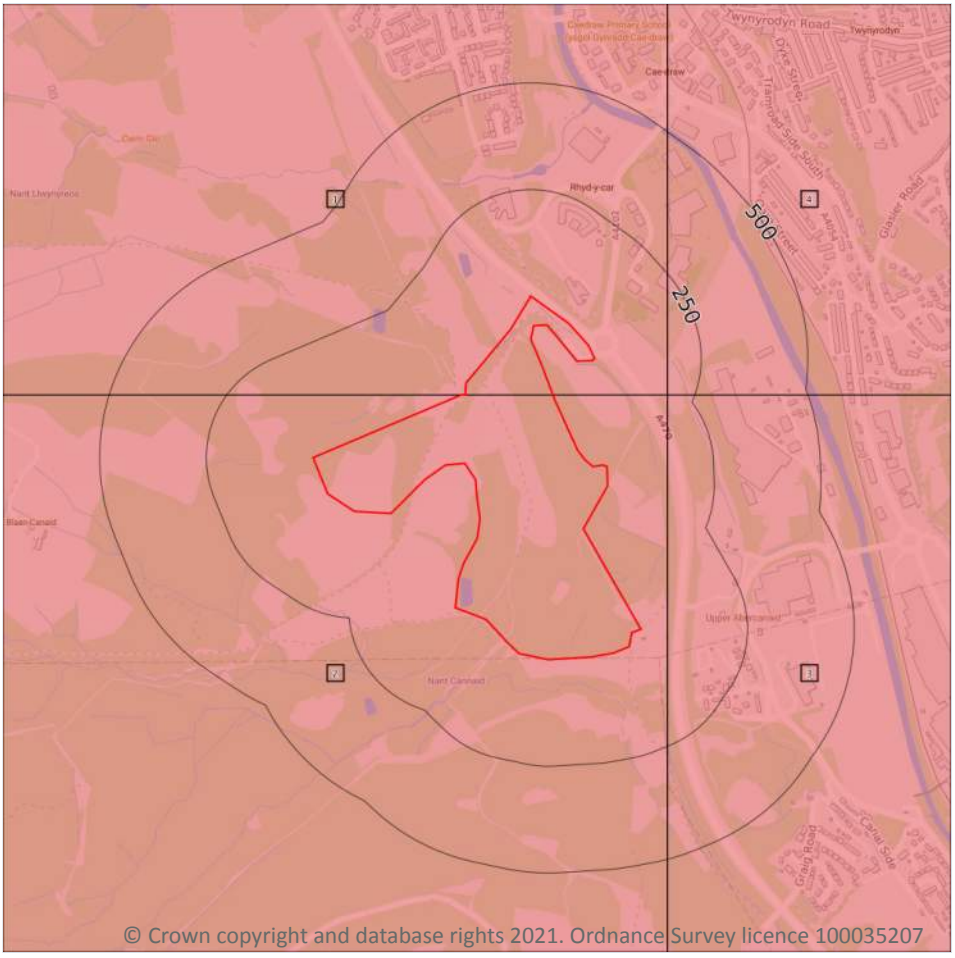
Features are displayed on the Hydrogeology map on **page 99**

| ID | Location | Designation | Description |
|---|---|---|---|
| 1 | On site | Secondary Undifferentiated | Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type |
| 2 | 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 |

| ID | Location | Designation | Description |
|---|---|---|---|
| 3 | 62m E | Secondary Undifferentiated | Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type |
| 4 | 149m NE | 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 |
| 5 | 170m E | Secondary A | Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers |
| 6 | 172m E | Secondary Undifferentiated | Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type |
| 7 | 234m E | Secondary A | Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers |

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

# Bedrock aquifer




## 5.2 Bedrock aquifer

| Records within 500m | 4 |
|---|---|

Aquifer status of groundwater held within bedrock geology.

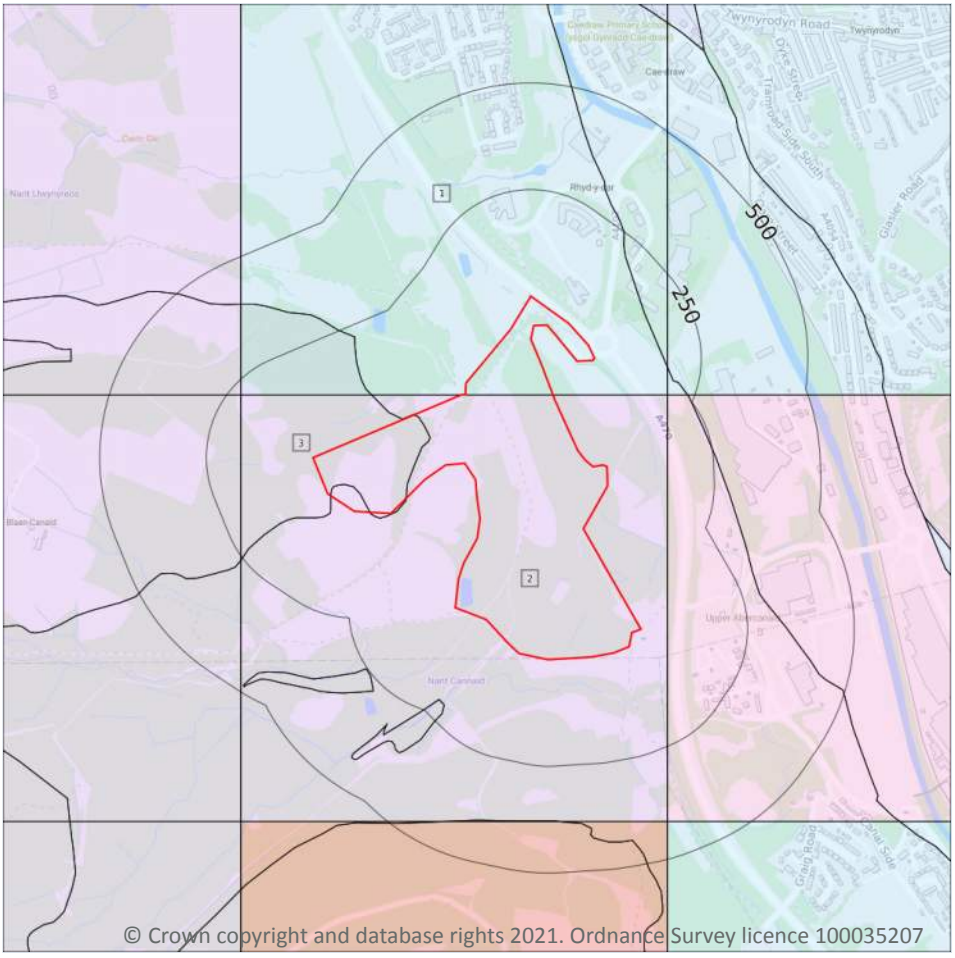
Features are displayed on the Bedrock aquifer map on **page 101**

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

| ID | Location | Designation | Description |
|---|---|---|---|
| 3 | 62m E | Secondary A | Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers |
| 4 | 170m E | Secondary A | Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers |

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

# Groundwater vulnerability




Site Outline

Search buffers in metres (m)

Superficial vulnerability

- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability

- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information

- Unproductive aquifer
- Soluble rock risk
- Local information

## 5.3 Groundwater vulnerability

| Records within 50m | 3 |
|---|---|

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

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

Features are displayed on the Groundwater vulnerability map on **page 103**

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

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

## 5.4 Groundwater vulnerability- soluble rock risk

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

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

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

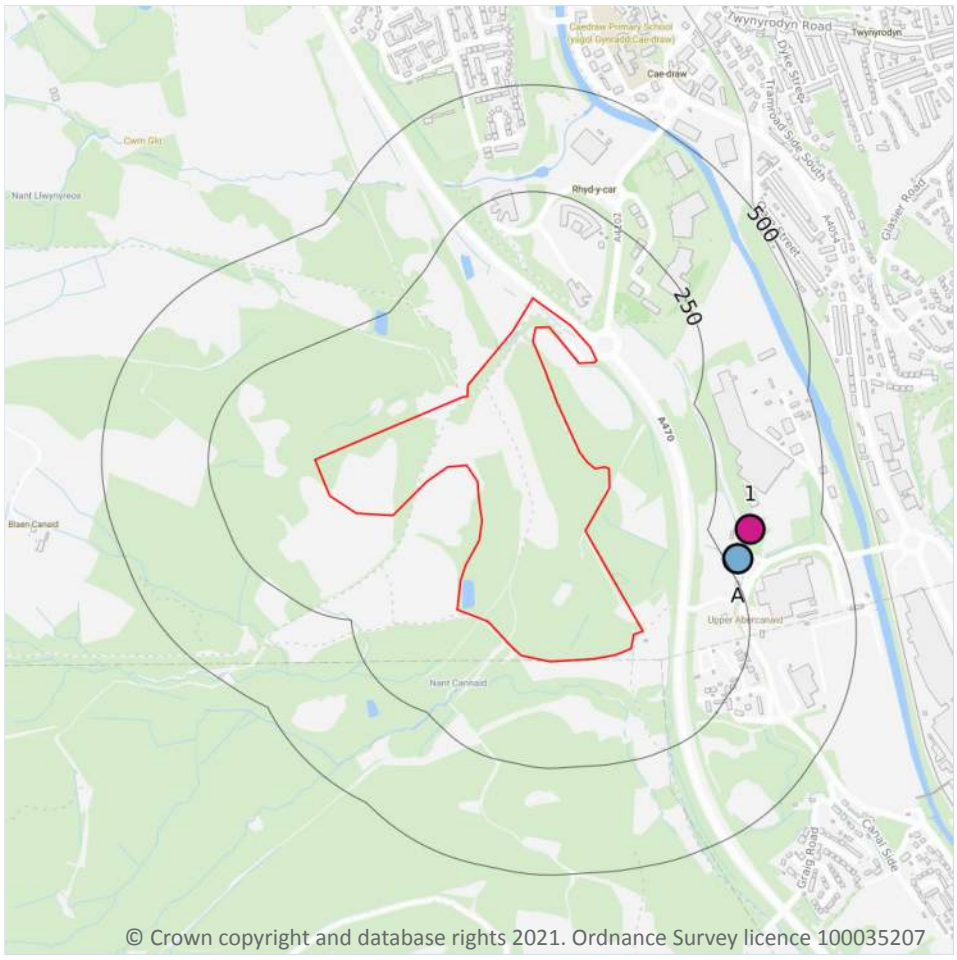
## 5.5 Groundwater vulnerability- local information

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

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

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

# Abstractions and Source Protection Zones




Site Outline

Search buffers in metres (m)

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

## 5.6 Groundwater abstractions

| Records within 2000m | 1 |
|---|---|

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

Features are displayed on the Abstractions and Source Protection Zones map on **page 105**

| ID | Location | Details | |
|---|---|---|---|
| 1 | 337m NE | Status: Historical<br>Licence No: 21/57/22/0035<br>Details: General Washing/Process Washing<br>Direct Source: EAW Groundwater<br>Point: BOREHOLE AT TBS (SOUTH WALES) LTD<br>Data Type: Point<br>Name: TBS (South Wales) Ltd<br>Easting: 305190<br>Northing: 204690 | Annual Volume ($m^3$): -<br>Max Daily Volume ($m^3$): -<br>Original Application No: -<br>Original Start Date: 08/06/1994<br>Expiry Date: -<br>Issue No: 100<br>Version Start Date: 14/10/1999<br>Version End Date: - |

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

## 5.7 Surface water abstractions

| **Records within 2000m** | **2** |
|---|---|

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

Features are displayed on the Abstractions and Source Protection Zones map on **page 105**

| ID | Location | Details | |
|---|---|---|---|
| A | 276m NE | Status: Historical<br>Licence No: 21/57/22/0025<br>Details: General Use Relating To Secondary Category (Low Loss)<br>Direct Source: EAW Surface Water<br>Point: NANT CANAID AT GLYN-DYRYS<br>Data Type: Point<br>Name: Hoover Plc<br>Easting: 305160<br>Northing: 204620 | Annual Volume ($m^3$): 509152<br>Max Daily Volume ($m^3$): 1818.4<br>Original Application No: -<br>Original Start Date: 25/07/1979<br>Expiry Date: -<br>Issue No: 100<br>Version Start Date: 30/10/2003<br>Version End Date: - |
| A | 276m NE | Status: Historical<br>Licence No: 21/57/22/0025<br>Details: Non-Evaporative Cooling<br>Direct Source: EAW Surface Water<br>Point: NANT CANAID AT GLYN-DYRYS<br>Data Type: Point<br>Name: Hoover Plc<br>Easting: 305160<br>Northing: 204620 | Annual Volume ($m^3$): 509152<br>Max Daily Volume ($m^3$): 1818.4<br>Original Application No: -<br>Original Start Date: 25/07/1979<br>Expiry Date: -<br>Issue No: 100<br>Version Start Date: 30/10/2003<br>Version End Date: - |

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

## 5.8 Potable abstractions

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

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

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

## 5.9 Source Protection Zones

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

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

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

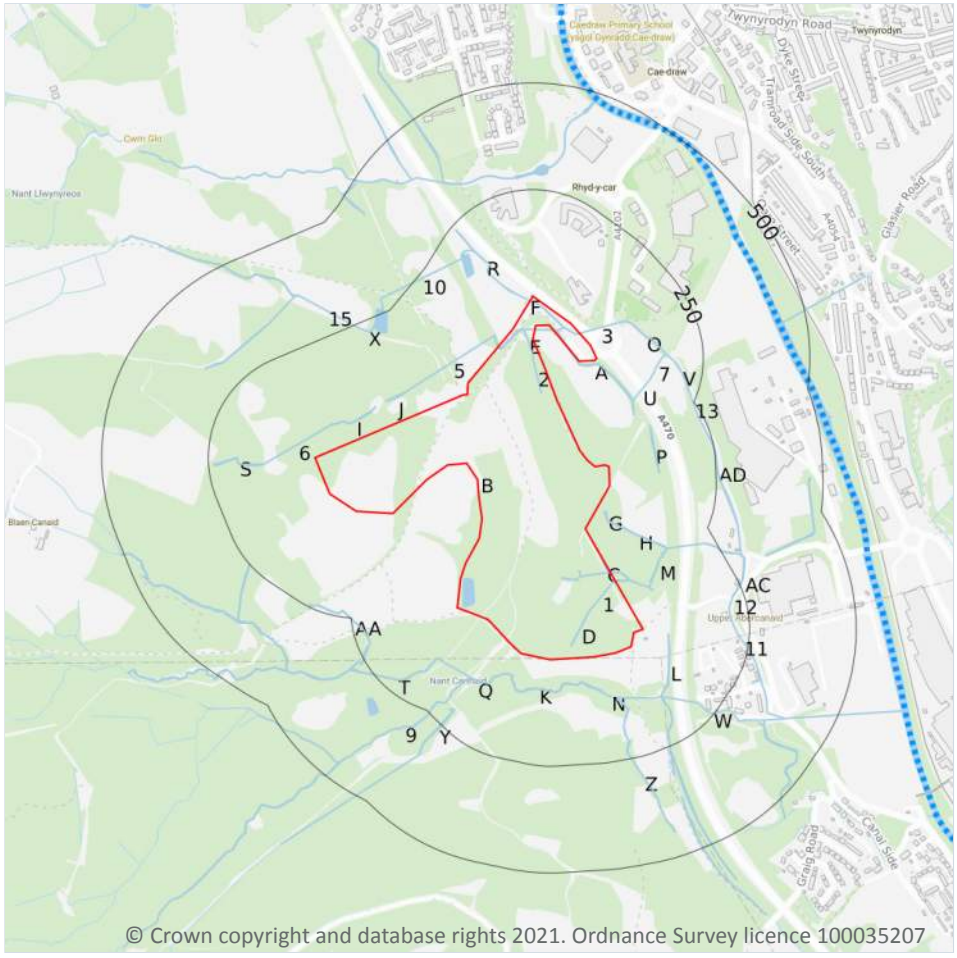
## 5.10 Source Protection Zones (confined aquifer)

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

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

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

# 6 Hydrology




## 6.1 Water Network (OS MasterMap)

| Records within 250m | 91 |
|---|---|

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

Features are displayed on the Hydrology map on **page 108**

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

| ID | Location | Type of water feature | Ground level | Permanence | Name |
|---|---|---|---|---|---|
| 2 | On site | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| 3 | On site | Inland river not influenced by normal tidal action. | Not provided | Watercourse contains water year round (in normal circumstances) | - |
| A | On site | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| C | On site | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| C | On site | Lake, loch or reservoir. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| C | On site | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| C | On site | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| C | On site | Lake, loch or reservoir. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| C | On site | Lake, loch or reservoir. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| C | On site | Inland river not influenced by normal tidal action. | Not provided | Watercourse contains water year round (in normal circumstances) | - |
| C | On site | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| C | On site | Lake, loch or reservoir. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| C | On site | Inland river not influenced by normal tidal action. | Underground | Watercourse contains water year round (in normal circumstances) | - |

| ID | Location | Type of water feature | Ground level | Permanence | Name |
|---|---|---|---|---|---|
| C | On site | Lake, loch or reservoir. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| C | On site | Inland river not influenced by normal tidal action. | Underground | Watercourse contains water year round (in normal circumstances) | - |
| C | On site | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| C | On site | Lake, loch or reservoir. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| D | On site | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| E | On site | Inland river not influenced by normal tidal action. | Underground | Watercourse contains water year round (in normal circumstances) | - |
| E | On site | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| E | On site | Inland river not influenced by normal tidal action. | Underground | Watercourse contains water year round (in normal circumstances) | - |
| E | On site | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| E | On site | Inland river not influenced by normal tidal action. | Underground | Watercourse contains water year round (in normal circumstances) | - |
| E | On site | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| E | On site | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| E | On site | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |

| ID | Location | Type of water feature | Ground level | Permanence | Name |
|---|---|---|---|---|---|
| **F** | **On site** | **Inland river not influenced by normal tidal action.** | **Underground** | **Watercourse contains water year round (in normal circumstances)** | **-** |
| G | 17m SE | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| 5 | 20m NW | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| C | 26m NE | Inland river not influenced by normal tidal action. | Underground | Watercourse contains water year round (in normal circumstances) | - |
| C | 30m NE | Inland river not influenced by normal tidal action. | Underground | Watercourse contains water year round (in normal circumstances) | - |
| C | 31m NE | Inland river not influenced by normal tidal action. | Underground | Watercourse contains water year round (in normal circumstances) | - |
| G | 32m SE | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| H | 36m SE | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| F | 37m NW | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| I | 41m NW | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| 6 | 47m NW | Inland river not influenced by normal tidal action. | Not provided | Watercourse contains water year round (in normal circumstances) | - |
| C | 52m NE | Lake, loch or reservoir. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| J | 54m NW | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |

| ID | Location | Type of water feature | Ground level | Permanence | Name |
|---|---|---|---|---|---|
| K | 55m SW | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | Nant Cannaid |
| L | 60m E | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| C | 61m NE | Lake, loch or reservoir. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| C | 61m NE | Lake, loch or reservoir. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| M | 68m NE | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| F | 68m NW | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| N | 85m S | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | Nant Cannaid |
| O | 95m NE | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| N | 104m S | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| N | 104m S | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | Nant Cannaid |
| N | 105m S | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | Nant Cannaid |
| P | 111m E | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| Q | 112m SW | Inland river not influenced by normal tidal action. | Underground | Watercourse contains water year round (in normal circumstances) | Nant Cannaid |

| ID | Location | Type of water feature | Ground level | Permanence | Name |
|---|---|---|---|---|---|
| R | 120m NW | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| Q | 121m SW | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | Nant Cannaid |
| S | 122m W | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| Q | 123m SW | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | Nant Cannaid |
| Q | 123m SW | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| N | 125m S | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | Nant Cannaid |
| T | 127m S | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| U | 128m SE | Inland river not influenced by normal tidal action. | Underground | Watercourse contains water year round (in normal circumstances) | - |
| U | 129m SE | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| U | 130m SE | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| 7 | 133m SE | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| N | 136m SE | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | Nant Cannaid |
| N | 136m SE | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |

| ID | Location | Type of water feature | Ground level | Permanence | Name |
|---|---|---|---|---|---|
| M | 144m NE | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| N | 144m SE | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | Nant Cannaid |
| Q | 145m SW | Inland river not influenced by normal tidal action. | Underground | Watercourse contains water year round (in normal circumstances) | Nant Cannaid |
| M | 147m NE | Inland river not influenced by normal tidal action. | Not provided | Watercourse contains water year round (in normal circumstances) | - |
| 9 | 155m SW | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | Nant Cannaid |
| V | 162m E | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| R | 172m NW | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| R | 172m NW | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| R | 172m NW | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| R | 187m NW | Lake, loch or reservoir. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| 10 | 188m NW | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| N | 194m S | Lake, loch or reservoir. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| W | 201m SE | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | Nant Cannaid |

| ID | Location | Type of water feature | Ground level | Permanence | Name |
|---|---|---|---|---|---|
| Y | 203m SW | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| 11 | 206m E | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| Z | 208m S | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| 12 | 216m E | Inland river not influenced by normal tidal action. | Underground | Watercourse contains water year round (in normal circumstances) | - |
| AA | 219m W | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| X | 220m NW | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| AC | 223m E | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| AC | 226m NE | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| X | 228m NW | Lake, loch or reservoir. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| 13 | 233m E | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| AD | 239m NE | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| 15 | 243m NW | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |

*This data is sourced from the Ordnance Survey.*

## 6.2 Surface water features

| Records within 250m | 33 |
|---|---|

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

Features are displayed on the Hydrology map on **page 108**

*This data is sourced from the Ordnance Survey.*

## 6.3 WFD Surface water body catchments

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

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

Features are displayed on the Hydrology map on **page 108**

| ID | Location | Type | Water body catchment | Water body ID | Operational catchment | Management catchment |
|---|---|---|---|---|---|---|
| **B** | **On site** | **River WB catchment** | **Taff - conf Taf Fechan to conf R Cynon** | **GB109057033100** | **Taff u s Cynon** | **South East Valleys** |

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

## 6.4 WFD Surface water bodies

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

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

Features are displayed on the Hydrology map on **page 108**

| ID | Location | Type | Name | Water body ID | Overall rating | Chemical rating | Ecological rating | Year |
|---|---|---|---|---|---|---|---|---|
| 27 | 424m NE | River | Taff - conf Taf Fechan to conf R Cynon | GB109057033100 | Moderate | Good | Moderate | 2016 |

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

## 6.5 WFD Groundwater bodies

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

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

Features are displayed on the Hydrology map on **page 108**

| ID | Location | Name | Water body ID | Overall rating | Chemical rating | Quantitative | Year |
|---|---|---|---|---|---|---|---|
| **B** | **On site** | **SE Valleys Carboniferous Coal Measures** | **GB40902G201900** | **Poor** | **Poor** | **Good** | **2016** |

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

# 7 River and coastal flooding

## 7.1 Risk of Flooding from Rivers and Sea (RoFRaS)

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

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

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

## 7.2 Historical Flood Events

| Records within 250m | 0 |
|---|---|

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

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

## 7.3 Flood Defences

| Records within 250m | 0 |
|---|---|

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

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

## 7.4 Areas Benefiting from Flood Defences

| Records within 250m | 0 |
|---|---|

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

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

## 7.5 Flood Storage Areas

| Records within 250m | 0 |
|---|---|

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

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

# River and coastal flooding - Flood Zones

## 7.6 Flood Zone 2

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

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

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

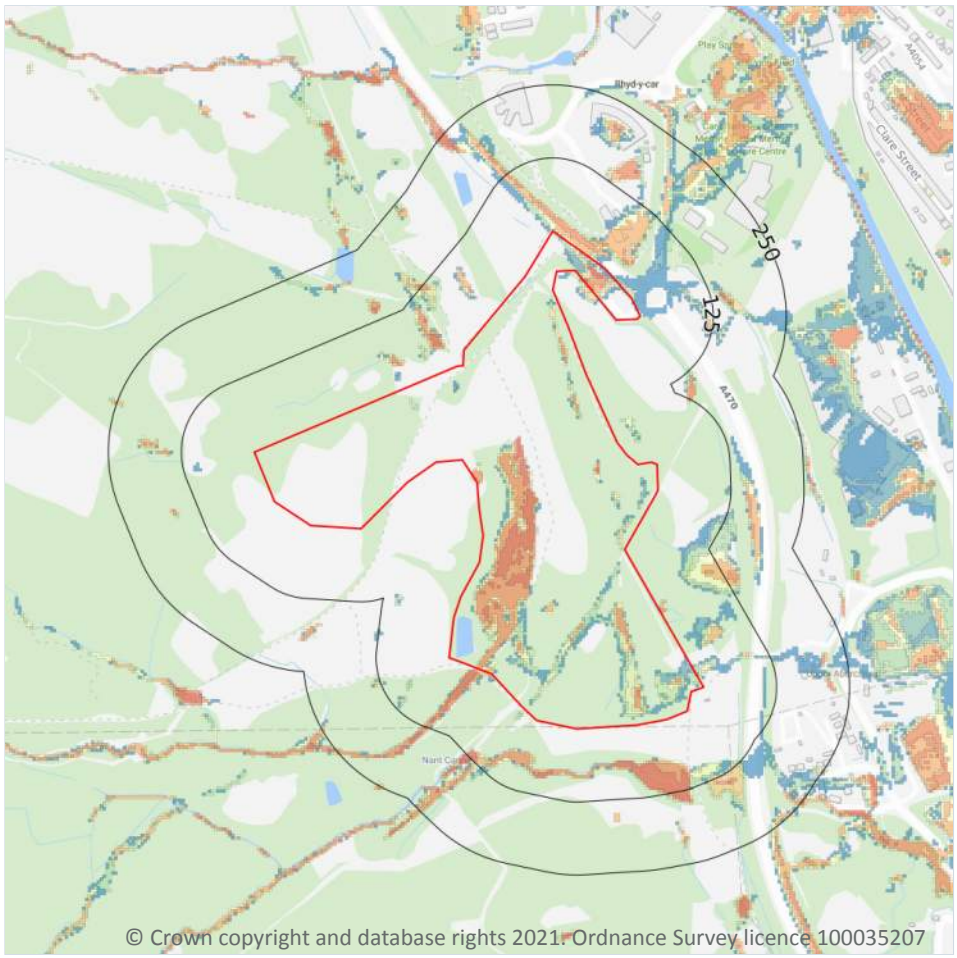
## 7.7 Flood Zone 3

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

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

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

# 8 Surface water flooding




Site Outline
Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

## 8.1 Surface water flooding

| | |
|---|---|
| **Highest risk on site** | **1 in 30 year, Greater than 1.0m** |
| **Highest risk within 50m** | **1 in 30 year, Greater than 1.0m** |

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

Features are displayed on the Surface water flooding map on **page 121**

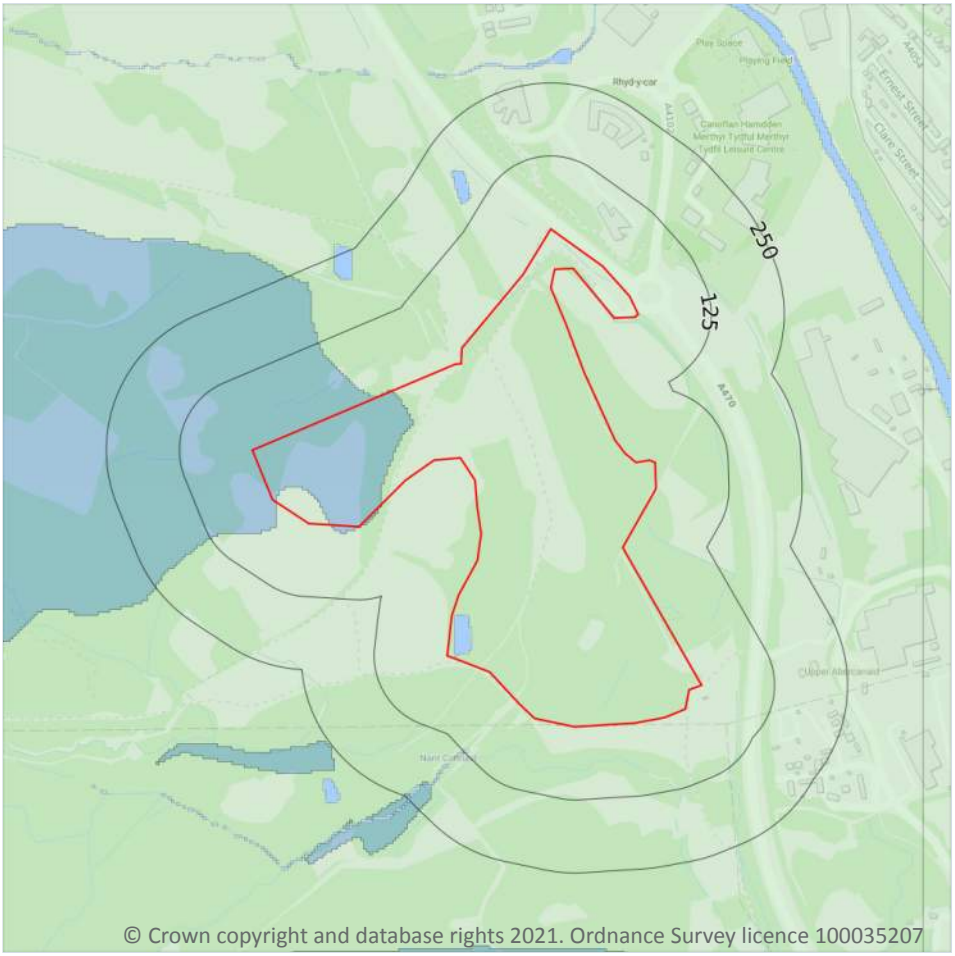
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

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

| Return period | Maximum modelled depth |
|---|---|
| 1 in 1000 year | Greater than 1.0m |
| 1 in 250 year | Greater than 1.0m |
| 1 in 100 year | Greater than 1.0m |
| 1 in 30 year | Greater than 1.0m |

*This data is sourced from Ambiental Risk Analytics.*

# 9 Groundwater flooding




Site Outline

Search buffers in metres (m)

High

Moderate - High

Moderate

Low

Negligible

## 9.1 Groundwater flooding

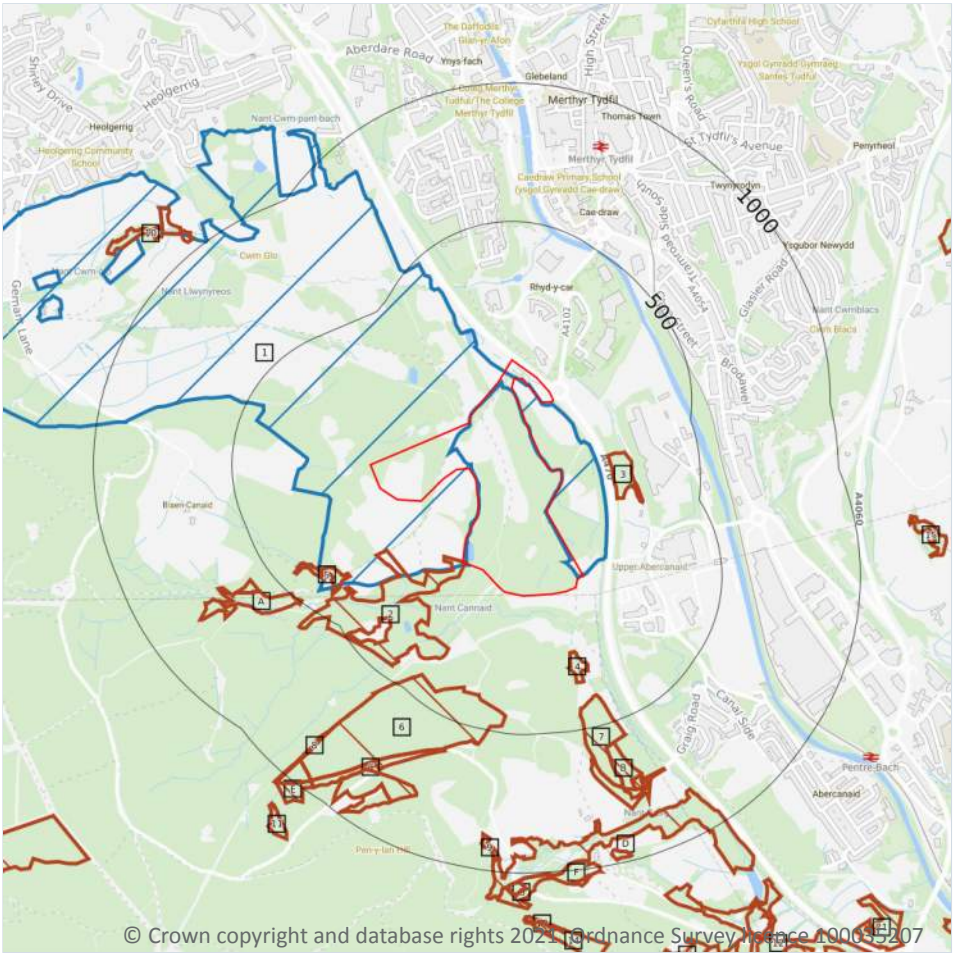
| | |
|---|---|
| **Highest risk on site** | **Low** |
| **Highest risk within 50m** | **Low** |

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

Features are displayed on the Groundwater flooding map on **page 123**

*This data is sourced from Ambiental Risk Analytics.*

# 10 Environmental designations




Site Outline

Search buffers in metres (m)

Sites of Special Scientific Interest (SSSI)

Designated Ancient Woodland

## 10.1 Sites of Special Scientific Interest (SSSI)

| Records within 2000m | 1 |
|---|---|

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

Features are displayed on the Environmental designations map on **page 124**

| ID | Location | Name | Data source |
|---|---|---|---|
| **1** | **On site** | **Cwm Glo A Glyndyrys** | **Natural Resources Wales** |

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

## 10.2 Conserved wetland sites (Ramsar sites)

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

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

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

## 10.3 Special Areas of Conservation (SAC)

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

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

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

## 10.4 Special Protection Areas (SPA)

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

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

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

## 10.5 National Nature Reserves (NNR)

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

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

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

## 10.6 Local Nature Reserves (LNR)

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

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

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

## 10.7 Designated Ancient Woodland

| Records within 2000m | 54 |
|---|---|

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

Features are displayed on the Environmental designations map on **page 124**

| ID | Location | Name | Woodland Type |
|---|---|---|---|
| **2** | **On site** | **Unknown** | **Ancient Semi Natural Woodland** |
| 3 | 176m E | Unknown | Ancient Semi Natural Woodland |
| 4 | 219m S | Unknown | Ancient Semi Natural Woodland |
| 5 | 321m SW | Unknown | Ancient Semi Natural Woodland |
| 6 | 374m SW | Unknown | Ancient Semi Natural Woodland |
| 7 | 389m S | Unknown | Ancient Semi Natural Woodland |
| A | 494m SW | Unknown | Ancient Semi Natural Woodland |
| B | 572m S | Unknown | Ancient Semi Natural Woodland |
| A | 572m SW | Unknown | Plantation on Ancient Woodland Site |
| B | 604m S | Unknown | Ancient Semi Natural Woodland |
| C | 607m S | Unknown | Ancient Semi Natural Woodland |
| A | 663m SW | Unknown | Plantation on Ancient Woodland Site |
| A | 676m SW | Unknown | Ancient Woodland Site of Unknown Category |
| B | 716m S | Unknown | Ancient Semi Natural Woodland |
| 8 | 758m SW | Unknown | Ancient Semi Natural Woodland |
| C | 776m SW | Unknown | Plantation on Ancient Woodland Site |

| ID | Location | Name | Woodland Type |
|---|---|---|---|
| C | 824m SW | Unknown | Ancient Semi Natural Woodland |
| D | 834m S | Unknown | Ancient Semi Natural Woodland |
| 9 | 871m S | Unknown | Plantation on Ancient Woodland Site |
| E | 923m SW | Unknown | Plantation on Ancient Woodland Site |
| E | 924m SW | Unknown | Plantation on Ancient Woodland Site |
| D | 948m S | Unknown | Restored Ancient Woodland Site |
| F | 969m S | Unknown | Restored Ancient Woodland Site |
| G | 1008m S | Unknown | Ancient Woodland Site of Unknown Category |
| F | 1024m S | Unknown | Plantation on Ancient Woodland Site |
| G | 1030m S | Unknown | Ancient Woodland Site of Unknown Category |
| 10 | 1038m NW | Unknown | Ancient Semi Natural Woodland |
| 11 | 1110m SW | Unknown | Plantation on Ancient Woodland Site |
| 12 | 1141m S | Unknown | Ancient Semi Natural Woodland |
| 13 | 1158m S | Unknown | Ancient Woodland Site of Unknown Category |
| 14 | 1171m S | Unknown | Plantation on Ancient Woodland Site |
| 15 | 1193m E | Unknown | Ancient Semi Natural Woodland |
| 16 | 1329m S | Unknown | Ancient Semi Natural Woodland |
| 17 | 1387m S | Unknown | Ancient Semi Natural Woodland |
| - | 1424m E | Unknown | Ancient Semi Natural Woodland |
| - | 1493m E | Unknown | Ancient Semi Natural Woodland |
| 20 | 1514m NE | Unknown | Restored Ancient Woodland Site |
| 21 | 1525m SE | Unknown | Ancient Semi Natural Woodland |
| - | 1557m E | Unknown | Ancient Semi Natural Woodland |
| - | 1590m E | Unknown | Ancient Semi Natural Woodland |
| - | 1610m S | Unknown | Ancient Semi Natural Woodland |
| - | 1621m E | Unknown | Ancient Semi Natural Woodland |
| 25 | 1670m SW | Unknown | Plantation on Ancient Woodland Site |
| - | 1713m SE | Unknown | Restored Ancient Woodland Site |

| ID | Location | Name | Woodland Type |
|---|---|---|---|
| - | 1726m S | Unknown | Plantation on Ancient Woodland Site |
| - | 1760m E | Unknown | Ancient Semi Natural Woodland |
| - | 1770m NE | Unknown | Ancient Semi Natural Woodland |
| 29 | 1794m SE | Unknown | Ancient Semi Natural Woodland |
| - | 1868m S | Unknown | Plantation on Ancient Woodland Site |
| - | 1873m SE | Unknown | Ancient Semi Natural Woodland |
| - | 1891m SE | Unknown | Ancient Semi Natural Woodland |
| - | 1935m SE | Unknown | Ancient Semi Natural Woodland |
| - | 1955m E | Unknown | Restored Ancient Woodland Site |
| - | 1960m N | Unknown | Restored Ancient Woodland Site |

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

## 10.8 Biosphere Reserves

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

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

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

## 10.9 Forest Parks

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

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

*This data is sourced from the Forestry Commission.*

## 10.10 Marine Conservation Zones

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

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

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

## 10.11 Green Belt

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

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

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

## 10.12 Proposed Ramsar sites

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

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

*This data is sourced from Natural England.*

## 10.13 Possible Special Areas of Conservation (pSAC)

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

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

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

## 10.14 Potential Special Protection Areas (pSPA)

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

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

*This data is sourced from Natural England.*

## 10.15 Nitrate Sensitive Areas

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

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

*This data is sourced from Natural England.*

## 10.16 Nitrate Vulnerable Zones

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

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

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

# SSSI Impact Zones and Units

## 10.17 SSSI Impact Risk Zones

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

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

*This data is sourced from Natural England.*

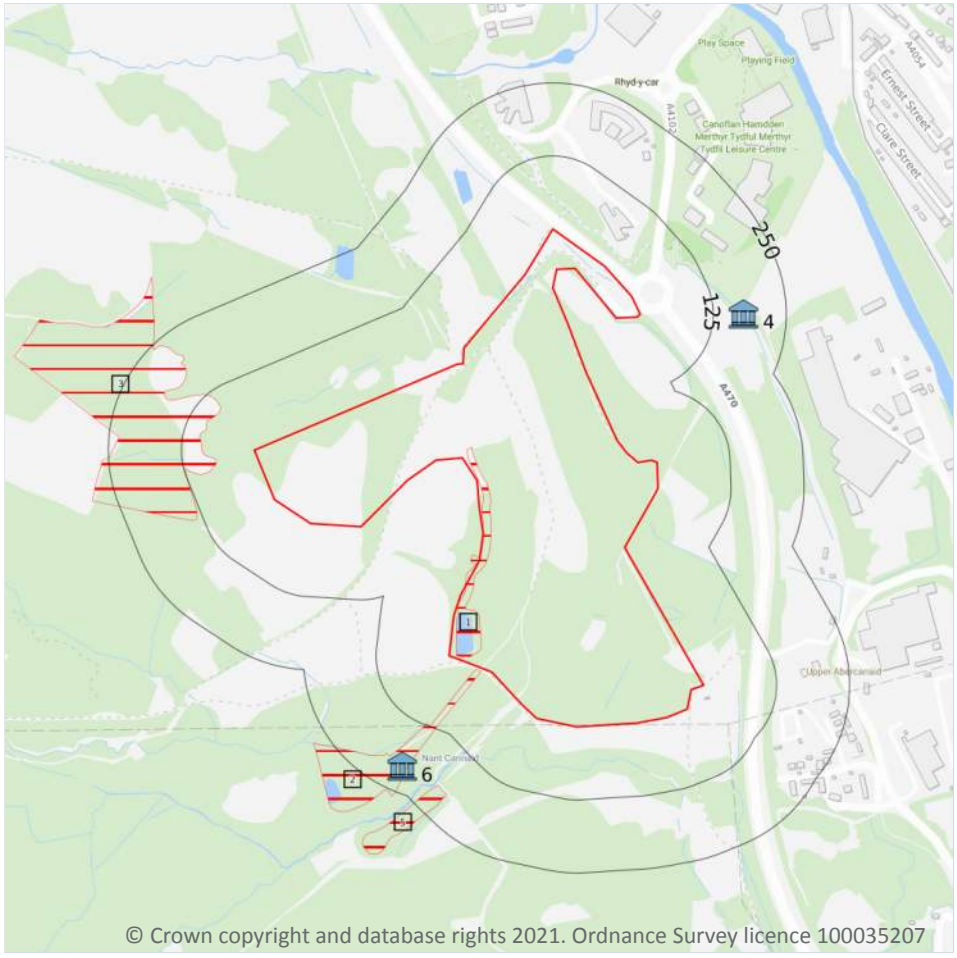
## 10.18 SSSI Units

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

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

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

# 11 Visual and cultural designations




Site Outline

Search buffers in metres (m)

Listed buildings

Conservation areas

Conservation areas - no data

National Parks

Areas of Outstanding Natural Beauty

Registered parks and gardens

Scheduled Monuments

World Heritage Sites

## 11.1 World Heritage Sites

| Records within 250m | 0 |
|---|---|

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

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

## 11.2 Area of Outstanding Natural Beauty

| Records within 250m | 0 |
|---|---|

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

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

## 11.3 National Parks

| Records within 250m | 0 |
|---|---|

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

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

## 11.4 Listed Buildings

| Records within 250m | 2 |
|---|---|

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

Features are displayed on the Visual and cultural designations map on **page 132**

| ID | Location | Name | Grade | Reference Number | Listed date |
|---|---|---|---|---|---|
| 4 | 177m E | Rhydycar Skew Bridge, Located S Of Rhydycar Leisure Centre And Crossing The Line Of The Former Glamorganshire Canal Beneath A Tall Embankment | II | 15676 | 14/02/1995 |
| 6 | 206m SW | Base Of Chimney At Cwm Pit, In Forestry On The W Side Of The Taf Valley Reached By A Track Some 1Km NW From The Gethin Forest Picnic Site | II | 81752 | 29/07/2003 |

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

## 11.5 Conservation Areas

| Records within 250m | 0 |
|---|---|

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

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

## 11.6 Scheduled Ancient Monuments

| Records within 250m | 4 |
|---|---|

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

Features are displayed on the Visual and cultural designations map on **page 132**

| ID | Location | Ancient monument name | Reference number |
|---|---|---|---|
| **1** | **On site** | **Cyfarthfa balance pond and leat** | **4338** |
| 2 | 5m S | Cwm Pit and head of railway | 4336 |
| 3 | 68m W | Black Pins early ironstone workings | 4339 |
| 5 | 199m SW | Vale of Neath railway cutting and tunnel portal | 4337 |

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

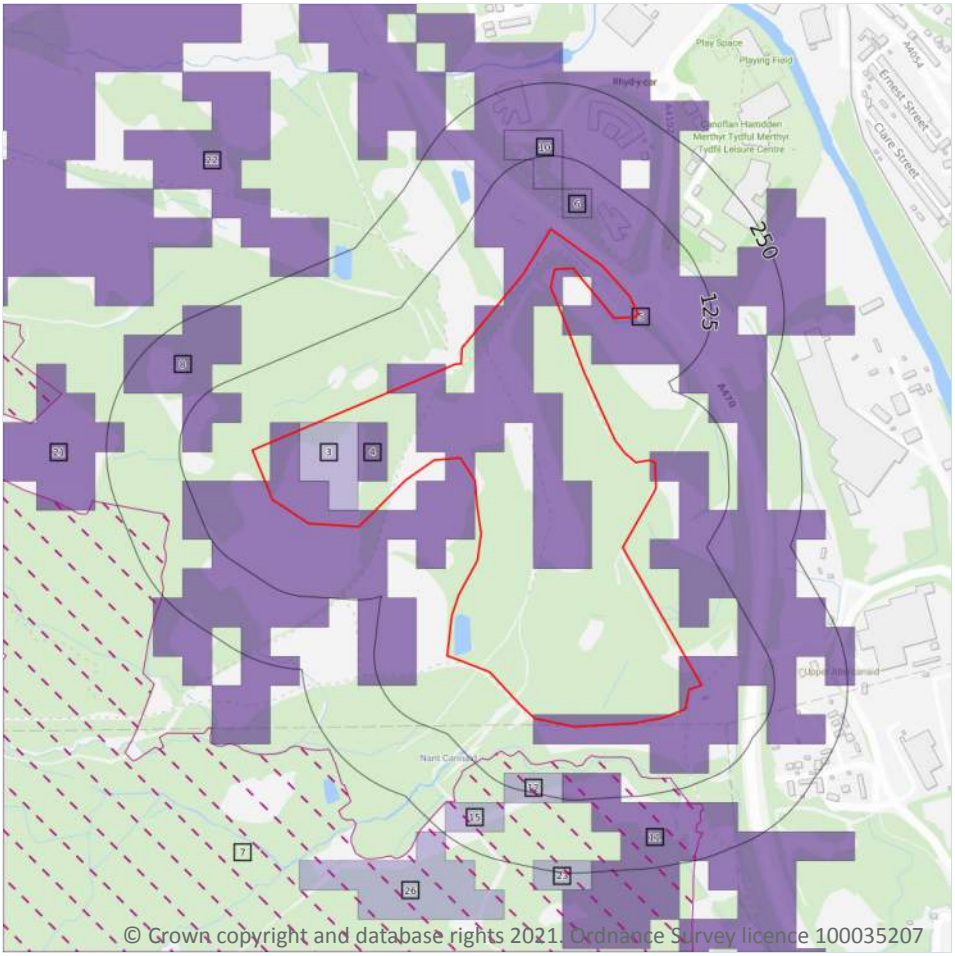
## 11.7 Registered Parks and Gardens

| Records within 250m | 0 |
|---|---|

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

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

# 12 Agricultural designations




Site Outline

Search buffers in metres (m)

- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Timber felling licences
- Open Access land

## 12.1 Agricultural Land Classification

| Records within 250m | 13 |
|---|---|

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

Features are displayed on the Agricultural designations map on **page 135**

| ID | Location | Classification | Description |
|---|---|---|---|
| **3** | **On site** | **Grade 4** | **Poor quality agricultural land** |
| **4** | **On site** | **Grade 5** | **Very poor quality agricultural land** |
| **5** | **On site** | **Grade 5** | **Very poor quality agricultural land** |

| ID | Location | Classification | Description |
|---|---|---|---|
| 6 | 27m NE | Grade 5 | Very poor quality agricultural land |
| 8 | 51m NW | Grade 5 | Very poor quality agricultural land |
| 10 | 69m N | Grade 5 | Very poor quality agricultural land |
| 11 | 79m S | Grade 5 | Very poor quality agricultural land |
| 12 | 82m S | Grade 4 | Poor quality agricultural land |
| 15 | 153m S | Grade 4 | Poor quality agricultural land |
| 21 | 219m W | Grade 5 | Very poor quality agricultural land |
| 22 | 223m NW | Grade 5 | Very poor quality agricultural land |
| 23 | 229m S | Grade 4 | Poor quality agricultural land |
| 26 | 247m SW | Grade 4 | Poor quality agricultural land |

*This data is sourced from Natural Resources Wales.*

## 12.2 Open Access Land

| **Records within 250m** | **1** |
|---|---|

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

Features are displayed on the Agricultural designations map on **page 135**

| ID | Location | Name | Classification | Other relevant legislation |
|---|---|---|---|---|
| 7 | 51m S | - | NRW Public Forest 2014 | - |

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

## 12.3 Tree Felling Licences

| **Records within 250m** | **0** |
|---|---|

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

*This data is sourced from the Forestry Commission.*

## 12.4 Environmental Stewardship Schemes

| Records within 250m | 0 |
|---|---|

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

*This data is sourced from Natural England.*

## 12.5 Countryside Stewardship Schemes

| Records within 250m | 0 |
|---|---|

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

*This data is sourced from Natural England.*

# 13 Habitat designations

## 13.1 Priority Habitat Inventory

| Records within 250m | 0 |
|---|---|

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

*This data is sourced from Natural England.*

## 13.2 Habitat Networks

| Records within 250m | 0 |
|---|---|

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

*This data is sourced from Natural England.*

## 13.3 Open Mosaic Habitat

| Records within 250m | 0 |
|---|---|

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

*This data is sourced from Natural England.*

## 13.4 Limestone Pavement Orders

| Records within 250m | 0 |
|---|---|

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

*This data is sourced from Natural England.*

# 14 Geology 1:10,000 scale - Availability




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Site Outline

Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

## 14.1 10k Availability

| Records within 500m | 1 |
|---|---|

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

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 139**

| ID | Location | Artificial | Superficial | Bedrock | Mass movement | Sheet No. |
|---|---|---|---|---|---|---|
| **1** | **On site** | **No coverage** | **No coverage** | **No coverage** | **No coverage** | **NoCov** |

*This data is sourced from the British Geological Survey.*

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

## 14.2 Artificial and made ground (10k)

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

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

*This data is sourced from the British Geological Survey.*

# Geology 1:10,000 scale - Superficial

## 14.3 Superficial geology (10k)

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

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

*This data is sourced from the British Geological Survey.*

## 14.4 Landslip (10k)

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

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

*This data is sourced from the British Geological Survey.*

# Geology 1:10,000 scale - Bedrock

## 14.5 Bedrock geology (10k)

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

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

*This data is sourced from the British Geological Survey.*

## 14.6 Bedrock faults and other linear features (10k)

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

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

*This data is sourced from the British Geological Survey.*

# 15 Geology 1:50,000 scale - Availability




Site Outline

Search buffers in metres (m)

Geological map tile

## 15.1 50k Availability

| Records within 500m | 1 |
|---|---|

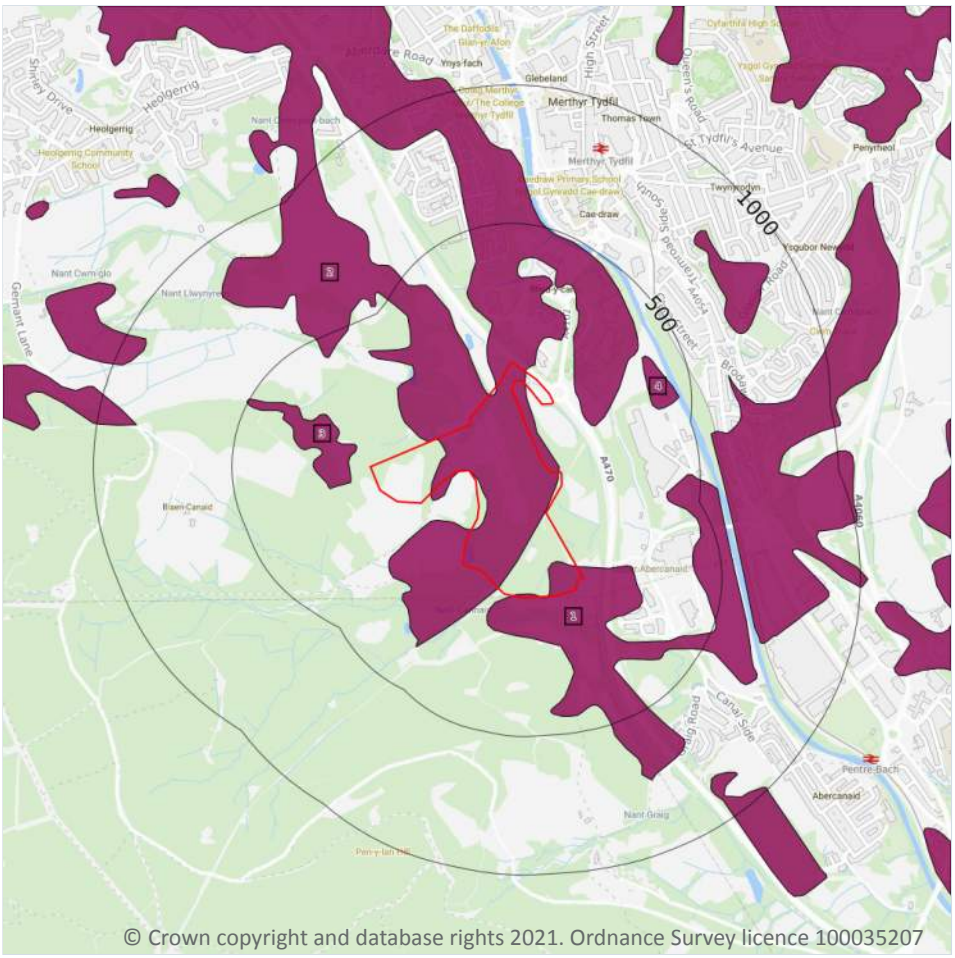
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme. Where 50k data is not available, this area has been filled in with 625k scale data.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 143**

| ID | Location | Artificial | Superficial | Bedrock | Mass movement | Sheet No. |
|---|---|---|---|---|---|---|
| **1** | **On site** | **Full** | **Full** | **Full** | **Full** | **EW231_merthyr_v4** |

*This data is sourced from the British Geological Survey.*

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




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Site Outline

Search buffers in metres (m)

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

## 15.2 Artificial and made ground (50k)

| Records within 500m | 4 |
|---|---|

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

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on **page 144**

| ID | Location | LEX Code | Description | Rock description |
|---|---|---|---|---|
| **1** | **On site** | **MGR-ARTDP** | **MADE GROUND (UNDIVIDED)** | **ARTIFICIAL DEPOSIT** |
| **2** | **On site** | **MGR-ARTDP** | **MADE GROUND (UNDIVIDED)** | **ARTIFICIAL DEPOSIT** |
| 3 | 75m W | MGR-ARTDP | MADE GROUND (UNDIVIDED) | ARTIFICIAL DEPOSIT |
| 4 | 344m E | MGR-ARTDP | MADE GROUND (UNDIVIDED) | ARTIFICIAL DEPOSIT |

*This data is sourced from the British Geological Survey.*

## 15.3 Artificial ground permeability (50k)

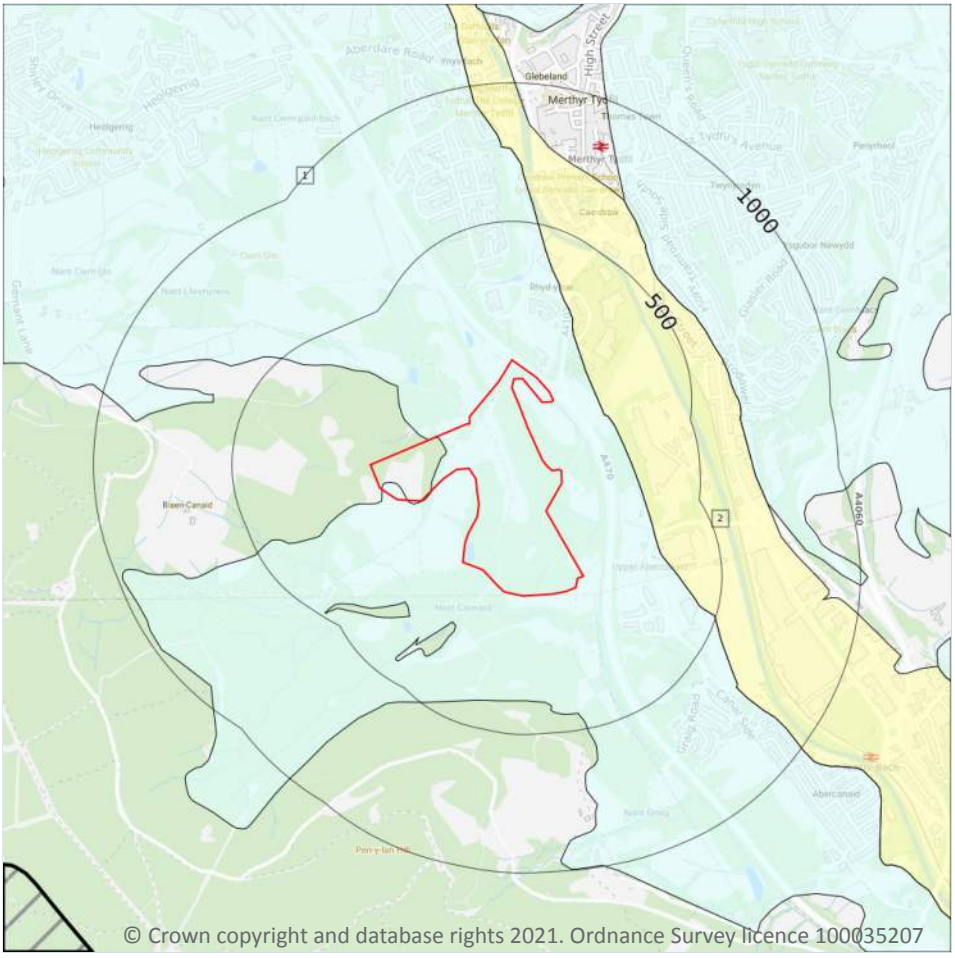
| Records within 50m | 3 |
|---|---|

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

| Location | Flow type | Maximum permeability | Minimum permeability |
|---|---|---|---|
| **On site** | **Mixed** | **Very High** | **Low** |
| **On site** | **Mixed** | **Very High** | **Low** |
| **On site** | **Mixed** | **Very High** | **Low** |

*This data is sourced from the British Geological Survey.*

# Geology 1:50,000 scale - Superficial




Site Outline

Search buffers in metres (m)

Landslip (50k)

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

## 15.4 Superficial geology (50k)

**Records within 500m** **2**

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

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 146**

| ID | Location | LEX Code | Description | Rock description |
|---|---|---|---|---|
| **1** | **On site** | **TILLD-DMTN** | **TILL, DEVENSIAN** | **DIAMICTON** |
| 2 | 149m NE | ALV-XCZSV | ALLUVIUM | CLAY, SILT, SAND AND GRAVEL |

*This data is sourced from the British Geological Survey.*

## 15.5 Superficial permeability (50k)

| Records within 50m | 2 |
|---|---|

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

| Location | Flow type | Maximum permeability | Minimum permeability |
|---|---|---|---|
| **On site** | **Mixed** | **High** | **Low** |
| **On site** | **Mixed** | **High** | **Low** |

*This data is sourced from the British Geological Survey.*

## 15.6 Landslip (50k)

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

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

*This data is sourced from the British Geological Survey.*

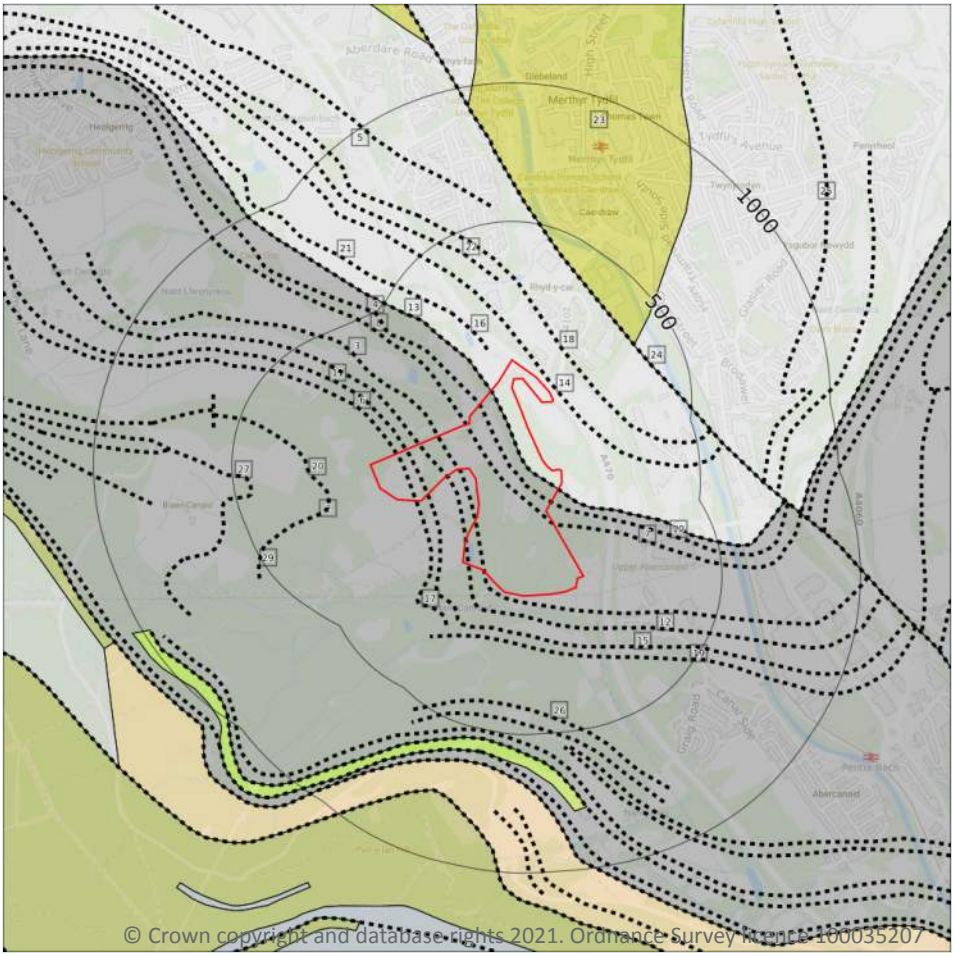
## 15.7 Landslip permeability (50k)

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

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

*This data is sourced from the British Geological Survey.*

# Geology 1:50,000 scale - Bedrock




Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

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

## 15.8 Bedrock geology (50k)

| Records within 500m | 4 |
|---|---|

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

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 148**

| ID | Location | LEX Code | Description | Rock age |
|---|---|---|---|---|
| **2** | **On site** | **SWMCM-MDSS** | **SOUTH WALES MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE** | **WESTPHALIAN** |
| **5** | **On site** | **SWLCM-MDSS** | **SOUTH WALES LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE** | **WESTPHALIAN** |

| ID | Location | LEX Code | Description | Rock age |
|---|---|---|---|---|
| 23 | 344m NE | SWLCM-SDST | SOUTH WALES LOWER COAL MEASURES FORMATION - SANDSTONE | WESTPHALIAN |
| 25 | 350m NE | SWLCM-MDSS | SOUTH WALES LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE | WESTPHALIAN |

*This data is sourced from the British Geological Survey.*

## 15.9 Bedrock permeability (50k)

**Records within 50m** **4**

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

| Location | Flow type | Maximum permeability | Minimum permeability |
|---|---|---|---|
| **On site** | **Fracture** | **Moderate** | **Low** |
| **On site** | **Fracture** | **Moderate** | **Low** |
| **On site** | **Fracture** | **Moderate** | **Low** |
| **On site** | **Fracture** | **Moderate** | **Low** |

*This data is sourced from the British Geological Survey.*

## 15.10 Bedrock faults and other linear features (50k)

**Records within 500m** **25**

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

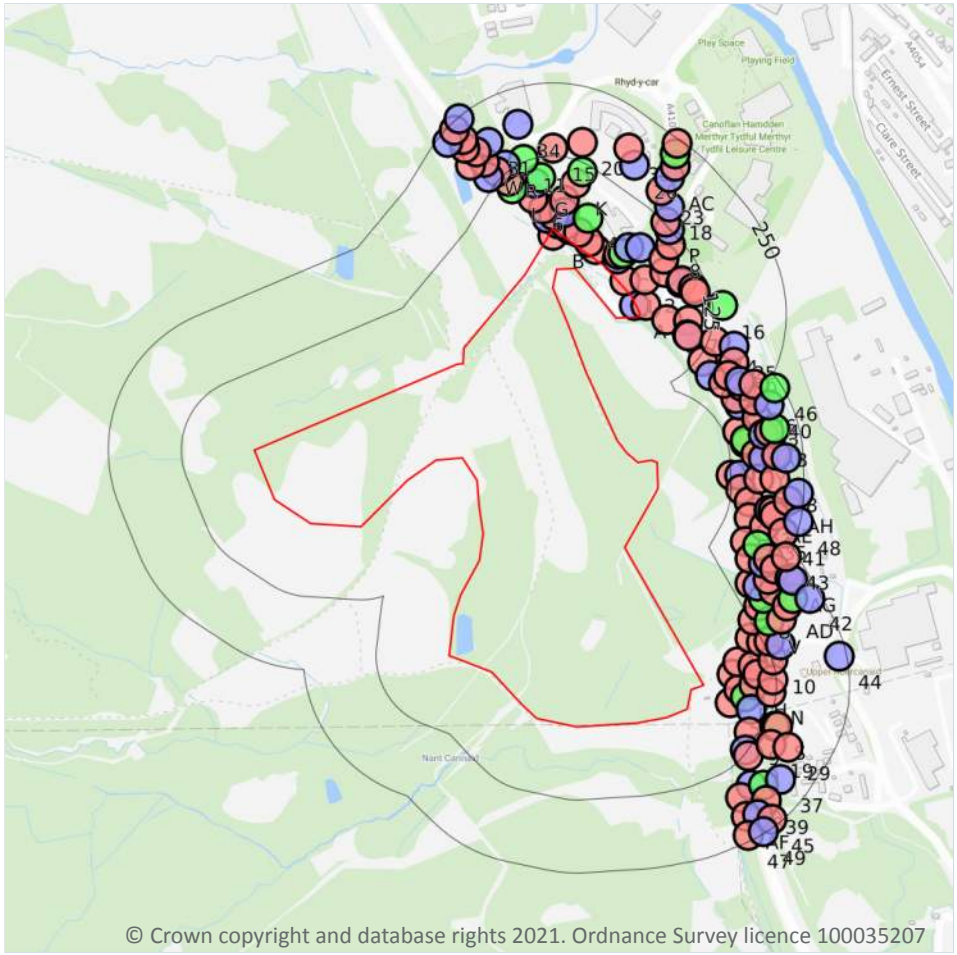
Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 148**

| ID | Location | Category | Description |
|---|---|---|---|
| **1** | **On site** | **ROCK** | **Coal seam, inferred** |
| **3** | **On site** | **ROCK** | **Coal seam, observed** |
| **4** | **On site** | **ROCK** | **Coal seam, observed** |
| **6** | **On site** | **ROCK** | **Coal seam, observed** |
| **7** | **On site** | **ROCK** | **Coal seam, inferred** |

| ID | Location | Category | Description |
|---|---|---|---|
| **8** | **On site** | **ROCK** | **Coal seam, observed** |
| **9** | **On site** | **ROCK** | **Coal seam, observed** |
| **10** | **On site** | **ROCK** | **Coal seam, inferred** |
| **11** | **On site** | **ROCK** | **Coal seam, observed** |
| **12** | **On site** | **ROCK** | **Coal seam, inferred** |
| **13** | **On site** | **FOSSIL_HORIZON** | **Marine band** |
| 14 | 24m NE | ROCK | Coal seam, inferred |
| 15 | 59m SE | ROCK | Coal seam, inferred |
| 16 | 96m NW | ROCK | Coal seam, inferred |
| 17 | 123m W | ROCK | Coal seam, inferred |
| 18 | 133m NE | ROCK | Coal seam, inferred |
| 19 | 173m S | ROCK | Coal seam, inferred |
| 20 | 182m W | ROCK | Coal seam, observed |
| 21 | 278m NW | ROCK | Coal seam, observed |
| 22 | 291m N | ROCK | Coal seam, inferred |
| 24 | 344m NE | FAULT | Fault, inferred, displacement unknown |
| 26 | 396m S | ROCK | Coal seam, inferred |
| 27 | 440m W | ROCK | Coal seam, observed |
| 28 | 449m S | ROCK | Coal seam, inferred |
| 29 | 468m SW | ROCK | Coal seam, inferred |

*This data is sourced from the British Geological Survey.*

# 16 Boreholes




Site Outline

Search buffers in metres (m)

Confidential

0 - 10m

10 - 30m

30m+

Unknown

## 16.1 BGS Boreholes

| Records within 250m | 163 |
|---|---|

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

Features are displayed on the Boreholes map on **page 151**

| ID | Location | Grid reference | Name | Length | Confidential | Web link |
|---|---|---|---|---|---|---|
| **A** | **On site** | **304820 205100** | **A470 PENTREBACH/CEFN COED P113** | **4.5** | **N** | **260288** |
| **B** | **On site** | **304680 205220** | **A470 PENTREBACH CEFNCOED B41** | **48.6** | **N** | **260140** |
| 1 | 10m NE | 304804 205143 | A470 PENTREBACH PB 162 | 42.0 | N | 260359 |

| ID | Location | Grid reference | Name | Length | Confidential | Web link |
|---|---|---|---|---|---|---|
| B | 13m NE | 304690 205240 | A470 PENTREBACH/CEFN COED P42 | 4.5 | N | 260223 |
| B | 14m NE | 304754 205196 | A470 PENTREBACH PB 180 | 45.0 | N | 260376 |
| A | 16m NE | 304840 205100 | A470 PENTREBACH CEFNCOED B34 | 53.0 | N | 260133 |
| B | 16m NE | 304710 205230 | TAFF VALLEY TRUNK ROAD. TP.633A | 4.7 | N | 259990 |
| B | 18m NE | 304742 205209 | A470 PENTREBACH PB 181 | 44.0 | N | 260377 |
| B | 18m NE | 304702 205238 | A470 PENTREBACH PB 183 | 42.0 | N | 260379 |
| B | 21m NE | 304724 205226 | A470 PENTREBACH PB 182 | 44.0 | N | 260378 |
| B | 21m NW | 304670 205250 | TAFF VALLEY TRUNK ROAD. TP.634A | 4.6 | N | 259991 |
| B | 23m N | 304682 205254 | A470 PENTREBACH PB 184 | 44.5 | N | 260380 |
| C | 24m NE | 304790 205180 | A470 PENTREBACH/CEFN COED P41 | 4.5 | N | 260222 |
| C | 32m NE | 304793 205188 | A470 PENTREBACH PB 167 | 43.0 | N | 260364 |
| B | 35m NE | 304700 205260 | A470 PENTREBACH/CEFN COED P43 | 2.5 | N | 260224 |
| 2 | 36m NE | 304838 205144 | A470 PENTREBACH PB 163 | 42.0 | N | 260360 |
| C | 38m NE | 304800 205190 | TAFF VALLEY T.K. TP.631, BH'S.271,271A | 29.35 | N | 259986 |
| B | 38m NW | 304664 205266 | A470 PENTREBACH PB 185 | 42.0 | N | 260381 |
| 3 | 46m E | 304875 205076 | A470 PENTREBACH PB 172 | 42.0 | N | 260369 |
| 4 | 50m NE | 304740 205250 | TAFF VALLEY TRUNK ROAD. 278 | 21.5 | N | 259989 |
| C | 52m NE | 304810 205200 | TAFF VALLEY TRUNK ROAD. TP.632 | 3.85 | N | 259988 |
| D | 53m E | 304987 204470 | A470 PENTREBACH-CEFNCOED PB 69 | 37.9 | N | 261196 |
| B | 53m N | 304700 205280 | TAFF VALLEY TRUNK ROAD. 274,274A | 31.1 | N | 259992 |
| 5 | 54m SE | 304983 204421 | A470 PENTREBACH-CEFNCOED PB 65 | 41.5 | N | 261194 |
| E | 60m E | 304998 204444 | A470 PENTREBACH-CEFNCOED PB 66 | 41.5 | N | 261195 |
| 6 | 63m NW | 304646 205284 | A470 PENTREBACH PB 186 | 42.5 | N | 260382 |
| C | 67m NE | 304830 205200 | TAFF VALLEY T.K. TP.631, 272 | 8.47 | N | 259987 |
| F | 70m NE | 304872 205157 | A470 PENTREBACH PB 164 | 42.0 | N | 260361 |
| D | 71m NE | 304997 204491 | A470 PENTREBACH-CEFNCOED PB 76 | 42.0 | N | 261197 |
| E | 75m E | 305010 204430 | A470 PENTREBACH-CEFNCOED B23 | 13.9 | N | 260814 |
| 7 | 83m E | 304912 205075 | A470 PENTREBACH PB 165 | 42.0 | N | 260362 |

| ID | Location | Grid reference | Name | Length | Confidential | Web link |
|---|---|---|---|---|---|---|
| F | 84m NE | 304870 205180 | A470 PENTREBACH CEFNCOED B35 | 37.3 | N | 260134 |
| G | 84m N | 304650 205310 | A470 PENTREBACH/CEFN COED P44 | 2.6 | N | 260225 |
| H | 87m E | 305025 204452 | A470 PENTREBACH-CEFNCOED PB 68 | 39.0 | N | 260980 |
| I | 87m NE | 304900 205140 | A470 PENTREBACH/CEFN COED P33 | 4.5 | N | 260214 |
| J | 88m SE | 304910 205050 | A470 PENTREBACH/CEFN COED P32 | 4.5 | N | 260213 |
| K | 88m NE | 304720 205310 | TAFF VALLEY TRUNK ROAD. 184,184A | 35.05 | N | 259993 |
| I | 89m NE | 304901 205142 | A470 PENTREBACH PB 171 | 42.0 | N | 260368 |
| J | 91m SE | 304912 205048 | A470 PENTREBACH PB 145 | 42.0 | N | 260343 |
| G | 91m N | 304660 205320 | TAFF VALLEY TRUNK ROAD. 277 | 17.0 | N | 259997 |
| H | 91m E | 305023 204484 | A470 PENTREBACH-CEFNCOED PB 75 | 38.0 | N | 260986 |
| E | 92m SE | 305020 204410 | A470 PENTREBACH-CEFNCOED P21 | 4.5 | N | 260845 |
| H | 94m E | 305030 204470 | A470 PENTREBACH-CEFNCOED B24 | 39.3 | N | 260815 |
| L | 98m NW | 304610 205300 | TAFF VALLEY TRUNK ROAD. 275, TP.635A | 18.0 | N | 259998 |
| I | 101m NE | 304920 205130 | TAFF VALLEY T.K. TP.631, BH'S.183,183A,183B | 31.7 | N | 259985 |
| I | 102m E | 304924 205123 | A470 PENTREBACH PB 166 | 33.0 | N | 260363 |
| 8 | 108m NE | 304881 205204 | A470 PENTREBACH PB 168 | 42.0 | N | 260365 |
| M | 109m NE | 305018 204531 | A470 PENTREBACH PB 226 | 42.0 | N | 261035 |
| K | 111m NE | 304730 205330 | TAFF VALLEY TRUNK ROAD. 185 | 10.8 | N | 259994 |
| 9 | 112m SE | 305016 204371 | A470 PENTREBACH-CEFNCOED PB 67 | 42.0 | N | 260979 |
| L | 112m NW | 304604 205313 | A470 PENTREBACH PB 187 | 45.0 | N | 260383 |
| N | 117m E | 305054 204439 | A470 PENTREBACH-CEFNCOED PB 63 | 42.0 | N | 260977 |
| N | 119m E | 305057 204459 | A470 PENTREBACH-CEFNCOED PB 77 | 38.0 | N | 260987 |
| O | 122m SE | 305010 204340 | A470 PENTREBACH-CEFNCOED P20 | 4.3 | N | 260844 |
| M | 124m NE | 305038 204525 | A470 PENTREBACH-CEFNCOED PB 78 | 36.0 | N | 260988 |
| P | 124m NE | 304880 205230 | A470 PENTREBACH/CEFN COED P34 | 4.5 | N | 260215 |
| 10 | 126m E | 305057 204493 | A470 PENTREBACH-CEFNCOED PB 79 | 33.0 | N | 260989 |
| Q | 127m E | 304986 204810 | A470 PENTREBACH PB 173 | 40.5 | N | 261200 |
| P | 129m NE | 304873 205244 | A470 PENTREBACH PB 169 | 42.0 | N | 260366 |

| ID | Location | Grid reference | Name | Length | Confidential | Web link |
|---|---|---|---|---|---|---|
| 11 | 129m NW | 304630 205350 | TAFF VALLEY TRUNK ROAD. 276 | 14.2 | N | 259999 |
| 12 | 129m NE | 305023 204562 | A470 PENTREBACH-CEFNCOED PB 88 | 36.0 | N | 260998 |
| O | 131m SE | 305014 204330 | A470 PENTREBACH-CEFNCOED PB 60 | 41.5 | N | 260974 |
| 13 | 134m SE | 304937 205005 | A470 PENTREBACH PB 161 | 42.0 | N | 260358 |
| M | 135m NE | 305050 204526 | A470 PENTREBACH-CEFNCOED PB 86 | 36.2 | N | 260996 |
| R | 135m NW | 304600 205340 | TAFF VALLEY TRUNK ROAD. TP.636A | 5.0 | N | 260001 |
| 14 | 137m E | 304958 205039 | A470 PENTREBACH PB 144 | 42.35 | N | 260342 |
| R | 138m NW | 304584 205330 | A470 PENTREBACH PB 188 | 42.0 | N | 260384 |
| 15 | 139m N | 304680 205370 | TAFF VALLEY TRUNK ROAD. 187 | 30.1 | N | 259996 |
| Q | 141m E | 305000 204810 | A470 PENTREBACH-CEFNCOED TP112 | 4.5 | N | 260859 |
| S | 141m SE | 305060 204380 | A470 PENTREBACH-CEFNCOED B22 | 18.0 | N | 260813 |
| 16 | 141m E | 304970 205100 | TAFF VALLEY T.K. 182 | 18.4 | N | 259984 |
| R | 141m NW | 304570 205320 | A470 PENTREBACH/CEFN COED P45 | 4.5 | N | 260226 |
| 17 | 142m E | 305002 204785 | A470 PENTREBACH PB 127 | 40.0 | N | 261024 |
| S | 145m SE | 305065 204381 | A470 PENTREBACH-CEFNCOED PB 64 | 42.0 | N | 260978 |
| T | 147m E | 304996 204885 | A470 PENTREBACH PB 225 | 42.0 | N | 261201 |
| M | 149m NE | 305070 204520 | A470 PENTREBACH-CEFNCOED P22 | 4.8 | N | 260846 |
| U | 149m NE | 305032 204587 | A470 PENTREBACH-CEFNCOED PB 87 | 42.0 | N | 260997 |
| 18 | 151m NE | 304880 205270 | A470 PENTREBACH CEFNCOED B36 | 9.65 | N | 260135 |
| V | 152m NE | 305050 204560 | A470 PENTREBACH-CEFNCOED B25 | 29.2 | N | 260816 |
| 19 | 154m SE | 305053 204349 | A470 PENTREBACH PB 227 | 42.0 | N | 261036 |
| T | 154m E | 305009 204866 | A470 PENTREBACH PB 130 | 42.0 | N | 261027 |
| U | 156m NE | 305018 204625 | A470 PENTREBACH PB 139 | 37.0 | N | 261033 |
| T | 156m E | 305010 204870 | A470 PENTREBACH-CEFNCOED B31 | 25.0 | N | 260822 |
| 20 | 157m N | 304730 205380 | TAFF VALLEY TRUNK ROAD. 186 | 35.1 | N | 259995 |
| 21 | 158m E | 305016 204764 | A470 PENTREBACH PB 126 | 42.0 | N | 261023 |
| 22 | 160m SE | 304950 204980 | A470 PENTREBACH/CEFN COED B31 | 4.5 | N | 261161 |
| 23 | 161m NE | 304866 205296 | A470 PENTREBACH PB 170 | 42.0 | N | 260367 |

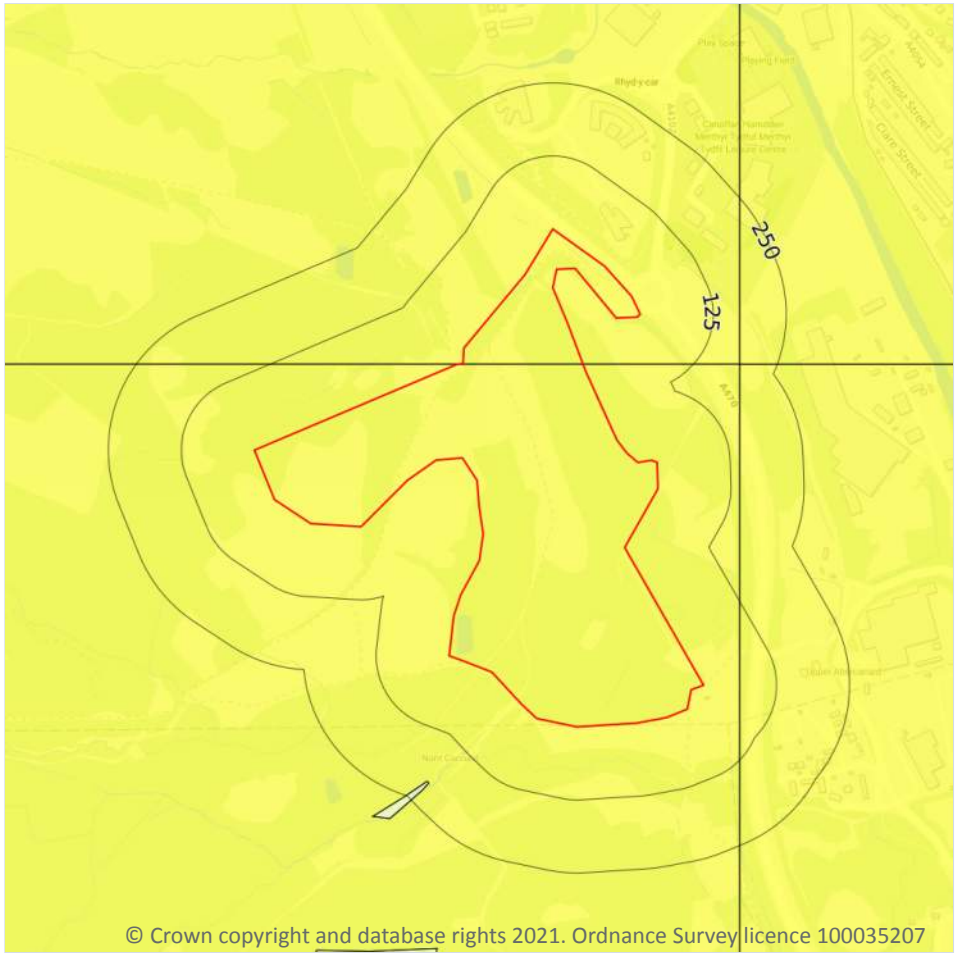
| ID | Location | Grid reference | Name | Length | Confidential | Web link |
|---|---|---|---|---|---|---|
| U | 163m NE | 305040 204600 | A470 PENTREBACH-CEFNCOED B26 | 25.0 | N | 260817 |
| W | 163m NW | 304564 205346 | A470 PENTREBACH PB 189 | 44.0 | N | 260385 |
| 24 | 164m E | 305016 204737 | A470 PENTREBACH PB 125 | 42.0 | N | 261022 |
| U | 164m NE | 305030 204620 | A470 PENTREBACH-CEFNCOED P25 | 4.1 | N | 260849 |
| 25 | 170m E | 304990 205030 | TAFF VALLEY T.K. TP.630 | 5.12 | N | 259983 |
| 26 | 170m NE | 304820 205340 | A470 PENTREBACH/CEFN COED P36 | 2.5 | N | 260217 |
| X | 170m SE | 305020 204280 | A470 PENTREBACH-CEFNCOED TP111 | 3.2 | N | 260858 |
| Y | 170m E | 305028 204846 | A470 PENTREBACH PB 122 | 42.0 | N | 261019 |
| V | 172m NE | 305071 204564 | A470 PENTREBACH-CEFNCOED PB 89 | 36.0 | N | 260999 |
| Z | 172m NE | 305000 204930 | A470 PENTREBACH-CEFNCOED P29 | 4.3 | N | 260853 |
| 27 | 173m E | 305033 204804 | A470 PENTREBACH-CEFNCOED PB 81 | 42.0 | N | 260991 |
| Z | 174m NE | 304994 204941 | A470 PENTREBACH PB 134 | 42.0 | N | 261198 |
| AA | 174m SE | 305009 204697 | A470 PENTREBACH-CEFNCOED PB105 | 42.2 | N | 261016 |
| U | 177m NE | 305018 204667 | A470 PENTREBACH-CEFNCOED PB104 | 42.2 | N | 261015 |
| Z | 177m NE | 304972 204968 | A470 PENTREBACH PB 135 | 42.0 | N | 261199 |
| 28 | 177m SE | 305002 204258 | A470 PENTREBACH-CEFNCOED PB 53 | 41.0 | N | 260967 |
| W | 177m NW | 304540 205340 | A470 PENTREBACH CEFNCOED B42 | 35.0 | N | 260141 |
| 29 | 179m SE | 305082 204345 | A470 PENTREBACH-CEFNCOED PB 62 | 42.0 | N | 260976 |
| 30 | 181m SE | 304991 205003 | A470 PENTREBACH PB 136 | 42.0 | N | 260338 |
| Y | 182m E | 305040 204840 | A470 PENTREBACH-CEFNCOED P27 | 4.5 | N | 260851 |
| X | 183m SE | 305040 204280 | A470 PENTREBACH-CEFNCOED B21 | 15.0 | N | 260812 |
| Z | 184m SE | 304980 204980 | A470 PENTREBACH/CEFN COED B33 | 40.4 | N | 261160 |
| U | 184m NE | 305058 204612 | A470 PENTREBACH PB 140 | 42.0 | N | 261034 |
| U | 185m NE | 305048 204631 | A470 PENTREBACH PB 138 | 41.5 | N | 261032 |
| 31 | 185m NW | 304570 205380 | TAFF VALLEY TRUNK ROAD. TP.637 | 3.8 | N | 260002 |
| W | 186m NW | 304549 205363 | A470 PENTREBACH PB 190 | 32.0 | N | 260386 |
| 32 | 186m NE | 305029 204907 | A470 PENTREBACH PB 137 | 42.0 | N | 261031 |
| AB | 188m E | 305040 204880 | A470 PENTREBACH-CEFNCOED P28 | 4.5 | N | 260852 |

| ID | Location | Grid reference | Name | Length | Confidential | Web link |
|---|---|---|---|---|---|---|
| 33 | 189m NE | 304810 205370 | A470 PENTREBACH CEFNCOED B38/38A | 34.4 | N | 260137 |
| 34 | 189m N | 304620 205410 | TAFF VALLEY TRUNK ROAD. 188,188A | 7.6 | N | 260000 |
| AC | 189m NE | 304880 205320 | A470 PENTREBACH/CEFN COED P35 | 3.5 | N | 260216 |
| AD | 192m NE | 305081 204587 | A470 PENTREBACH-CEFNCOED PB 85 | 42.0 | N | 260995 |
| U | 193m NE | 305040 204660 | A470 PENTREBACH-CEFNCOED P26 | 4.5 | N | 260850 |
| 35 | 193m E | 305042 204722 | A470 PENTREBACH PB 124 | 43.5 | N | 261021 |
| AE | 194m E | 305050 204750 | A470 PENTREBACH-CEFNCOED TT7 | 4.8 | N | 260866 |
| Z | 195m NE | 305003 204963 | A470 PENTREBACH PB 132 | 42.0 | N | 261029 |
| AA | 196m SE | 305030 204690 | A470 PENTREBACH-CEFNCOED B29 | 12.35 | N | 260820 |
| 36 | 197m NE | 305024 204939 | A470 PENTREBACH PB 133 | 42.0 | N | 261030 |
| Z | 198m NE | 305000 204970 | A470 PENTREBACH-CEFNCOED P30 | 4.5 | N | 260854 |
| AB | 199m E | 305050 204885 | A470 PENTREBACH PB 128 | 42.0 | N | 261025 |
| 37 | 200m SE | 305070 204290 | A470 PENTREBACH-CEFNCOED P19 | 4.5 | N | 260843 |
| 38 | 200m E | 305060 204804 | A470 PENTREBACH PB 129 | 43.0 | N | 261026 |
| AE | 201m E | 305057 204749 | A470 PENTREBACH-CEFNCOED PB 99 | 42.0 | N | 261010 |
| U | 204m NE | 305049 204667 | A470 PENTREBACH-CEFNCOED PB103 | 41.8 | N | 261014 |
| W | 204m NW | 304530 205370 | A470 PENTREBACH CEFNCOED B43 | 30.6 | N | 260142 |
| Y | 205m E | 305063 204844 | A470 PENTREBACH PB 123 | 42.0 | N | 261020 |
| U | 205m NE | 305060 204650 | A470 PENTREBACH-CEFNCOED B28 | 42.8 | N | 260819 |
| AE | 205m E | 305060 204740 | A470 PENTREBACH-CEFNCOED B30 | 41.6 | N | 260821 |
| AD | 206m NE | 305090 204600 | A470 PENTREBACH-CEFNCOED B27 | 23.87 | N | 260818 |
| 39 | 207m SE | 305045 204253 | A470 PENTREBACH-CEFNCOED PB 54 | 39.0 | N | 260968 |
| AB | 210m E | 305060 204890 | A470 PENTREBACH-CEFNCOED B32 | 25.6 | N | 260823 |
| AC | 210m NE | 304890 205339 | A470 PENTREBACH PB 174 | 42.0 | N | 260370 |
| AF | 210m SE | 305012 204226 | A470 PENTREBACH-CEFNCOED PB 51 | 42.0 | N | 260965 |
| Z | 214m NE | 305025 204966 | A470 PENTREBACH PB 131 | 42.0 | N | 261028 |
| 40 | 215m NE | 305050 204930 | TAFF VALE TRUNK ROAD, ABERFAN. TP.629 | 3.2 | N | 260689 |
| AF | 216m SE | 305030 204230 | A470 PENTREBACH-CEFNCOED P18 | 4.5 | N | 260842 |

| ID | Location | Grid reference | Name | Length | Confidential | Web link |
|---|---|---|---|---|---|---|
| W | 218m NW | 304526 205385 | A470 PENTREBACH PB 191 | 42.5 | N | 260387 |
| AG | 219m NE | 305086 204633 | A470 PENTREBACH-CEFNCOED PB 84 | 42.0 | N | 260994 |
| AG | 221m NE | 305090 204630 | A470 PENTREBACH-CEFNCOED P24 | 4.0 | N | 260848 |
| Y | 222m E | 305080 204840 | TAFF VALE TRUNK ROAD, ABERFAN. TP.525A | 2.9 | N | 260688 |
| AH | 223m E | 305082 204767 | A470 PENTREBACH-CEFNCOED PB100 | 42.0 | N | 261011 |
| AC | 227m NE | 304890 205360 | A470 PENTREBACH CEFNCOED B37 | 24.43 | N | 260136 |
| 41 | 227m E | 305074 204711 | A470 PENTREBACH-CEFNCOED PB101 | 42.0 | N | 261012 |
| 42 | 232m NE | 305120 204600 | A470 PENTREBACH-CEFNCOED P23 | 4.5 | N | 260847 |
| 43 | 233m NE | 305080 204671 | A470 PENTREBACH-CEFNCOED PB 83 | 42.0 | N | 260993 |
| W | 234m NW | 304500 205380 | A470 PENTREBACH/CEFN COED P46 | 4.5 | N | 260227 |
| 44 | 237m E | 305170 204500 | TAFF VALE TRUNK ROAD, ABERFAN. TP.520 | 2.75 | N | 260683 |
| 45 | 238m SE | 305055 204221 | A470 PENTREBACH-CEFNCOED PB 50 | 42.0 | N | 260964 |
| 46 | 239m NE | 305060 204960 | TAFF VALE TRUNK ROAD, ABERFAN. 181 | 16.7 | N | 260690 |
| W | 239m NW | 304512 205401 | A470 PENTREBACH PB 192 | 42.0 | N | 260388 |
| AH | 240m E | 305100 204780 | TAFF VALE TRUNK ROAD, ABERFAN. TP.524 | 2.7 | N | 260687 |
| 47 | 240m SE | 305014 204193 | A470 PENTREBACH-CEFNCOED PB112 | 45.0 | N | 261018 |
| AC | 243m NE | 304893 205378 | A470 PENTREBACH PB 175 | 42.0 | N | 260371 |
| 48 | 247m E | 305100 204730 | TAFF VALE TRUNK ROAD, ABERFAN. TP.523 | 3.7 | N | 260686 |
| 49 | 247m SE | 305040 204200 | A470 PENTREBACH-CEFNCOED P17 | 4.5 | N | 260841 |
| W | 248m NW | 304520 205420 | TAFF VALLEY TRUNK ROAD. TP.638 | 4.9 | N | 260003 |

*This data is sourced from the British Geological Survey.*

# 17 Natural ground subsidence - Shrink swell clays




Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

## 17.1 Shrink swell clays

| Records within 50m | 1 |
|---|---|

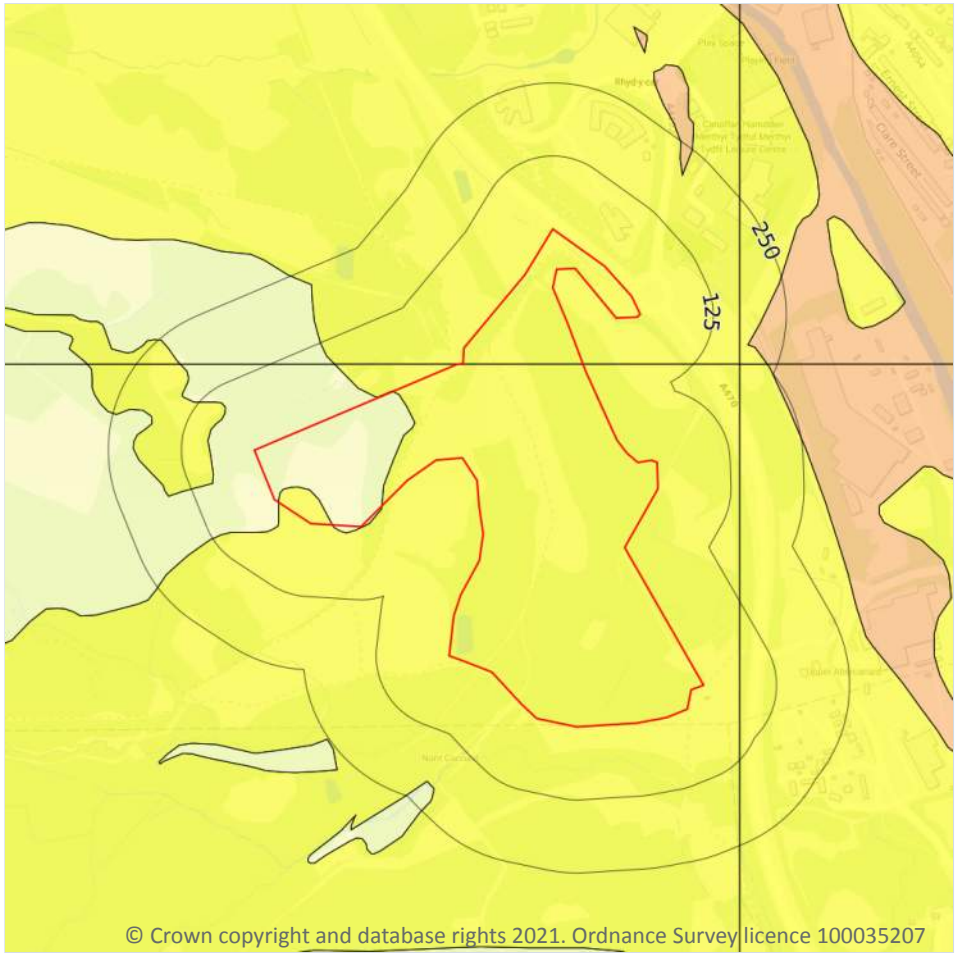
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 158**

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

*This data is sourced from the British Geological Survey.*

# Natural ground subsidence - Running sands




Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

## 17.2 Running sands

| Records within 50m | 2 |
|---|---|

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

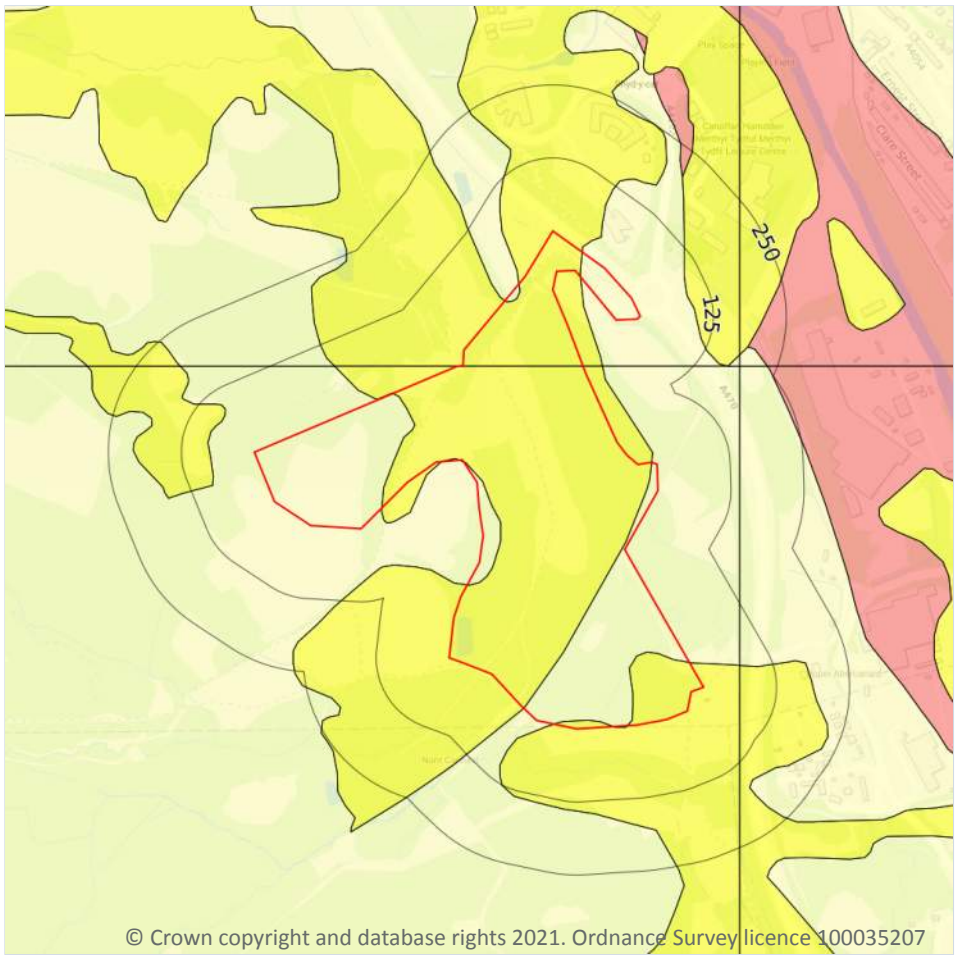
Features are displayed on the Natural ground subsidence - Running sands map on **page 159**

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

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

*This data is sourced from the British Geological Survey.*

# Natural ground subsidence - Compressible deposits




Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

## 17.3 Compressible deposits

| Records within 50m | 2 |
|---|---|

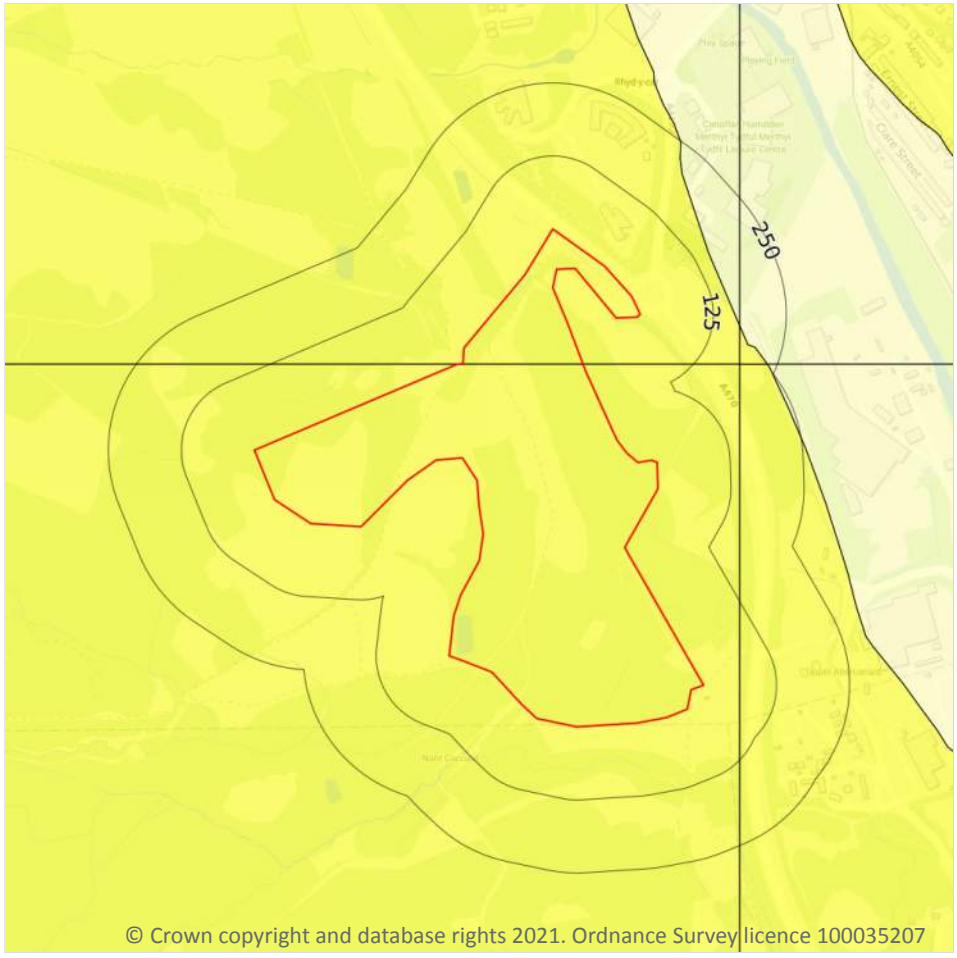
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 161**

| Location | Hazard rating | Details |
|---|---|---|
| **On site** | **Negligible** | **Compressible strata are not thought to occur.** |
| **On site** | **Very low** | **Compressibility and uneven settlement problems are not likely to be significant on the site for most land uses.** |

*This data is sourced from the British Geological Survey.*

# Natural ground subsidence - Collapsible deposits




Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

## 17.4 Collapsible deposits

| Records within 50m | 1 |
|---|---|

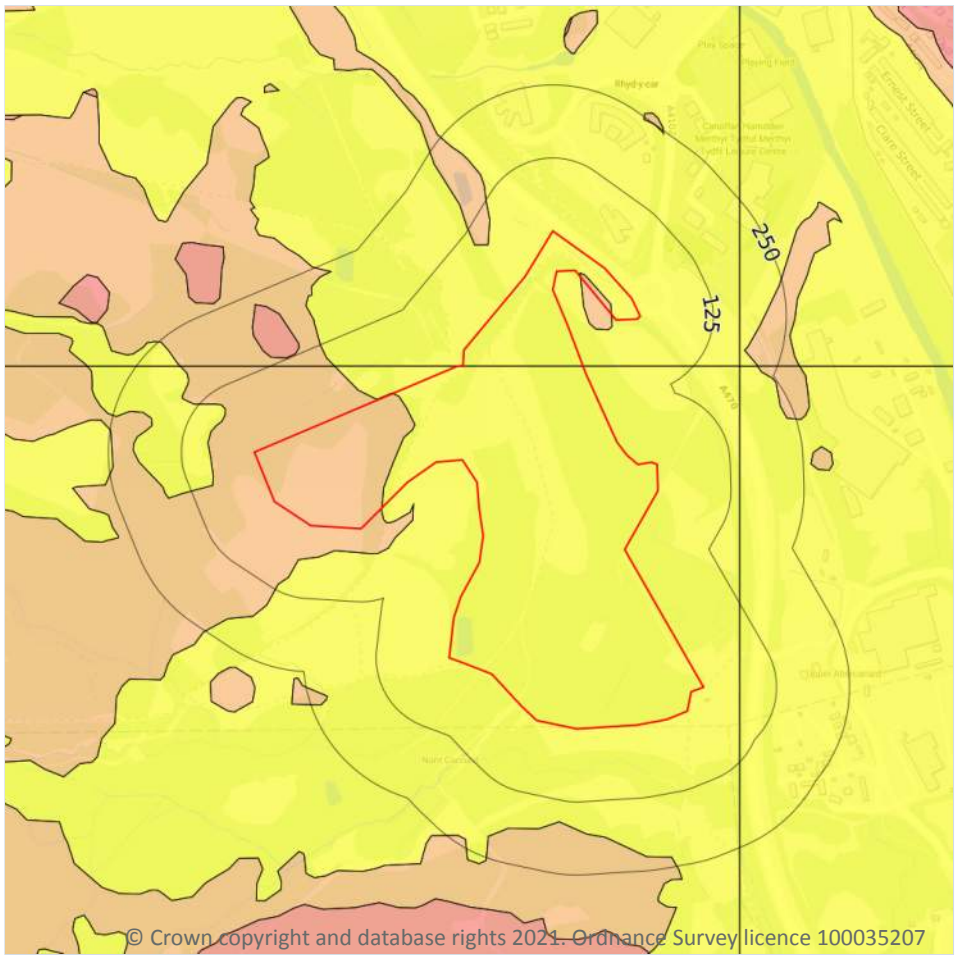
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 163**

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

*This data is sourced from the British Geological Survey.*

# Natural ground subsidence - Landslides




Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

## 17.5 Landslides

| Records within 50m | 2 |
|---|---|

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

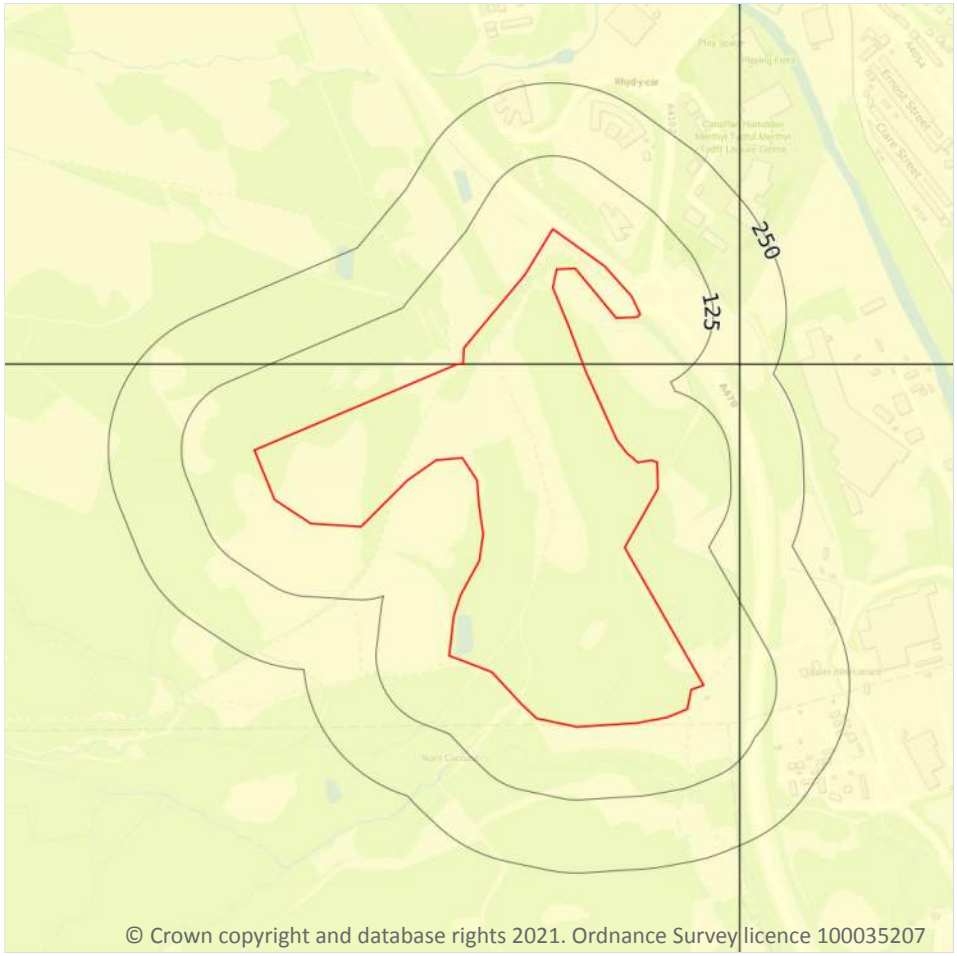
Features are displayed on the Natural ground subsidence - Landslides map on **page 164**

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

| Location | Hazard rating | Details |
|---|---|---|
| **On site** | **Low** | **Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.** |

*This data is sourced from the British Geological Survey.*

# Natural ground subsidence - Ground dissolution of soluble rocks




Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

## 17.6 Ground dissolution of soluble rocks

| Records within 50m | 1 |
|---|---|

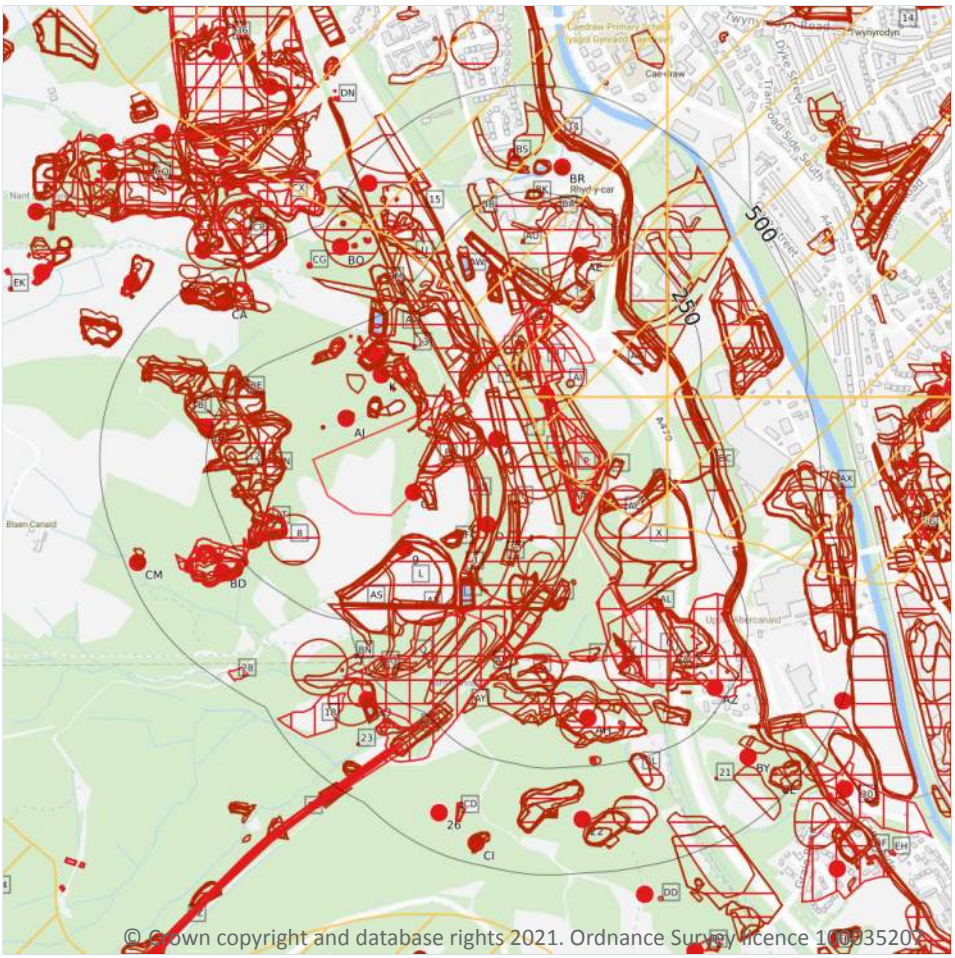
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 166**

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

*This data is sourced from the British Geological Survey.*

# 18 Mining, ground workings and natural cavities




Site Outline

Search buffers in metres (m)

Natural cavities (Area)

Natural cavities (Point)

BritPits

Surface ground workings

Underground workings

Historical Mineral Planning Areas

Mining Cavities

Non Coal Mining

Sporadic underground mining of restricted extent possible

Localised small scale underground mining possible

Small scale mining possible

Underground mining known or likely within or in close proximity

Underground mining known within or in very close proximity

## 18.1 Natural cavities

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

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

*This data is sourced from Stantec UK Ltd.*

## 18.2 BritPits

| Records within 500m | 26 |
|---|---|

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 168**

| ID | Location | Details | Description |
|---|---|---|---|
| 1 | On site | Name: The Willows<br>Address: MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Ironstone<br>Status: Ceased | Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |
| A | On site | Name: Lower Colliers Row Tips<br>Address: Abercanaid, MERTHYR TYDFIL, Glamorgan<br>Commodity: Coal, Surface Mined<br>Status: Ceased | Type: Tip at a mine, quarry or other location from which mineral is being extracted. Working may be termed Slate Waste Tip, Shale Bing, Coal Tip or Coal Bing<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |
| C | On site | Name: Pen-cae<br>Address: MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Coal, Deep<br>Status: Ceased | Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |
| D | On site | Name: Glyn-dyrys Pit<br>Address: MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Coal, Deep<br>Status: Ceased | Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |

| ID | Location | Details | Description |
|---|---|---|---|
| AJ | 57m NW | Name: Pen-cae<br>Address: MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Coal, Deep<br>Status: Ceased | Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |
| 9 | 82m SE | Name: Pen-cae<br>Address: MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Coal, Deep<br>Status: Ceased | Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |
| K | 120m NW | Name: Pen-cae<br>Address: MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Coal, Deep<br>Status: Ceased | Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |
| AH | 137m S | Name: Upper Aber-canaid<br>Address: Pentrebach, MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Coal, Deep<br>Status: Ceased | Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |
| AE | 148m NE | Name: Rhyd-y-car Pit<br>Address: MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Coal, Deep<br>Status: Ceased | Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |

| ID | Location | Details | Description |
|---|---|---|---|
| K | 169m NW | Name: Pen-cae<br>Address: MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Coal, Deep<br>Status: Ceased | Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |
| AZ | 218m SE | Name: Upper Aber-canaid<br>Address: Pentrebach, MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Coal, Deep<br>Status: Ceased | Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |
| AO | 263m W | Name: Pen-cae<br>Address: MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Sandstone<br>Status: Ceased | Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |
| BO | 295m SW | Name: Cwm Pit<br>Address: Abercanaid, MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Coal, Deep<br>Status: Ceased | Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |
| BD | 304m SW | Name: Pen-cae<br>Address: MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Ironstone<br>Status: Ceased | Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |

| ID | Location | Details | Description |
|---|---|---|---|
| BR | 316m N | Name: Rhyd-y-car<br>Address: MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Coal, Deep<br>Status: Ceased | Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |
| 22 | 373m S | Name: Upper Aber-canaid<br>Address: Pentrebach, MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Sandstone<br>Status: Ceased | Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |
| BY | 377m SE | Name: Upper Aber-canaid<br>Address: Pentrebach, MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Coal, Deep<br>Status: Ceased | Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |
| BY | 379m SE | Name: Lucy No 4 Level<br>Address: MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Coal, Deep<br>Status: Ceased | Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |
| 26 | 413m SW | Name: Waunwyllt<br>Address: Abercanaid, MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Coal, Deep<br>Status: Ceased | Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |

| ID | Location | Details | Description |
|---|---|---|---|
| CA | 423m NW | Name: Pen-cae<br>Address: MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Coal, Deep<br>Status: Ceased | Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |
| BQ | 434m NW | Name: Pen-cae<br>Address: MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Coal, Deep<br>Status: Ceased | Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |
| CI | 452m S | Name: Waunwyllt<br>Address: Abercanaid, MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Sandstone<br>Status: Ceased | Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |
| CE | 455m SE | Name: Upper Aber-canaid<br>Address: Pentrebach, MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Sandstone<br>Status: Ceased | Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |
| BQ | 465m NW | Name: Lucy Thomas No.5 Mine<br>Address: Rhyd-y-Car, MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Coal, Deep<br>Status: Ceased | Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |

| ID | Location | Details | Description |
|---|---|---|---|
| CM | 472m W | Name: Pen-cae<br>Address: MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Sandstone<br>Status: Ceased | Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |
| CA | 480m NW | Name: Pen-cae<br>Address: MERTHYR TYDFIL, Mid Glamorgan<br>Commodity: Coal, Deep<br>Status: Ceased | Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |

*This data is sourced from the British Geological Survey.*

## 18.3 Surface ground workings

**Records within 250m** **577**

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 168**

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| **3** | **On site** | **Unspecified Disused Pit** | **1903** | **1:10560** |
| **4** | **On site** | **Old Ironstone Level** | **1948** | **1:10560** |
| **5** | **On site** | **Unspecified Pit** | **1979** | **1:10000** |
| **6** | **On site** | **Cuttings** | **1915** | **1:10560** |
| **A** | **On site** | **Cuttings** | **1969** | **1:10560** |
| **A** | **On site** | **Cuttings** | **1964** | **1:10560** |
| **A** | **On site** | **Cuttings** | **1938** | **1:10560** |
| **A** | **On site** | **Unspecified Pit** | **1988** | **1:10000** |
| **A** | **On site** | **Unspecified Pit** | **1979** | **1:10000** |
| **A** | **On site** | **Cuttings** | **1915** | **1:10560** |
| **A** | **On site** | **Cuttings** | **1922** | **1:10560** |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| A | On site | Cuttings | 1922 | 1:10560 |
| B | On site | Unspecified Heap | 1875 | 1:10560 |
| B | On site | Unspecified Heap | 1875 | 1:10560 |
| B | On site | Unspecified Heap | 1875 | 1:10560 |
| B | On site | Unspecified Pit | 1875 | 1:10560 |
| B | On site | Cuttings | 1965 | 1:10560 |
| B | On site | Unspecified Heap | 1901 | 1:10560 |
| B | On site | Coal Drift | 1938 | 1:10560 |
| B | On site | Unspecified Ground Workings | 1938 | 1:10560 |
| B | On site | Cuttings | 1948 | 1:10560 |
| B | On site | Cuttings | 1903 | 1:10560 |
| B | On site | Cuttings | 1969 | 1:10560 |
| B | On site | Cuttings | 1964 | 1:10560 |
| B | On site | Coal Drift | 1938 | 1:10560 |
| B | On site | Unspecified Ground Workings | 1938 | 1:10560 |
| B | On site | Unspecified Disused Tip | 1979 | 1:10000 |
| B | On site | Old Coal Drift | 1948 | 1:10560 |
| B | On site | Unspecified Heap | 1903 | 1:10560 |
| B | On site | Unspecified Disused Tips | 1988 | 1:10000 |
| B | On site | Unspecified Disused Tip | 1988 | 1:10000 |
| B | On site | Unspecified Disused Tips | 1979 | 1:10000 |
| B | On site | Unspecified Heap | 1969 | 1:10560 |
| B | On site | Unspecified Heaps | 1969 | 1:10560 |
| B | On site | Unspecified Heaps | 1964 | 1:10560 |
| B | On site | Unspecified Heap | 1964 | 1:10560 |
| B | On site | Unspecified Heap | 1921 | 1:10560 |
| B | On site | Refuse Heap | 1921 | 1:10560 |
| B | On site | Drift | 1921 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| B | On site | Coal Drift | 1915 | 1:10560 |
| B | On site | Cuttings | 1915 | 1:10560 |
| B | On site | Coal Drift | 1922 | 1:10560 |
| B | On site | Coal Drift | 1922 | 1:10560 |
| C | On site | Coal Level | 1938 | 1:10560 |
| C | On site | Coal Level | 1938 | 1:10560 |
| C | On site | Old Coal Level | 1948 | 1:10560 |
| C | On site | Unspecified Disused Tip | 1988 | 1:10000 |
| C | On site | Unspecified Disused Tip | 1979 | 1:10000 |
| C | On site | Unspecified Heap | 1969 | 1:10560 |
| C | On site | Unspecified Heap | 1964 | 1:10560 |
| C | On site | Coal Level | 1921 | 1:10560 |
| C | On site | Refuse Heap | 1921 | 1:10560 |
| C | On site | Coal Level | 1915 | 1:10560 |
| C | On site | Coal Level | 1922 | 1:10560 |
| C | On site | Coal Level | 1922 | 1:10560 |
| D | On site | Old Canal | 1901 | 1:10560 |
| D | On site | Unspecified Heap | 1948 | 1:10560 |
| E | On site | Cuttings | 1922 | 1:10560 |
| E | On site | Cuttings | 1922 | 1:10560 |
| F | On site | Refuse Heap | 1903 | 1:10560 |
| F | On site | Cuttings | 1922 | 1:10560 |
| F | On site | Cuttings | 1922 | 1:10560 |
| G | On site | Cuttings | 1922 | 1:10560 |
| G | On site | Cuttings | 1922 | 1:10560 |
| H | On site | Unspecified Pit | 1875 | 1:10560 |
| H | On site | Unspecified Disused Pit | 1901 | 1:10560 |
| H | On site | Unspecified Disused Pit | 1938 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| H | On site | Unspecified Disused Pit | 1938 | 1:10560 |
| H | On site | Cuttings | 1938 | 1:10560 |
| H | On site | Ironstone Pit | 1875 | 1:10560 |
| H | On site | Unspecified Disused Tips | 1979 | 1:10000 |
| H | On site | Unspecified Disused Pits | 1948 | 1:10560 |
| H | On site | Unspecified Disused Tip | 1988 | 1:10000 |
| H | On site | Unspecified Disused Pit | 1915 | 1:10560 |
| H | On site | Cuttings | 1915 | 1:10560 |
| H | On site | Cuttings | 1922 | 1:10560 |
| H | On site | Cuttings | 1922 | 1:10560 |
| I | On site | Unspecified Heaps | 1875 | 1:10560 |
| I | On site | Unspecified Pit | 1992 | 1:10000 |
| I | On site | Unspecified Pit | 1976 | 1:10000 |
| I | On site | Unspecified Pit | 1965 | 1:10560 |
| I | On site | Cuttings | 1938 | 1:10560 |
| I | On site | Old Ironstone Level | 1938 | 1:10560 |
| I | On site | Unspecified Ground Workings | 1948 | 1:10560 |
| I | On site | Old Ironstone Level | 1921 | 1:10560 |
| I | On site | Old Ironstone Level | 1915 | 1:10560 |
| I | On site | Cuttings | 1915 | 1:10560 |
| I | On site | Cuttings | 1922 | 1:10560 |
| I | On site | Cuttings | 1922 | 1:10560 |
| J | On site | Unspecified Heap | 1875 | 1:10560 |
| J | On site | Unspecified Heap | 1922 | 1:10560 |
| J | On site | Cuttings | 1901 | 1:10560 |
| J | On site | Pond | 1901 | 1:10560 |
| J | On site | Cuttings | 1901 | 1:10560 |
| J | On site | Unspecified Heap | 1938 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| J | On site | Unspecified Heap | 1938 | 1:10560 |
| J | On site | Cuttings | 1922 | 1:10560 |
| J | On site | Unspecified Heap | 1922 | 1:10560 |
| J | On site | Cuttings | 1948 | 1:10560 |
| J | On site | Cuttings | 1903 | 1:10560 |
| J | On site | Cuttings | 1979 | 1:10000 |
| J | On site | Cuttings | 1969 | 1:10560 |
| J | On site | Cuttings | 1964 | 1:10560 |
| J | On site | Unspecified Heap | 1938 | 1:10560 |
| J | On site | Unspecified Heap | 1938 | 1:10560 |
| J | On site | Cuttings | 1948 | 1:10560 |
| J | On site | Cuttings | 1875 | 1:10560 |
| J | On site | Unspecified Disused Tip | 1979 | 1:10000 |
| J | On site | Unspecified Heap | 1948 | 1:10560 |
| J | On site | Unspecified Heap | 1948 | 1:10560 |
| J | On site | Refuse Heap | 1903 | 1:10560 |
| J | On site | Unspecified Disused Tip | 1988 | 1:10000 |
| J | On site | Unspecified Disused Tip | 1979 | 1:10000 |
| J | On site | Unspecified Heap | 1969 | 1:10560 |
| J | On site | Unspecified Ground Workings | 1969 | 1:10560 |
| J | On site | Unspecified Heap | 1921 | 1:10560 |
| J | On site | Unspecified Ground Workings | 1921 | 1:10560 |
| J | On site | Cuttings | 1921 | 1:10560 |
| J | On site | Unspecified Ground Workings | 1915 | 1:10560 |
| J | On site | Cuttings | 1915 | 1:10560 |
| J | On site | Unspecified Heap | 1915 | 1:10560 |
| J | On site | Unspecified Heap | 1948 | 1:10560 |
| J | On site | Unspecified Heap | 1922 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| J | On site | Unspecified Ground Workings | 1922 | 1:10560 |
| J | On site | Cuttings | 1922 | 1:10560 |
| J | On site | Unspecified Heap | 1922 | 1:10560 |
| J | On site | Unspecified Ground Workings | 1922 | 1:10560 |
| J | On site | Cuttings | 1922 | 1:10560 |
| K | On site | Refuse Heap | 1922 | 1:10560 |
| K | On site | Refuse Heap | 1922 | 1:10560 |
| L | On site | Unspecified Disused Tip | 1988 | 1:10000 |
| L | On site | Refuse Heap | 1922 | 1:10560 |
| L | On site | Refuse Heap | 1922 | 1:10560 |
| M | On site | Cuttings | 1965 | 1:10560 |
| M | On site | Unspecified Disused Tip | 1992 | 1:10000 |
| M | On site | Unspecified Disused Tip | 1976 | 1:10000 |
| M | On site | Unspecified Heap | 1948 | 1:10560 |
| M | On site | Unspecified Heap | 1921 | 1:10560 |
| M | On site | Unspecified Heap | 1915 | 1:10560 |
| M | On site | Unspecified Heap | 1922 | 1:10560 |
| M | On site | Unspecified Heap | 1922 | 1:10560 |
| N | On site | Reservoir | 1901 | 1:10560 |
| N | On site | Disused Reservoir | 1948 | 1:10560 |
| N | On site | Reservoir | 1903 | 1:10560 |
| N | On site | Pond | 1988 | 1:10000 |
| N | On site | Pond | 1979 | 1:10000 |
| N | On site | Reservoir | 1938 | 1:10560 |
| N | On site | Reservoir | 1875 | 1:10560 |
| N | On site | Reservoir | 1921 | 1:10560 |
| N | On site | Reservoir | 1915 | 1:10560 |
| N | On site | Reservoir | 1922 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| N | On site | Reservoir | 1922 | 1:10560 |
| O | On site | Ironstone Level | 1875 | 1:10560 |
| P | On site | Old Ironstone Level | 1901 | 1:10560 |
| P | On site | Refuse Heap | 1938 | 1:10560 |
| P | On site | Old Ironstone Level | 1903 | 1:10560 |
| P | On site | Refuse Heap | 1938 | 1:10560 |
| Q | On site | Unspecified Pit | 1922 | 1:10560 |
| Q | On site | Unspecified Pit | 1922 | 1:10560 |
| Q | On site | Unspecified Disused Tip | 1979 | 1:10000 |
| Q | On site | Unspecified Heap | 1948 | 1:10560 |
| Q | On site | Unspecified Heap | 1948 | 1:10560 |
| R | On site | Unspecified Heaps | 1875 | 1:10560 |
| R | On site | Unspecified Ground Workings | 1921 | 1:10560 |
| R | On site | Unspecified Heap | 1915 | 1:10560 |
| S | On site | Cuttings | 1992 | 1:10000 |
| S | On site | Cuttings | 1976 | 1:10000 |
| S | On site | Cuttings | 1976 | 1:10000 |
| S | On site | Cuttings | 1965 | 1:10560 |
| S | On site | Cuttings | 1938 | 1:10560 |
| S | On site | Cuttings | 1921 | 1:10560 |
| T | On site | Unspecified Ground Workings | 1901 | 1:10560 |
| T | On site | Unspecified Pit | 1988 | 1:10000 |
| U | On site | Unspecified Disused Tip | 1992 | 1:10000 |
| U | On site | Unspecified Disused Tips | 1976 | 1:10000 |
| V | On site | Unspecified Disused Tip | 1992 | 1:10000 |
| V | On site | Unspecified Disused Tip | 1976 | 1:10000 |
| V | On site | Unspecified Heap | 1965 | 1:10560 |
| W | On site | Pond | 1901 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| **W** | **On site** | **Water Body** | **1903** | **1:10560** |
| **X** | **On site** | **Pond** | **1901** | **1:10560** |
| **X** | **On site** | **Pool** | **1903** | **1:10560** |
| **X** | **On site** | **Pond** | **1875** | **1:10560** |
| **Y** | **On site** | **Pond** | **1901** | **1:10560** |
| **Y** | **On site** | **Pond** | **1922** | **1:10560** |
| **Y** | **On site** | **Pond** | **1948** | **1:10560** |
| **Y** | **On site** | **Pond** | **1875** | **1:10560** |
| **Y** | **On site** | **Unspecified Disused Tip** | **1979** | **1:10000** |
| **Z** | **On site** | **Unspecified Disused Workings** | **1988** | **1:10000** |
| **Z** | **On site** | **Unspecified Disused Tip** | **1979** | **1:10000** |
| **Z** | **On site** | **Refuse Heap** | **1969** | **1:10560** |
| **Z** | **On site** | **Refuse Heap** | **1964** | **1:10560** |
| **AA** | **On site** | **Unspecified Disused Tip** | **1979** | **1:10000** |
| **AA** | **On site** | **Unspecified Heap** | **1969** | **1:10560** |
| **AA** | **On site** | **Unspecified Heap** | **1964** | **1:10560** |
| **AB** | **On site** | **Unspecified Disused Tip** | **1979** | **1:10000** |
| S | 0m NE | Cuttings | 1915 | 1:10560 |
| S | 0m NE | Cuttings | 1922 | 1:10560 |
| S | 0m NE | Cuttings | 1922 | 1:10560 |
| U | 0m NW | Refuse Heap | 1965 | 1:10560 |
| E | 1m E | Cuttings | 1915 | 1:10560 |
| B | 1m NW | Unspecified Disused Tips | 1988 | 1:10000 |
| B | 1m NW | Unspecified Disused Tips | 1979 | 1:10000 |
| E | 2m E | Cuttings | 1948 | 1:10560 |
| U | 2m NW | Unspecified Ground Workings | 1938 | 1:10560 |
| U | 2m NW | Unspecified Ground Workings | 1938 | 1:10560 |
| AC | 2m SE | Unspecified Disused Workings | 1988 | 1:10000 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| L | 2m W | Refuse Heap | 1915 | 1:10560 |
| L | 2m W | Refuse Heap | 1938 | 1:10560 |
| L | 2m W | Refuse Heap | 1938 | 1:10560 |
| U | 3m NW | Unspecified Ground Workings | 1915 | 1:10560 |
| Q | 4m S | Refuse Heap | 1901 | 1:10560 |
| L | 5m W | Refuse Heap | 1921 | 1:10560 |
| S | 5m NE | Cuttings | 1901 | 1:10560 |
| AC | 5m SE | Unspecified Heap | 1921 | 1:10560 |
| U | 5m W | Unspecified Ground Workings | 1921 | 1:10560 |
| L | 6m W | Refuse Heap | 1948 | 1:10560 |
| L | 6m W | Unspecified Heap | 1969 | 1:10560 |
| L | 6m W | Unspecified Heap | 1964 | 1:10560 |
| S | 6m NW | Cuttings | 1965 | 1:10560 |
| AC | 6m SE | Unspecified Disused Tip | 1979 | 1:10000 |
| S | 7m NW | Cuttings | 1992 | 1:10000 |
| U | 7m W | Unspecified Ground Workings | 1901 | 1:10560 |
| AD | 8m SW | Cuttings | 1875 | 1:10560 |
| AB | 8m W | Refuse Heap | 1948 | 1:10560 |
| AC | 8m SE | Unspecified Heap | 1922 | 1:10560 |
| AC | 8m SE | Unspecified Heap | 1922 | 1:10560 |
| AC | 9m SE | Unspecified Heap | 1915 | 1:10560 |
| AC | 9m SE | Unspecified Heap | 1948 | 1:10560 |
| AC | 9m SE | Unspecified Heap | 1938 | 1:10560 |
| AC | 9m SE | Unspecified Heap | 1938 | 1:10560 |
| AD | 9m SW | Cuttings | 1901 | 1:10560 |
| AD | 9m SW | Cuttings | 1948 | 1:10560 |
| Z | 11m S | Unspecified Pit | 1948 | 1:10560 |
| Z | 18m S | Unspecified Pit | 1922 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| Z | 18m S | Unspecified Pit | 1922 | 1:10560 |
| S | 19m NE | Cuttings | 1948 | 1:10560 |
| S | 19m NE | Cuttings | 1903 | 1:10560 |
| Y | 19m SE | Unspecified Heap | 1948 | 1:10560 |
| Z | 20m S | Unspecified Pit | 1875 | 1:10560 |
| Q | 21m S | Refuse Heap | 1901 | 1:10560 |
| AE | 22m NE | Ironstone Pit | 1875 | 1:10560 |
| K | 24m NW | Unspecified Disused Tips | 1988 | 1:10000 |
| K | 24m NW | Unspecified Disused Tips | 1979 | 1:10000 |
| K | 24m NW | Unspecified Heaps | 1969 | 1:10560 |
| K | 24m NW | Unspecified Heaps | 1964 | 1:10560 |
| Y | 24m S | Unspecified Ground Workings | 1901 | 1:10560 |
| U | 25m NW | Unspecified Ground Workings | 1903 | 1:10560 |
| Y | 28m S | Unspecified Heap | 1922 | 1:10560 |
| Y | 28m S | Unspecified Heap | 1922 | 1:10560 |
| K | 28m NW | Refuse Heap | 1921 | 1:10560 |
| Y | 31m S | Unspecified Disused Workings | 1988 | 1:10000 |
| AF | 31m NW | Unspecified Ground Workings | 1938 | 1:10560 |
| AF | 31m NW | Unspecified Ground Workings | 1938 | 1:10560 |
| K | 32m NW | Unspecified Heap | 1938 | 1:10560 |
| K | 32m NW | Unspecified Heap | 1938 | 1:10560 |
| AE | 32m NE | Unspecified Disused Pit | 1948 | 1:10560 |
| AF | 34m NW | Unspecified Disused Tip | 1988 | 1:10000 |
| AF | 34m NW | Unspecified Disused Tip | 1979 | 1:10000 |
| U | 34m NW | Pond | 1965 | 1:10560 |
| K | 34m NW | Unspecified Heap | 1915 | 1:10560 |
| AG | 34m NE | Unspecified Heap | 1922 | 1:10560 |
| AG | 34m NE | Unspecified Heap | 1922 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| K | 35m NW | Unspecified Heap | 1948 | 1:10560 |
| AF | 35m W | Unspecified Pit | 1948 | 1:10560 |
| K | 36m NW | Unspecified Heap | 1922 | 1:10560 |
| K | 36m NW | Unspecified Heap | 1922 | 1:10560 |
| AG | 36m NE | Unspecified Heap | 1938 | 1:10560 |
| AG | 36m NE | Unspecified Heap | 1938 | 1:10560 |
| K | 36m NW | Unspecified Heap | 1965 | 1:10560 |
| AF | 36m NW | Refuse Heap | 1922 | 1:10560 |
| AF | 36m NW | Refuse Heap | 1922 | 1:10560 |
| AF | 37m W | Unspecified Disused Pits | 1922 | 1:10560 |
| AF | 37m W | Unspecified Disused Pits | 1922 | 1:10560 |
| AH | 38m S | Disused Quarries and Tips | 1979 | 1:10000 |
| AF | 39m NW | Unspecified Heap | 1969 | 1:10560 |
| AF | 39m NW | Unspecified Heap | 1964 | 1:10560 |
| AI | 41m E | Old Ironstone Level | 1922 | 1:10560 |
| AI | 41m E | Old Ironstone Level | 1922 | 1:10560 |
| U | 41m NW | Pond | 1992 | 1:10000 |
| U | 41m NW | Pond | 1976 | 1:10000 |
| AE | 42m NE | Unspecified Disused Pit | 1903 | 1:10560 |
| AE | 42m NE | Unspecified Disused Pit | 1901 | 1:10560 |
| AH | 43m S | Unspecified Ground Workings | 1875 | 1:10560 |
| K | 44m NW | Unspecified Heap | 1921 | 1:10560 |
| K | 44m NW | Unspecified Disused Tips | 1988 | 1:10000 |
| K | 44m NW | Unspecified Disused Tips | 1979 | 1:10000 |
| AJ | 47m NW | Unspecified Pit | 1938 | 1:10560 |
| AJ | 47m NW | Unspecified Pit | 1938 | 1:10560 |
| AJ | 47m NW | Old Coal Level | 1915 | 1:10560 |
| AJ | 47m NW | Old Coal Level | 1922 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| AJ | 47m NW | Old Coal Level | 1922 | 1:10560 |
| AJ | 48m NW | Old Coal Level | 1948 | 1:10560 |
| AK | 48m NE | Unspecified Pit | 1875 | 1:10560 |
| AL | 49m NE | Unspecified Heap | 1938 | 1:10560 |
| AL | 49m NE | Unspecified Heap | 1938 | 1:10560 |
| X | 51m NE | Pond | 1921 | 1:10560 |
| X | 51m NE | Pond | 1938 | 1:10560 |
| AL | 52m NE | Unspecified Heap | 1921 | 1:10560 |
| X | 52m NE | Pond | 1915 | 1:10560 |
| X | 52m NE | Pond | 1922 | 1:10560 |
| X | 52m NE | Pond | 1922 | 1:10560 |
| O | 53m NE | Unspecified Ground Workings | 1948 | 1:10560 |
| AL | 53m NE | Unspecified Heap | 1901 | 1:10560 |
| AL | 54m NE | Unspecified Heap | 1915 | 1:10560 |
| S | 54m NW | Unspecified Ground Workings | 1948 | 1:10560 |
| U | 54m NW | Pond | 1921 | 1:10560 |
| AL | 54m NE | Unspecified Heap | 1948 | 1:10560 |
| AL | 54m NE | Unspecified Ground Workings | 1922 | 1:10560 |
| AL | 54m NE | Unspecified Ground Workings | 1922 | 1:10560 |
| S | 55m NW | Unspecified Ground Workings | 1915 | 1:10560 |
| S | 55m NW | Unspecified Ground Workings | 1938 | 1:10560 |
| S | 55m NW | Unspecified Ground Workings | 1938 | 1:10560 |
| AJ | 56m NW | Old Coal Level | 1921 | 1:10560 |
| S | 56m NW | Unspecified Ground Workings | 1921 | 1:10560 |
| S | 57m NW | Unspecified Ground Workings | 1922 | 1:10560 |
| S | 57m NW | Unspecified Ground Workings | 1922 | 1:10560 |
| AM | 57m NW | Old Coal Level | 1938 | 1:10560 |
| AM | 57m NW | Old Coal Level | 1938 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| O | 58m NE | Unspecified Heaps | 1922 | 1:10560 |
| O | 58m NE | Unspecified Heaps | 1922 | 1:10560 |
| AL | 60m NE | Unspecified Pit | 1969 | 1:10560 |
| AL | 60m NE | Unspecified Pit | 1964 | 1:10560 |
| 7 | 64m NE | Unspecified Ground Workings | 1965 | 1:10560 |
| AN | 66m W | Unspecified Disused Tip | 1979 | 1:10000 |
| AO | 67m W | Unspecified Old Quarries | 1901 | 1:10560 |
| S | 67m NW | Unspecified Ground Workings | 1965 | 1:10560 |
| AO | 68m W | Old Quarries | 1921 | 1:10560 |
| AK | 68m NE | Unspecified Disused Tip | 1992 | 1:10000 |
| AK | 68m NE | Unspecified Disused Tip | 1976 | 1:10000 |
| AO | 69m W | Unspecified Disused Tip | 1988 | 1:10000 |
| AO | 69m W | Unspecified Old Quarries | 1903 | 1:10560 |
| AO | 70m W | Unspecified Old Quarries | 1922 | 1:10560 |
| AO | 70m W | Unspecified Old Quarries | 1922 | 1:10560 |
| O | 70m NE | Unspecified Heap | 1968 | 1:10560 |
| O | 70m NE | Unspecified Heap | 1964 | 1:10560 |
| O | 71m NE | Unspecified Ground Workings | 1901 | 1:10560 |
| AO | 71m W | Unspecified Old Quarries | 1915 | 1:10560 |
| K | 71m NW | Unspecified Heap | 1875 | 1:10560 |
| 8 | 71m SW | Unspecified Disused Workings | 1988 | 1:10000 |
| AB | 72m W | Refuse Heap | 1915 | 1:10560 |
| AK | 72m NE | Unspecified Heap | 1915 | 1:10560 |
| AN | 73m W | Unspecified Old Quarries | 1948 | 1:10560 |
| AO | 73m W | Unspecified Old Quarries | 1938 | 1:10560 |
| AK | 73m NE | Unspecified Heap | 1965 | 1:10560 |
| K | 74m NW | Coal Level | 1901 | 1:10560 |
| AH | 74m S | Unspecified Heap | 1969 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| AH | 74m S | Unspecified Heap | 1964 | 1:10560 |
| AK | 74m NE | Unspecified Heap | 1948 | 1:10560 |
| AK | 75m NE | Unspecified Heap | 1922 | 1:10560 |
| AK | 75m NE | Unspecified Heap | 1922 | 1:10560 |
| K | 75m NW | Old Coal Drift | 1921 | 1:10560 |
| AK | 75m NE | Unspecified Heap | 1921 | 1:10560 |
| AH | 75m S | Unspecified Ground Workings | 1948 | 1:10560 |
| AH | 76m S | Unspecified Ground Workings | 1922 | 1:10560 |
| AH | 76m S | Unspecified Ground Workings | 1922 | 1:10560 |
| S | 78m NW | Cuttings | 1948 | 1:10560 |
| S | 78m NW | Cuttings | 1922 | 1:10560 |
| S | 78m NW | Cuttings | 1922 | 1:10560 |
| AO | 78m W | Unspecified Ground Workings | 1875 | 1:10560 |
| AH | 79m S | Unspecified Heap | 1988 | 1:10000 |
| AH | 79m S | Unspecified Ground Workings | 1901 | 1:10560 |
| S | 82m NW | Cuttings | 1921 | 1:10560 |
| AF | 82m NW | Coal Level | 1922 | 1:10560 |
| AF | 82m NW | Coal Level | 1922 | 1:10560 |
| AF | 83m NW | Coal Level | 1921 | 1:10560 |
| AF | 85m NW | Coal Level | 1938 | 1:10560 |
| AF | 85m NW | Coal Level | 1938 | 1:10560 |
| AH | 85m S | Unspecified Ground Workings | 1922 | 1:10560 |
| AH | 85m S | Unspecified Ground Workings | 1922 | 1:10560 |
| AF | 85m NW | Old Coal Level | 1948 | 1:10560 |
| AO | 85m NW | Unspecified Old Quarries | 1948 | 1:10560 |
| AF | 85m NW | Coal Level | 1915 | 1:10560 |
| AP | 89m E | Unspecified Ground Workings | 1922 | 1:10560 |
| AP | 89m E | Unspecified Ground Workings | 1922 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| AP | 89m E | Unspecified Ground Workings | 1921 | 1:10560 |
| AP | 91m E | Unspecified Pit | 1938 | 1:10560 |
| AP | 91m E | Unspecified Pit | 1938 | 1:10560 |
| AP | 91m E | Unspecified Pit | 1948 | 1:10560 |
| AP | 91m E | Unspecified Ground Workings | 1915 | 1:10560 |
| AO | 92m NW | Unspecified Ground Workings | 1969 | 1:10560 |
| AO | 92m NW | Unspecified Ground Workings | 1964 | 1:10560 |
| AH | 93m S | Unspecified Disused Tip | 1979 | 1:10000 |
| S | 94m NW | Cuttings | 1875 | 1:10560 |
| S | 94m NW | Cuttings | 1915 | 1:10560 |
| S | 98m NW | Unspecified Ground Workings | 1922 | 1:10560 |
| S | 98m NW | Unspecified Ground Workings | 1922 | 1:10560 |
| AH | 100m S | Unspecified Heap | 1969 | 1:10560 |
| AH | 100m S | Unspecified Heaps | 1964 | 1:10560 |
| 10 | 103m NW | Unspecified Heap | 1965 | 1:10560 |
| K | 103m NW | Old Coal Drift | 1915 | 1:10560 |
| K | 103m NW | Old Coal Drift | 1948 | 1:10560 |
| K | 104m NW | Old Coal Drift | 1922 | 1:10560 |
| K | 104m NW | Old Coal Drift | 1922 | 1:10560 |
| K | 104m NW | Old Coal Drift | 1938 | 1:10560 |
| K | 104m NW | Old Coal Drift | 1938 | 1:10560 |
| AQ | 105m SE | Unspecified Ground Workings | 1968 | 1:10560 |
| AQ | 107m SE | Unspecified Ground Workings | 1964 | 1:10560 |
| 11 | 111m NE | Disused Canal | 1938 | 1:10560 |
| AK | 111m NE | Old Canal | 1901 | 1:10560 |
| AH | 111m S | Unspecified Heap | 1969 | 1:10560 |
| AK | 112m NE | Disused Canal | 1921 | 1:10560 |
| AK | 112m NE | Disused Canal | 1915 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| AR | 112m NE | Disused Canal | 1948 | 1:10560 |
| AQ | 113m SE | Unspecified Ground Workings | 1901 | 1:10560 |
| AQ | 113m SE | Unspecified Heap | 1964 | 1:10560 |
| AH | 114m S | Unspecified Ground Workings | 1901 | 1:10560 |
| AS | 115m S | Unspecified Disused Tip | 1979 | 1:10000 |
| AK | 115m NE | Cuttings | 1901 | 1:10560 |
| Q | 116m SW | Unspecified Pit | 1875 | 1:10560 |
| AT | 117m SW | Old Ironstone Levels | 1903 | 1:10560 |
| AT | 119m SW | Unspecified Ground Workings | 1921 | 1:10560 |
| AT | 119m SW | Old Ironstone Levels | 1922 | 1:10560 |
| AT | 119m SW | Old Ironstone Levels | 1922 | 1:10560 |
| AT | 121m SW | Unspecified Disused Tip | 1979 | 1:10000 |
| AH | 122m S | Unspecified Pit | 1969 | 1:10560 |
| AH | 122m S | Unspecified Pit | 1964 | 1:10560 |
| AK | 122m NE | Canal | 1903 | 1:10560 |
| AT | 122m SW | Old Ironstone Levels | 1948 | 1:10560 |
| AT | 123m SW | Unspecified Ground Workings | 1969 | 1:10560 |
| AT | 123m SW | Unspecified Heap | 1964 | 1:10560 |
| AT | 123m W | Unspecified Ground Workings | 1921 | 1:10560 |
| L | 124m W | Refuse Heap | 1915 | 1:10560 |
| U | 125m NW | Unspecified Ground Workings | 1965 | 1:10560 |
| AT | 125m SW | Unspecified Heap | 1901 | 1:10560 |
| 12 | 126m W | Unspecified Old Quarries | 1903 | 1:10560 |
| AT | 127m W | Unspecified Old Quarries | 1948 | 1:10560 |
| AS | 130m W | Unspecified Heaps | 1948 | 1:10560 |
| AU | 131m N | Unspecified Disused Pit | 1938 | 1:10560 |
| AU | 131m N | Unspecified Disused Pit | 1938 | 1:10560 |
| AU | 131m N | Unspecified Disused Pit | 1915 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| AR | 132m NE | Unspecified Pit | 1992 | 1:10000 |
| AR | 132m NE | Unspecified Pit | 1976 | 1:10000 |
| AV | 132m NW | Unspecified Disused Tips | 1992 | 1:10000 |
| AV | 132m NW | Unspecified Disused Tips | 1976 | 1:10000 |
| AU | 133m N | Unspecified Disused Pit | 1922 | 1:10560 |
| AU | 133m N | Unspecified Disused Pit | 1922 | 1:10560 |
| AO | 134m W | Unspecified Disused Quarries | 1988 | 1:10000 |
| AO | 134m W | Unspecified Disused Quarries | 1979 | 1:10000 |
| AQ | 137m SE | Unspecified Heap | 1948 | 1:10560 |
| AT | 137m W | Unspecified Ground Workings | 1875 | 1:10560 |
| AH | 138m S | Unspecified Ground Workings | 1901 | 1:10560 |
| K | 139m NW | Unspecified Heap | 1965 | 1:10560 |
| AW | 139m NW | Reservoir | 1875 | 1:10560 |
| K | 140m NW | Unspecified Ground Workings | 1875 | 1:10560 |
| AK | 140m NE | Unspecified Heap | 1875 | 1:10560 |
| AW | 140m NW | Reservoir | 1915 | 1:10560 |
| AW | 141m NW | Reservoir | 1938 | 1:10560 |
| AV | 141m NW | Unspecified Heap | 1965 | 1:10560 |
| AW | 141m NW | Reservoir | 1922 | 1:10560 |
| AW | 141m NW | Reservoir | 1922 | 1:10560 |
| K | 141m NW | Unspecified Heap | 1938 | 1:10560 |
| K | 141m NW | Unspecified Heap | 1938 | 1:10560 |
| AQ | 142m SE | Unspecified Heap | 1922 | 1:10560 |
| AQ | 142m SE | Unspecified Heap | 1922 | 1:10560 |
| AW | 142m NW | Reservoir | 1948 | 1:10560 |
| AY | 142m SW | Unspecified Pit | 1922 | 1:10560 |
| AY | 142m SW | Unspecified Pit | 1922 | 1:10560 |
| K | 143m NW | Unspecified Heap | 1948 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| K | 143m NW | Unspecified Heap | 1915 | 1:10560 |
| AW | 144m NW | Reservoir | 1921 | 1:10560 |
| K | 144m NW | Unspecified Heap | 1922 | 1:10560 |
| K | 144m NW | Unspecified Heap | 1922 | 1:10560 |
| AW | 146m NW | Pond | 1992 | 1:10000 |
| AW | 146m NW | Pond | 1976 | 1:10000 |
| AW | 146m NW | Pond | 1965 | 1:10560 |
| K | 148m NW | Unspecified Heap | 1901 | 1:10560 |
| AW | 150m NW | Reservoir | 1901 | 1:10560 |
| AZ | 150m SE | Unspecified Ground Workings | 1968 | 1:10560 |
| AO | 150m W | Unspecified Old Quarries | 1948 | 1:10560 |
| K | 151m NW | Unspecified Heap | 1921 | 1:10560 |
| Q | 153m SW | Unspecified Pit | 1964 | 1:10560 |
| BA | 153m N | Unspecified Ground Workings | 1915 | 1:10560 |
| AT | 154m W | Unspecified Pit | 1969 | 1:10560 |
| AT | 154m W | Unspecified Pit | 1964 | 1:10560 |
| AH | 155m S | Unspecified Ground Workings | 1901 | 1:10560 |
| AT | 155m W | Unspecified Pit | 1903 | 1:10560 |
| AW | 156m NW | Reservoir | 1903 | 1:10560 |
| AT | 159m W | Unspecified Pit | 1901 | 1:10560 |
| AQ | 160m SE | Coal Level | 1922 | 1:10560 |
| AQ | 160m SE | Coal Level | 1922 | 1:10560 |
| AT | 160m SW | Unspecified Pit | 1875 | 1:10560 |
| AQ | 162m SE | Unspecified Ground Workings | 1901 | 1:10560 |
| K | 164m NW | Coal Level | 1903 | 1:10560 |
| AQ | 168m SE | Unspecified Heap | 1968 | 1:10560 |
| AZ | 176m E | Unspecified Ground Workings | 1875 | 1:10560 |
| AH | 178m S | Unspecified Ground Workings | 1901 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| BB | 180m NW | Refuse Heap | 1938 | 1:10560 |
| BB | 180m NW | Refuse Heap | 1938 | 1:10560 |
| BC | 181m E | Disused Canal | 1922 | 1:10560 |
| BC | 181m E | Disused Canal | 1922 | 1:10560 |
| AQ | 186m SE | Unspecified Heap | 1964 | 1:10560 |
| BD | 188m SW | Ironstone Levels | 1875 | 1:10560 |
| AW | 193m NW | Cuttings | 1922 | 1:10560 |
| AW | 193m NW | Cuttings | 1922 | 1:10560 |
| BE | 194m NW | Unspecified Disused Tip | 1992 | 1:10000 |
| BF | 194m E | Canal | 1901 | 1:10560 |
| BF | 194m E | Disused Canal | 1948 | 1:10560 |
| BG | 194m SW | Unspecified Heap | 1948 | 1:10560 |
| BE | 196m NW | Unspecified Heaps | 1965 | 1:10560 |
| BF | 200m E | Disused Canal | 1922 | 1:10560 |
| BH | 200m SW | Cuttings | 1988 | 1:10000 |
| BH | 200m SW | Cuttings | 1979 | 1:10000 |
| K | 201m NW | Unspecified Heap | 1922 | 1:10560 |
| K | 201m NW | Unspecified Heap | 1922 | 1:10560 |
| K | 201m NW | Unspecified Ground Workings | 1938 | 1:10560 |
| K | 201m NW | Unspecified Ground Workings | 1938 | 1:10560 |
| AR | 201m NE | Unspecified Ground Workings | 1992 | 1:10000 |
| AR | 201m NE | Unspecified Ground Workings | 1975 | 1:10000 |
| AR | 201m NE | Unspecified Ground Workings | 1982 | 1:10000 |
| K | 201m NW | Reservoir | 1875 | 1:10560 |
| K | 201m NW | Old Coal Level | 1948 | 1:10560 |
| K | 201m NW | Unspecified Heap | 1965 | 1:10560 |
| K | 202m NW | Reservoir | 1938 | 1:10560 |
| K | 202m NW | Pond | 1965 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| K | 202m NW | Unspecified Heap | 1915 | 1:10560 |
| K | 203m NW | Pond | 1976 | 1:10000 |
| K | 203m NW | Reservoir | 1915 | 1:10560 |
| BG | 203m SW | Unspecified Heap | 1964 | 1:10560 |
| K | 204m NW | Ponds | 1992 | 1:10000 |
| K | 204m NW | Reservoir | 1922 | 1:10560 |
| K | 204m NW | Reservoir | 1922 | 1:10560 |
| K | 204m NW | Unspecified Pit | 1875 | 1:10560 |
| K | 204m NW | Reservoir | 1948 | 1:10560 |
| BC | 204m E | Disused Canal | 1988 | 1:10000 |
| K | 205m NW | Unspecified Pit | 1922 | 1:10560 |
| K | 205m NW | Unspecified Pit | 1922 | 1:10560 |
| K | 205m NW | Unspecified Pit | 1948 | 1:10560 |
| K | 206m NW | Unspecified Pit | 1915 | 1:10560 |
| K | 206m NW | Unspecified Heap | 1875 | 1:10560 |
| K | 208m NW | Reservoir | 1921 | 1:10560 |
| BA | 209m N | Unspecified Heap | 1938 | 1:10560 |
| BA | 209m N | Unspecified Heap | 1938 | 1:10560 |
| K | 209m NW | Coal Level | 1938 | 1:10560 |
| K | 209m NW | Coal Level | 1938 | 1:10560 |
| K | 209m NW | Reservoir | 1901 | 1:10560 |
| BH | 209m SW | Cuttings | 1922 | 1:10560 |
| K | 211m NW | Unspecified Heap | 1921 | 1:10560 |
| K | 211m NW | Coal Level | 1915 | 1:10560 |
| K | 212m NW | Coal Level | 1922 | 1:10560 |
| K | 212m NW | Coal Level | 1922 | 1:10560 |
| K | 212m NW | Unspecified Pit | 1921 | 1:10560 |
| BI | 213m SW | Cuttings | 1969 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| BI | 213m SW | Cuttings | 1964 | 1:10560 |
| BJ | 216m NW | Unspecified Old Quarries | 1901 | 1:10560 |
| K | 217m NW | Coal Level | 1921 | 1:10560 |
| AZ | 220m E | Unspecified Heap | 1875 | 1:10560 |
| BH | 222m SW | Cuttings | 1948 | 1:10560 |
| K | 226m NW | Reservoir | 1903 | 1:10560 |
| AH | 229m S | Unspecified Heap | 1875 | 1:10560 |
| BJ | 231m NW | Unspecified Old Quarries | 1903 | 1:10560 |
| BK | 232m N | Unspecified Heap | 1921 | 1:10560 |
| BD | 233m SW | Old Ironstone Levels | 1903 | 1:10560 |
| BK | 234m N | Unspecified Heap | 1938 | 1:10560 |
| BK | 234m N | Unspecified Heap | 1938 | 1:10560 |
| BK | 235m N | Unspecified Heap | 1915 | 1:10560 |
| BK | 235m N | Unspecified Heap | 1948 | 1:10560 |
| BK | 235m N | Unspecified Heap | 1922 | 1:10560 |
| BK | 235m N | Unspecified Heap | 1922 | 1:10560 |
| BH | 235m SW | Cuttings | 1875 | 1:10560 |
| BL | 238m S | Unspecified Disused Tip | 1979 | 1:10000 |
| BL | 238m S | Unspecified Heap | 1969 | 1:10560 |
| BL | 238m S | Unspecified Heap | 1964 | 1:10560 |
| BM | 238m NW | Unspecified Disused Tips | 1992 | 1:10000 |
| BM | 238m NW | Unspecified Disused Tips | 1976 | 1:10000 |
| BL | 239m S | Unspecified Heap | 1948 | 1:10560 |
| BM | 239m NW | Unspecified Heap | 1965 | 1:10560 |
| BD | 240m SW | Old Ironstone Levels | 1901 | 1:10560 |
| 15 | 240m NW | Refuse Heap | 1965 | 1:10560 |
| BD | 243m SW | Old Ironstone Levels | 1922 | 1:10560 |
| BD | 243m SW | Old Ironstone Levels | 1922 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| BD | 244m SW | Unspecified Ground Workings | 1921 | 1:10560 |
| BD | 245m SW | Unspecified Ground Workings | 1915 | 1:10560 |
| BD | 246m SW | Old Ironstone Levels | 1948 | 1:10560 |
| BD | 247m SW | Old Ironstone Levels | 1938 | 1:10560 |
| BM | 248m NW | Refuse Heap | 1922 | 1:10560 |
| BM | 248m NW | Refuse Heap | 1922 | 1:10560 |

*This is data is sourced from Ordnance Survey/Groundsure.*

## 18.4 Underground workings

| **Records within 1000m** | **191** |
|---|---|

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 168**

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| **B** | **On site** | **Old Coal Drift** | **1948** | **1:10560** |
| **C** | **On site** | **Old Coal Level** | **1948** | **1:10560** |
| **O** | **On site** | **Ironstone Level** | **1875** | **1:10560** |
| **P** | **On site** | **Old Ironstone Level** | **1901** | **1:10560** |
| **P** | **On site** | **Old Ironstone Level** | **1903** | **1:10560** |
| **Q** | **On site** | **Coal Pit** | **1875** | **1:10560** |
| B | 11m NW | Coal Shaft | 1875 | 1:10560 |
| Z | 35m S | Air Shaft | 1915 | 1:10560 |
| Z | 38m S | Air Shaft | 1901 | 1:10560 |
| Z | 45m S | Air Shaft | 1875 | 1:10560 |
| AJ | 48m NW | Old Coal Level | 1948 | 1:10560 |
| K | 74m NW | Coal Level | 1901 | 1:10560 |
| AF | 85m NW | Old Coal Level | 1948 | 1:10560 |
| K | 103m NW | Old Coal Drift | 1948 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| AT | 117m SW | Old Ironstone Levels | 1903 | 1:10560 |
| AT | 122m SW | Old Ironstone Levels | 1948 | 1:10560 |
| 13 | 146m NW | Air Shaft | 1875 | 1:10560 |
| K | 164m NW | Coal Level | 1903 | 1:10560 |
| AH | 168m S | Old Coal Shaft | 1901 | 1:10560 |
| BD | 188m SW | Ironstone Levels | 1875 | 1:10560 |
| K | 201m NW | Old Coal Level | 1948 | 1:10560 |
| AZ | 221m SE | Air Shaft | 1875 | 1:10560 |
| K | 229m NW | Air Shaft | 1875 | 1:10560 |
| AH | 230m S | Air Shaft | 1915 | 1:10560 |
| AH | 231m S | Unspecified Disused Shaft | 1969 | 1:10560 |
| AH | 231m S | Unspecified Disused Shaft | 1964 | 1:10560 |
| AH | 232m S | Unspecified Disused Shaft | 1988 | 1:10000 |
| AH | 232m S | Unspecified Disused Shaft | 1979 | 1:10000 |
| BD | 233m SW | Old Ironstone Levels | 1903 | 1:10560 |
| AH | 234m S | Air Shaft | 1901 | 1:10560 |
| BD | 240m SW | Old Ironstone Levels | 1901 | 1:10560 |
| AH | 243m S | Air Shaft | 1875 | 1:10560 |
| BD | 246m SW | Old Ironstone Levels | 1948 | 1:10560 |
| BN | 255m SW | Air Shaft | 1915 | 1:10560 |
| BD | 291m SW | Unspecified Disused Levels | 1988 | 1:10000 |
| BD | 291m SW | Unspecified Disused Level | 1979 | 1:10000 |
| BD | 296m SW | Unspecified Disused Level | 1969 | 1:10560 |
| BD | 296m SW | Unspecified Disused Level | 1964 | 1:10560 |
| 18 | 324m SW | Unspecified Disused Mine | 1964 | 1:10560 |
| BS | 326m N | Old Coal Level | 1948 | 1:10560 |
| BX | 336m SW | Tunnel | 1969 | 1:10560 |
| BX | 336m SW | Tunnel | 1969 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| BX | 336m SW | Tunnel | 1964 | 1:10560 |
| BZ | 344m SW | Tunnel | 1901 | 1:10560 |
| BZ | 344m SW | Tunnel | 1915 | 1:10560 |
| BQ | 345m NW | Coal Level | 1901 | 1:10560 |
| BZ | 346m SW | Tunnel | 1875 | 1:10560 |
| BX | 363m SW | Disused Tunnel | 1988 | 1:10000 |
| 21 | 364m SE | Air Shaft | 1875 | 1:10560 |
| CD | 369m S | Coal Level | 1915 | 1:10560 |
| 23 | 387m SW | Air Shaft | 1875 | 1:10560 |
| BQ | 388m NW | Unspecified Disused Drift | 1992 | 1:10000 |
| BQ | 388m NW | Unspecified Disused Drift | 1976 | 1:10000 |
| BQ | 407m NW | Old Coal Drift | 1948 | 1:10560 |
| CG | 417m NW | Disused Air Shaft | 1992 | 1:10000 |
| CG | 417m NW | Disused Air Shaft | 1976 | 1:10000 |
| CA | 420m NW | Coal Level | 1948 | 1:10560 |
| BQ | 420m NW | Disused Coal Drift | 1948 | 1:10560 |
| CG | 420m NW | Air Shaft | 1948 | 1:10560 |
| 28 | 445m SW | Unspecified Melin | 1915 | 1:10560 |
| CE | 450m SE | Old Coal Shaft | 1915 | 1:10560 |
| CP | 471m NW | Coal Level | 1875 | 1:10560 |
| CV | 493m E | Unspecified Old Shaft | 1915 | 1:10560 |
| 30 | 514m SE | Coal Pit | 1875 | 1:10560 |
| CX | 519m NW | Old Coal Level | 1948 | 1:10560 |
| CX | 528m NW | Old Coal Level | 1901 | 1:10560 |
| CX | 539m NW | Old Coal Level | 1903 | 1:10560 |
| CQ | 539m NW | Coal and Ironstone Pit | 1875 | 1:10560 |
| CP | 559m NW | Air Shaft | 1875 | 1:10560 |
| DD | 577m S | Unspecified Disused Shaft | 1979 | 1:10000 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| DF | 579m NW | Old Coal Level | 1948 | 1:10560 |
| BF | 585m SE | Unspecified Old Shafts | 1915 | 1:10560 |
| BF | 590m SE | Unspecified Old Shafts | 1915 | 1:10560 |
| DJ | 615m SE | Coal Pit | 1875 | 1:10560 |
| BF | 624m SE | Air Shaft | 1875 | 1:10560 |
| DN | 646m NW | Disused Air Shaft | 1976 | 1:10000 |
| DN | 646m NW | Disused Air Shaft | 1965 | 1:10560 |
| DN | 647m NW | Air Shaft | 1948 | 1:10560 |
| DN | 650m NW | Air Shaft | 1875 | 1:10560 |
| DN | 652m NW | Air Shaft | 1901 | 1:10560 |
| DN | 667m NW | Air Shaft | 1903 | 1:10560 |
| DG | 690m E | Unspecified Disused Shafts | 1968 | 1:10560 |
| DG | 690m E | Unspecified Disused Shafts | 1964 | 1:10560 |
| DG | 692m E | Unspecified Disused Shafts | 1968 | 1:10560 |
| DG | 692m E | Unspecified Disused Shafts | 1964 | 1:10560 |
| DG | 692m E | Air Shaft | 1875 | 1:10560 |
| DG | 696m E | Air Shaft | 1901 | 1:10560 |
| DN | 697m NW | Unspecified Disused Drift | 1976 | 1:10000 |
| DG | 699m E | Air Shaft | 1901 | 1:10560 |
| DG | 699m E | Air Shafts | 1903 | 1:10560 |
| DG | 699m E | Air Shafts | 1948 | 1:10560 |
| DT | 701m S | Old Coal Level | 1915 | 1:10560 |
| DG | 701m E | Air Shafts | 1903 | 1:10560 |
| DG | 702m E | Air Shafts | 1948 | 1:10560 |
| DG | 703m NE | Air Shaft | 1875 | 1:10560 |
| DN | 704m NW | Old Coal Drift | 1948 | 1:10560 |
| DG | 705m NE | Air Shaft | 1901 | 1:10560 |
| 36 | 705m NW | Colliery | 1875 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| DG | 706m E | Unspecified Disused Shaft | 1988 | 1:10000 |
| DG | 706m E | Unspecified Disused Shaft | 1968 | 1:10560 |
| DG | 706m E | Unspecified Disused Shaft | 1964 | 1:10560 |
| DG | 708m E | Air Shaft | 1901 | 1:10560 |
| DG | 709m NE | Air Shafts | 1903 | 1:10560 |
| DG | 709m E | Air Shafts | 1903 | 1:10560 |
| DG | 713m E | Air Shaft | 1875 | 1:10560 |
| DG | 714m E | Air Shaft | 1948 | 1:10560 |
| - | 736m S | Old Air Shaft | 1915 | 1:10560 |
| - | 739m S | Disused Air Shaft | 1979 | 1:10000 |
| - | 739m S | Disused Air Shaft | 1969 | 1:10560 |
| DX | 746m E | Old Coal Level | 1948 | 1:10560 |
| EB | 757m NW | Unspecified Disused Level | 1992 | 1:10000 |
| EB | 757m NW | Unspecified Disused Level | 1976 | 1:10000 |
| EB | 761m NW | Old Coal Level | 1948 | 1:10560 |
| EB | 761m NW | Old Coal Level | 1901 | 1:10560 |
| EB | 763m NW | Old Coal Level | 1903 | 1:10560 |
| EH | 775m SE | Unspecified Disused Shaft | 1988 | 1:10000 |
| EH | 775m SE | Unspecified Disused Shaft | 1968 | 1:10560 |
| EH | 775m SE | Unspecified Disused Shaft | 1964 | 1:10560 |
| - | 777m E | Unspecified Old Shafts | 1948 | 1:10560 |
| - | 778m E | Coal Level | 1901 | 1:10560 |
| - | 778m N | Old Ironstone Level | 1948 | 1:10560 |
| - | 779m E | Unspecified Old Shafts | 1901 | 1:10560 |
| - | 779m E | Unspecified Old Shafts | 1903 | 1:10560 |
| - | 781m N | Old Ironstone Level | 1901 | 1:10560 |
| EH | 784m SE | Air Shaft | 1875 | 1:10560 |
| - | 785m E | Unspecified Old Shafts | 1901 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| - | 794m N | Old Ironstone Level | 1903 | 1:10560 |
| DX | 810m E | Coal Level | 1903 | 1:10560 |
| EK | 811m NW | Old Coal Level | 1903 | 1:10560 |
| DX | 812m E | Coal Level | 1901 | 1:10560 |
| - | 818m W | Old Coal Level | 1948 | 1:10560 |
| DZ | 820m NW | Old Air Shaft | 1901 | 1:10560 |
| - | 826m NE | Coal and Ironstone Pit | 1875 | 1:10560 |
| EK | 833m NW | Air Shaft | 1948 | 1:10560 |
| EK | 835m NW | Disused Air Shafts | 1992 | 1:10000 |
| EK | 835m NW | Disused Air Shafts | 1976 | 1:10000 |
| EK | 835m NW | Disused Air Shaft | 1965 | 1:10560 |
| DZ | 838m NW | Old Air Shaft | 1903 | 1:10560 |
| CQ | 839m NW | Unspecified Disused Shaft | 1992 | 1:10000 |
| CQ | 839m NW | Unspecified Disused Shaft | 1976 | 1:10000 |
| CQ | 839m NW | Unspecified Disused Shaft | 1965 | 1:10560 |
| EL | 841m SE | Unspecified Disused Shaft | 1968 | 1:10560 |
| EL | 841m SE | Unspecified Disused Shaft | 1964 | 1:10560 |
| EL | 843m SE | Old Air Shaft | 1915 | 1:10560 |
| EL | 847m SE | Air Shaft | 1875 | 1:10560 |
| - | 853m W | Old Coal Level | 1901 | 1:10560 |
| - | 854m W | Old Coal Level | 1903 | 1:10560 |
| - | 854m E | Disused Drift | 1948 | 1:10560 |
| - | 858m W | Unspecified Disused Level | 1992 | 1:10000 |
| - | 858m W | Unspecified Disused Level | 1976 | 1:10000 |
| - | 862m E | Unspecified Old Shaft | 1901 | 1:10560 |
| EB | 862m NW | Coal Levels | 1948 | 1:10560 |
| - | 865m NW | Unspecified Old Shaft | 1948 | 1:10560 |
| - | 865m E | Unspecified Old Shaft | 1903 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| - | 865m E | Unspecified Old Shaft | 1948 | 1:10560 |
| - | 870m E | Coal Level | 1903 | 1:10560 |
| - | 874m E | Coal Level | 1948 | 1:10560 |
| - | 879m E | Coal Level | 1875 | 1:10560 |
| - | 887m S | Disused Air Shaft | 1988 | 1:10000 |
| - | 887m S | Disused Air Shaft | 1979 | 1:10000 |
| - | 887m N | Ironstone Level | 1948 | 1:10560 |
| EU | 889m NW | Old Coal Levels | 1948 | 1:10560 |
| - | 891m NW | Air Shaft | 1948 | 1:10560 |
| - | 892m NW | Disused Air Shafts | 1992 | 1:10000 |
| - | 892m NW | Disused Air Shafts | 1976 | 1:10000 |
| - | 892m NW | Disused Air Shaft | 1965 | 1:10560 |
| - | 902m S | Air Shaft | 1915 | 1:10560 |
| - | 912m N | Old Ironstone Level | 1903 | 1:10560 |
| - | 916m E | Air Shaft | 1901 | 1:10560 |
| - | 917m E | Unspecified Disused Shaft | 1988 | 1:10000 |
| - | 917m E | Unspecified Disused Shaft | 1968 | 1:10560 |
| - | 917m E | Unspecified Disused Shaft | 1964 | 1:10560 |
| - | 918m E | Air Shaft | 1903 | 1:10560 |
| - | 920m E | Air Shaft | 1875 | 1:10560 |
| - | 925m E | Air Shaft | 1948 | 1:10560 |
| - | 934m S | Unspecified Disused Level | 1969 | 1:10560 |
| - | 934m S | Unspecified Disused Level | 1964 | 1:10560 |
| - | 938m W | Unspecified Old Levels | 1901 | 1:10560 |
| - | 940m S | Unspecified Disused Level | 1988 | 1:10000 |
| - | 940m S | Unspecified Disused Level | 1979 | 1:10000 |
| - | 940m W | Unspecified Old Levels | 1903 | 1:10560 |
| - | 941m W | Unspecified Disused Level | 1969 | 1:10560 |

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| - | 941m W | Unspecified Disused Level | 1964 | 1:10560 |
| - | 944m W | Unspecified Disused Levels | 1988 | 1:10000 |
| - | 944m W | Unspecified Disused Level | 1979 | 1:10000 |
| - | 946m S | Unspecified Old Level | 1915 | 1:10560 |
| 44 | 959m SE | Coal Pit | 1875 | 1:10560 |
| - | 960m NW | Old Ironstone Level | 1901 | 1:10560 |
| - | 960m W | Unspecified Old Levels | 1901 | 1:10560 |
| - | 967m W | Unspecified Old Levels | 1948 | 1:10560 |
| - | 991m E | Air Shaft | 1875 | 1:10560 |

*This is data is sourced from Ordnance Survey/Groundsure.*

## 18.5 Historical Mineral Planning Areas

| **Records within 500m** | **0** |
|---|---|

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

*This data is sourced from the British Geological Survey.*

## 18.6 Non-coal mining

| **Records within 1000m** | **5** |
|---|---|

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 168**

| ID | Location | Name | Commodity | Class | Likelihood |
|---|---|---|---|---|---|
| **2** | **On site** | **Not available** | **Iron Ore (Bedded)** | **B** | **Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered** |

| ID | Location | Name | Commodity | Class | Likelihood |
|---|---|---|---|---|---|
| **E** | **On site** | **Not available** | **Iron Ore (Bedded)** | **B** | **Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered** |
| AX | 140m E | Not available | Iron Ore (Bedded) | B | Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered |
| 14 | 170m E | Not available | Iron Ore (Bedded) | B | Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered |
| 34 | 624m S | Not available | Iron Ore (Bedded) | B | Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered |

*This data is sourced from the British Geological Survey.*

## 18.7 Mining cavities

| **Records within 1000m** | **0** |
|---|---|

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

*This data is sourced from Stantec UK Ltd.*

## 18.8 JPB mining areas

| **Records on site** | **0** |
|---|---|

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

*This data is sourced from Johnson Poole and Bloomer.*

## 18.9 Coal mining

| **Records on site** | **1** |
|---|---|

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

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

*This data is sourced from the Coal Authority.*

## 18.10 Brine areas

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

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

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

## 18.11 Gypsum areas

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

Generalised areas that may be affected by gypsum extraction.

*This data is sourced from British Gypsum.*

## 18.12 Tin mining

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

Generalised areas that may be affected by historical tin mining.

*This data is sourced from Mining Searches UK.*

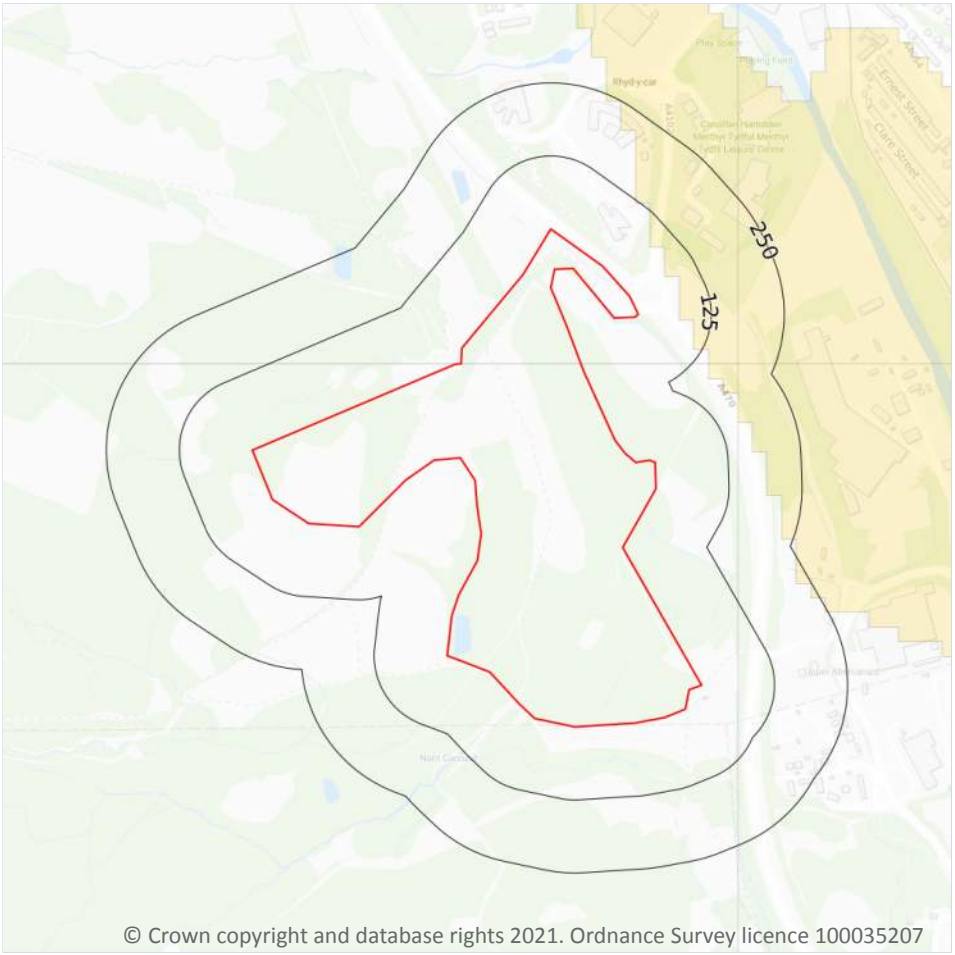
## 18.13 Clay mining

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

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

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

# 19 Radon




Site Outline

Search buffers in metres (m)

- Greater than 30%
- Between 10% and 30%
- Between 5% and 10%
- Between 3% and 5%
- Between 1% and 3%
- Less than 1%

## 19.1 Radon

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

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

Features are displayed on the Radon map on **page 205**

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

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

# 20 Soil chemistry

## 20.1 BGS Estimated Background Soil Chemistry

| Records within 50m | 12 |
|---|---|

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

| Location | Arsenic | Bioaccessible Arsenic | Lead | Bioaccessible Lead | Cadmium | Chromium | Nickel |
|---|---|---|---|---|---|---|---|
| **On site** | **15 - 25 mg/kg** | **No data** | **100 mg/kg** | **60 mg/kg** | **1.8 mg/kg** | **60 - 90 mg/kg** | **30 - 45 mg/kg** |
| **On site** | **15 - 25 mg/kg** | **No data** | **100 mg/kg** | **60 mg/kg** | **1.8 mg/kg** | **60 - 90 mg/kg** | **30 - 45 mg/kg** |
| **On site** | **15 - 25 mg/kg** | **No data** | **100 mg/kg** | **60 mg/kg** | **1.8 mg/kg** | **60 - 90 mg/kg** | **15 - 30 mg/kg** |
| **On site** | **15 - 25 mg/kg** | **No data** | **100 mg/kg** | **60 mg/kg** | **1.8 mg/kg** | **60 - 90 mg/kg** | **15 - 30 mg/kg** |
| **On site** | **15 - 25 mg/kg** | **No data** | **100 mg/kg** | **60 mg/kg** | **1.8 mg/kg** | **60 - 90 mg/kg** | **30 - 45 mg/kg** |
| **On site** | **15 - 25 mg/kg** | **No data** | **100 mg/kg** | **60 mg/kg** | **1.8 mg/kg** | **60 - 90 mg/kg** | **15 - 30 mg/kg** |
| **On site** | **15 - 25 mg/kg** | **No data** | **100 mg/kg** | **60 mg/kg** | **1.8 mg/kg** | **60 - 90 mg/kg** | **30 - 45 mg/kg** |
| **On site** | **15 mg/kg** | **No data** | **100 mg/kg** | **60 mg/kg** | **1.8 mg/kg** | **60 - 90 mg/kg** | **15 - 30 mg/kg** |
| **On site** | **15 mg/kg** | **No data** | **100 mg/kg** | **60 mg/kg** | **1.8 mg/kg** | **60 - 90 mg/kg** | **30 - 45 mg/kg** |
| 3m SW | 15 - 25 mg/kg | No data | 100 mg/kg | 60 mg/kg | 1.8 mg/kg | 60 - 90 mg/kg | 30 - 45 mg/kg |
| 7m NW | 15 - 25 mg/kg | No data | 100 mg/kg | 60 mg/kg | 1.8 mg/kg | 60 - 90 mg/kg | 30 - 45 mg/kg |
| 7m NW | 15 mg/kg | No data | 100 mg/kg | 60 mg/kg | 1.8 mg/kg | 60 - 90 mg/kg | 30 - 45 mg/kg |

*This data is sourced from the British Geological Survey.*

## 20.2 BGS Estimated Urban Soil Chemistry

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

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per $km^2$).

*This data is sourced from the British Geological Survey.*

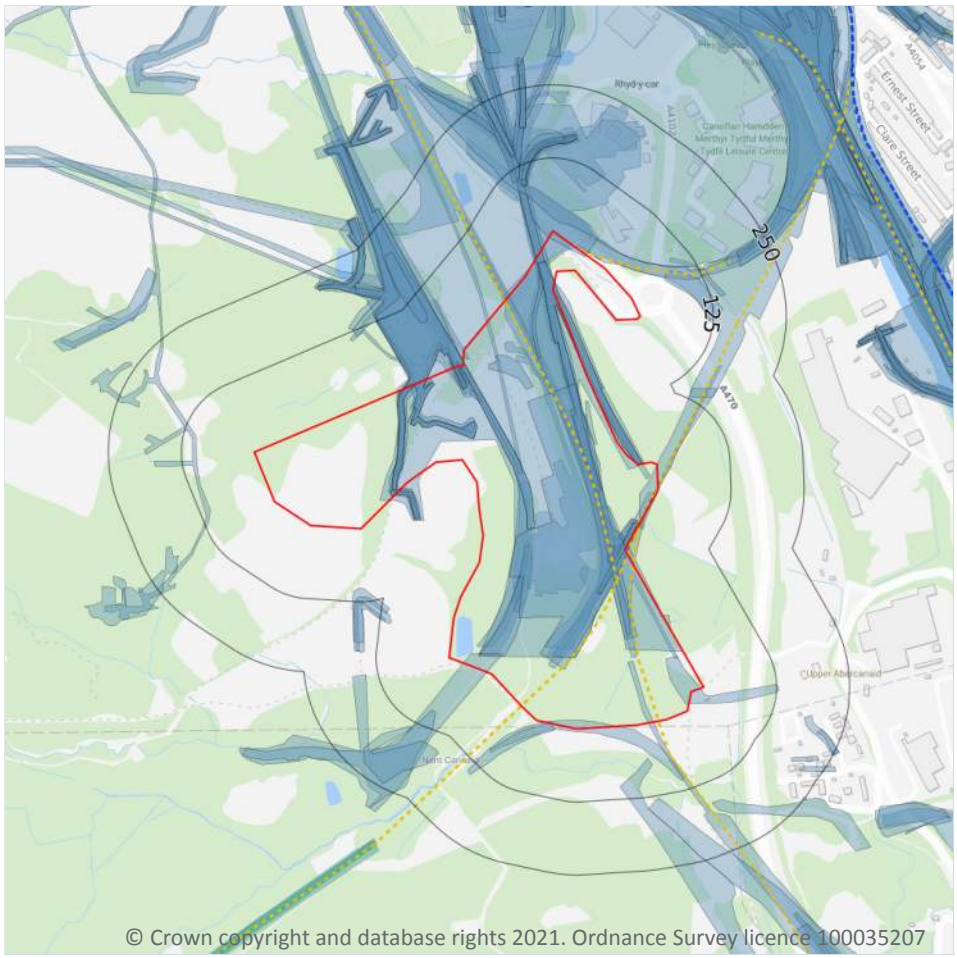
## 20.3 BGS Measured Urban Soil Chemistry

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

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per $km^2$.

*This data is sourced from the British Geological Survey.*

# 21 Railway infrastructure and projects




Site Outline

Search buffers in metres (m)

- Crossrail 1 Stations
- Crossrail 1 Route
- Crossrail 1 Worksites
- Crossrail 2 Stations
- Crossrail 2 Route
- Crossrail 2 Worksites
- Crossrail 2 Safeguarding
- Crossrail 2 Headhouses
- Railway stations
- Active railways
- Active tunnels
- Abandoned railways
- Historic railways
- Historic tunnels
- Underground stations
- Underground Lines
- Royal Mail tunnels
- HS2 optimised route
- HS2 Stations
- HS2 Depots
- HS2 Surface Safeguarding
- HS2 Subsurface Safeguarding

## 21.1 Underground railways (London)

| Records within 250m | 0 |
|---|---|

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

*This data is sourced from publicly available information by Groundsure.*

## 21.2 Underground railways (Non-London)

| Records within 250m | 0 |
|---|---|

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

*This data is sourced from publicly available information by Groundsure.*

## 21.3 Railway tunnels

| Records within 250m | 0 |
|---|---|

Railway tunnels taken from contemporary Ordnance Survey mapping.

*This data is sourced from the Ordnance Survey.*

## 21.4 Historical railway and tunnel features

| Records within 250m | 50 |
|---|---|

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

Features are displayed on the Railway infrastructure and projects map on **page 208**

| Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|
| **On site** | **Railway Sidings** | **1962** | **2500** |
| **On site** | **Railway Sidings** | **1900** | **2500** |
| **On site** | **Railway Sidings** | **1919** | **2500** |
| **On site** | **Tramway Sidings** | **1919** | **2500** |
| **On site** | **Railway** | **1875** | **-** |
| **On site** | **Railway** | **1873** | **-** |
| **On site** | **Railway Sidings** | **1875** | **2500** |
| **On site** | **Railway Sidings** | **1948** | **10560** |
| **On site** | **Railway Sidings** | **1903** | **10560** |
| **On site** | **Railway Sidings** | **1901** | **10560** |
| **On site** | **Railway Sidings** | **1938** | **10560** |
| **On site** | **Railway Sidings** | **1915** | **10560** |
| **On site** | **Railway Sidings** | **1921** | **10560** |
| **On site** | **Railway Sidings** | **1922** | **10560** |
| **On site** | **Tramway Sidings** | **1948** | **10560** |
| **On site** | **Tramway Sidings** | **1915** | **10560** |
| **On site** | **Tramway Sidings** | **1922** | **10560** |

| Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|
| **On site** | **Tramway Sidings** | **1921** | **10560** |
| **On site** | **Railway Sidings** | **1875** | **10560** |
| 19m NE | Railway Sidings | 1903 | 10560 |
| 60m S | Tramway Sidings | 1948 | 10560 |
| 65m NE | Railway Sidings | 1875 | 10560 |
| 82m NW | Railway Sidings | 1901 | 10560 |
| 86m NE | Railway Sidings | 1875 | 2500 |
| 89m NW | Railway Sidings | 1922 | 10560 |
| 90m NE | Railway Sidings | 1875 | 2500 |
| 91m NW | Railway Sidings | 1915 | 10560 |
| 94m S | Railway Sidings | 1901 | 10560 |
| 99m W | Railway Sidings | 1875 | 2500 |
| 100m NW | Railway Sidings | 1901 | 10560 |
| 102m S | Railway Sidings | 1903 | 10560 |
| 105m W | Railway Sidings | 1901 | 10560 |
| 106m NW | Railway Sidings | 1901 | 10560 |
| 113m NW | Railway Sidings | 1901 | 10560 |
| 115m W | Railway Sidings | 1900 | 2500 |
| 125m NW | Railway Sidings | 1901 | 10560 |
| 129m S | Railway Sidings | 1948 | 10560 |
| 135m SW | Railway Sidings | 1875 | 10560 |
| 145m NW | Railway Sidings | 1922 | 10560 |
| 161m S | Railway Sidings | 1948 | 10560 |
| 173m NE | Railway Sidings | 1921 | 10560 |
| 181m E | Railway Sidings | 1901 | 10560 |
| 184m N | Railway Sidings | 1922 | 10560 |
| 188m SW | Railway Sidings | 1875 | 10560 |
| 191m NE | Railway Sidings | 1875 | 10560 |

| Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|
| 194m SE | Tramway Sidings | 1901 | 10560 |
| 196m NE | Railway Sidings | 1956 | 1250 |
| 197m NE | Railway Sidings | 1956 | 2500 |
| 209m E | Railway Sidings | 1922 | 10560 |
| 214m SE | Tramway Sidings | 1901 | 10560 |

*This data is sourced from Ordnance Survey/Groundsure.*

## 21.5 Royal Mail tunnels

| **Records within 250m** | **0** |
|---|---|

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

*This data is sourced from Groundsure/the Postal Museum.*

## 21.6 Historical railways

| **Records within 250m** | **8** |
|---|---|

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

Features are displayed on the Railway infrastructure and projects map on **page 208**

| Location | Description |
|---|---|
| **On site** | **Abandoned** |
| **On site** | **Abandoned** |
| **On site** | **Abandoned** |
| **On site** | **Abandoned** |
| **On site** | **Abandoned** |
| 1m NE | Dismantled |
| 166m E | Abandoned |
| 190m E | Abandoned |

*This data is sourced from OpenStreetMap.*

## 21.7 Railways

| Records within 250m | 0 |
|---|---|

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

*This data is sourced from Ordnance Survey and OpenStreetMap.*

## 21.8 Crossrail 1

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

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

*This data is sourced from publicly available information by Groundsure.*

## 21.9 Crossrail 2

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

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

*This data is sourced from publicly available information by Groundsure.*

## 21.10 HS2

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

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

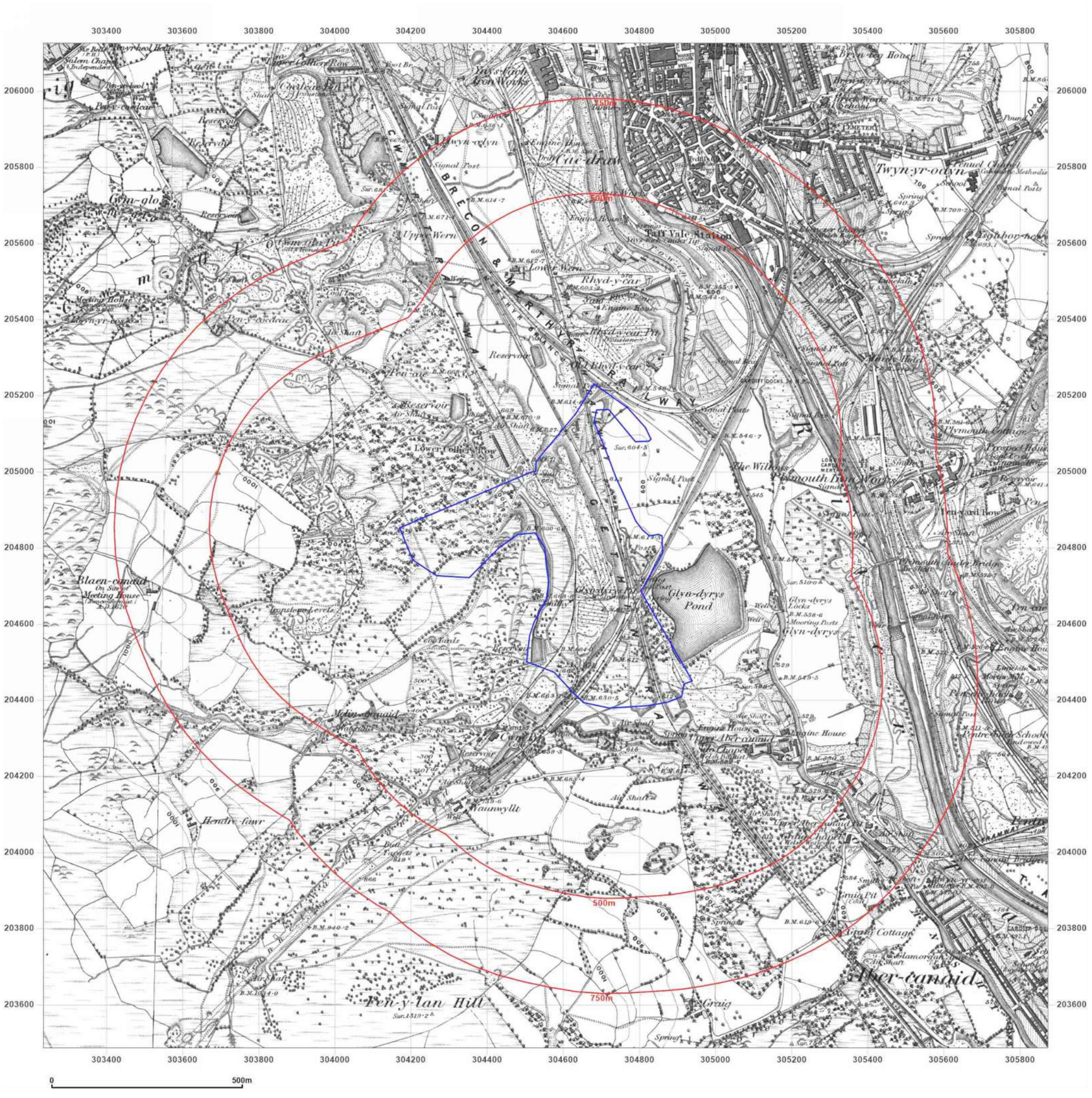
*This data is sourced from HS2 ltd.*

## Data providers

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**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801
**Grid Ref:** 304553, 204805

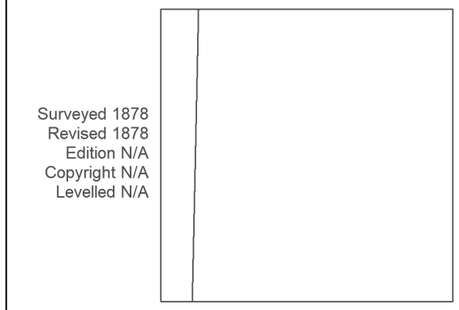
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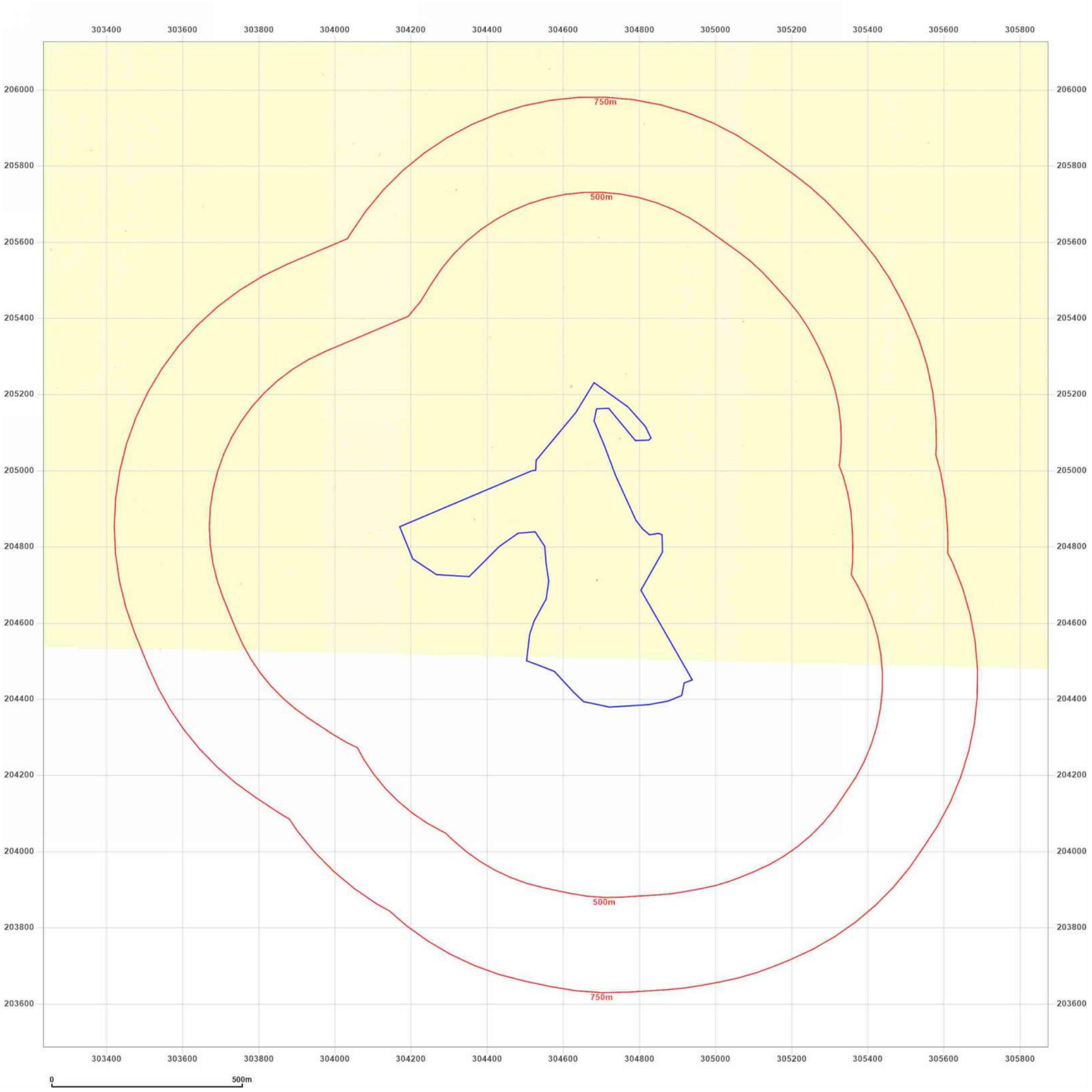

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**Report Ref:** GS-8054801
**Grid Ref:** 304553, 204805

**Map Name:** County Series

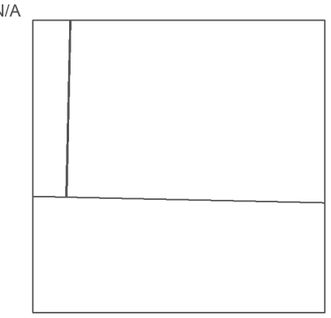
**Map date:** **1884**

**Scale:** 1:10,560

**Printed at:** 1:10,560

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Edition N/A
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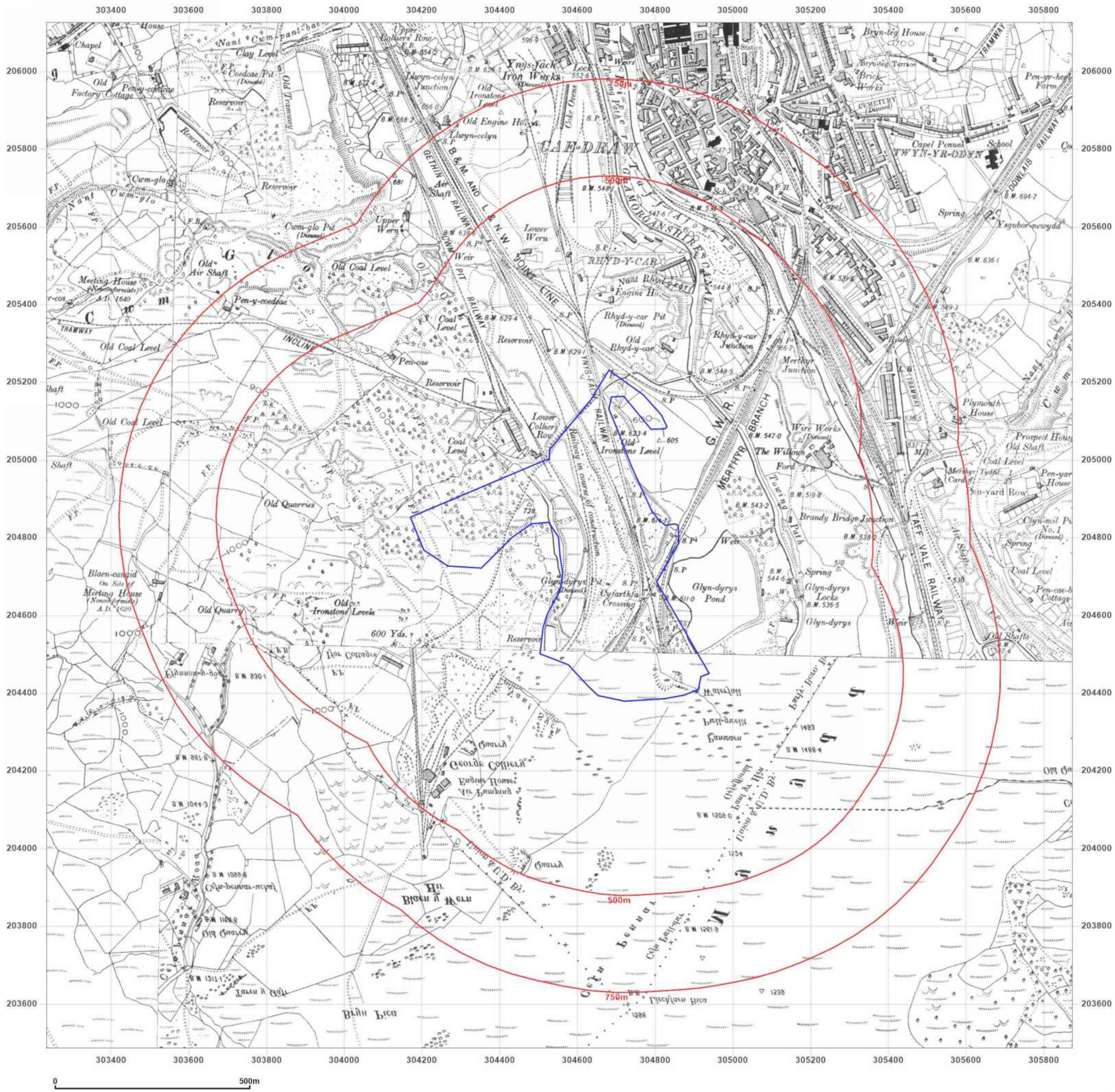
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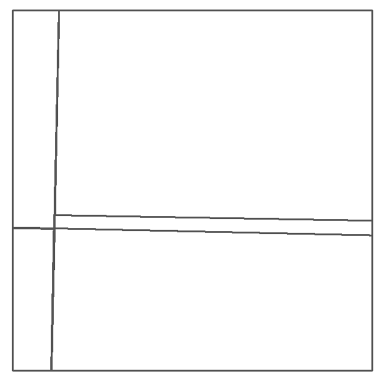

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| 304716, 204780 | |
| **Client Ref:** | 7002094_-_Rhyd_y_Car_ |
| **Report Ref:** | GS-8054801 |
| **Grid Ref:** | 304553, 204805 |

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|---|---|
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| **Map date:** | **1898-1901** |
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| **Printed at:** | 1:10,560 |

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Edition N/A
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Levelled N/A



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Surveyed 1875
Revised 1901
Edition N/A
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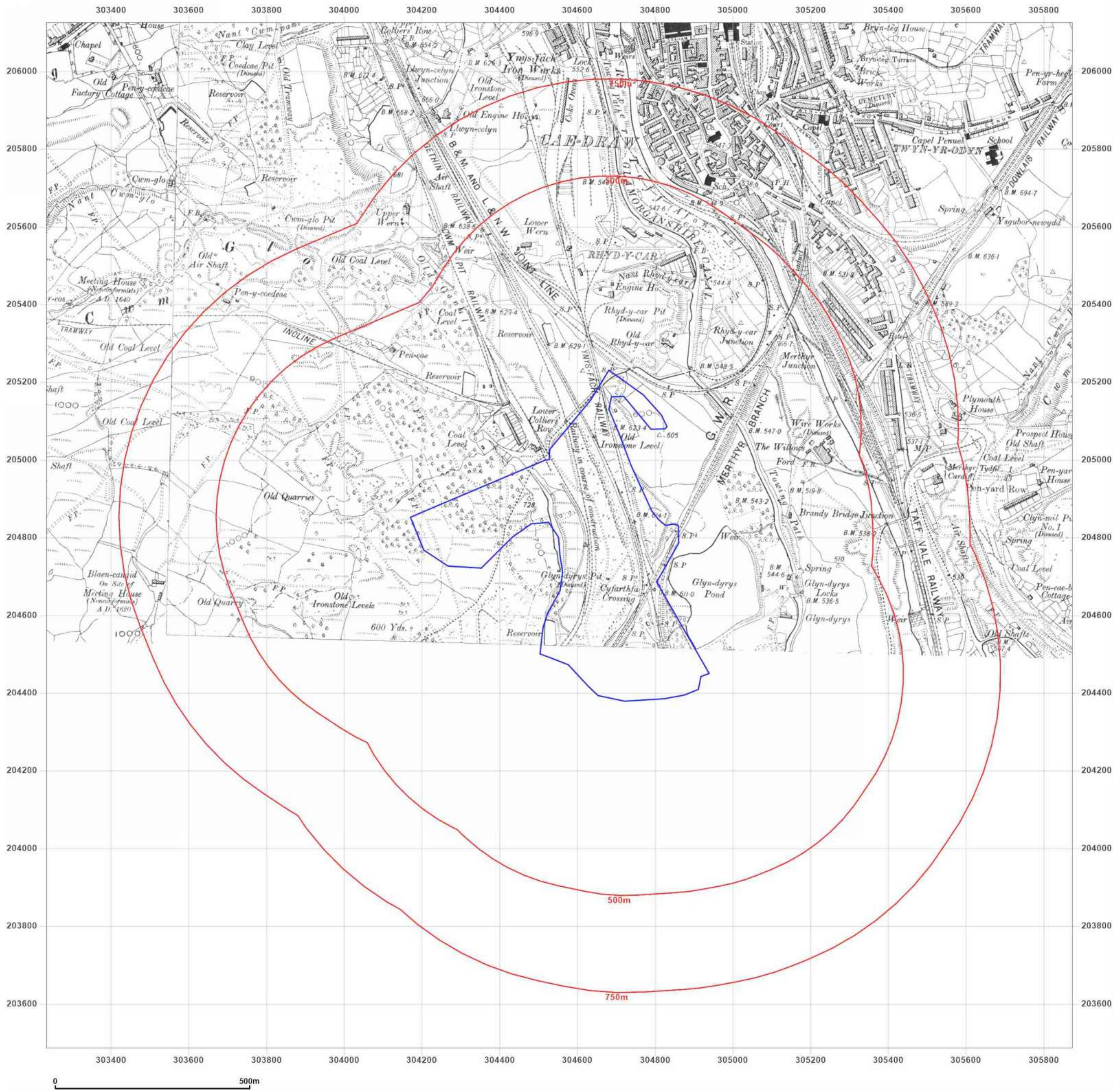
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**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801
**Grid Ref:** 304553, 204805

**Map Name:** County Series

**Map date:** **1903**

**Scale:** 1:10,560

**Printed at:** 1:10,560

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Edition N/A
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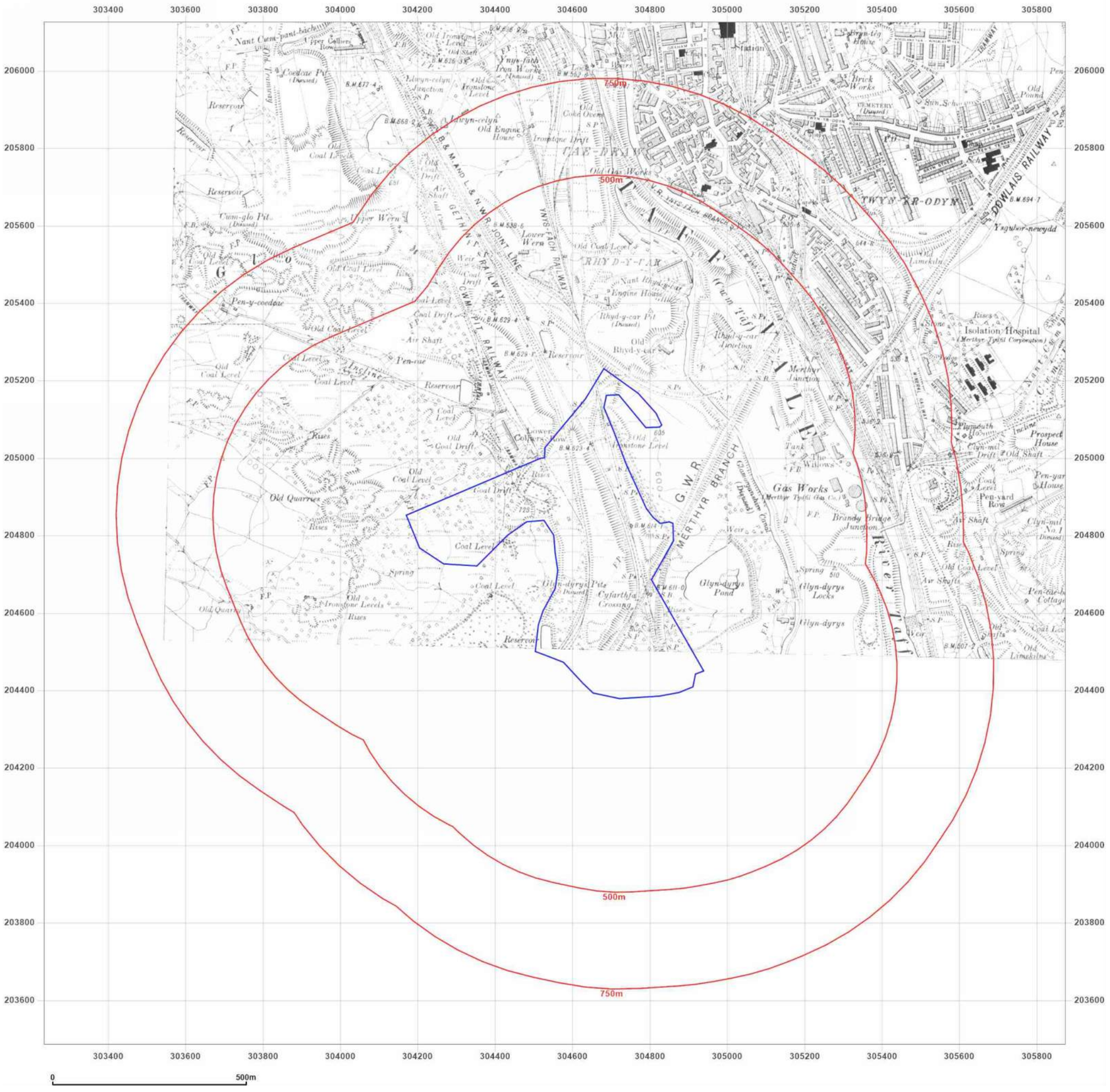
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**Grid Ref:** 304553, 204805

**Map Name:** County Series

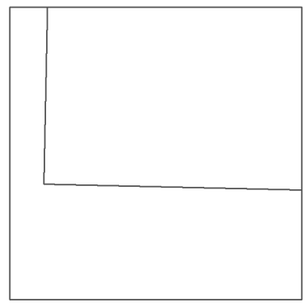
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**Scale:** 1:10,560

**Printed at:** 1:10,560

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Revised 1915
Edition N/A
Copyright N/A
Levelled N/A



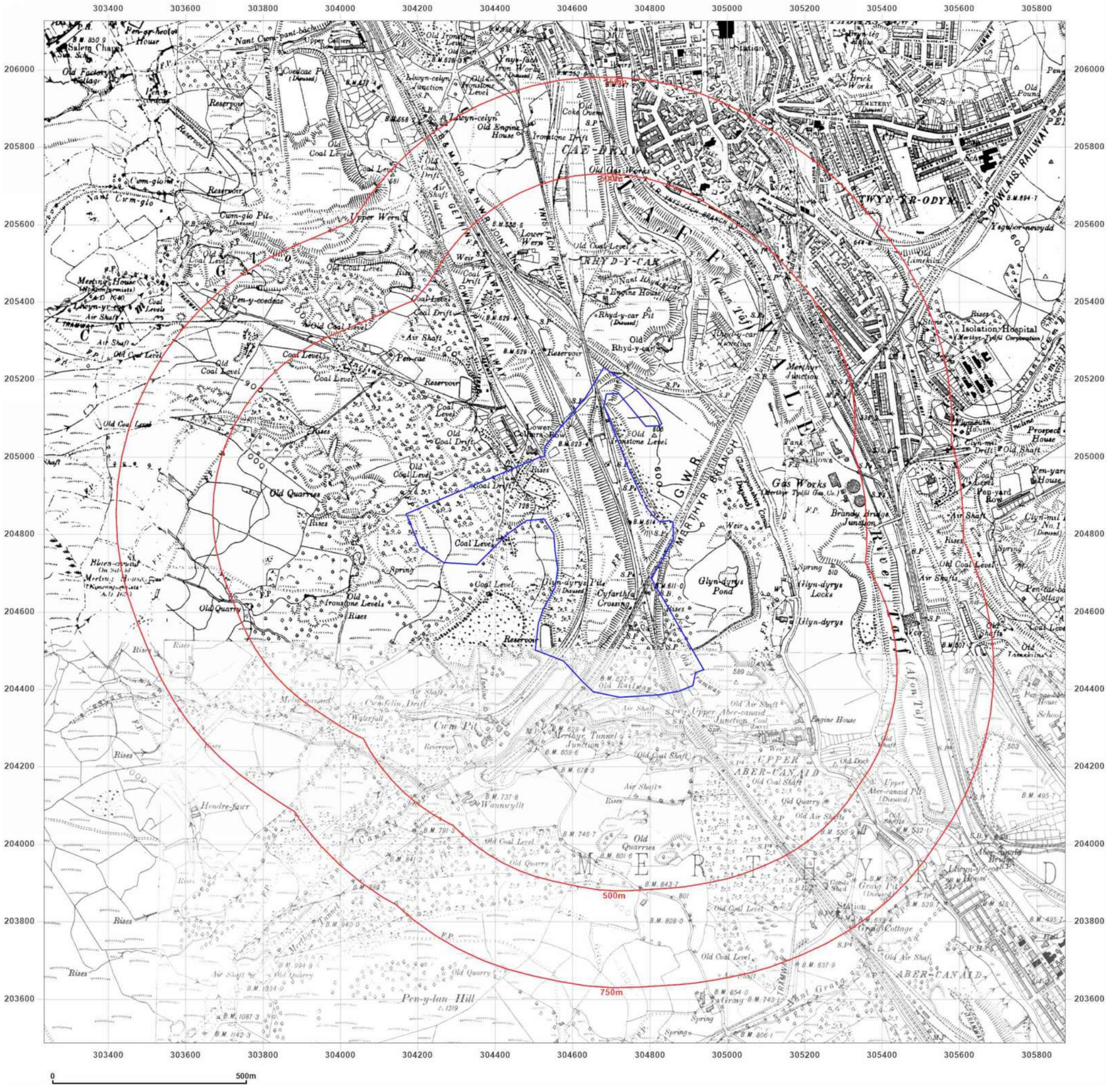
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# Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801
**Grid Ref:** 304553, 204805

**Map Name:** County Series

**Map date:** **1921-1922**

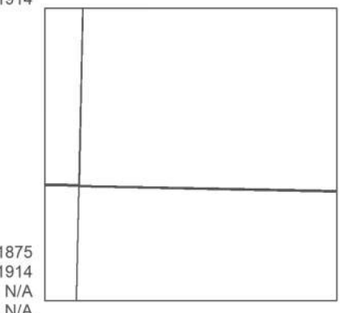
**Scale:** 1:10,560

**Printed at:** 1:10,560

N
W E
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Surveyed 1884
Revised 1914
Edition 1921
Copyright N/A
Levelled 1914

Surveyed 1884
Revised 1915
Edition 1922
Copyright N/A
Levelled 1915



Surveyed 1875
Revised 1914
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1874
Revised 1922
Edition 1922
Copyright N/A
Levelled N/A

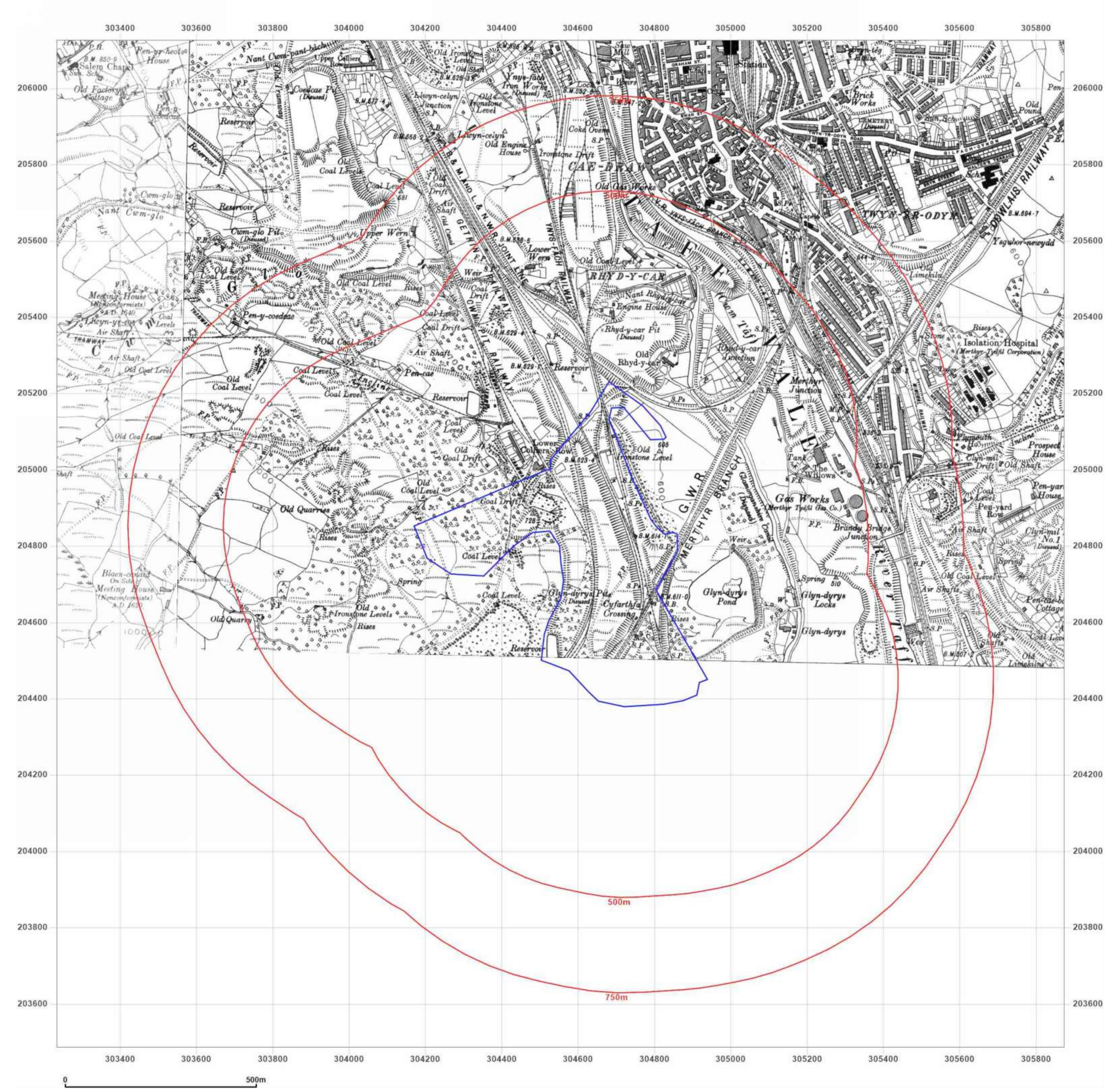
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# Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801
**Grid Ref:** 304553, 204805

**Map Name:** County Series

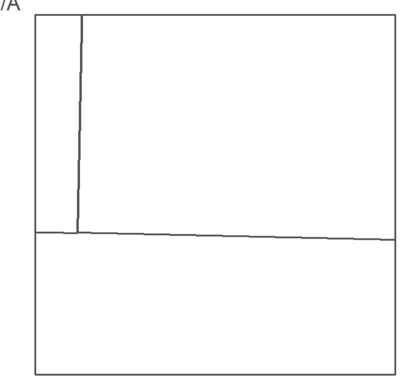
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**Scale:** 1:10,560

**Printed at:** 1:10,560

N
W E
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Surveyed 1884
Revised 1921
Edition 1921
Copyright N/A
Levelled N/A



Surveyed 1922
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

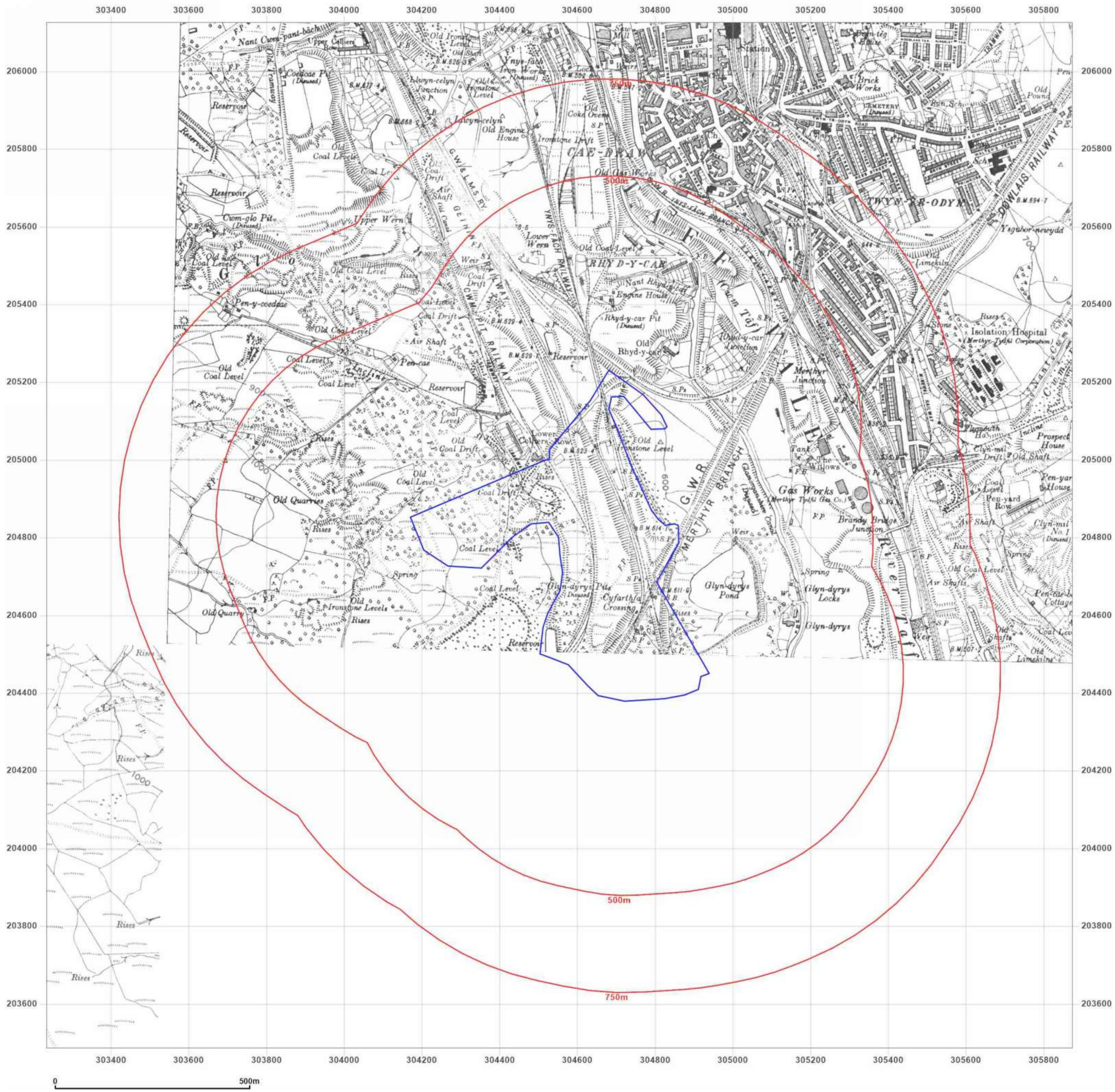
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# Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801
**Grid Ref:** 304553, 204805

**Map Name:** County Series

**Map date:** **1938**

**Scale:** 1:10,560

**Printed at:** 1:10,560

N
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Surveyed 1884
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

Surveyed 1875
Revised 1915
Edition N/A
Copyright N/A
Levelled N/A

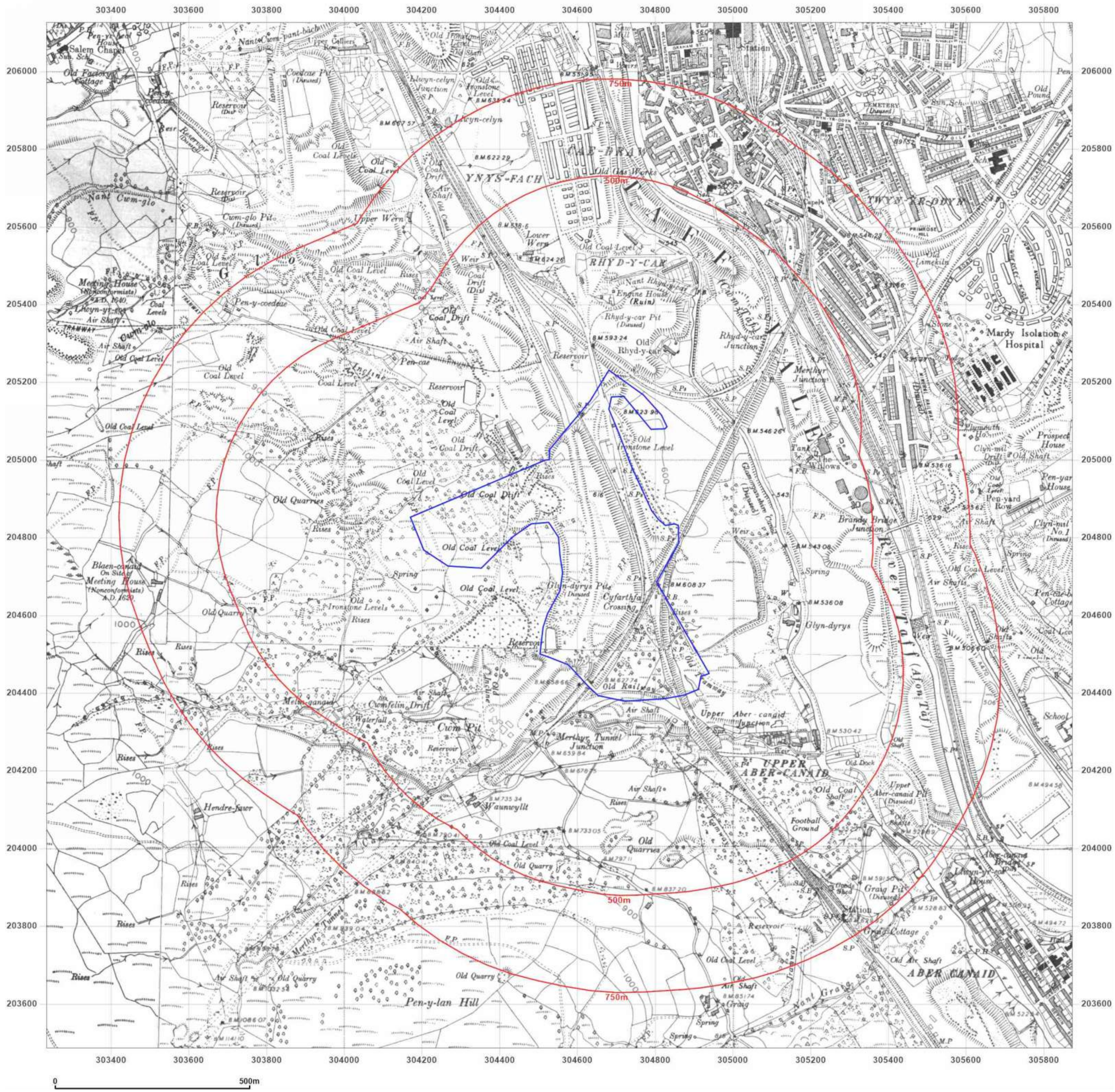
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# Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801
**Grid Ref:** 304553, 204805

**Map Name:** County Series

**Map date:** **1947-1948**

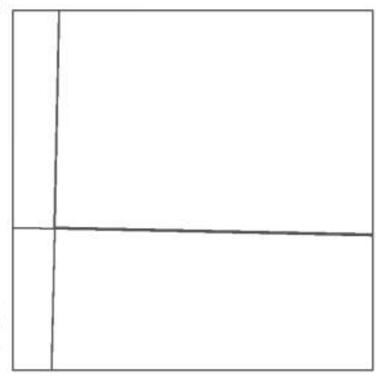
**Scale:** 1:10,560

**Printed at:** 1:10,560

N
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Surveyed 1884
Revised 1948
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1884
Revised 1948
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1875
Revised 1947
Edition 1947
Copyright N/A
Levelled N/A

Surveyed 1874
Revised 1948
Edition N/A
Copyright N/A
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801
**Grid Ref:** 304553, 204805

**Map Name:** Provisional

**Map date:** **1964-1965**

**Scale:** 1:10,560

**Printed at:** 1:10,560

N
W E
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Surveyed 1965
Revised 1965
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1965
Revised 1965
Edition N/A
Copyright N/A
Levelled N/A

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

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

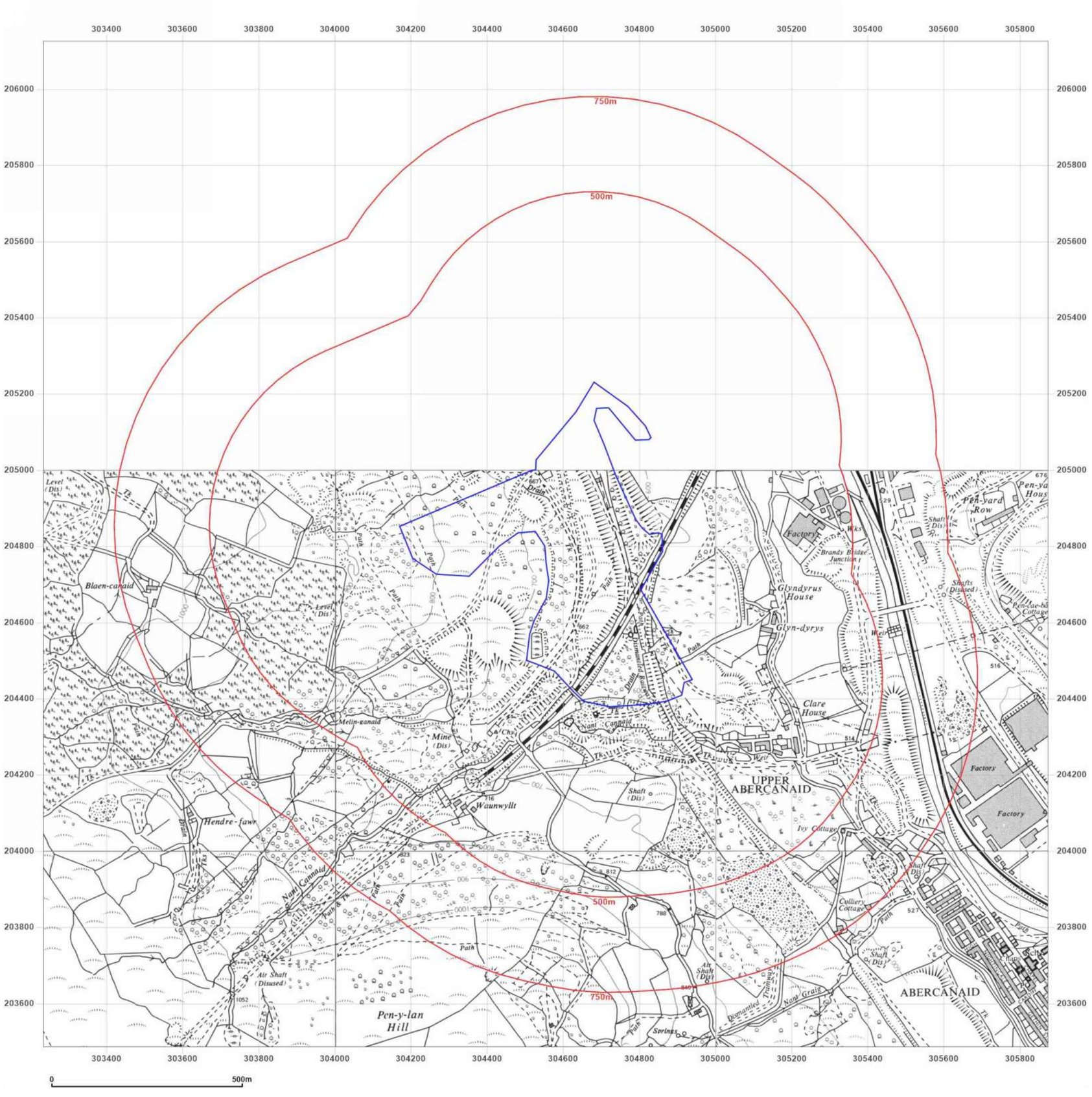
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801
**Grid Ref:** 304553, 204805

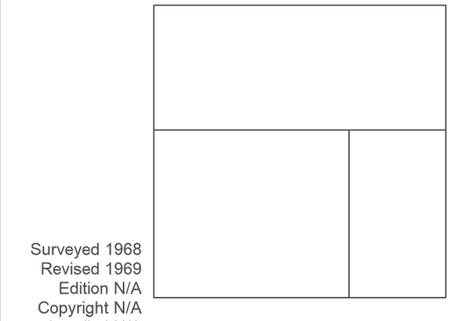
**Map Name:** Provisional

**Map date:** **1968-1969**

**Scale:** 1:10,560

**Printed at:** 1:10,560

N
W E
S



Surveyed 1968
Revised 1969
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1968
Revised 1968
Edition N/A
Copyright N/A
Levelled N/A

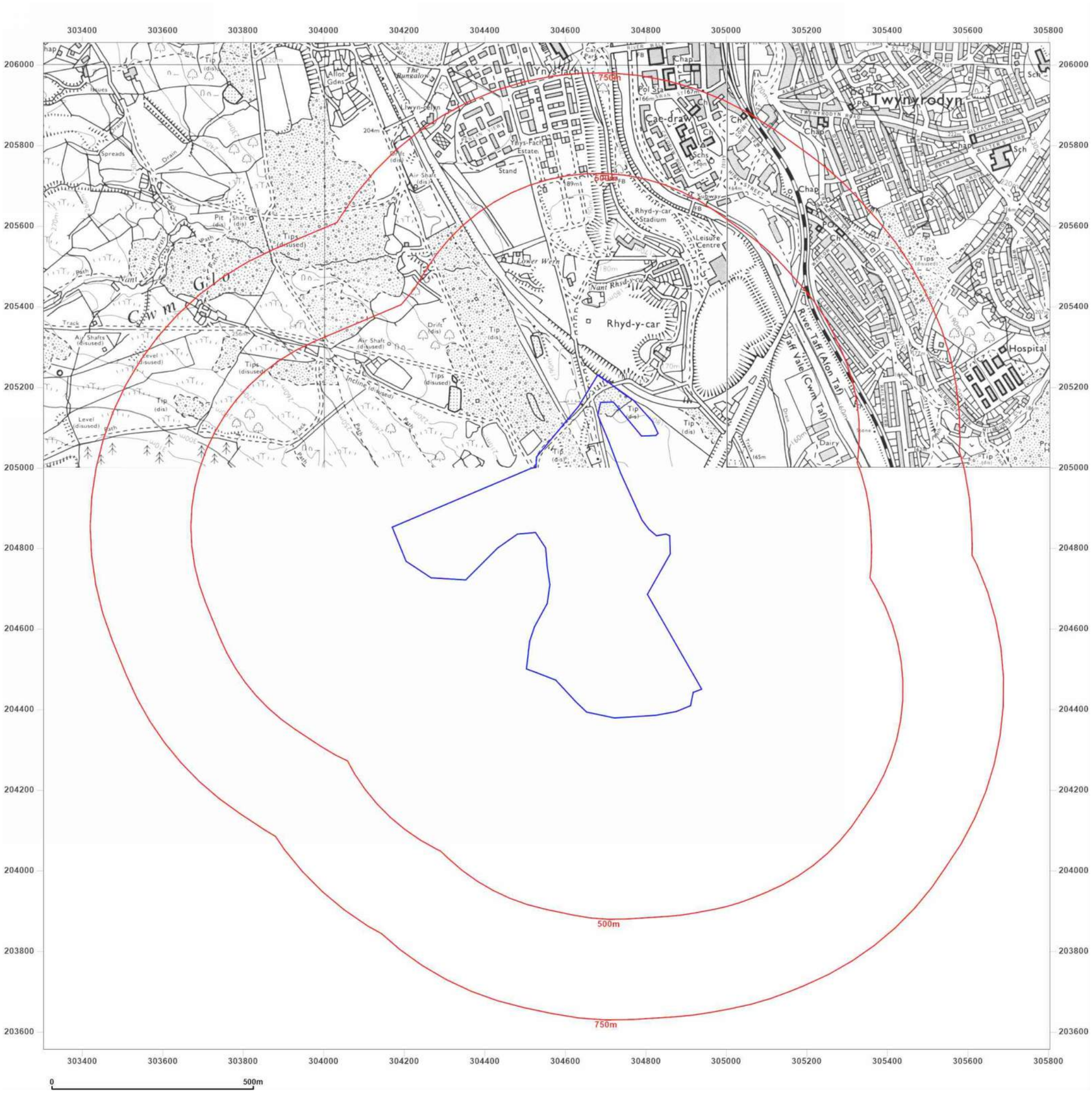
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801
**Grid Ref:** 304553, 204805

**Map Name:** National Grid

**Map date:** **1976-1977**

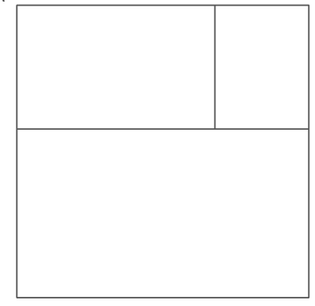
**Scale:** 1:10,000

**Printed at:** 1:10,000

N
W E
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Surveyed 1975
Revised 1976
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1974
Revised 1977
Edition N/A
Copyright 1977
Levelled 1975



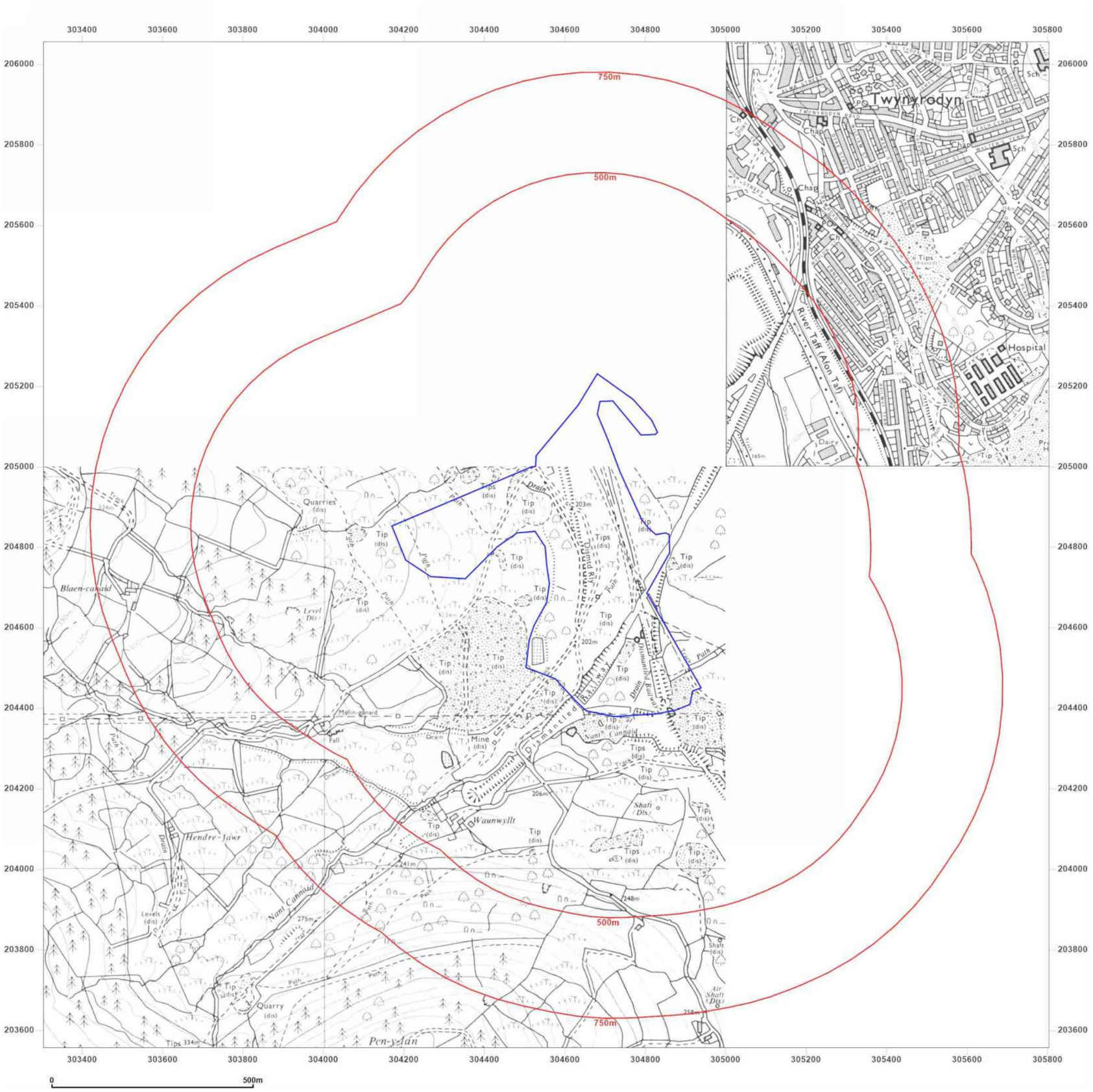
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**Site Details:**

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**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801
**Grid Ref:** 304553, 204805

**Map Name:** National Grid

**Map date:** **1982**

**Scale:** 1:10,000

**Printed at:** 1:10,000

N
W E
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Surveyed 1974
Revised 1982
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1975
Revised 1981
Edition N/A
Copyright 1982
Levelled 1975

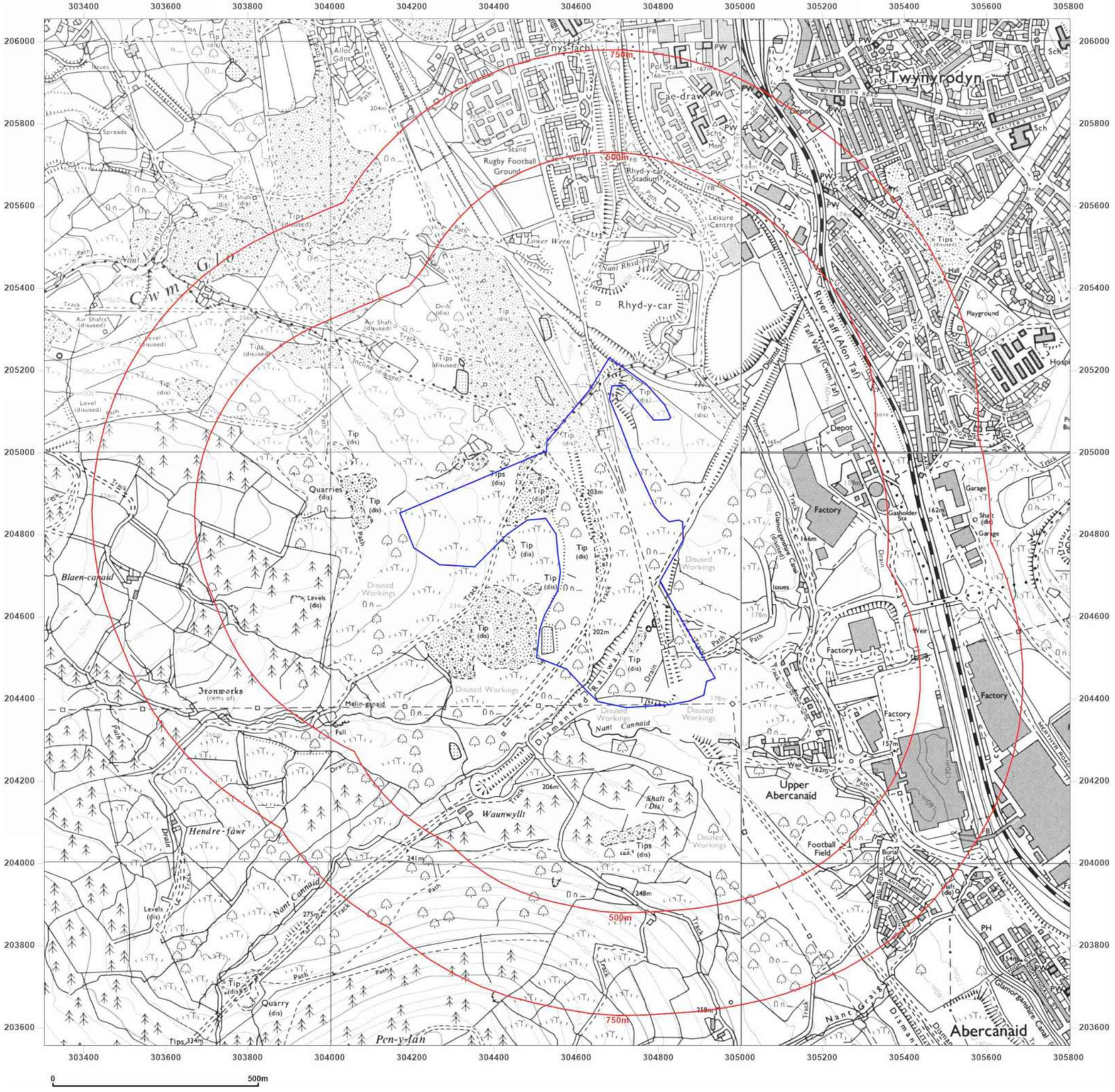
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801
**Grid Ref:** 304553, 204805

**Map Name:** National Grid

**Map date:** **1988-1992**

**Scale:** 1:10,000

**Printed at:** 1:10,000

N
W E
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Surveyed 1990
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1989
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1986
Revised 1988
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1984
Revised 1988
Edition N/A
Copyright N/A
Levelled N/A

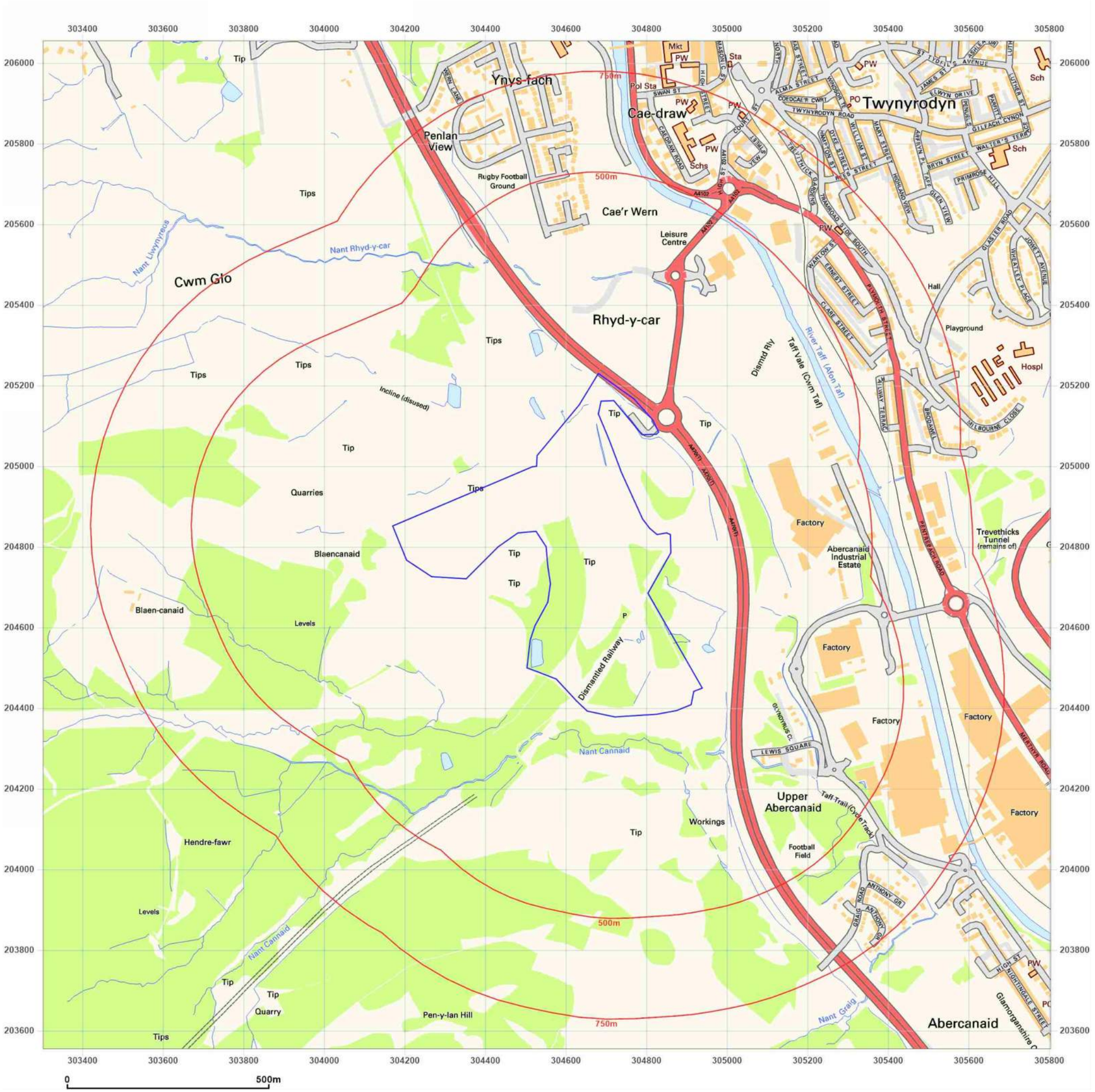
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801
**Grid Ref:** 304553, 204805

**Map Name:** National Grid

**Map date:** **2001**

**Scale:** 1:10,000

**Printed at:** 1:10,000

N
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2001

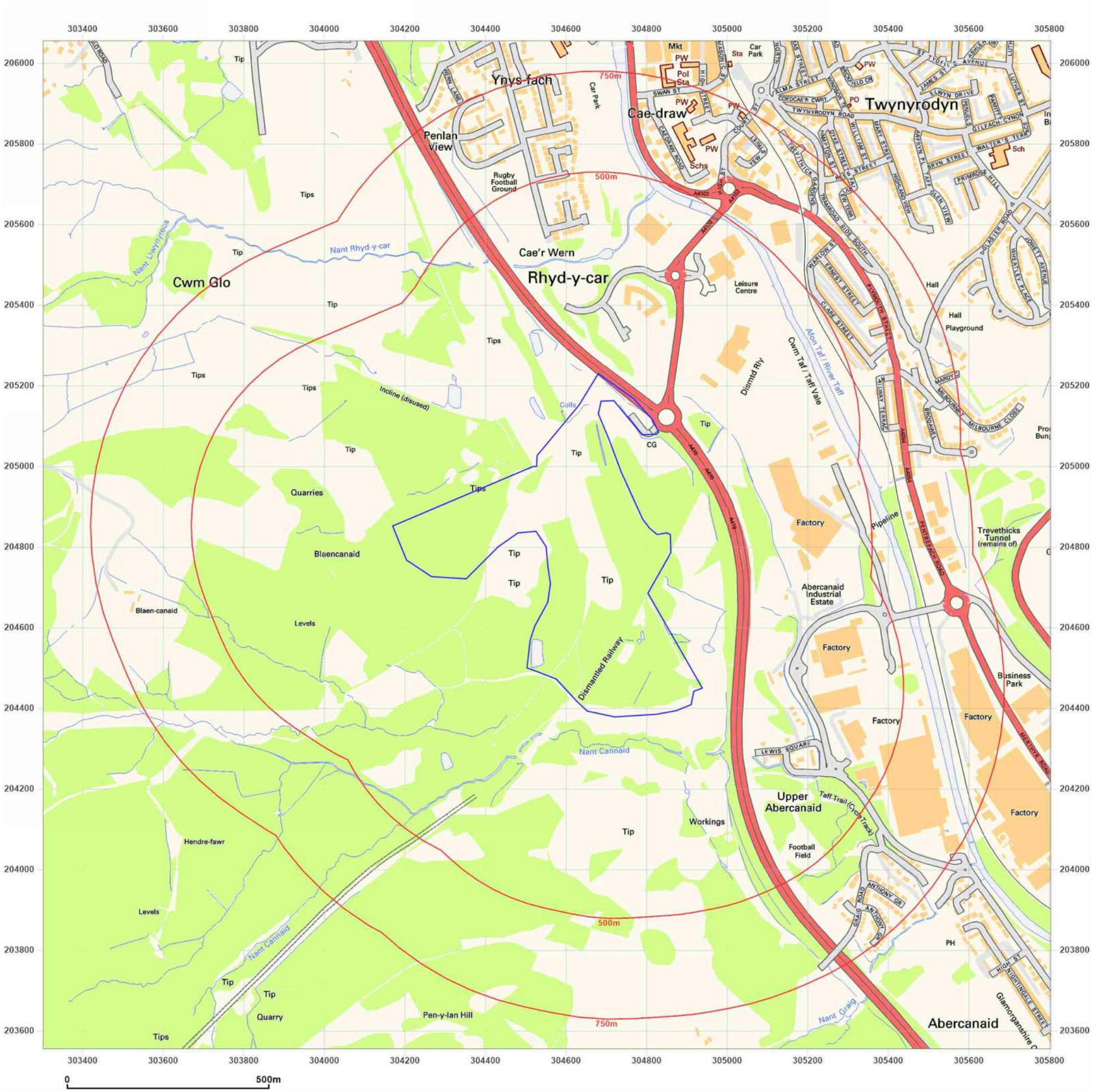
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801
**Grid Ref:** 304553, 204805

**Map Name:** National Grid

**Map date:** **2010**

**Scale:** 1:10,000

**Printed at:** 1:10,000

N
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2010

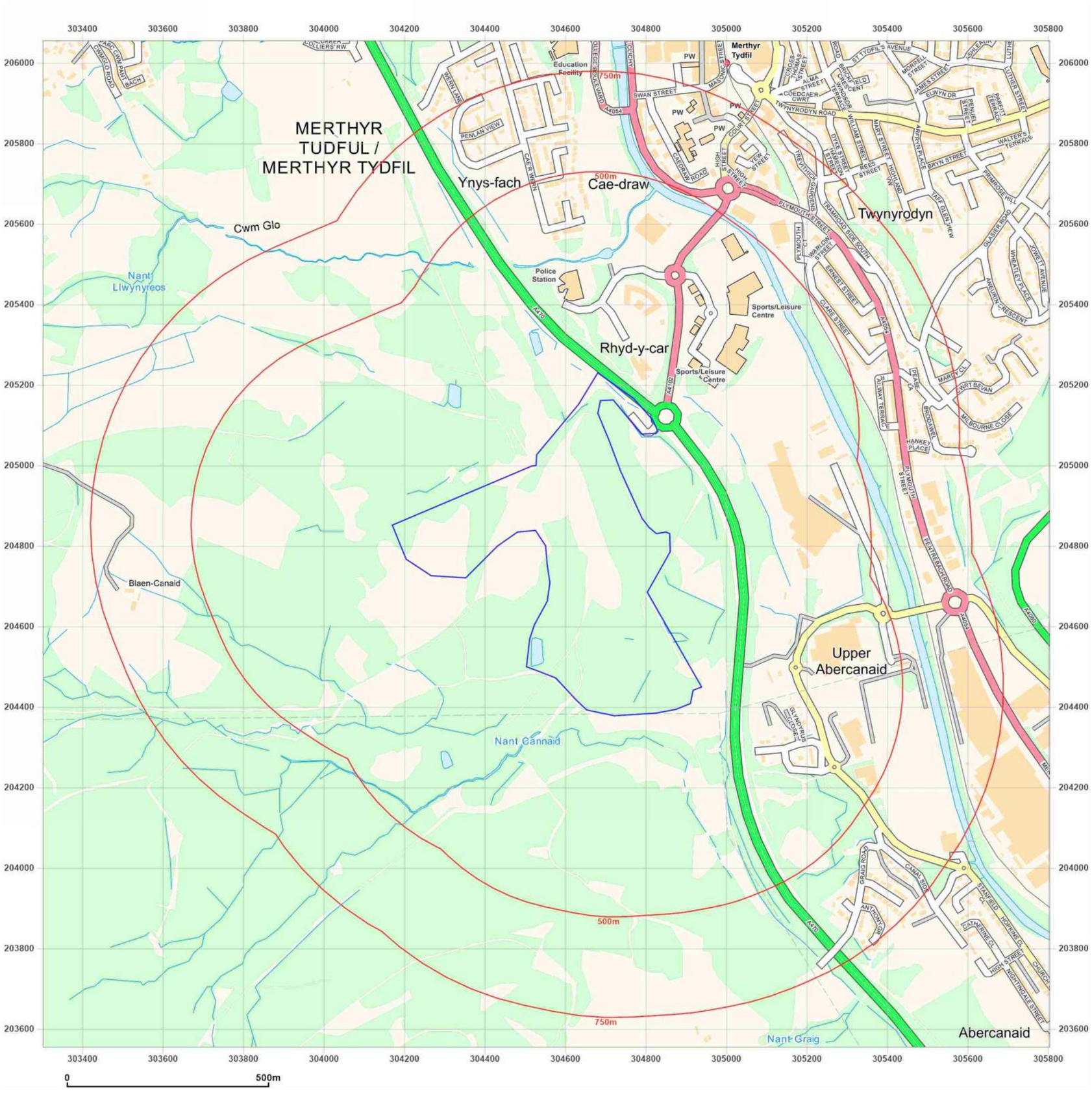
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801
**Grid Ref:** 304553, 204805

**Map Name:** National Grid

**Map date:** **2021**

**Scale:** 1:10,000

**Printed at:** 1:10,000

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2021

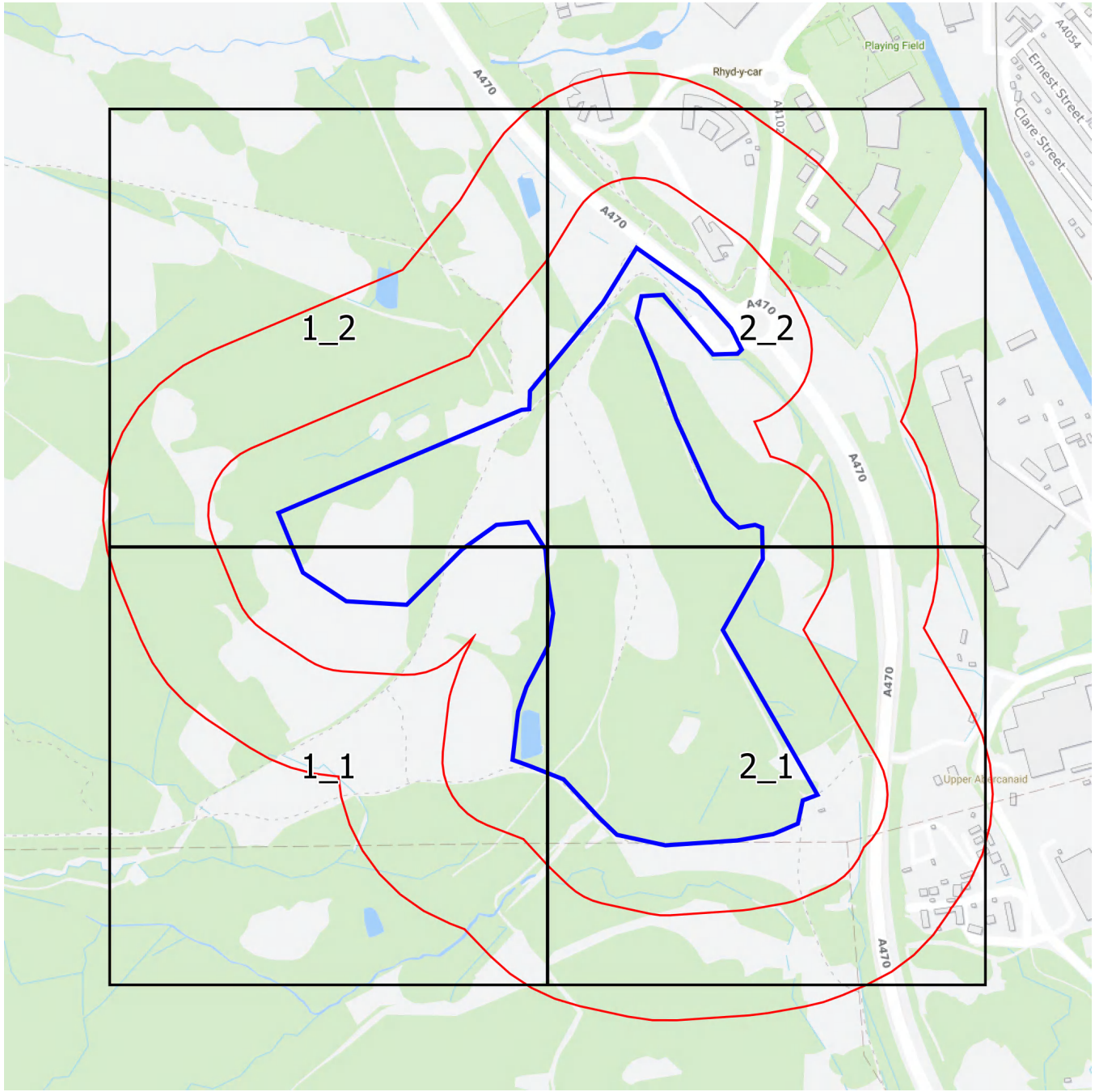
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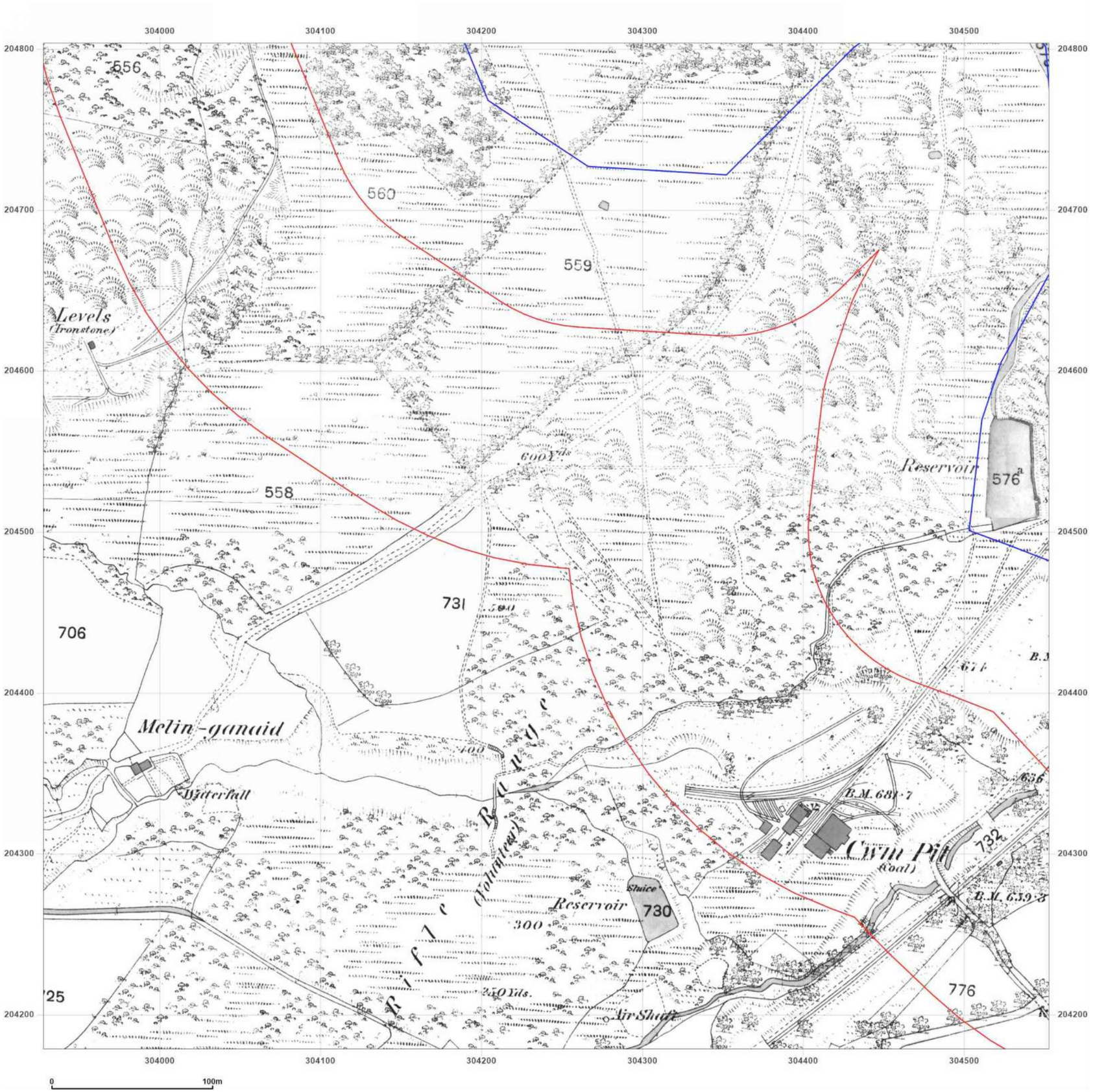
Map legend available at:
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Groundsure INSIGHTS

# 1:2,500 Scale Grid Index

N
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_1_1
**Grid Ref:** 304240, 204491

**Map Name:** County Series

**Map date:** **1875**

**Scale:** 1:2,500

**Printed at:** 1:2,500

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

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

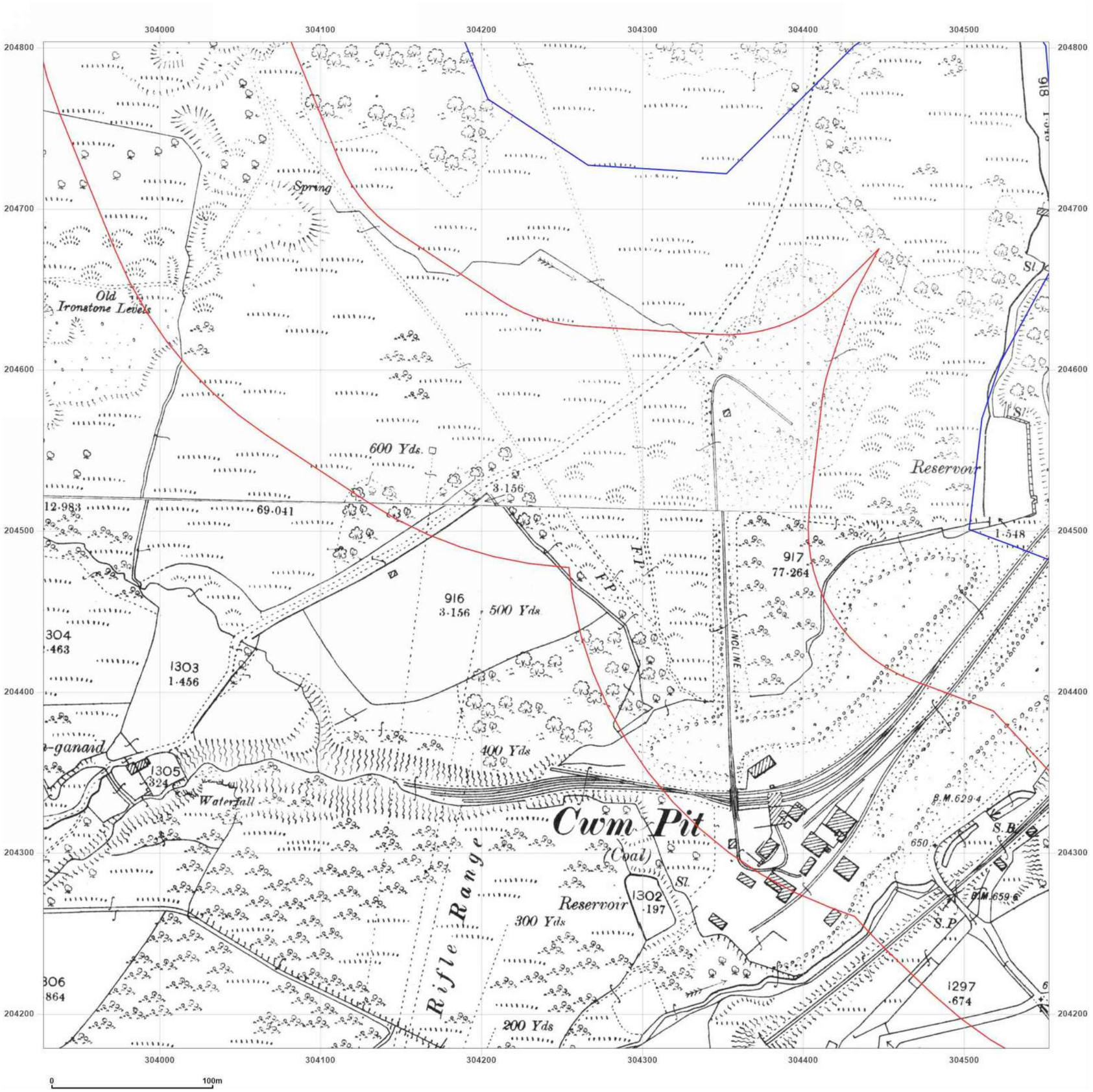
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_1_1
**Grid Ref:** 304240, 204491

**Map Name:** County Series

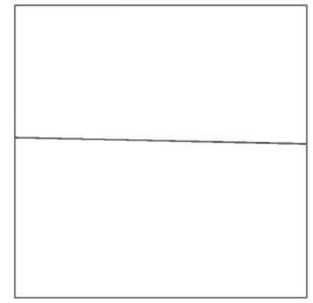
**Map date:** **1900**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
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Surveyed 1900
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A



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

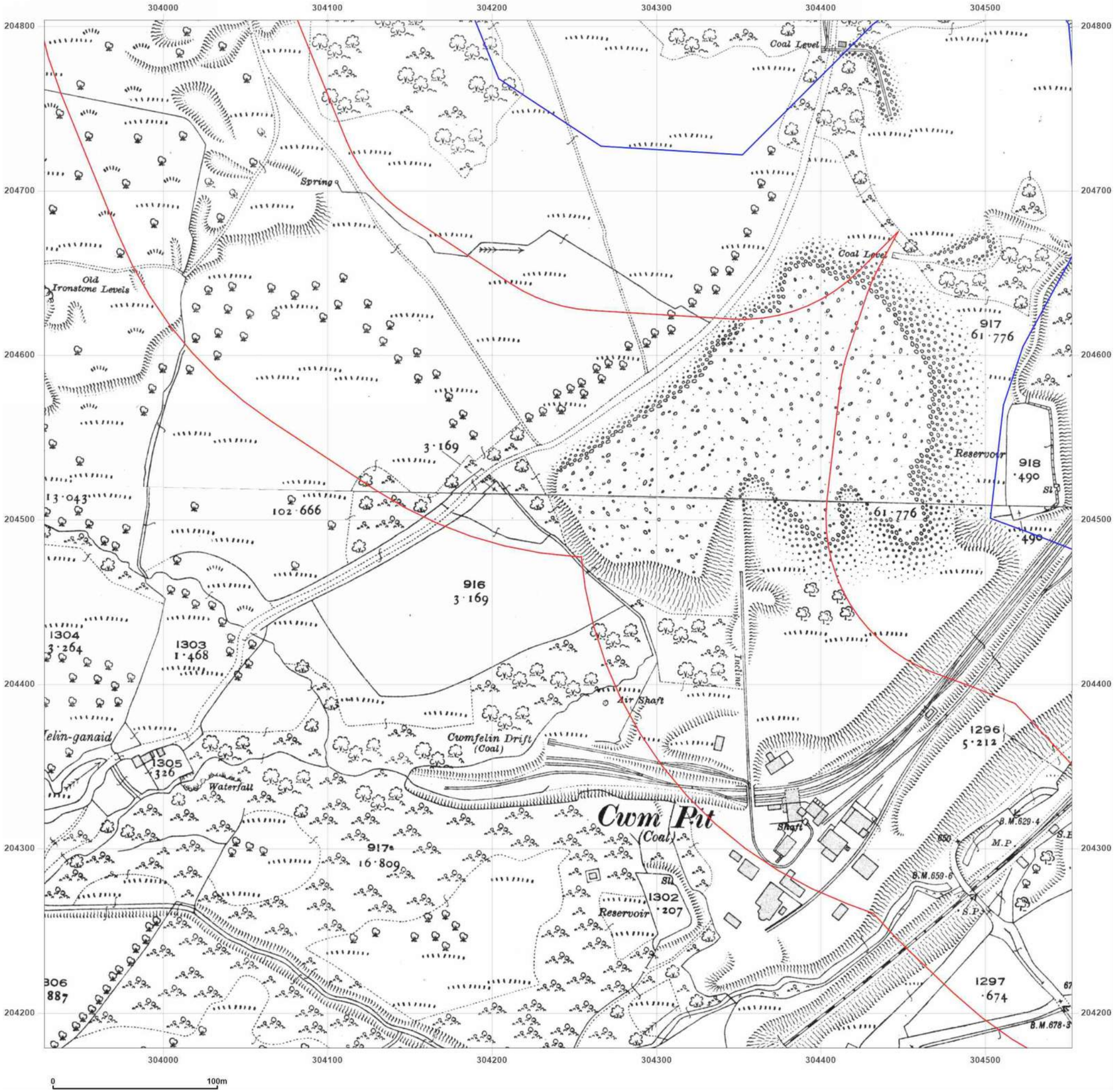
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_1_1
**Grid Ref:** 304240, 204491

**Map Name:** County Series

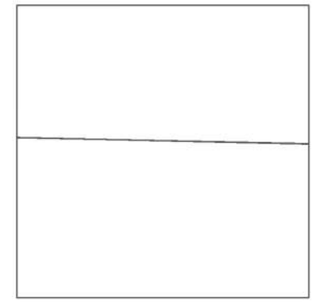
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**Scale:** 1:2,500

**Printed at:** 1:2,500

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



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

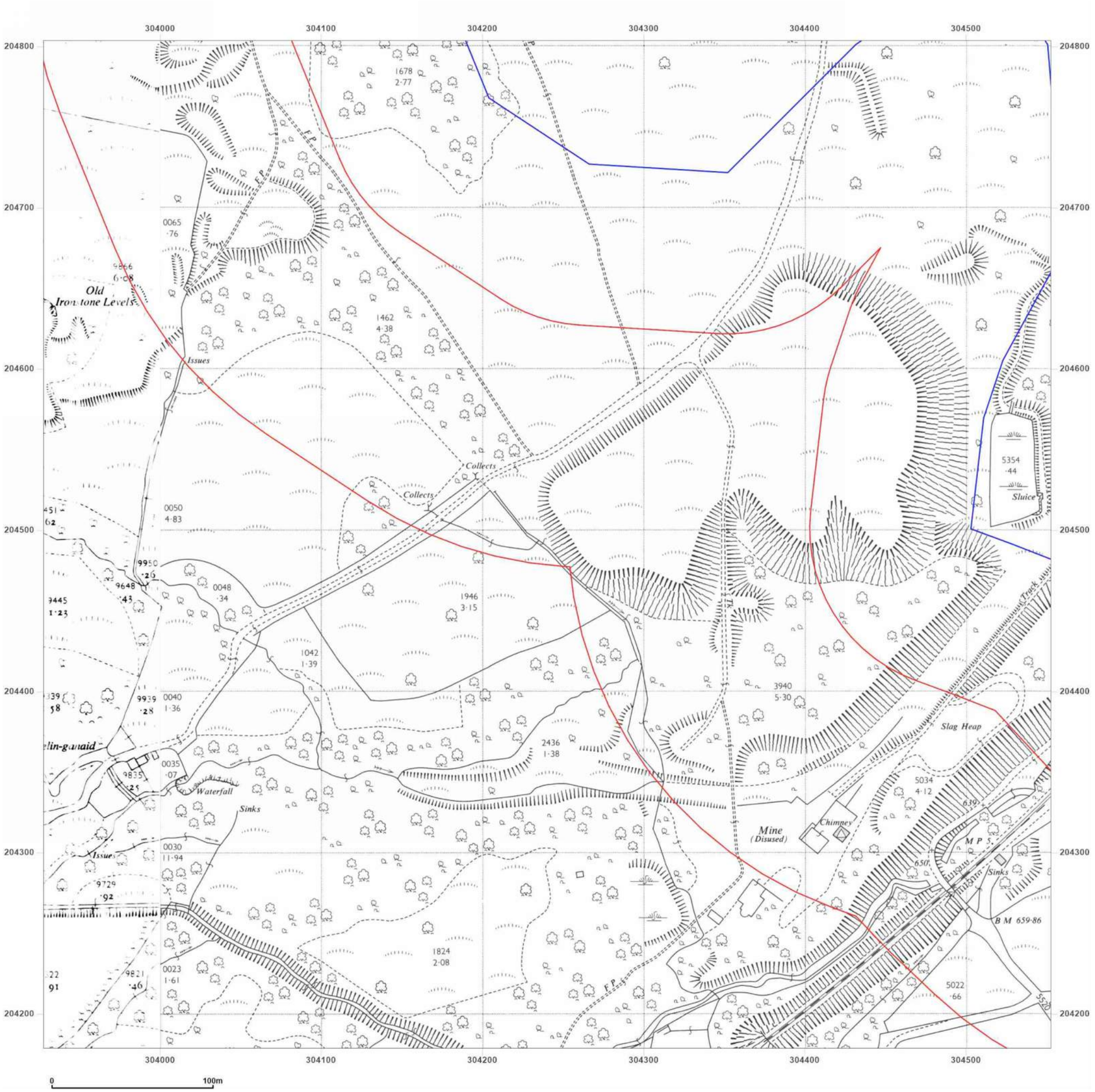
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_1_1
**Grid Ref:** 304240, 204491

**Map Name:** National Grid

**Map date:** **1957-1962**

**Scale:** 1:2,500

**Printed at:** 1:2,500

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

Surveyed 1962
Revised 1962
Edition N/A
Copyright 1964
Levelled 1958

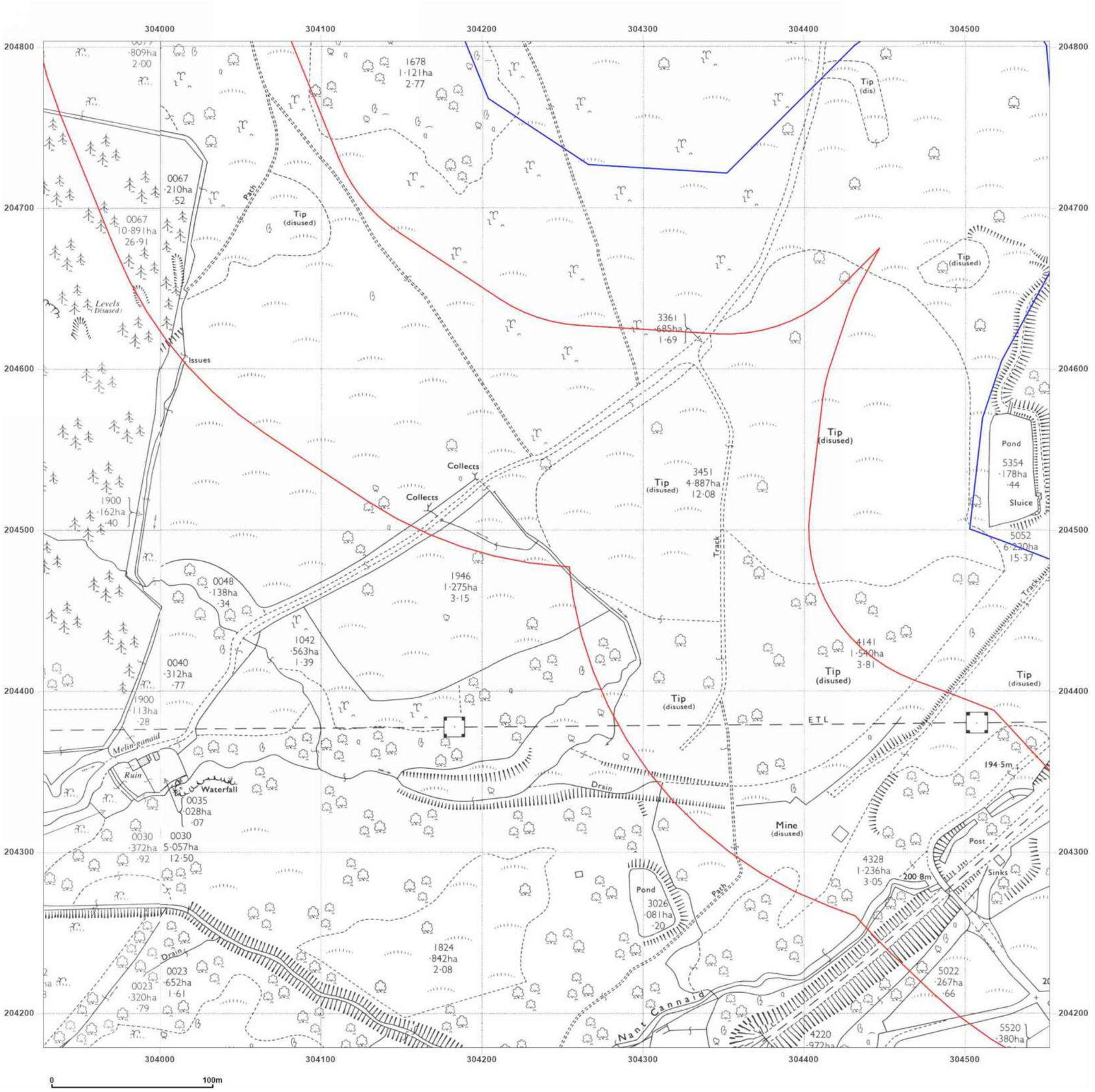
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_1_1
**Grid Ref:** 304240, 204491

**Map Name:** National Grid

**Map date:** **1971-1975**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
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Surveyed 1975
Revised 1975
Edition N/A
Copyright 1977
Levelled 1964

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1964

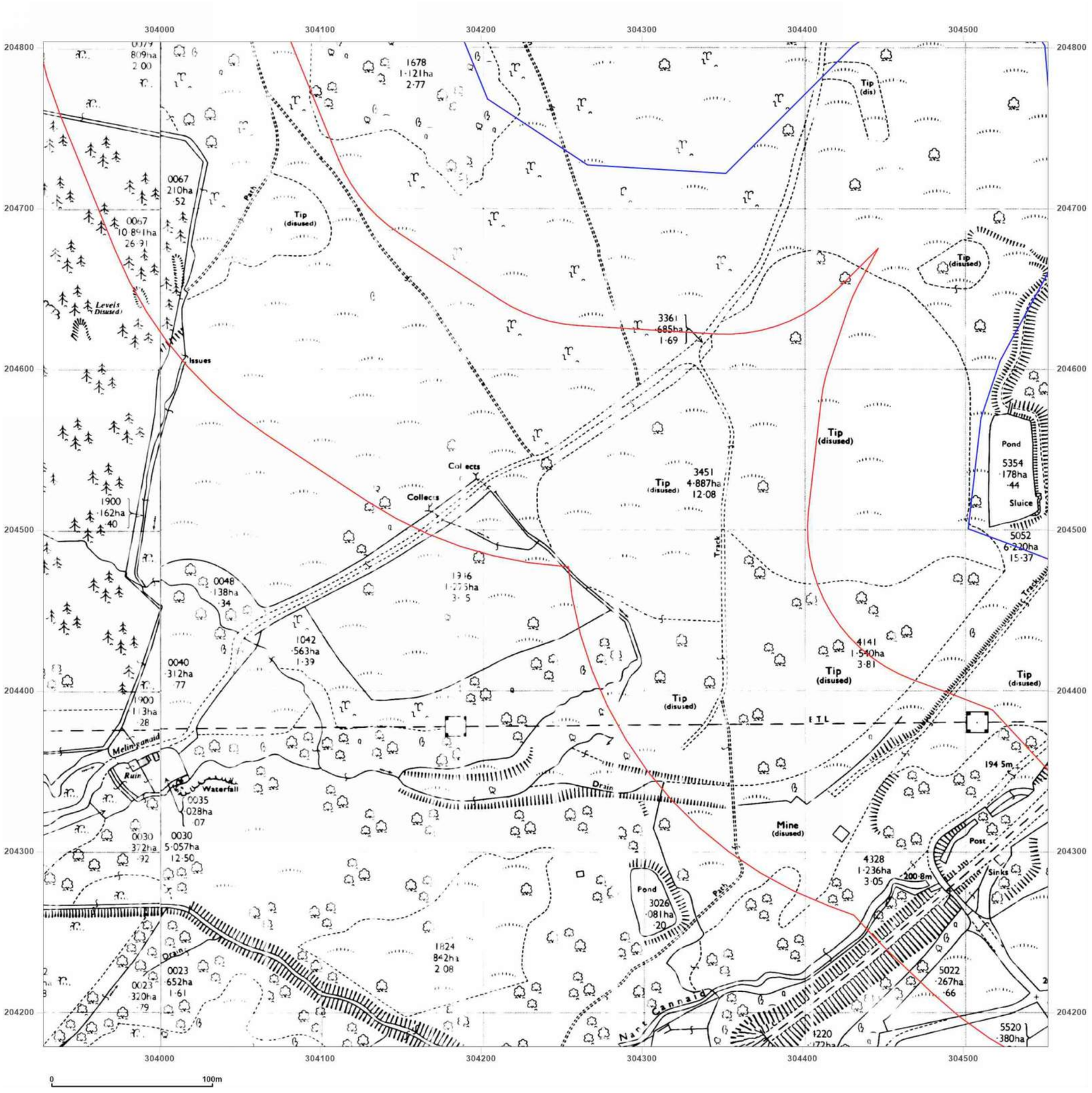
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304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_1_1
**Grid Ref:** 304240, 204491

**Map Name:** National Grid

**Map date:** **1972-1977**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

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

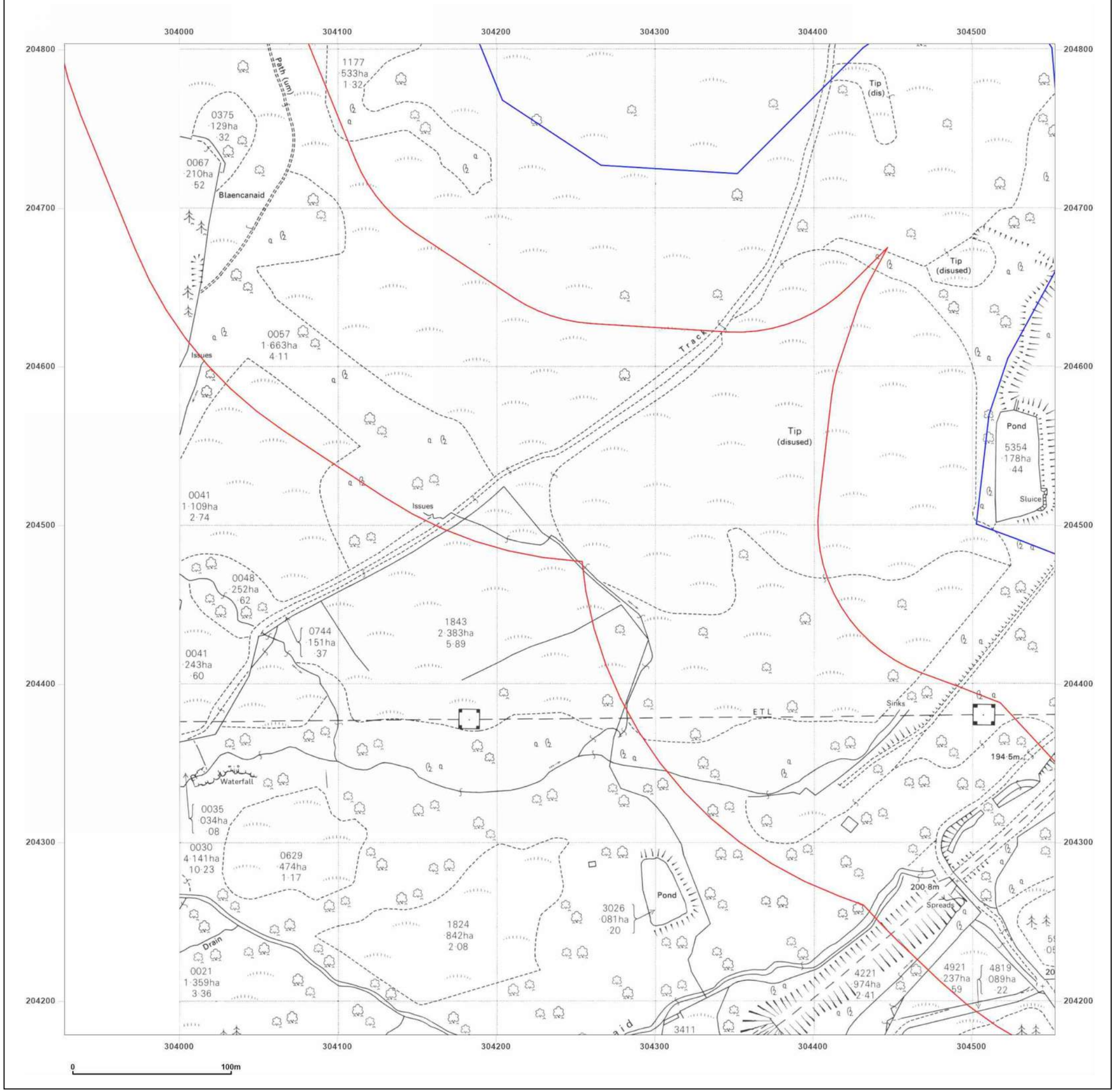
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_1_1
**Grid Ref:** 304240, 204491

**Map Name:** National Grid

**Map date:** **1984**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

Surveyed 1984
Revised 1984
Edition N/A
Copyright 1986
Levelled 1964

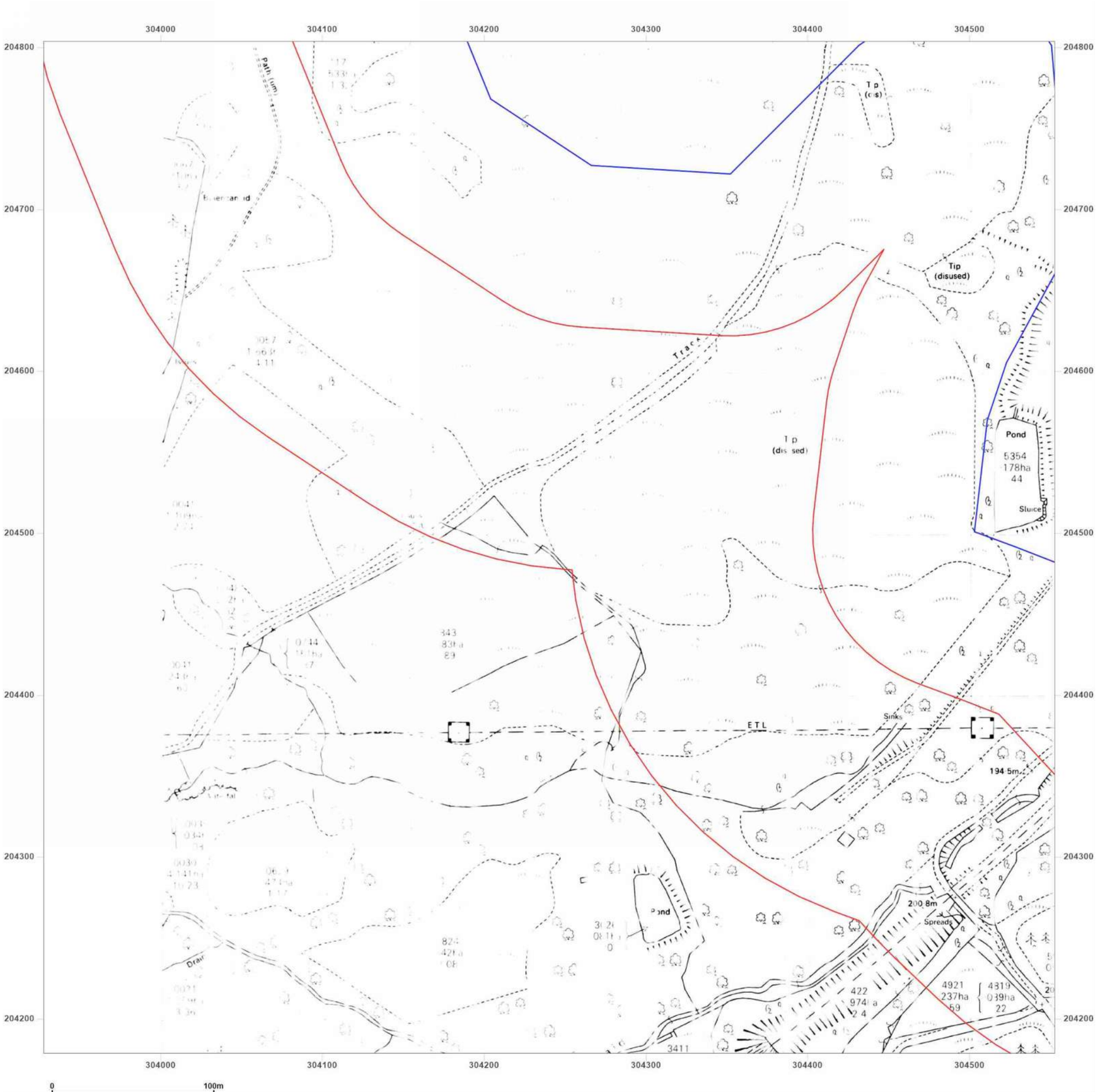
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_1_1
**Grid Ref:** 304240, 204491

**Map Name:** National Grid

**Map date:** **1986**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
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S

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

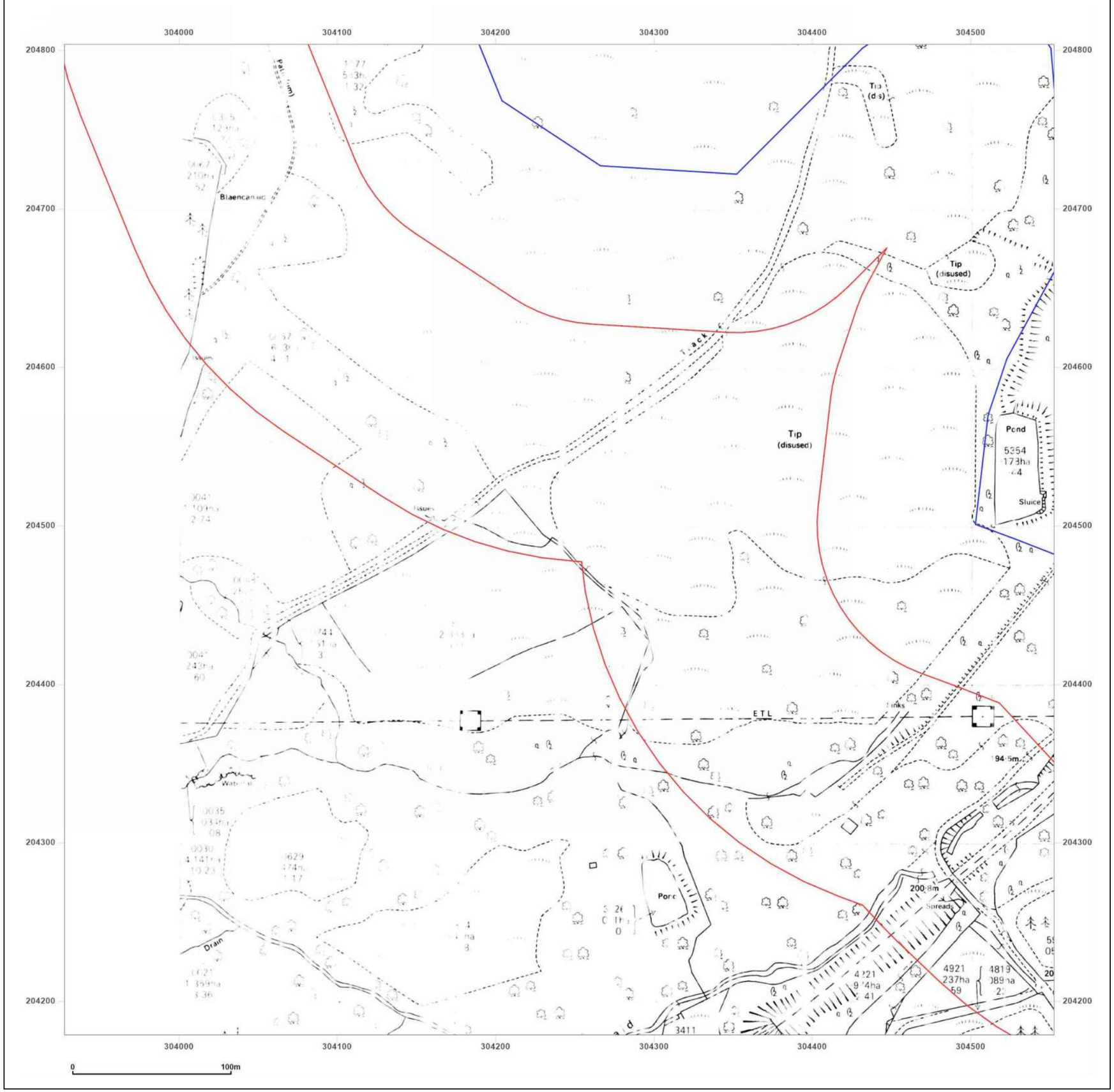
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_1_1
**Grid Ref:** 304240, 204491

**Map Name:** National Grid

**Map date:** **1986**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

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

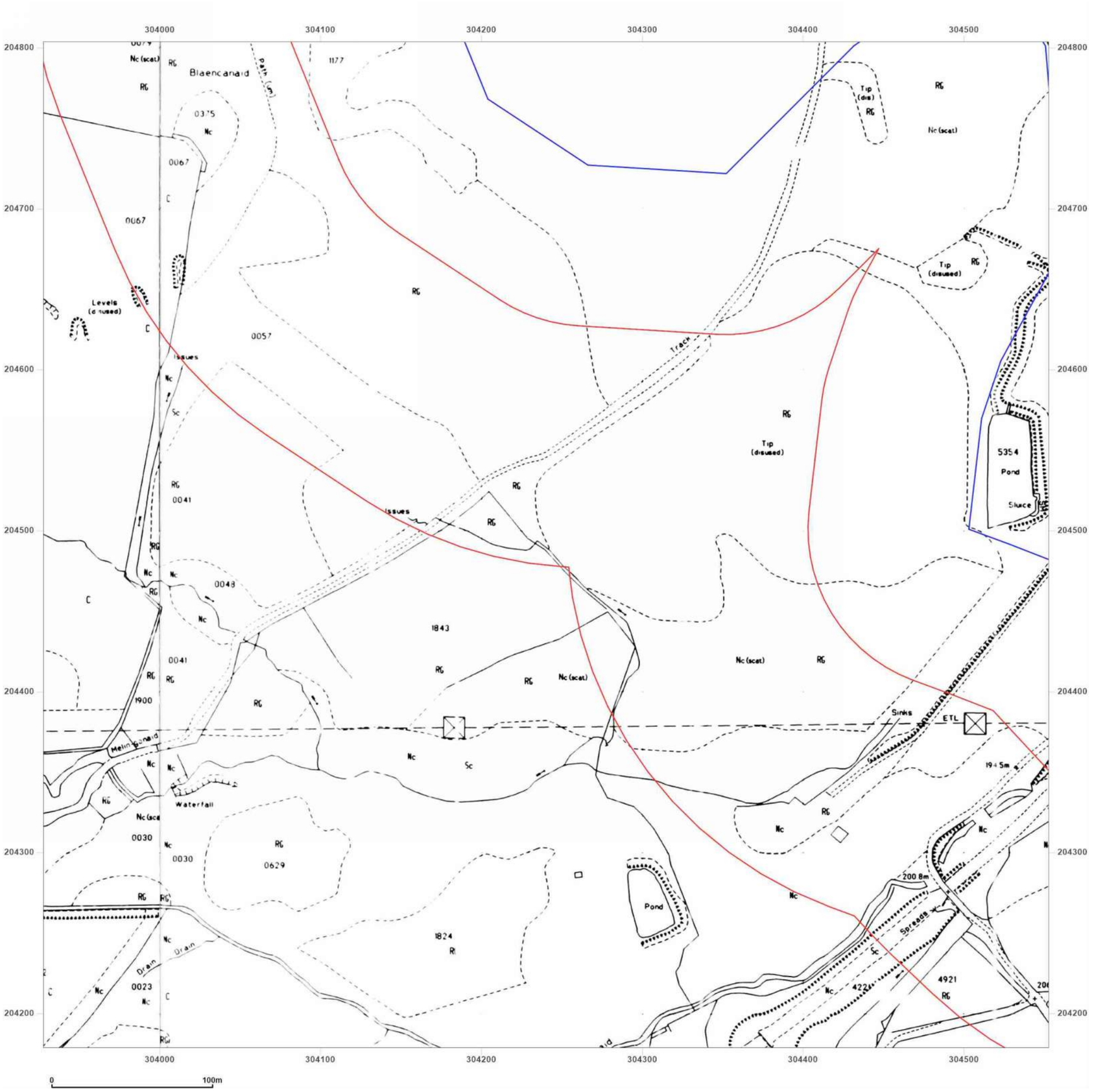
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_1_1
**Grid Ref:** 304240, 204491

**Map Name:** National Grid

**Map date:** **1993**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
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Surveyed 1993
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

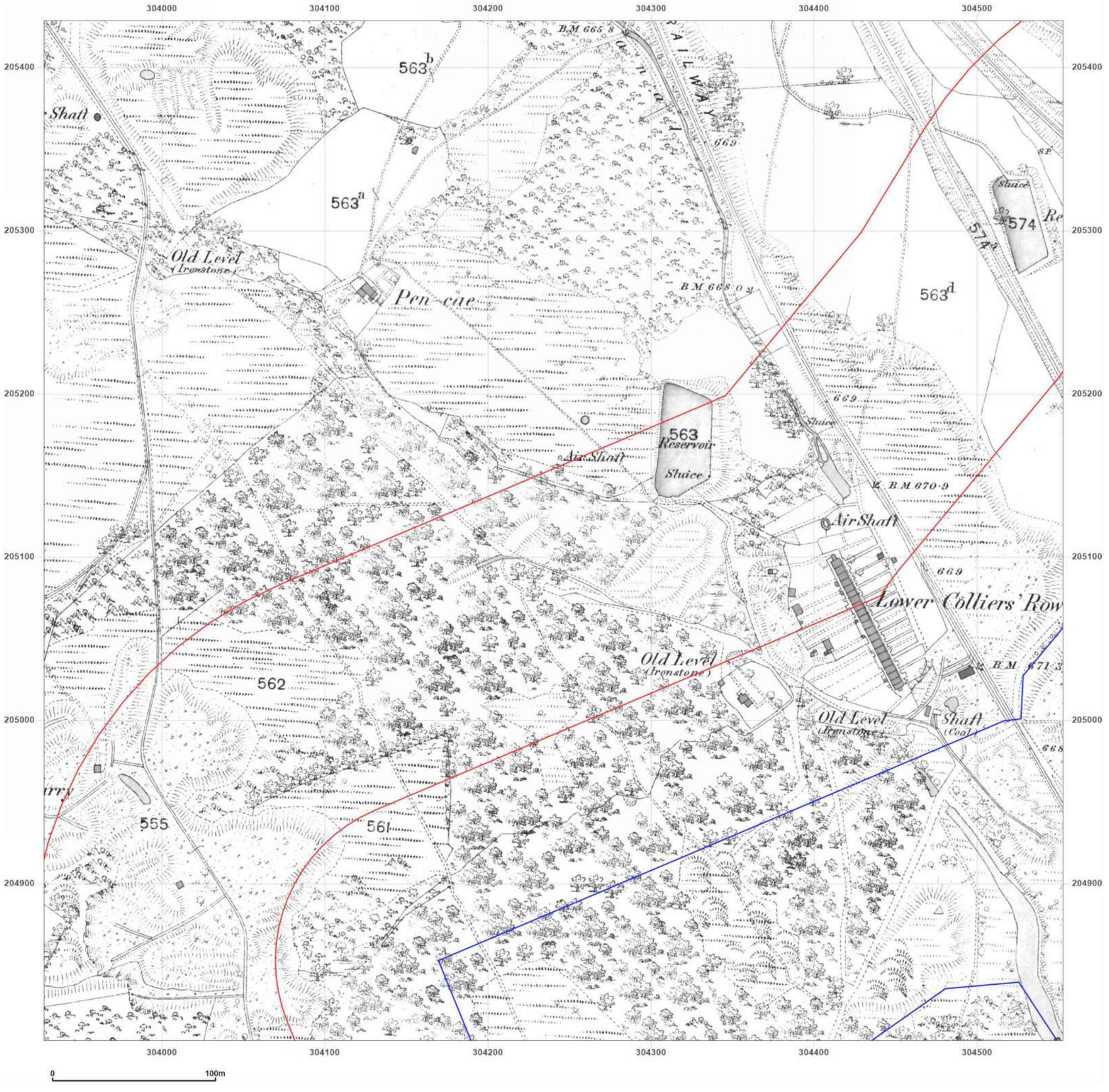
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_1_2
**Grid Ref:** 304240, 205116

**Map Name:** County Series

**Map date:** **1875**

**Scale:** 1:2,500

**Printed at:** 1:2,500

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

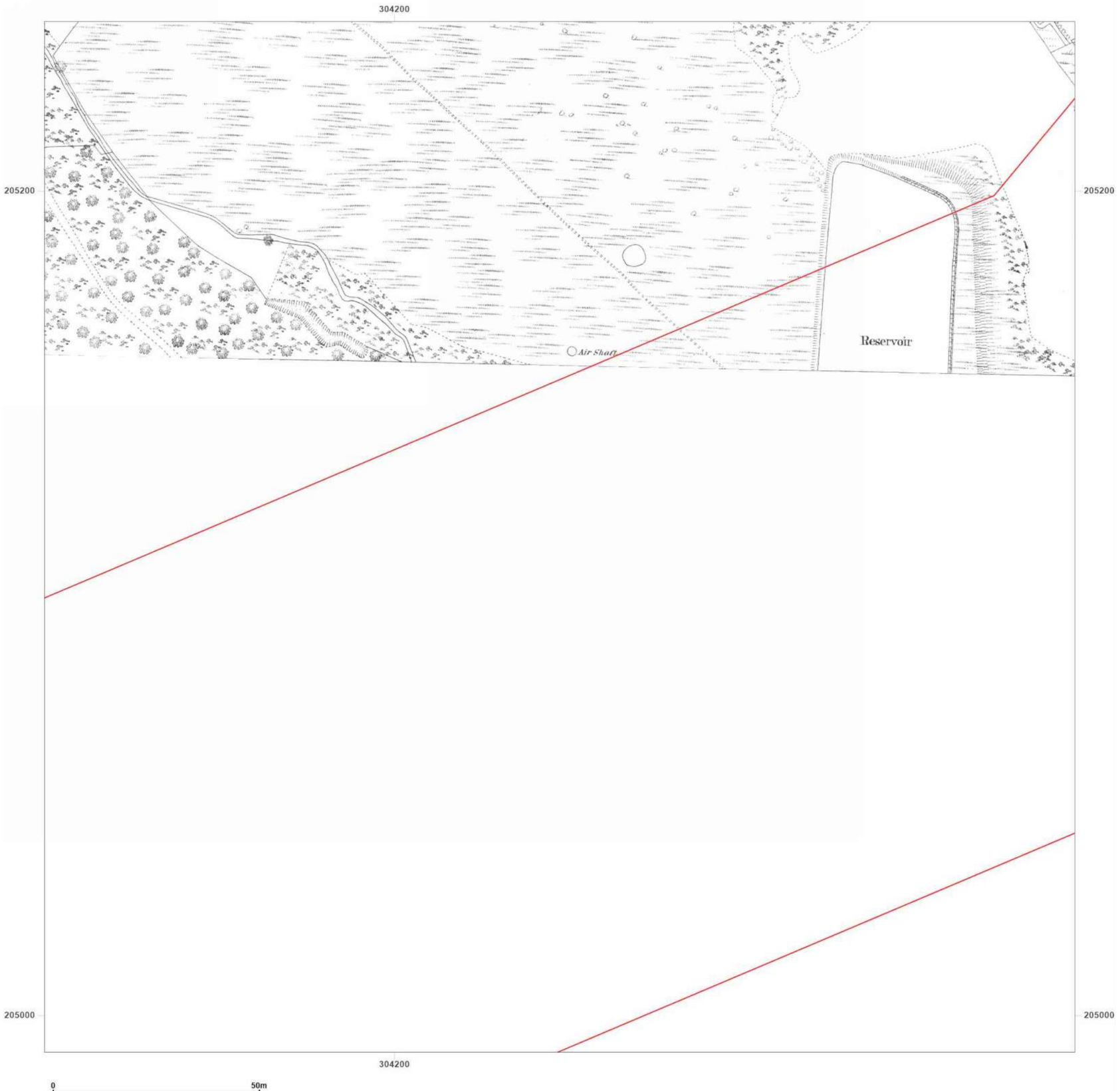
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_1_2
**Grid Ref:** 304240, 205116

**Map Name:** County Series Town Plan

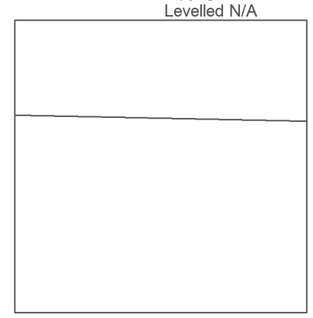
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**Scale:** 1:500

**Printed at:** 1:1,000

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



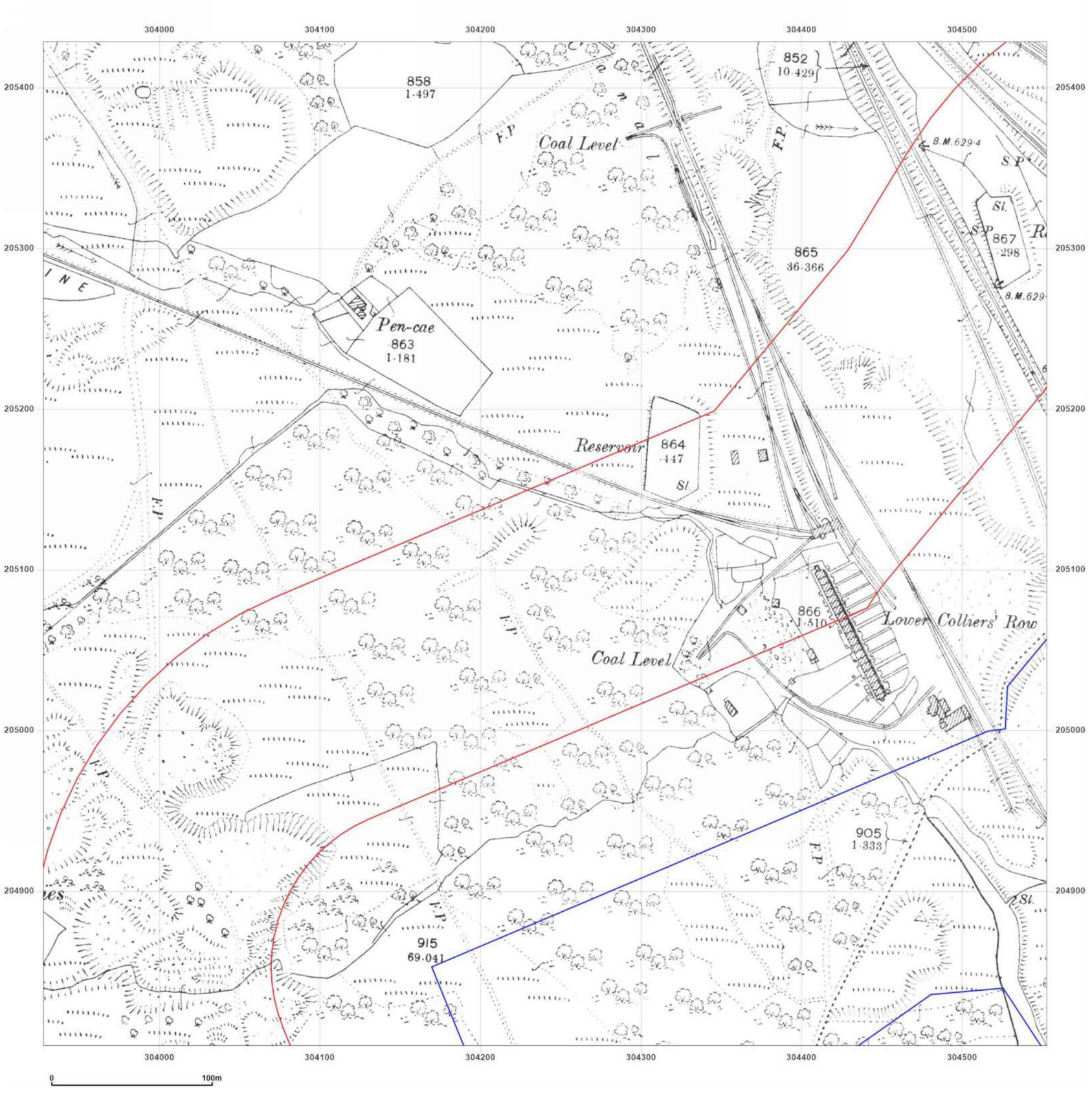
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_1_2
**Grid Ref:** 304240, 205116

**Map Name:** County Series

**Map date:** **1900**

**Scale:** 1:2,500

**Printed at:** 1:2,500

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

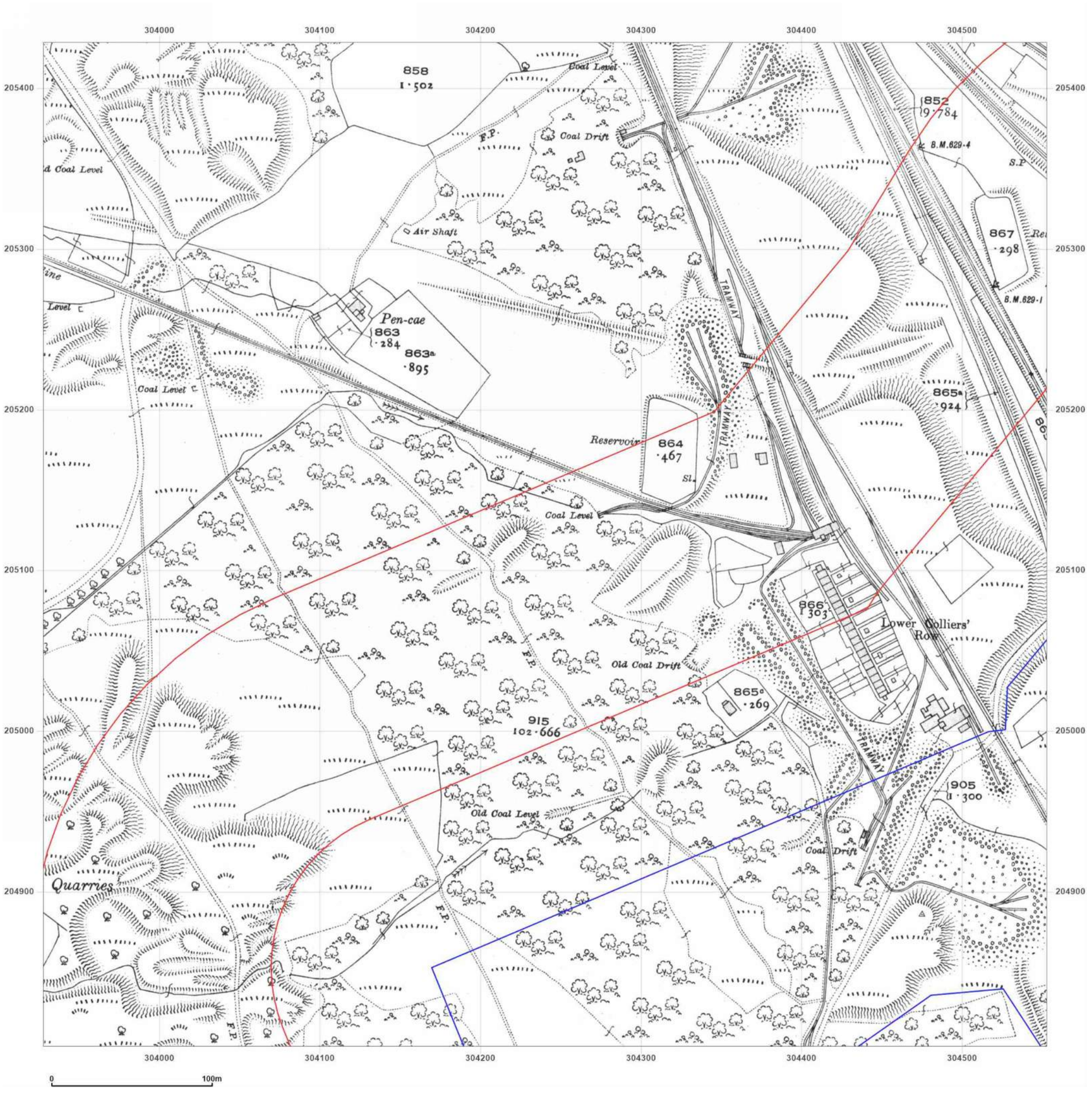
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**Site Details:**

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**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_1_2
**Grid Ref:** 304240, 205116

**Map Name:** County Series

**Map date:** **1919**

**Scale:** 1:2,500

**Printed at:** 1:2,500

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

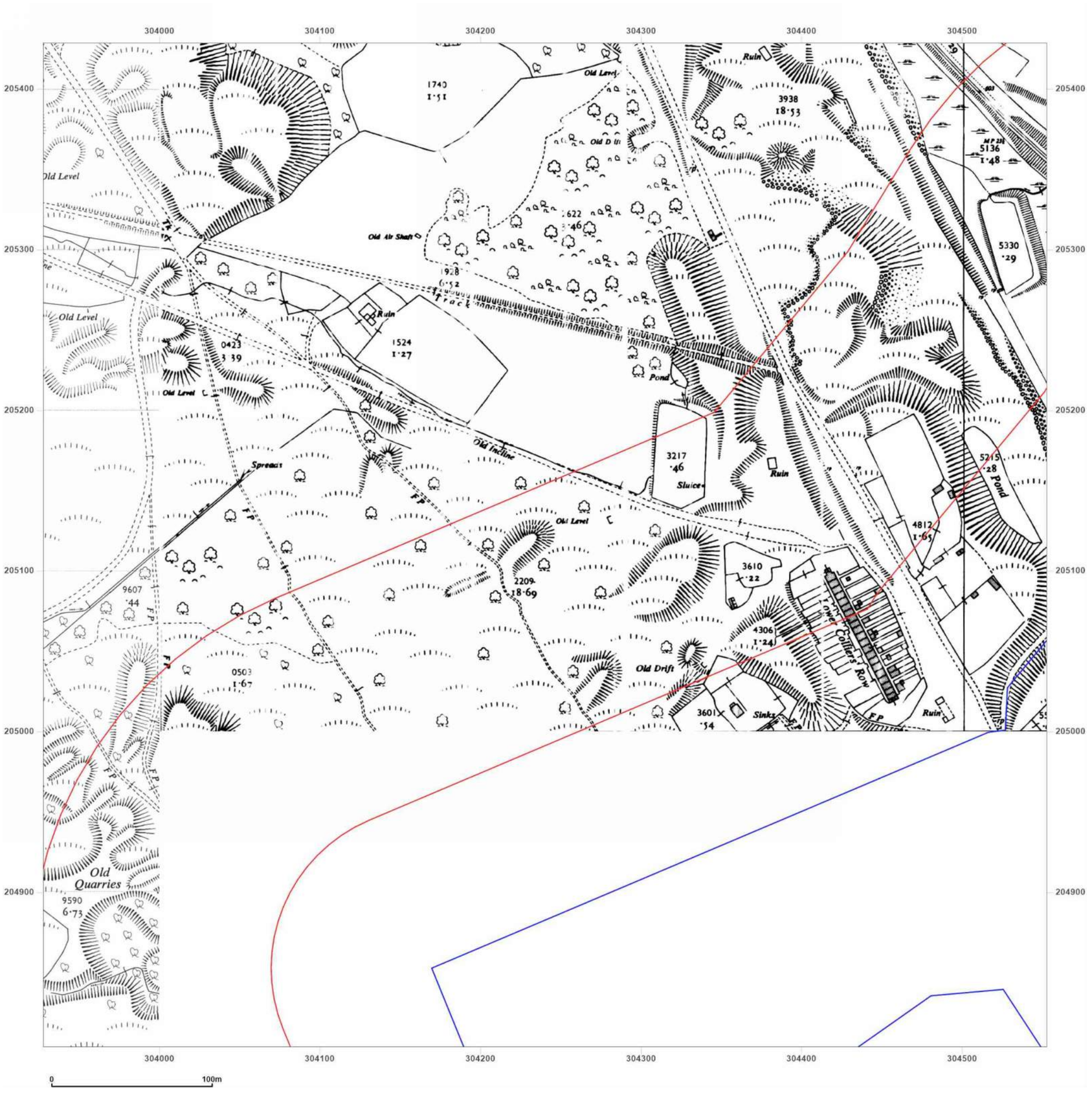
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**Site Details:**

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**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_1_2
**Grid Ref:** 304240, 205116

**Map Name:** National Grid

**Map date:** **1956-1958**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
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Surveyed 1956
Revised 1956
Edition N/A
Copyright N/A
Levelled 1948

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

Surveyed 1956
Revised 1956
Edition N/A
Copyright N/A
Levelled 1948

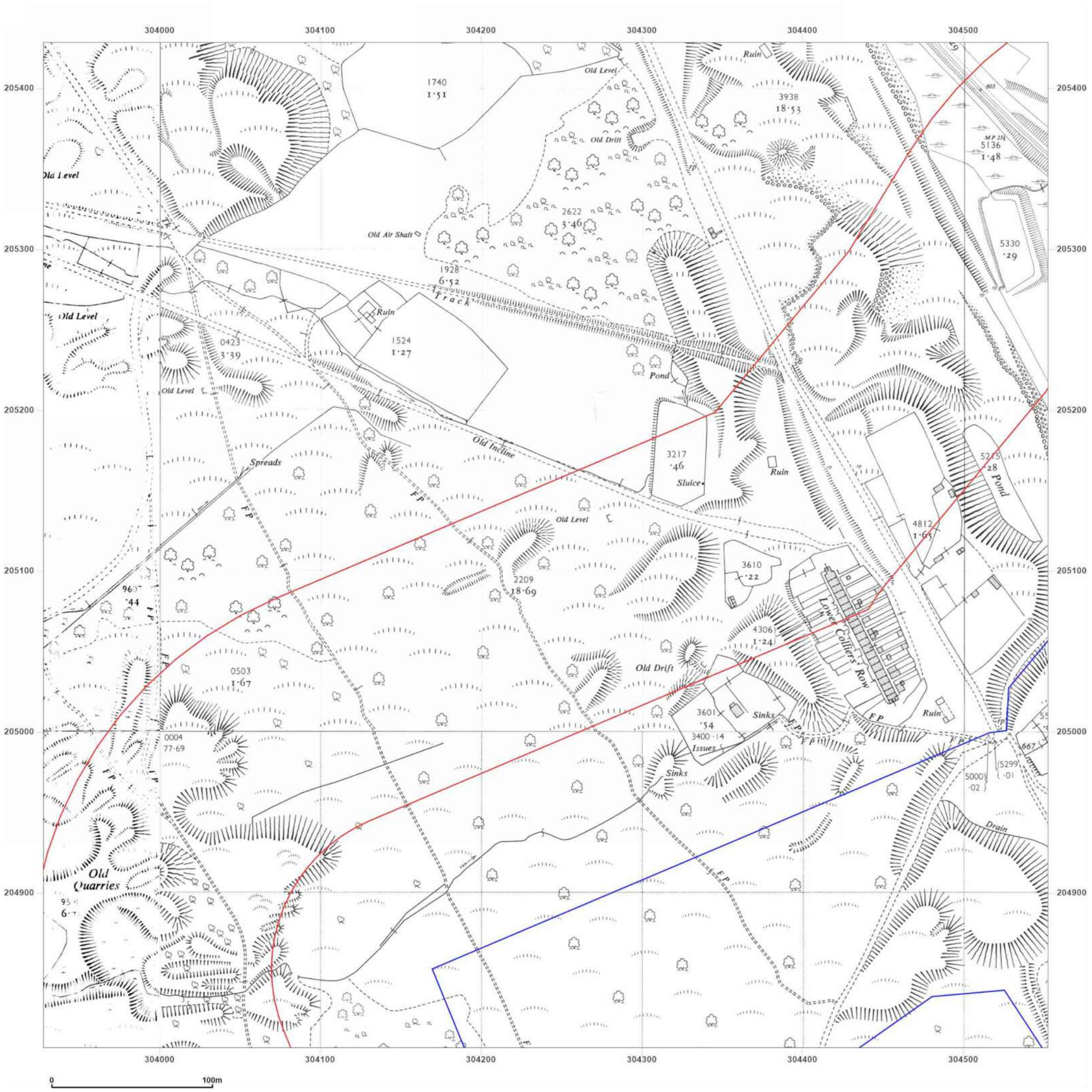
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**Site Details:**

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**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_1_2
**Grid Ref:** 304240, 205116

**Map Name:** National Grid

**Map date:** **1957-1962**

**Scale:** 1:2,500

**Printed at:** 1:2,500

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|---|---|
| Surveyed N/A<br>Revised N/A<br>Edition N/A<br>Copyright N/A<br>Levelled N/A | Surveyed 1957<br>Revised 1957<br>Edition 1958<br>Copyright N/A<br>Levelled 1950 |
| Surveyed N/A<br>Revised N/A<br>Edition N/A<br>Copyright N/A<br>Levelled N/A | Surveyed 1962<br>Revised 1962<br>Edition N/A<br>Copyright 1964<br>Levelled 1958 |

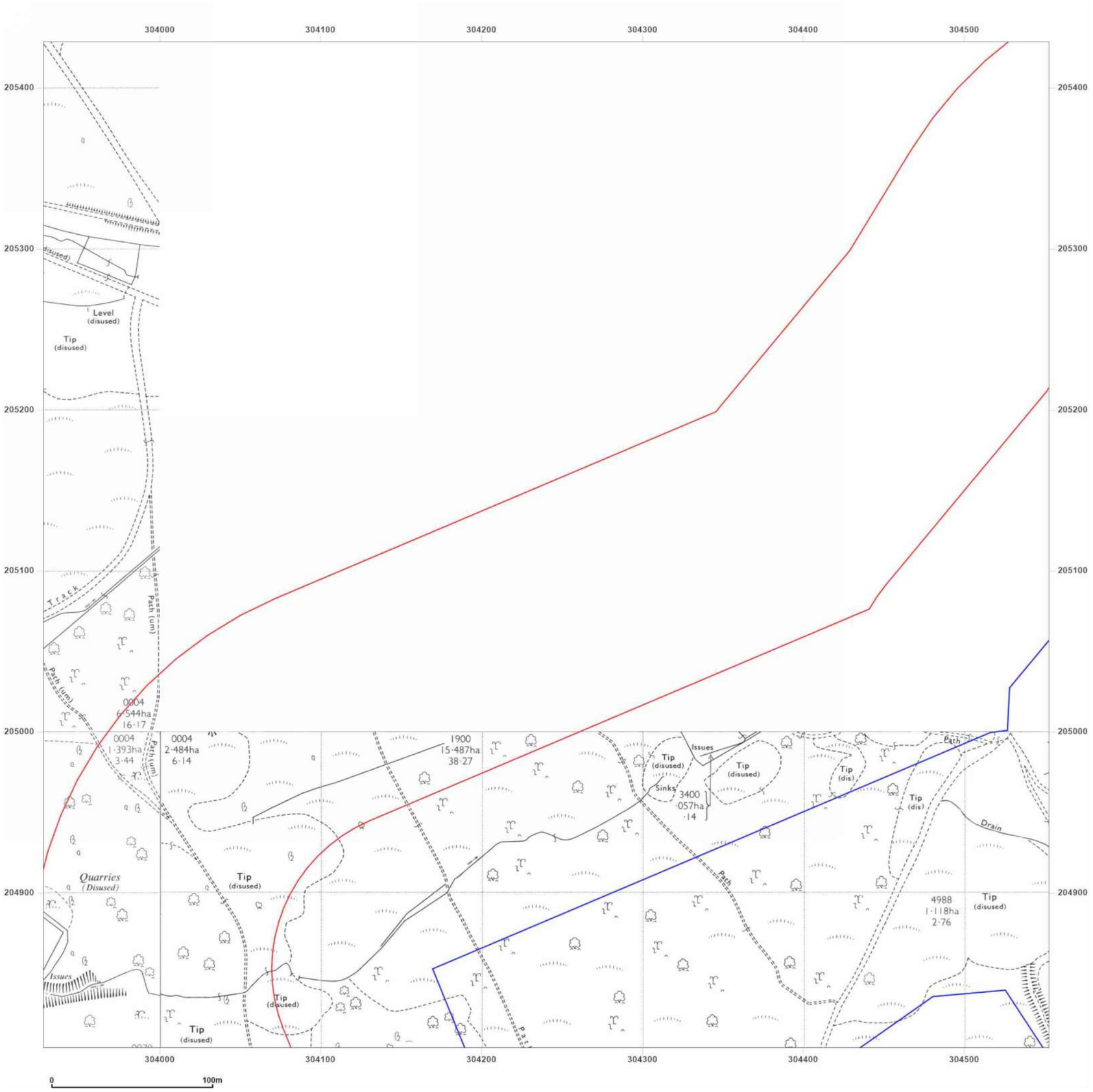
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**Site Details:**

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**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_1_2
**Grid Ref:** 304240, 205116

**Map Name:** National Grid

**Map date:** **1971-1975**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
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Surveyed 1974
Revised 1974
Edition N/A
Copyright 1975
Levelled 1964

Surveyed 1975
Revised 1975
Edition N/A
Copyright 1977
Levelled 1964

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1964

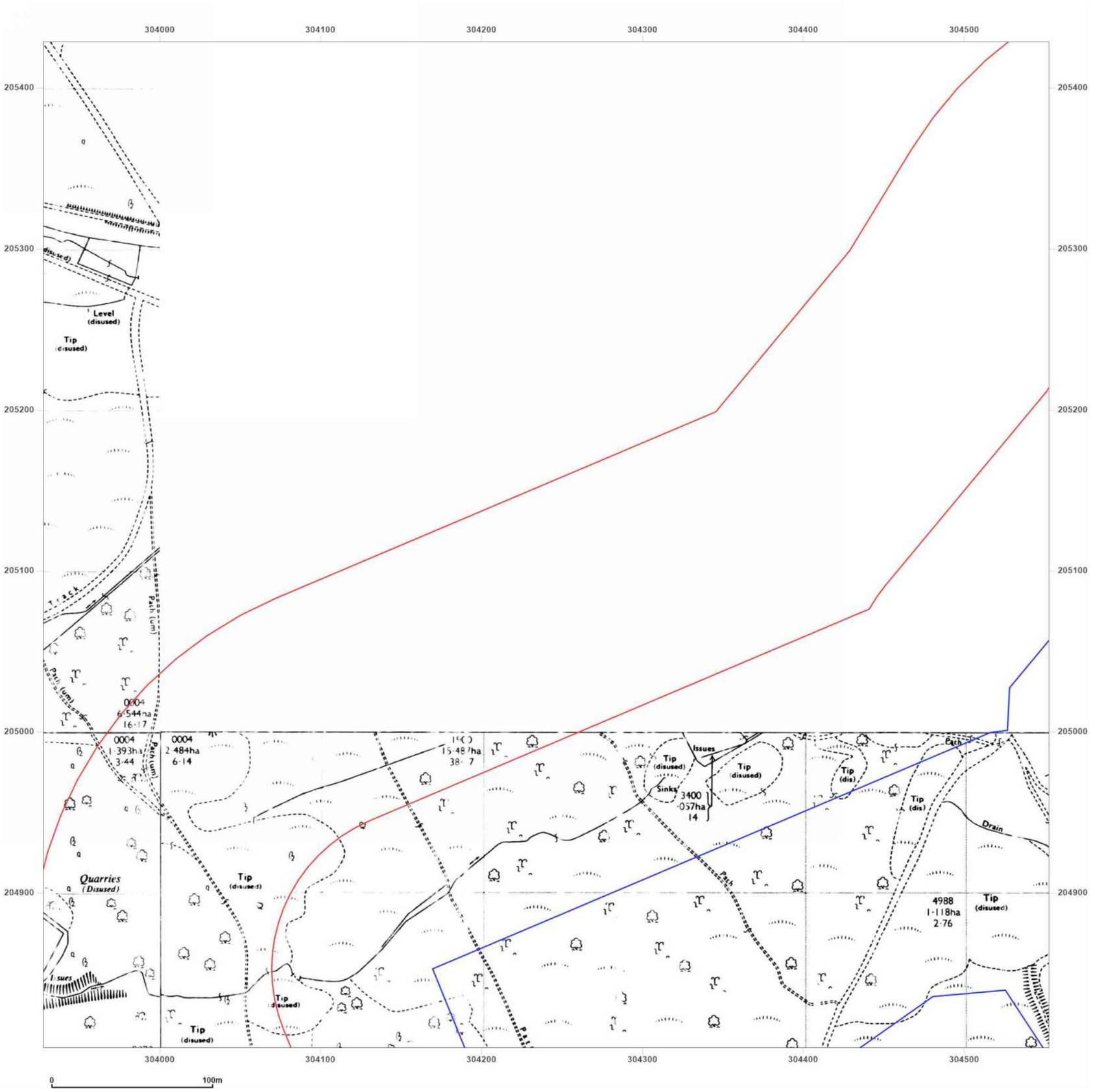
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_1_2
**Grid Ref:** 304240, 205116

**Map Name:** National Grid

**Map date:** **1972-1977**

**Scale:** 1:2,500

**Printed at:** 1:2,500

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

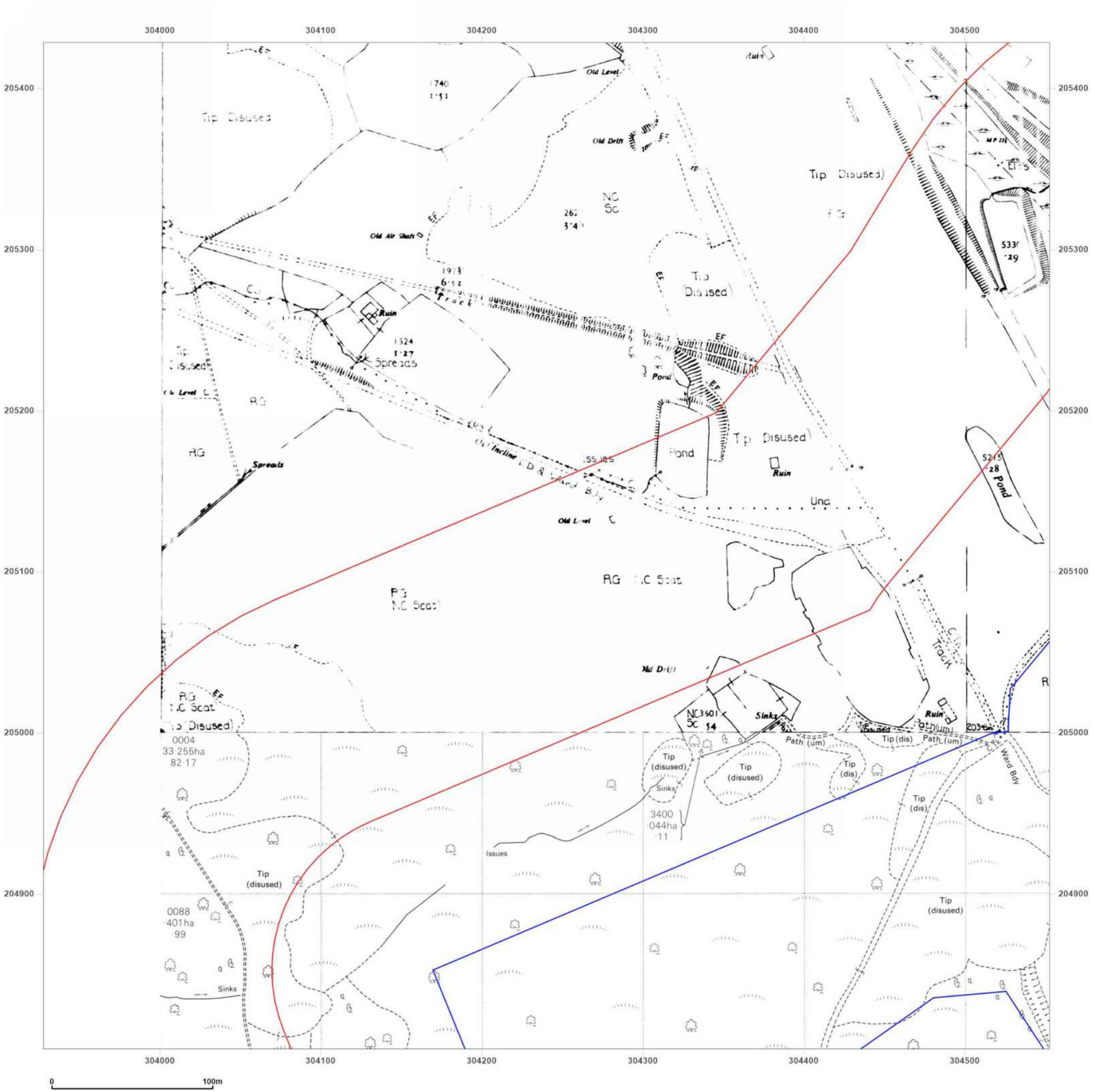
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_1_2
**Grid Ref:** 304240, 205116

**Map Name:** National Grid

**Map date:** **1984-1989**

**Scale:** 1:2,500

**Printed at:** 1:2,500

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

Surveyed 1984
Revised 1984
Edition N/A
Copyright 1986
Levelled 1964

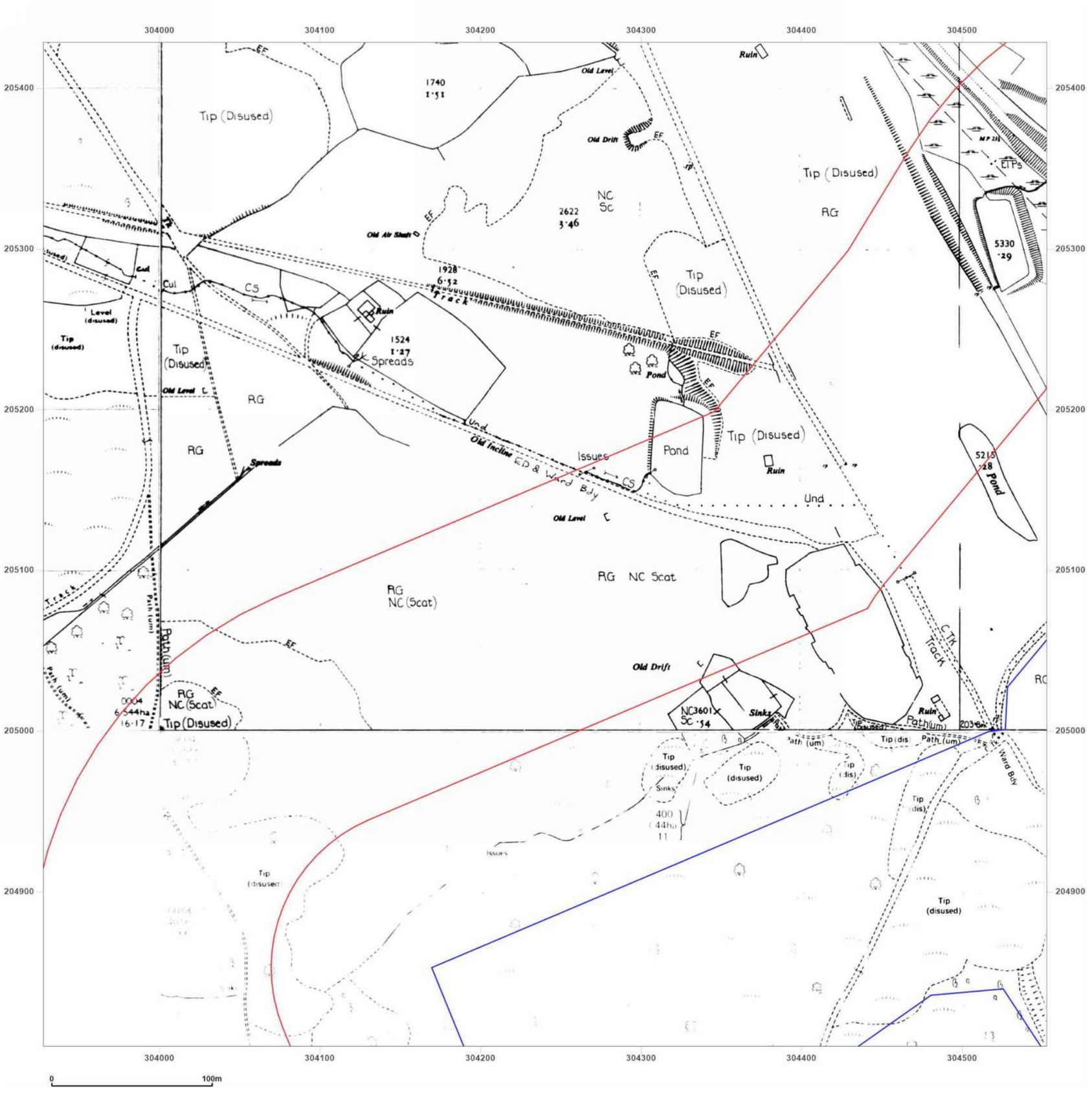
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_1_2
**Grid Ref:** 304240, 205116

**Map Name:** National Grid

**Map date:** **1986-1990**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
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Surveyed 1964
Revised 1990
Edition N/A
Copyright 1990
Levelled 1964

Surveyed 1964
Revised 1989
Edition N/A
Copyright 1989
Levelled 1964

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

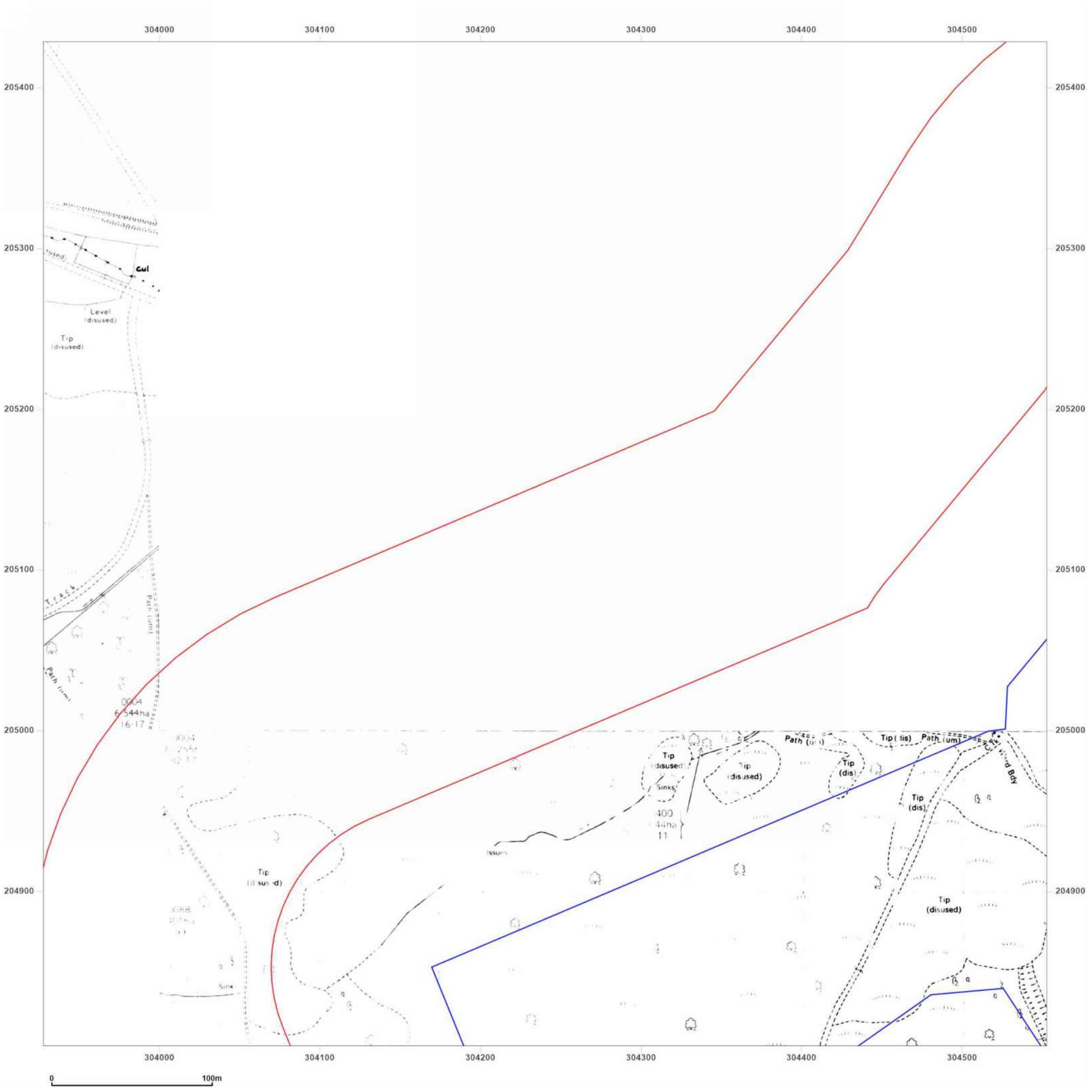
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_1_2
**Grid Ref:** 304240, 205116

**Map Name:** National Grid

**Map date:** **1986-1990**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
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Surveyed 1964
Revised 1990
Edition N/A
Copyright 1990
Levelled 1964

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

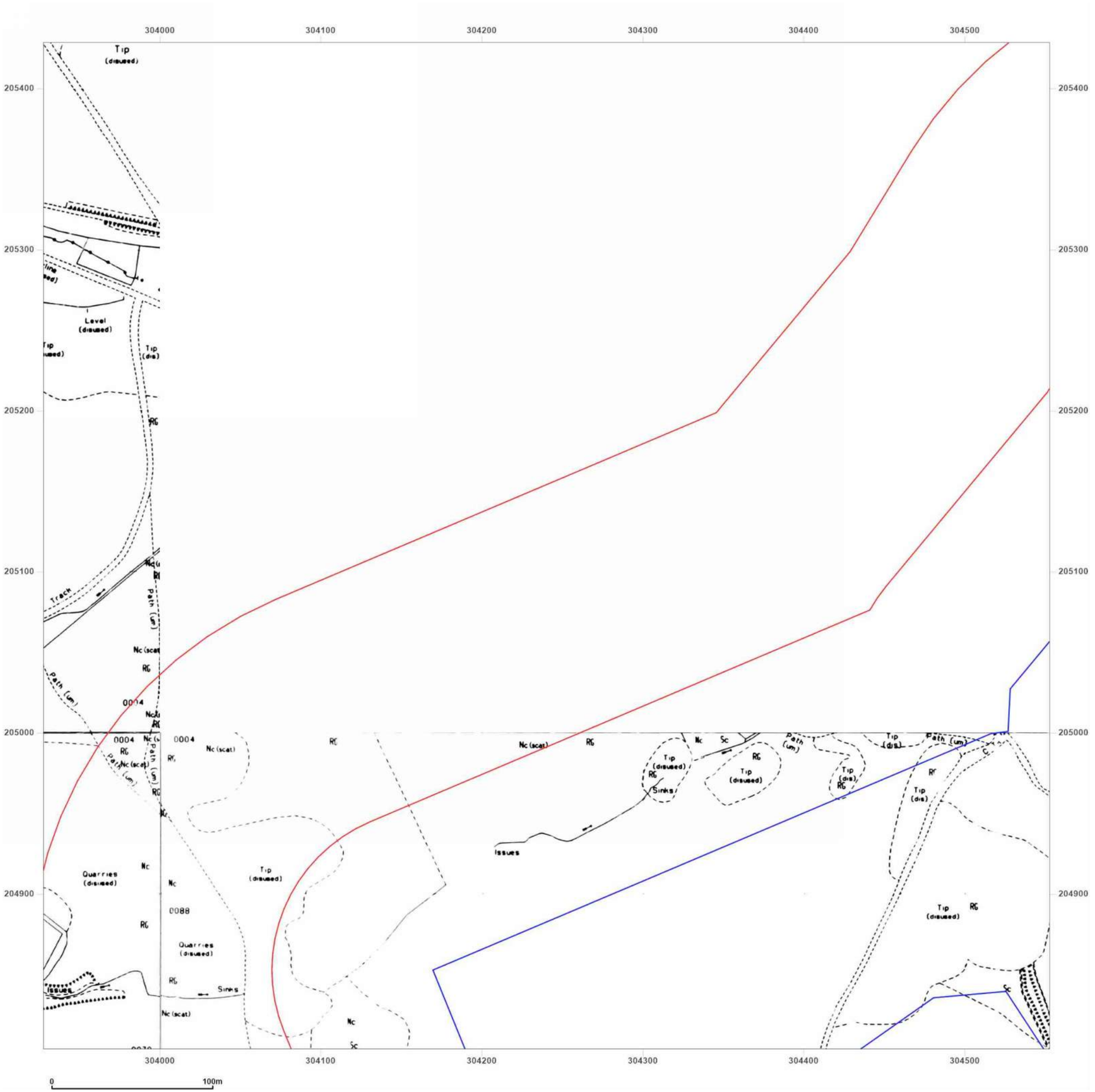
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_1_2
**Grid Ref:** 304240, 205116

**Map Name:** National Grid

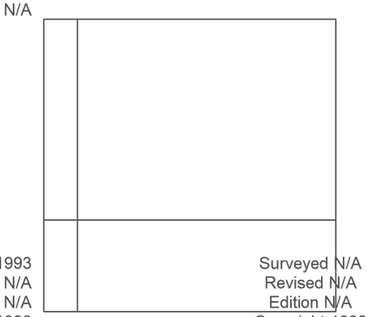
**Map date:** **1993**

**Scale:** 1:2,500

**Printed at:** 1:2,500

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

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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_1
**Grid Ref:** 304865, 204491

**Map Name:** County Series

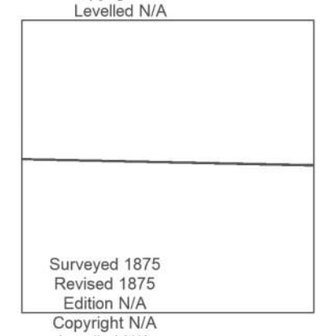
**Map date:** **1875**

**Scale:** 1:2,500

**Printed at:** 1:2,500

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



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

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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_1
**Grid Ref:** 304865, 204491

**Map Name:** County Series Town Plan

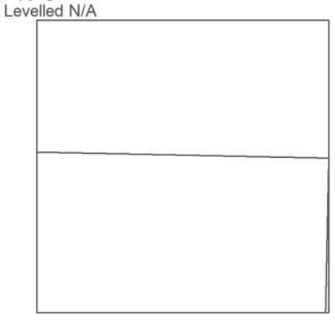
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**Scale:** 1:500

**Printed at:** 1:1,000

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



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

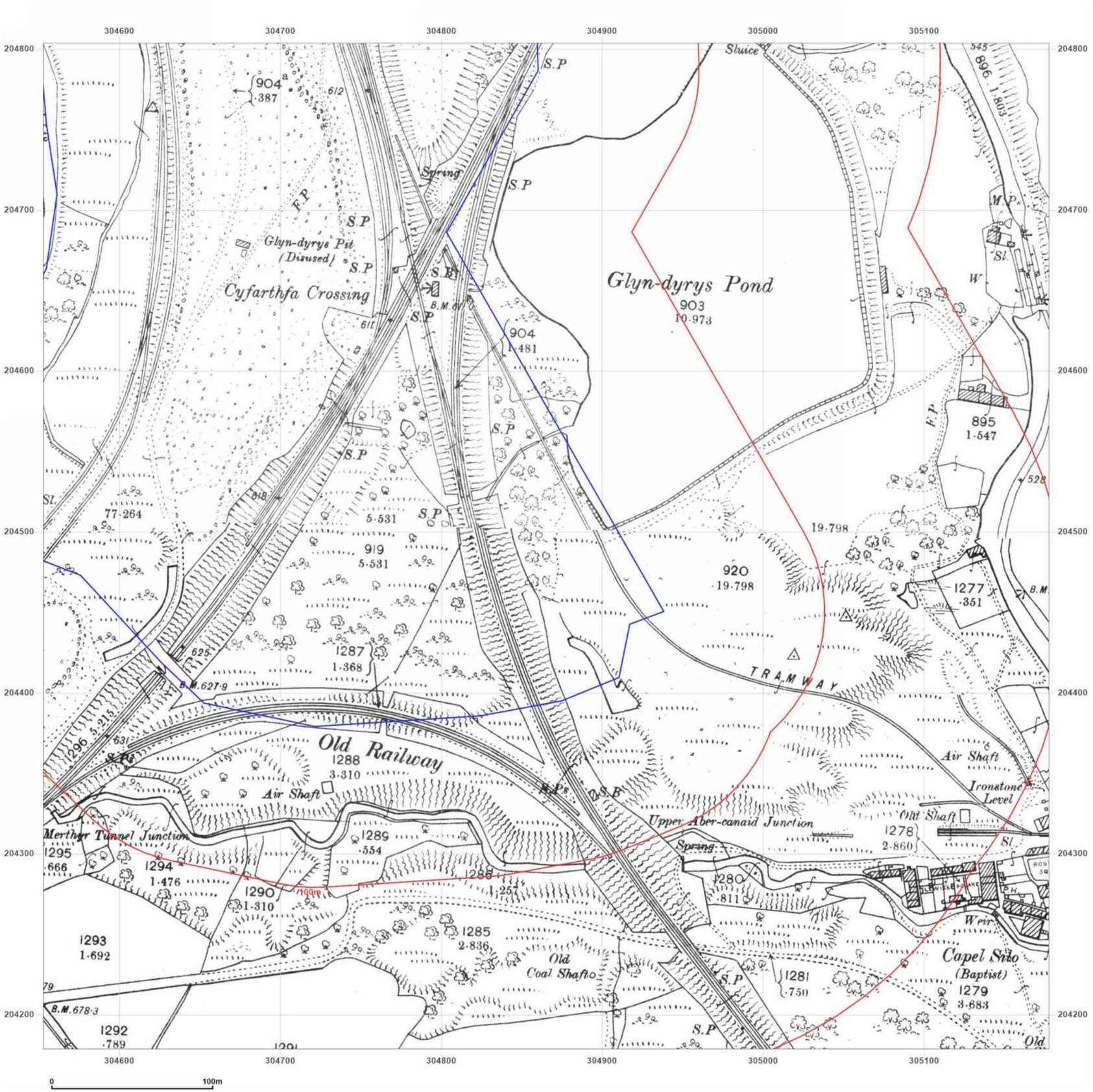
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_1
**Grid Ref:** 304865, 204491

**Map Name:** County Series

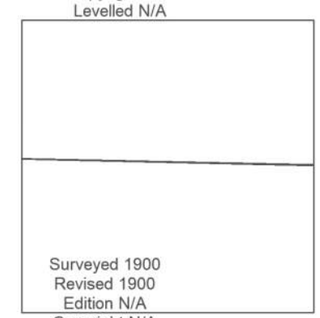
**Map date:** **1900**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

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



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

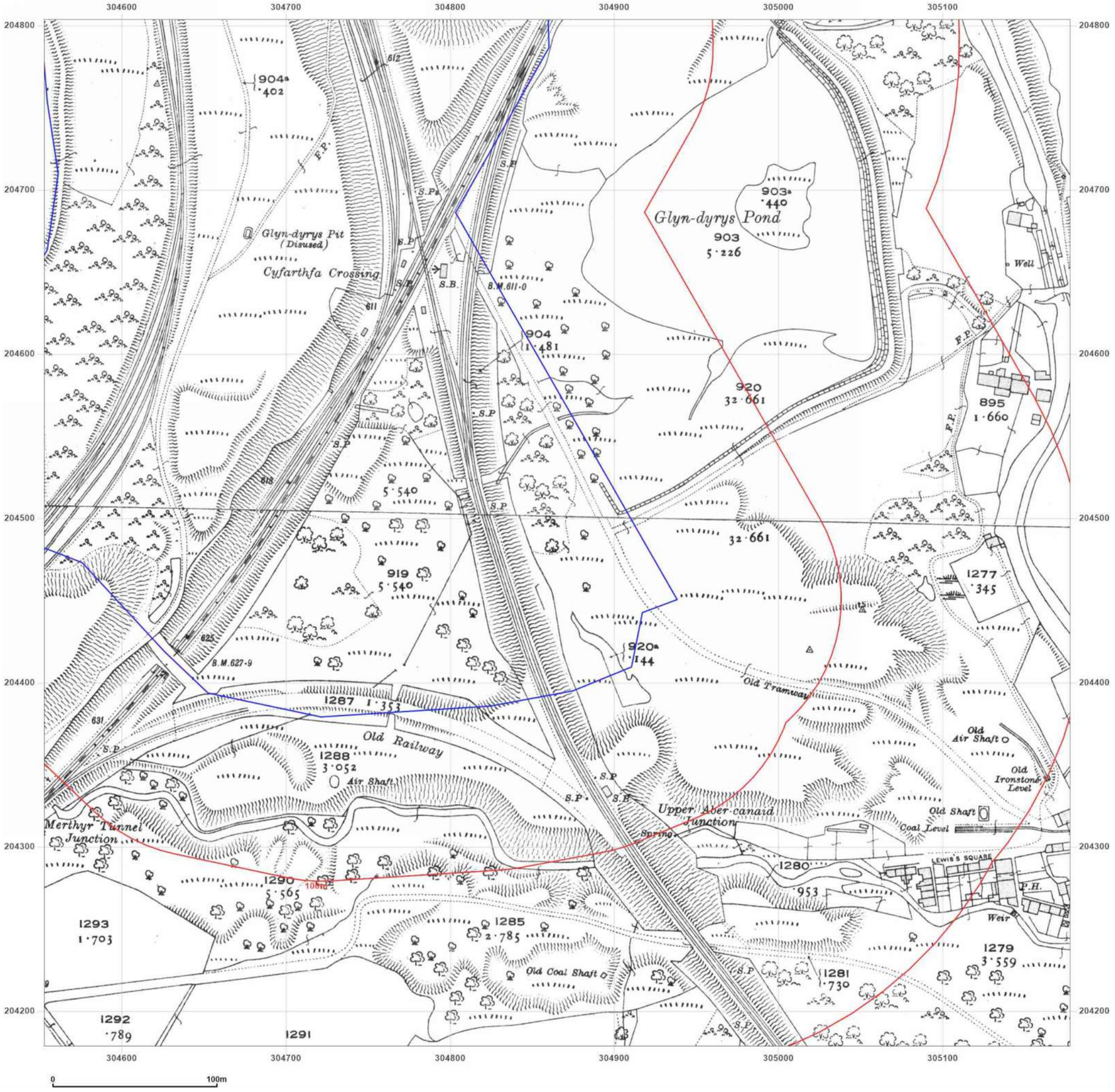
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_1
**Grid Ref:** 304865, 204491

**Map Name:** County Series

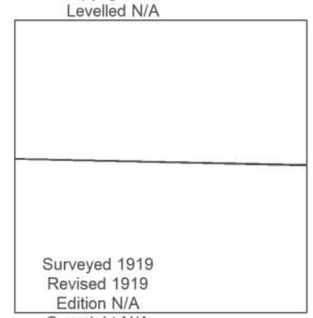
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**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

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



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

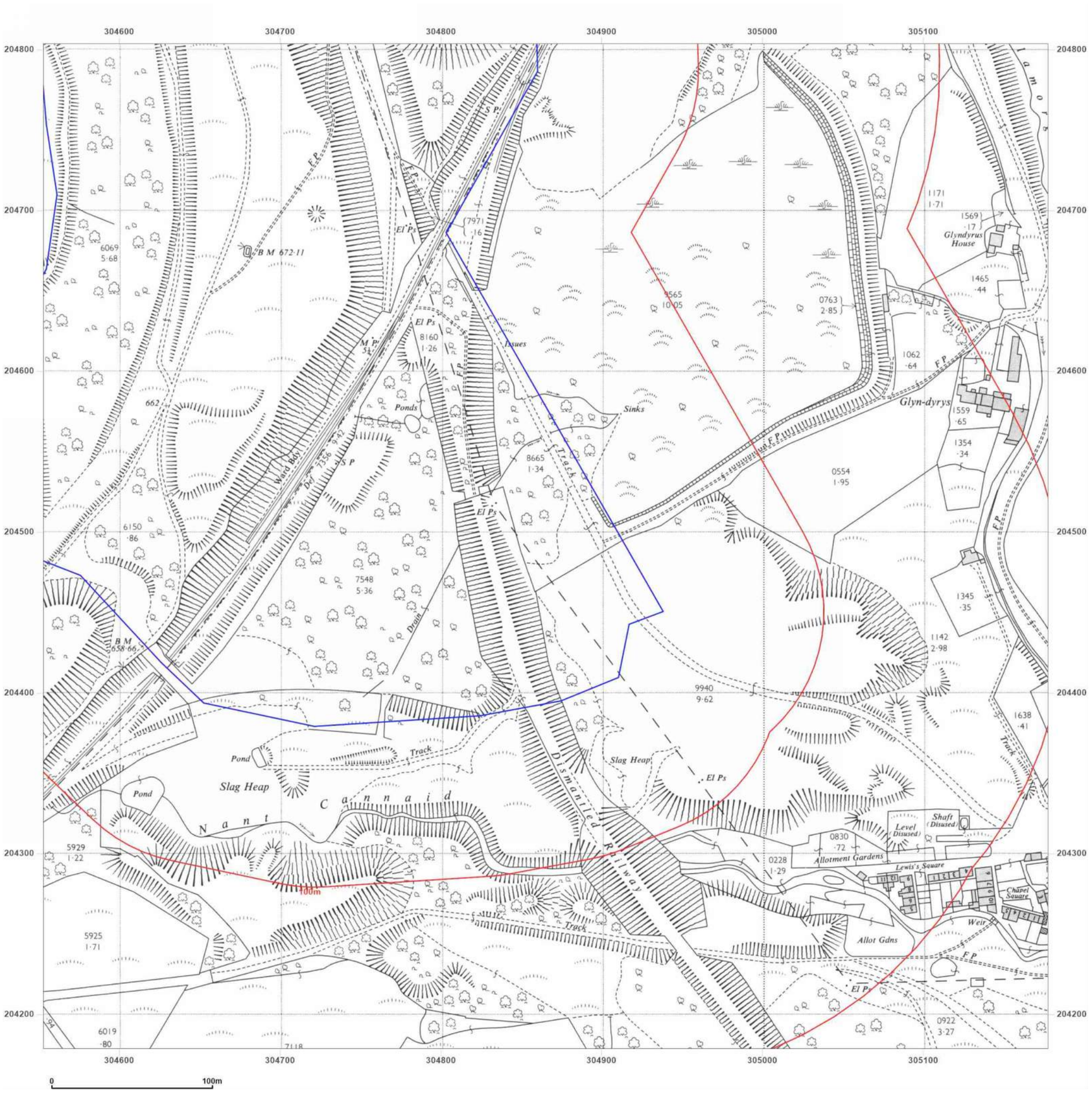
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_1
**Grid Ref:** 304865, 204491

**Map Name:** National Grid

**Map date:** **1962**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

Surveyed 1962
Revised 1962
Edition N/A
Copyright 1964
Levelled 1958

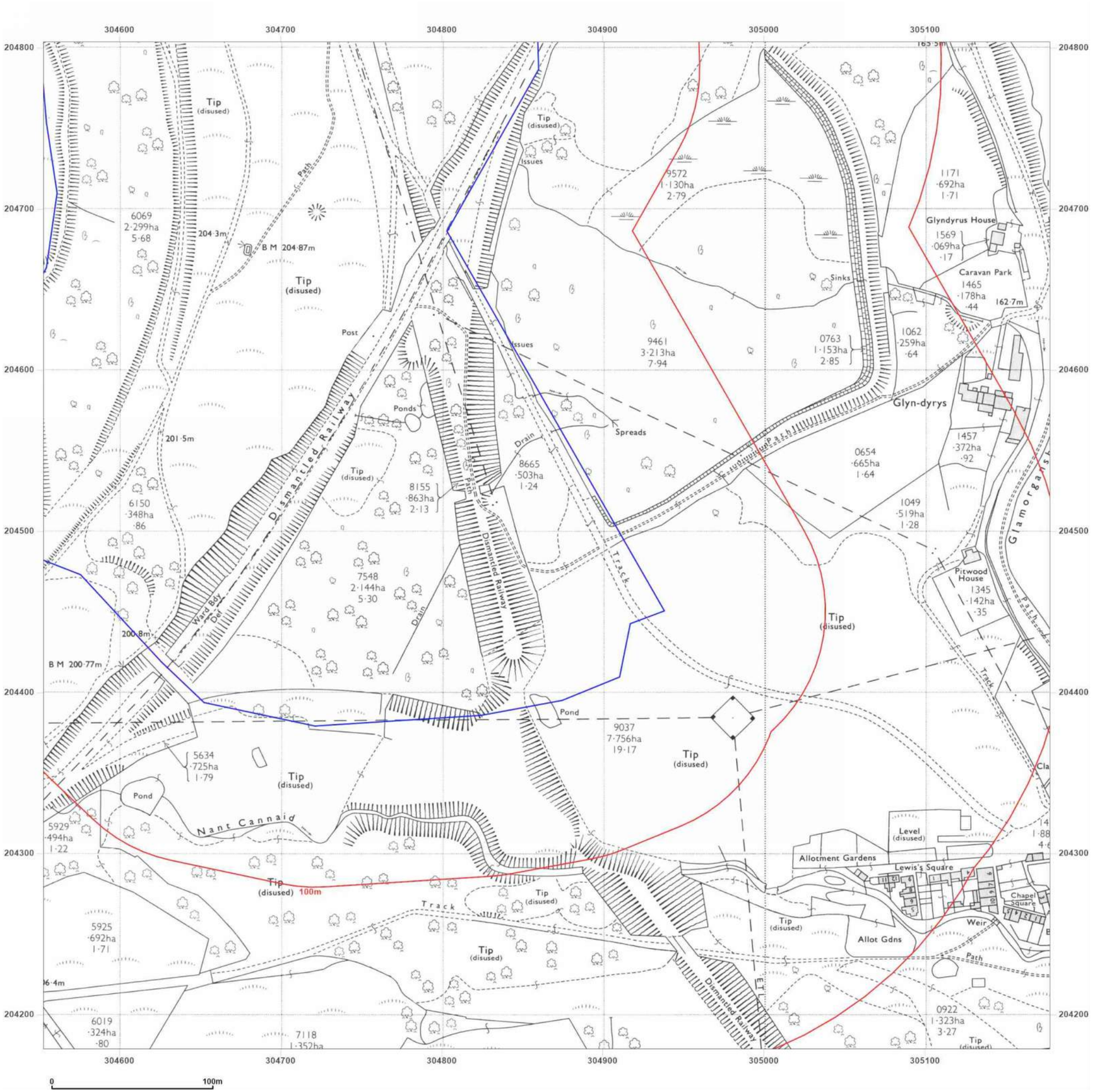
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Production date: 19 July 2021

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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_1
**Grid Ref:** 304865, 204491

**Map Name:** National Grid

**Map date:** **1971**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1964

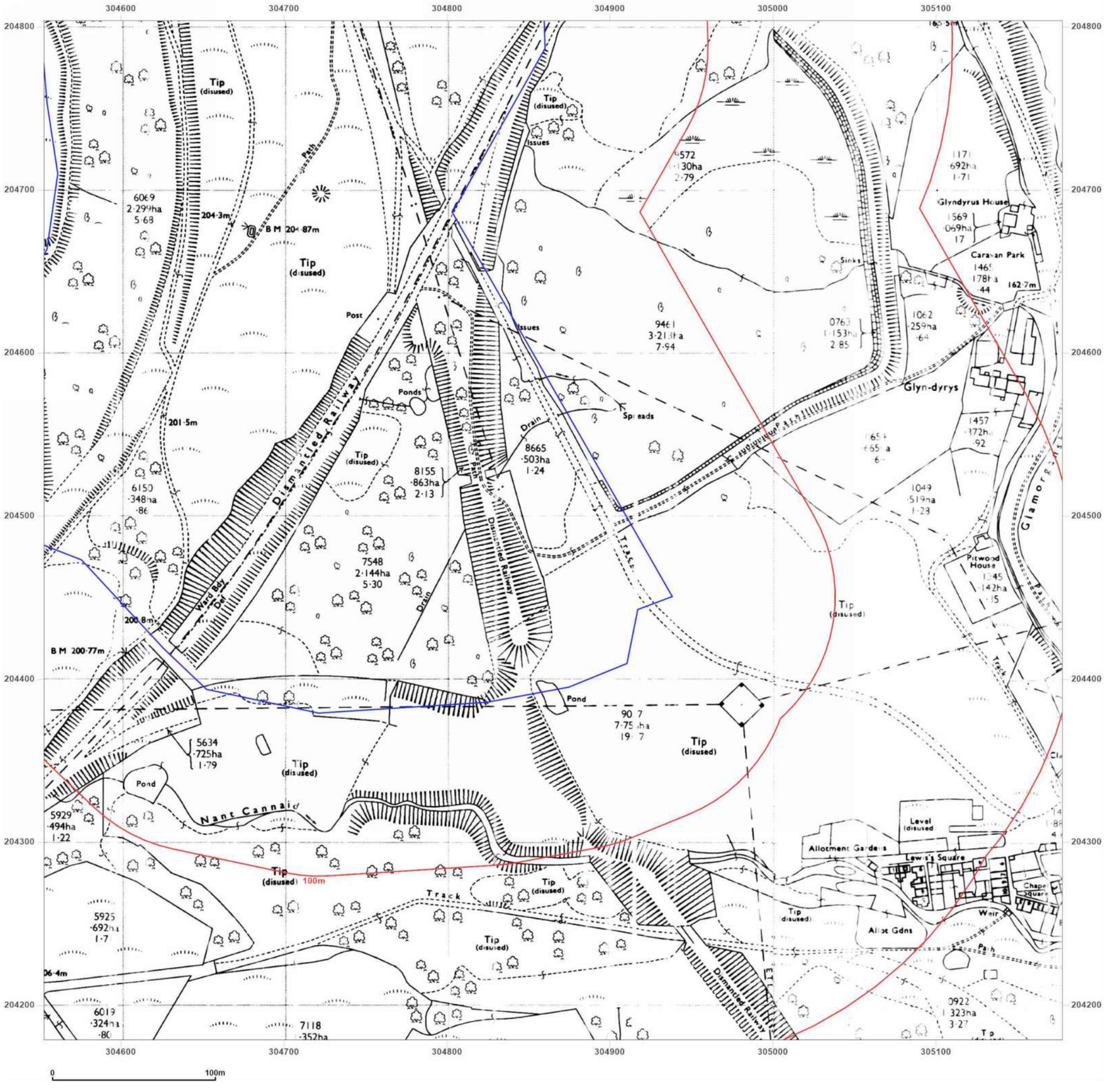
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_1
**Grid Ref:** 304865, 204491

**Map Name:** National Grid

**Map date:** **1972**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

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

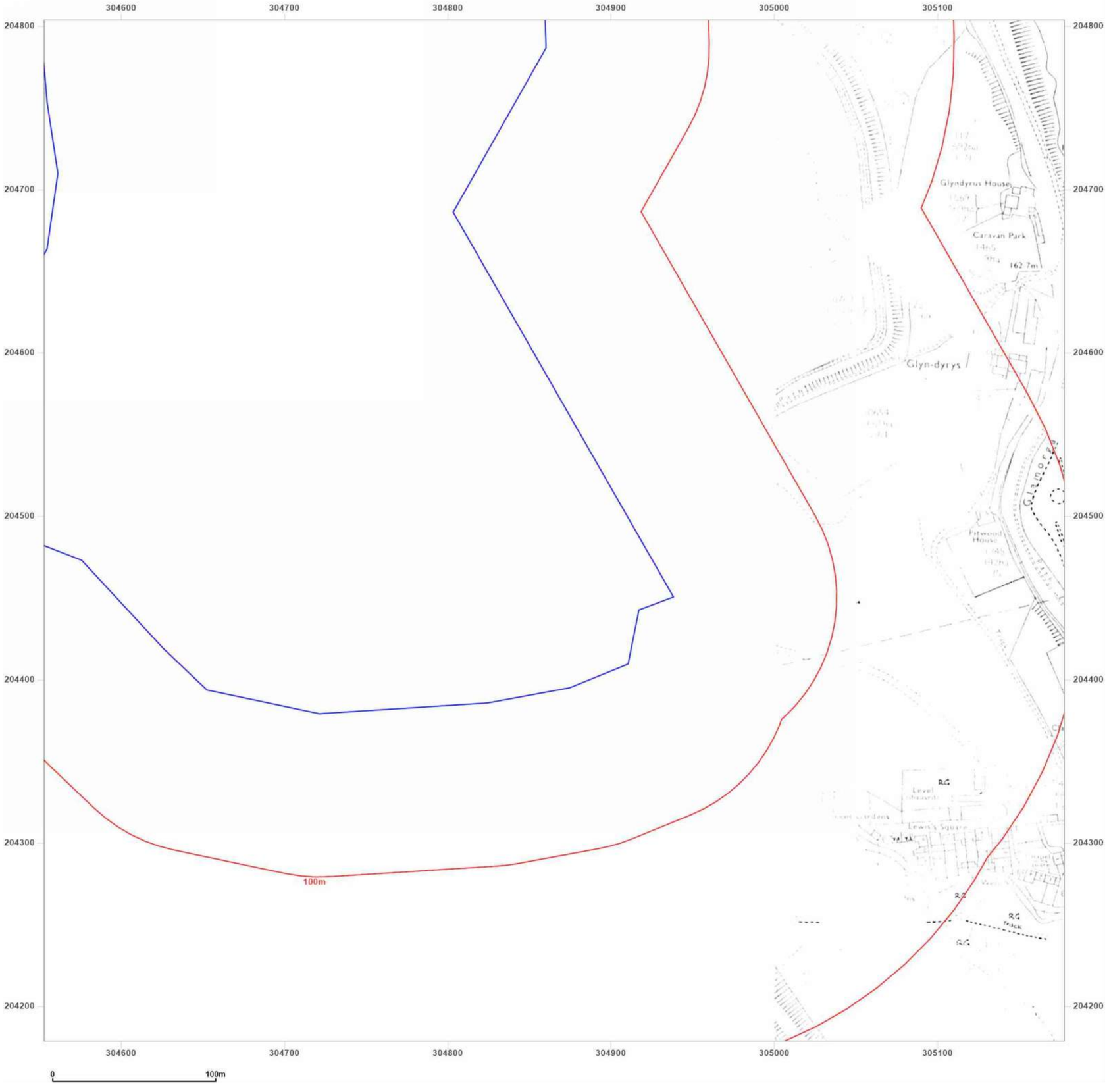
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_1
**Grid Ref:** 304865, 204491

**Map Name:** National Grid

**Map date:** **1979**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1979
Levelled 1964

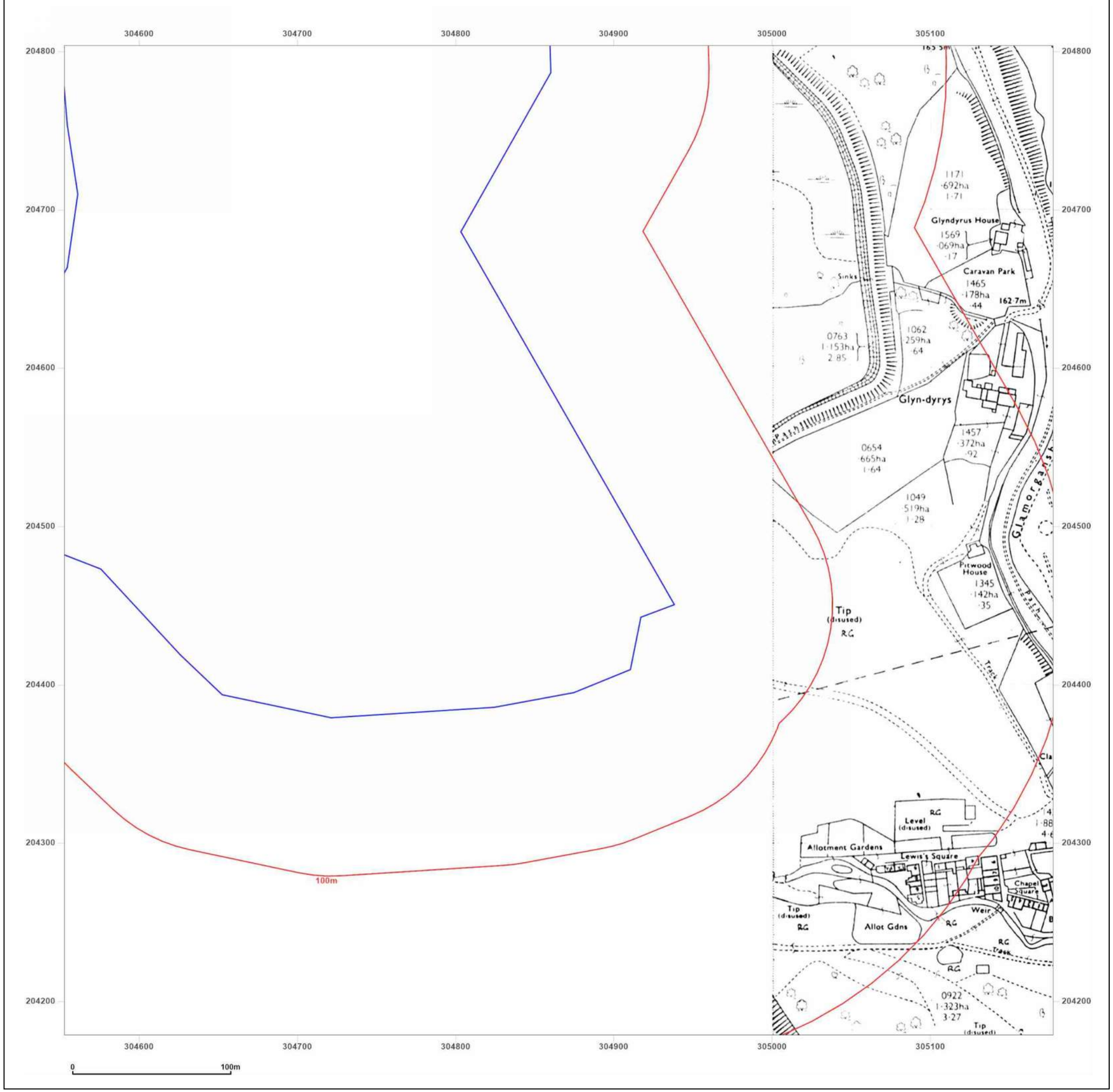
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_1
**Grid Ref:** 304865, 204491

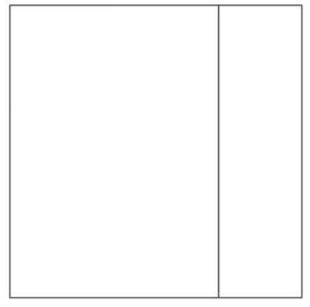
**Map Name:** National Grid

**Map date:** **1979**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S



Surveyed 1964
Revised 1979
Edition N/A
Copyright 1979
Levelled 1964

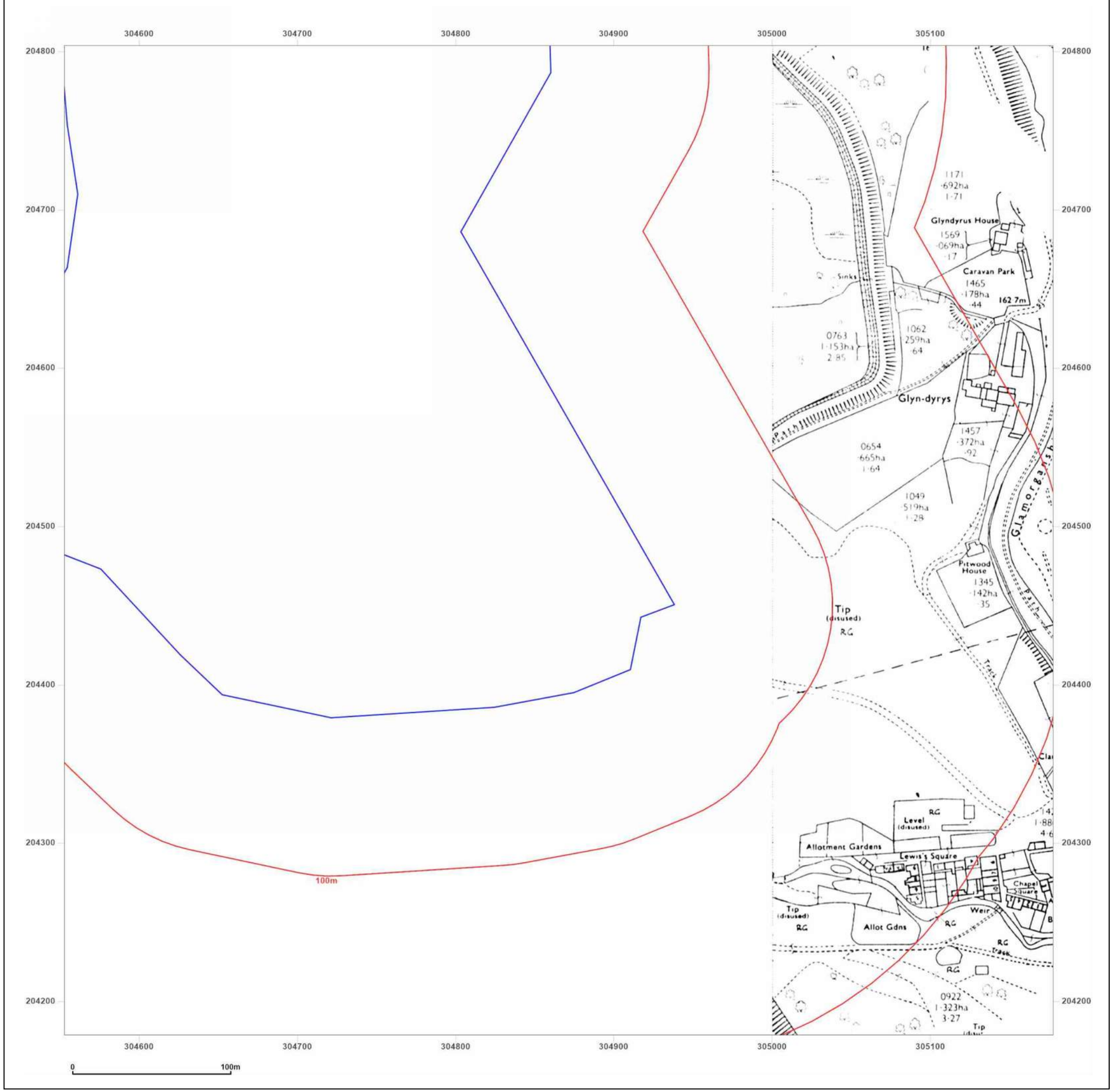
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
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**Grid Ref:** 304865, 204491

**Map Name:** National Grid

**Map date:** **1979**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

Surveyed 1964
Revised 1979
Edition N/A
Copyright 1979
Levelled 1964

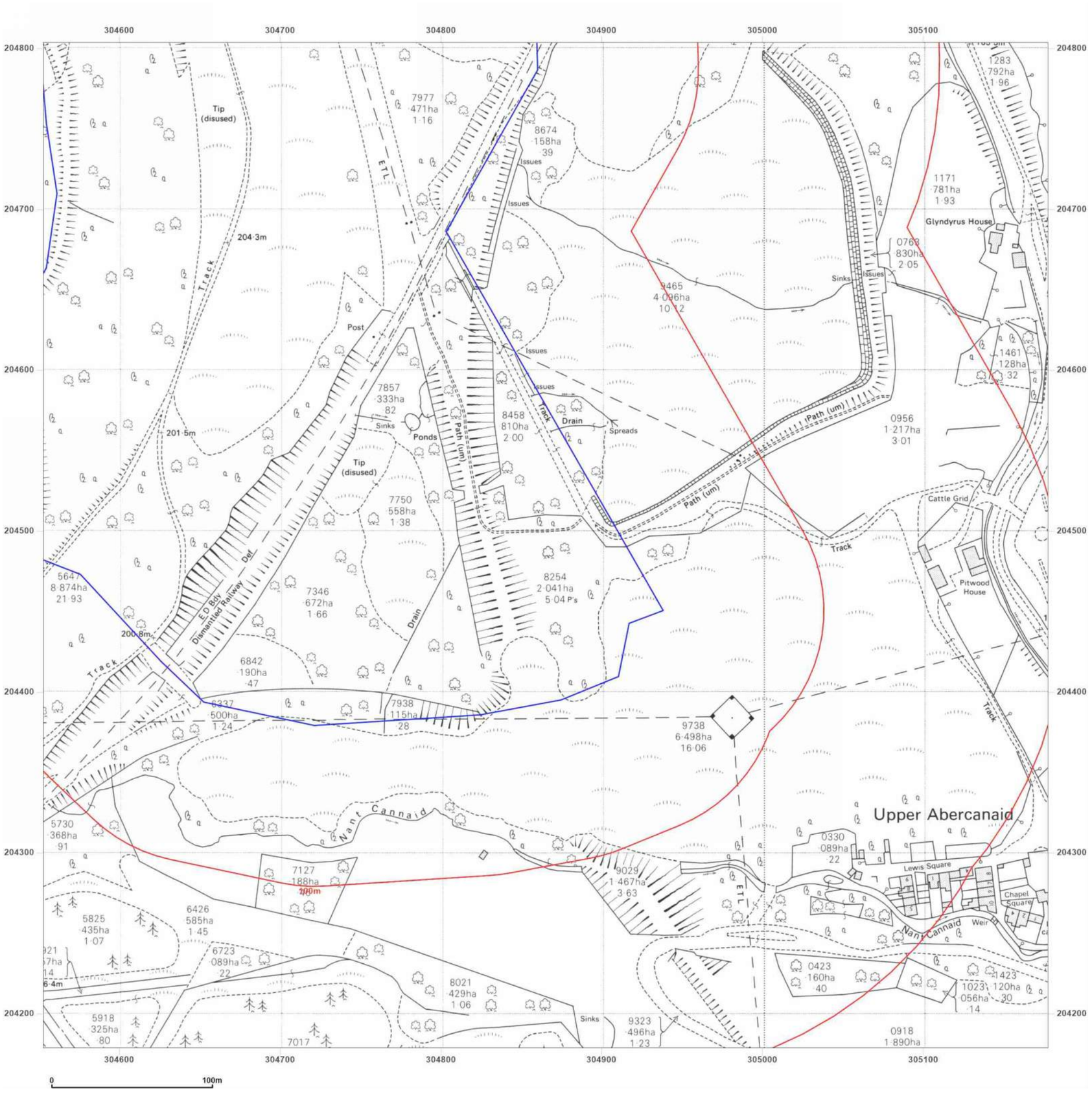
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_1
**Grid Ref:** 304865, 204491

**Map Name:** National Grid

**Map date:** **1984**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
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Surveyed 1984
Revised 1984
Edition N/A
Copyright 1986
Levelled 1964

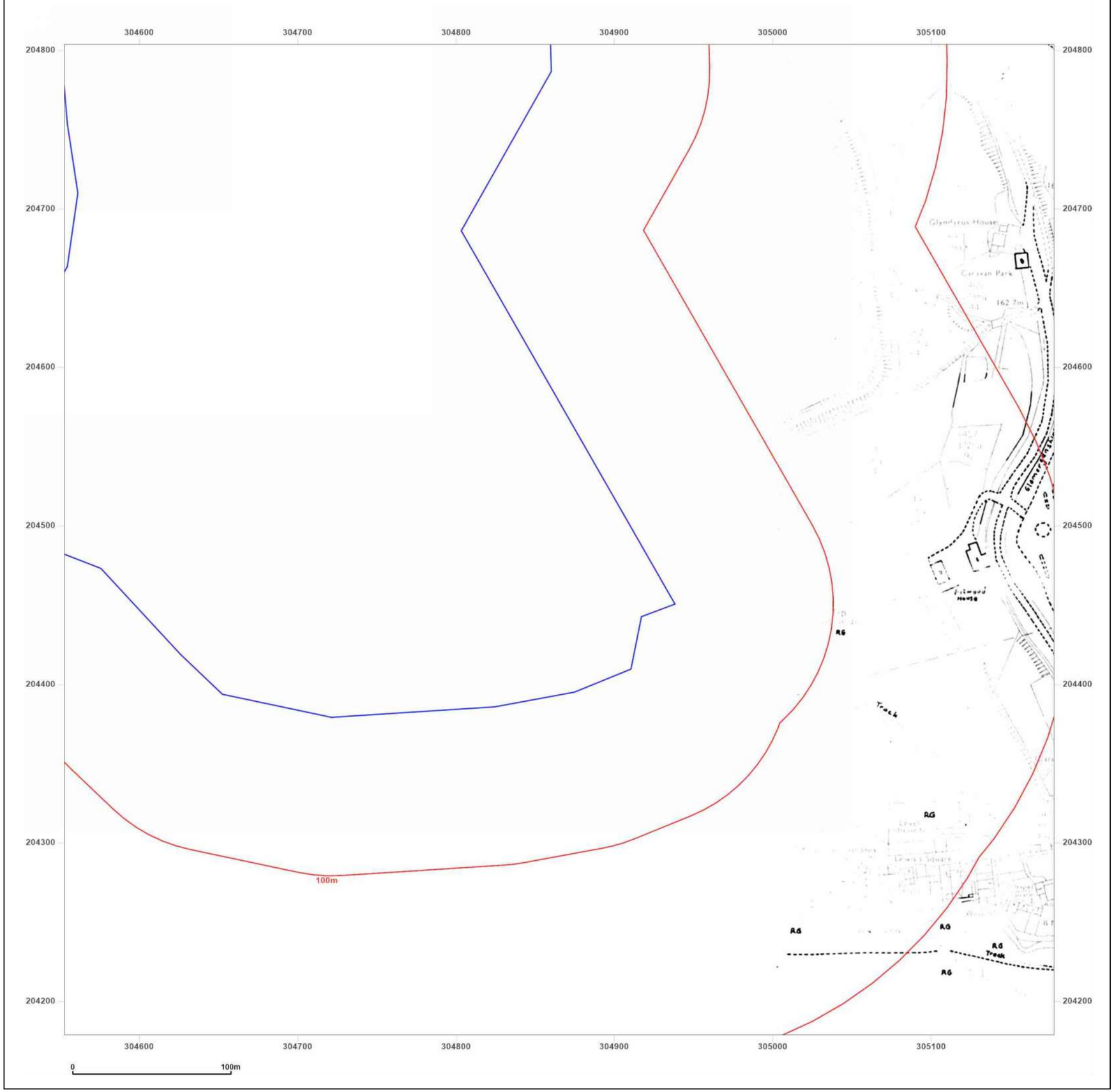
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_1
**Grid Ref:** 304865, 204491

**Map Name:** National Grid

**Map date:** **1984**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1984
Levelled 1964

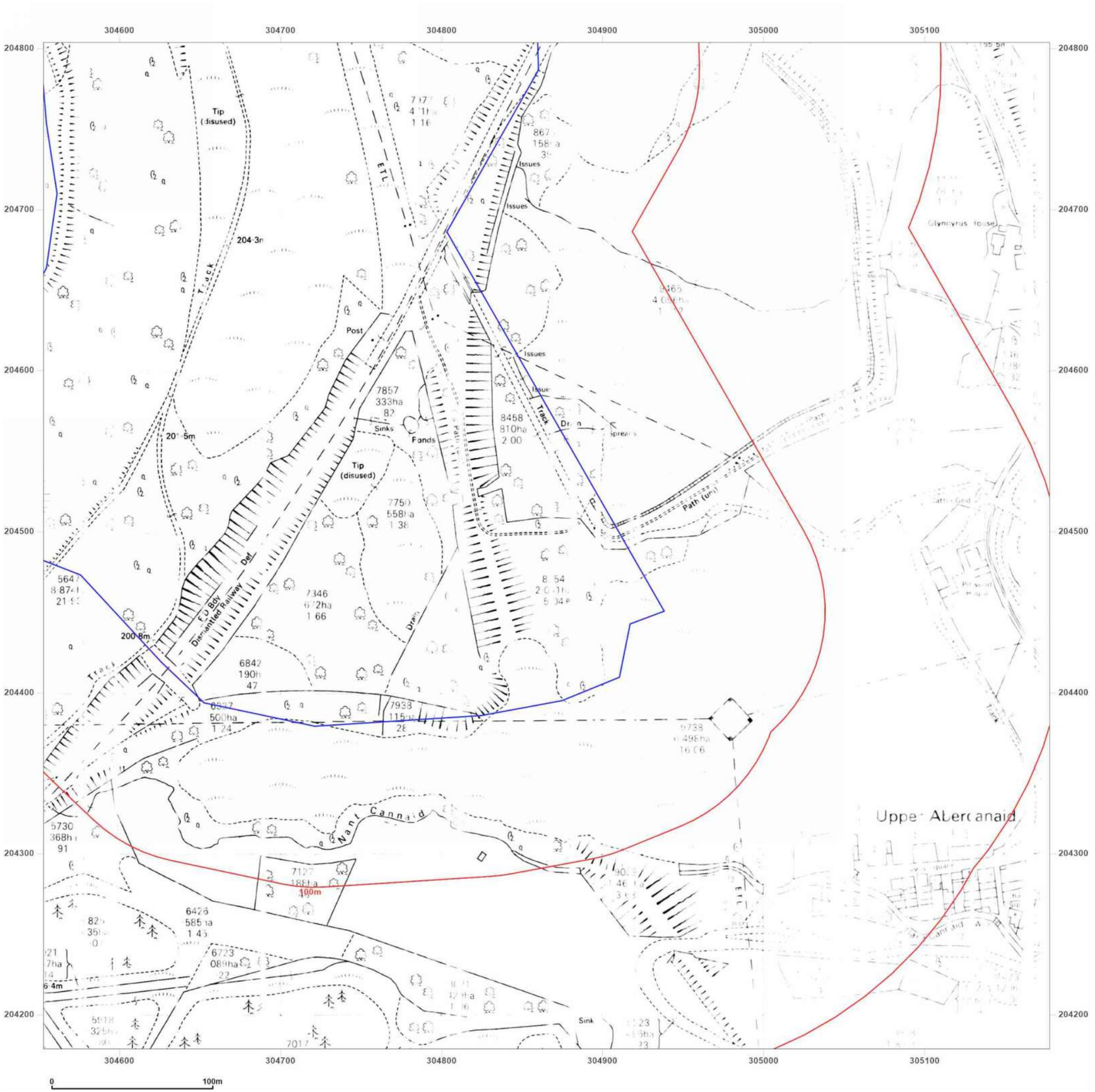
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_1
**Grid Ref:** 304865, 204491

**Map Name:** National Grid

**Map date:** **1986**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
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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

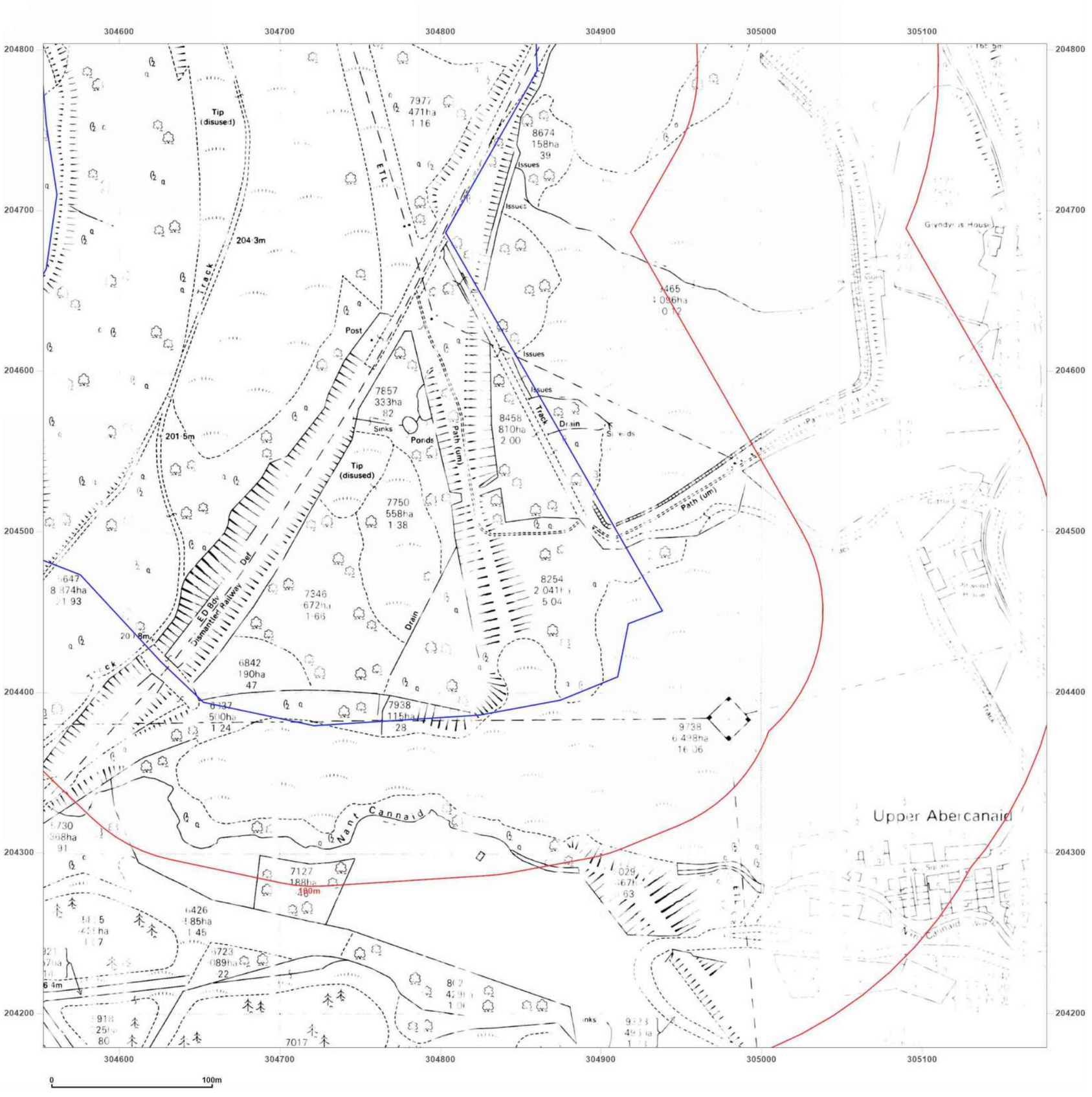
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_1
**Grid Ref:** 304865, 204491

**Map Name:** National Grid

**Map date:** **1986**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
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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

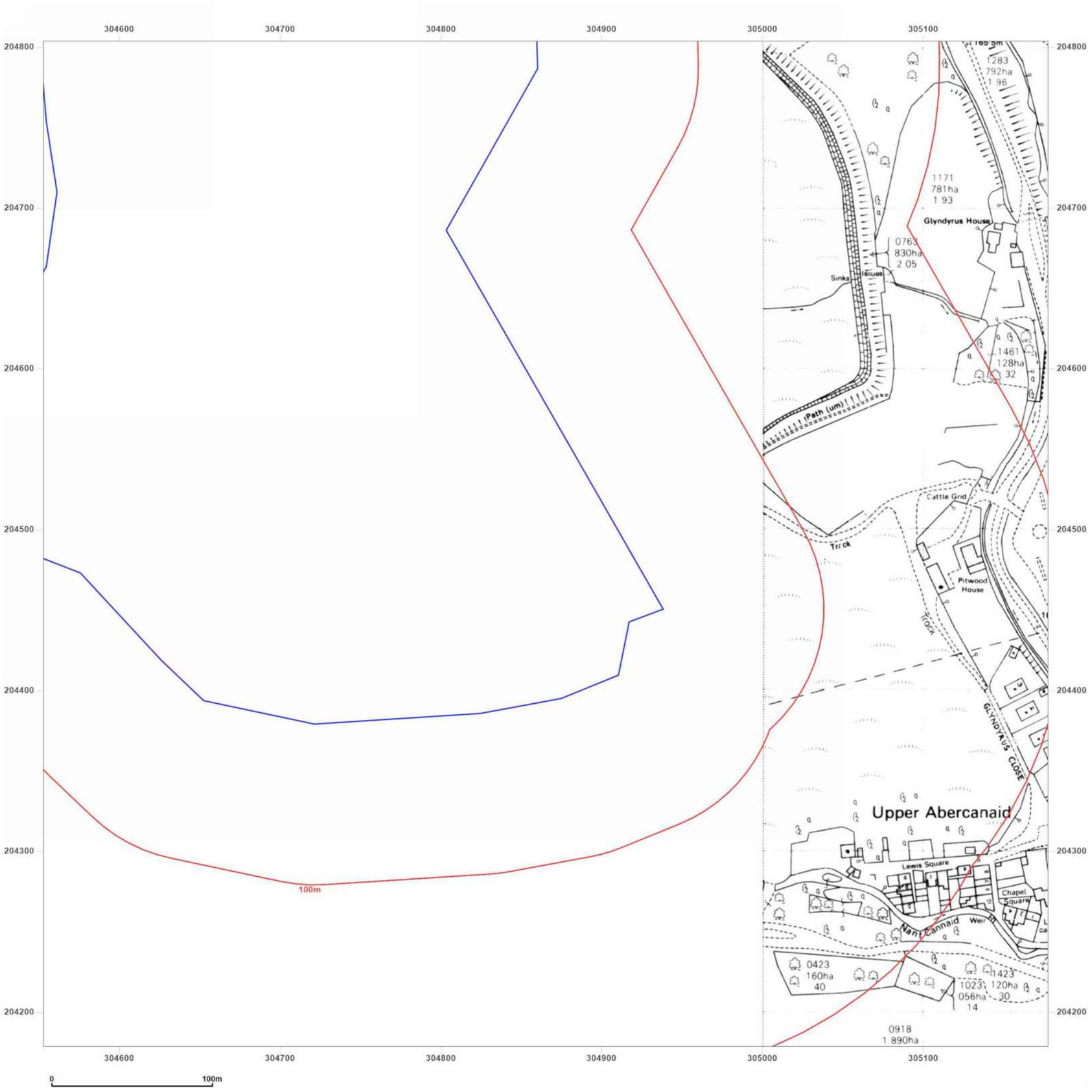
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_1
**Grid Ref:** 304865, 204491

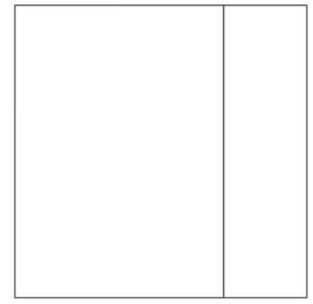
**Map Name:** National Grid

**Map date:** **1988**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
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Surveyed 1964
Revised 1984
Edition N/A
Copyright 1988
Levelled 1964

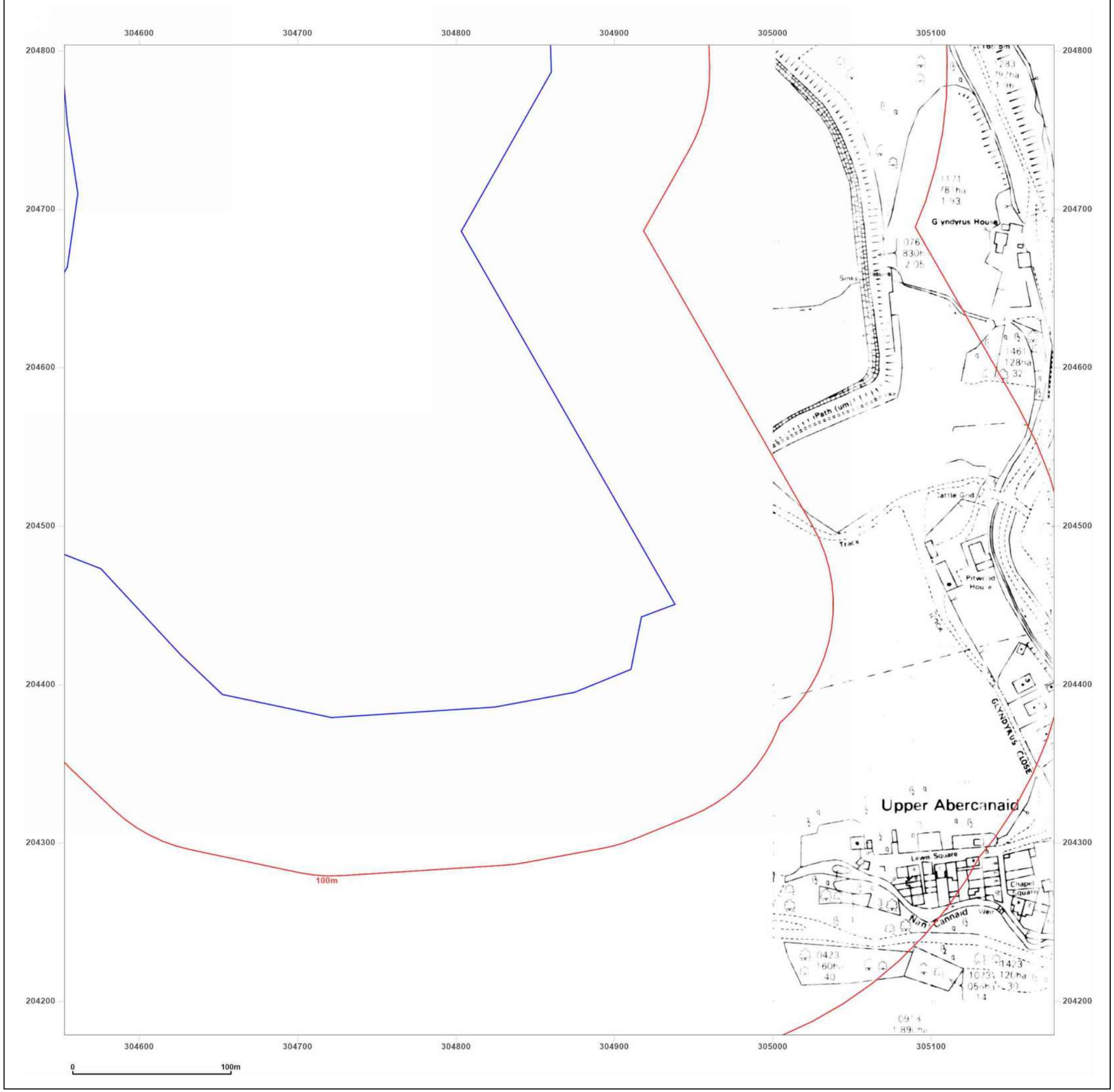
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_1
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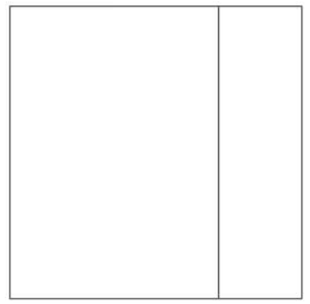
**Map Name:** National Grid

**Map date:** **1989**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S



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

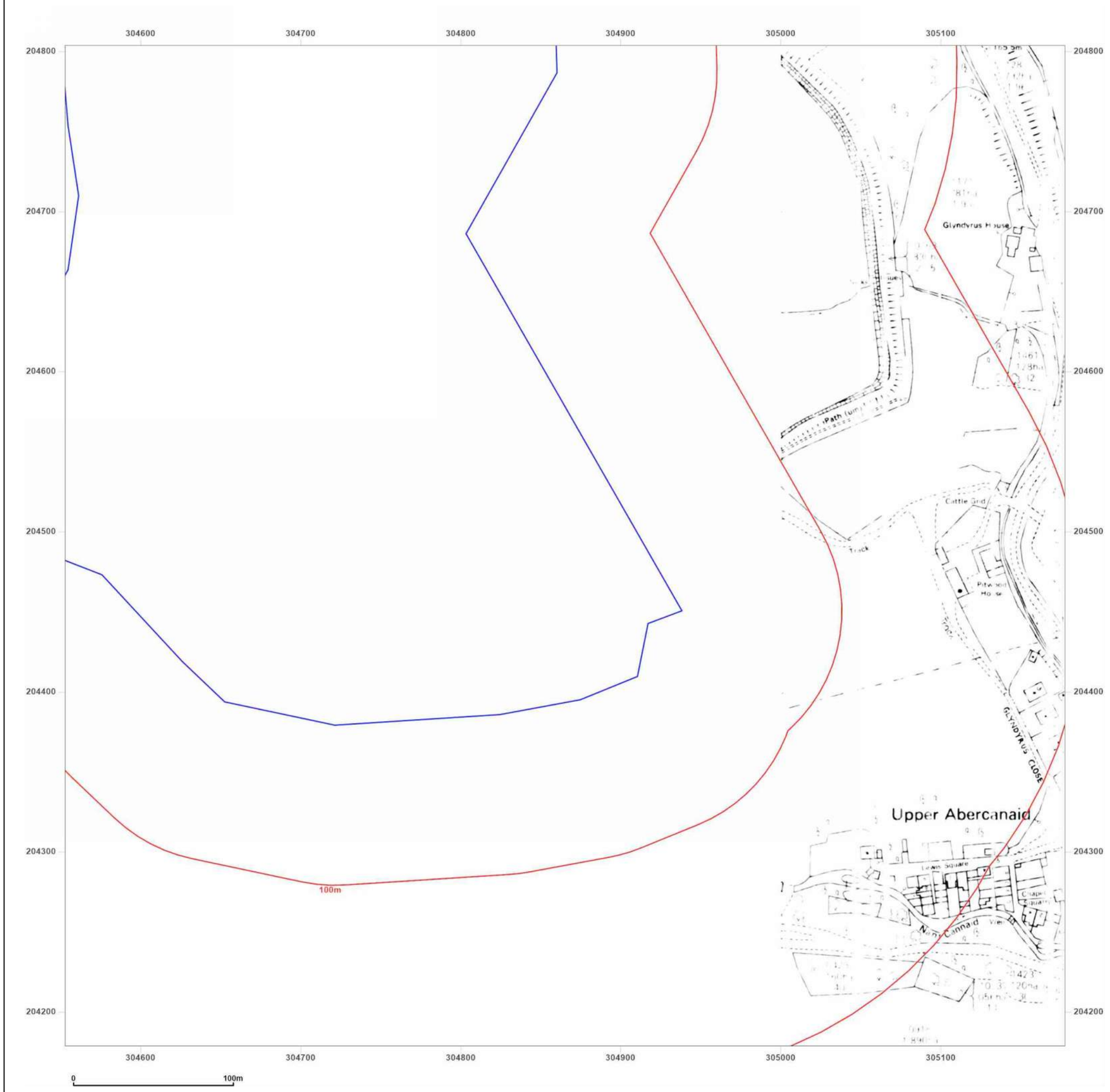
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_1
**Grid Ref:** 304865, 204491

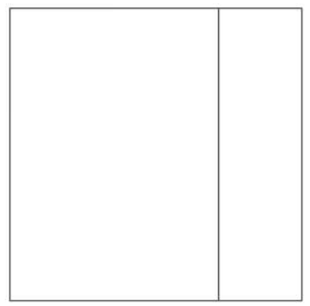
**Map Name:** National Grid

**Map date:** **1990**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
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S



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

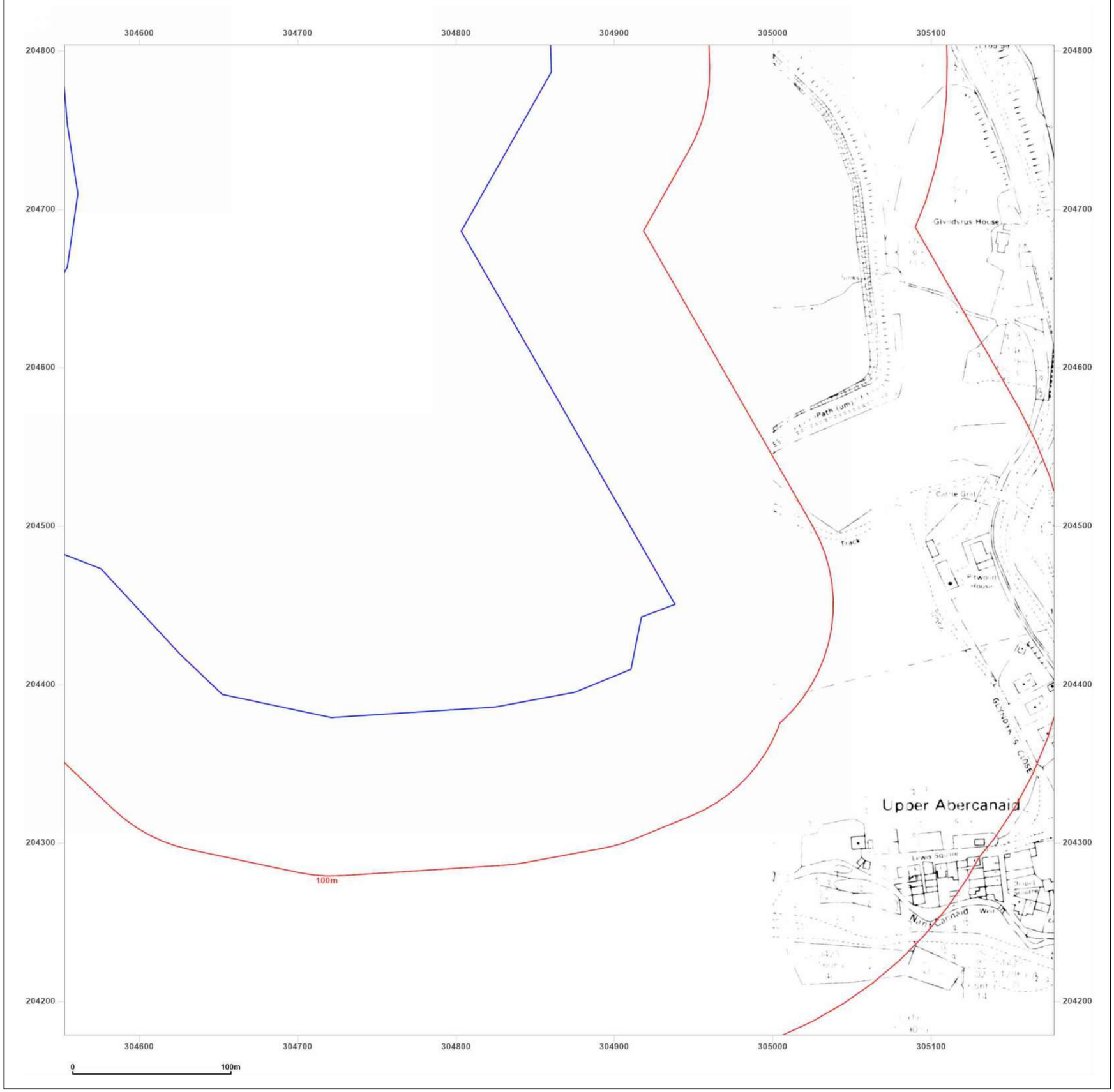
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_1
**Grid Ref:** 304865, 204491

**Map Name:** National Grid

**Map date:** **1991**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

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

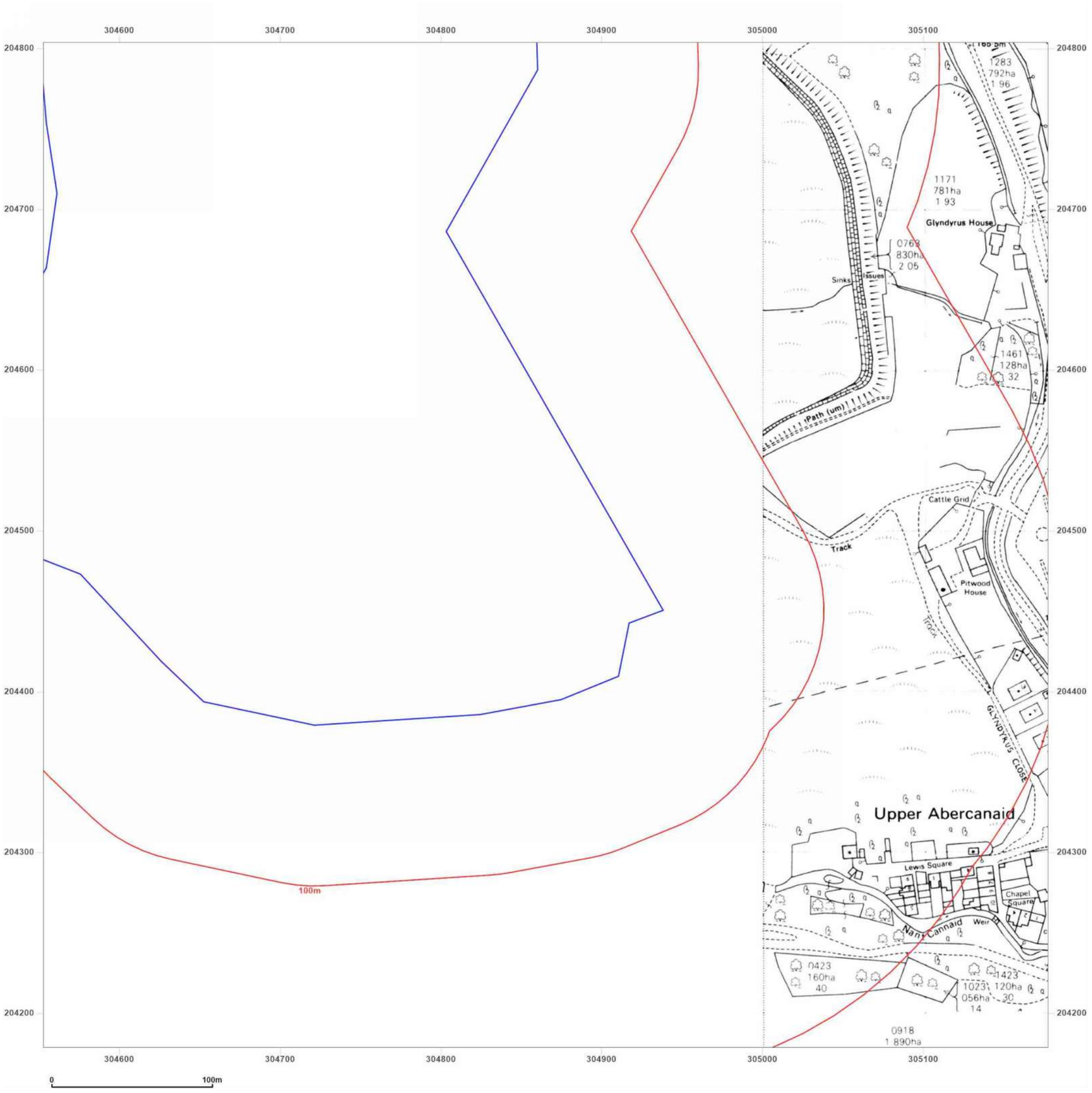
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_1
**Grid Ref:** 304865, 204491

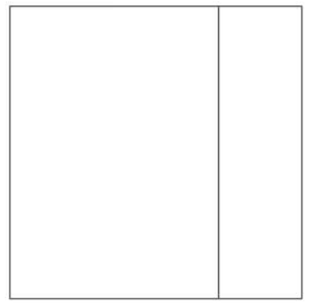
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**Map date:** **1992**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
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Surveyed 1964
Revised 1984
Edition N/A
Copyright 1992
Levelled 1964

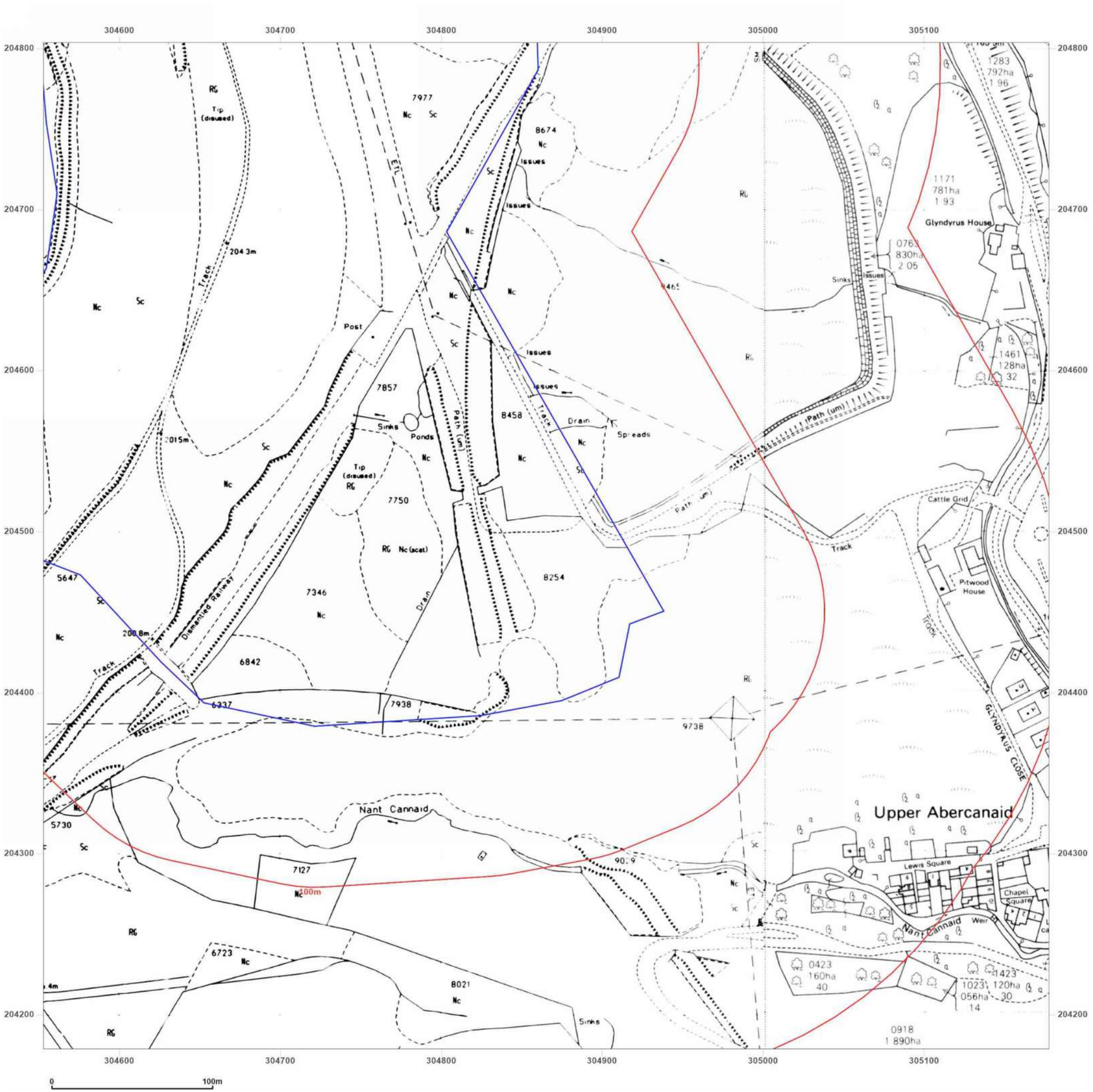
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**Site Details:**

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**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_1
**Grid Ref:** 304865, 204491

**Map Name:** National Grid

**Map date:** **1988-1993**

**Scale:** 1:2,500

**Printed at:** 1:2,500

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

Surveyed 1964
Revised 1984
Edition N/A
Copyright 1988
Levelled 1964

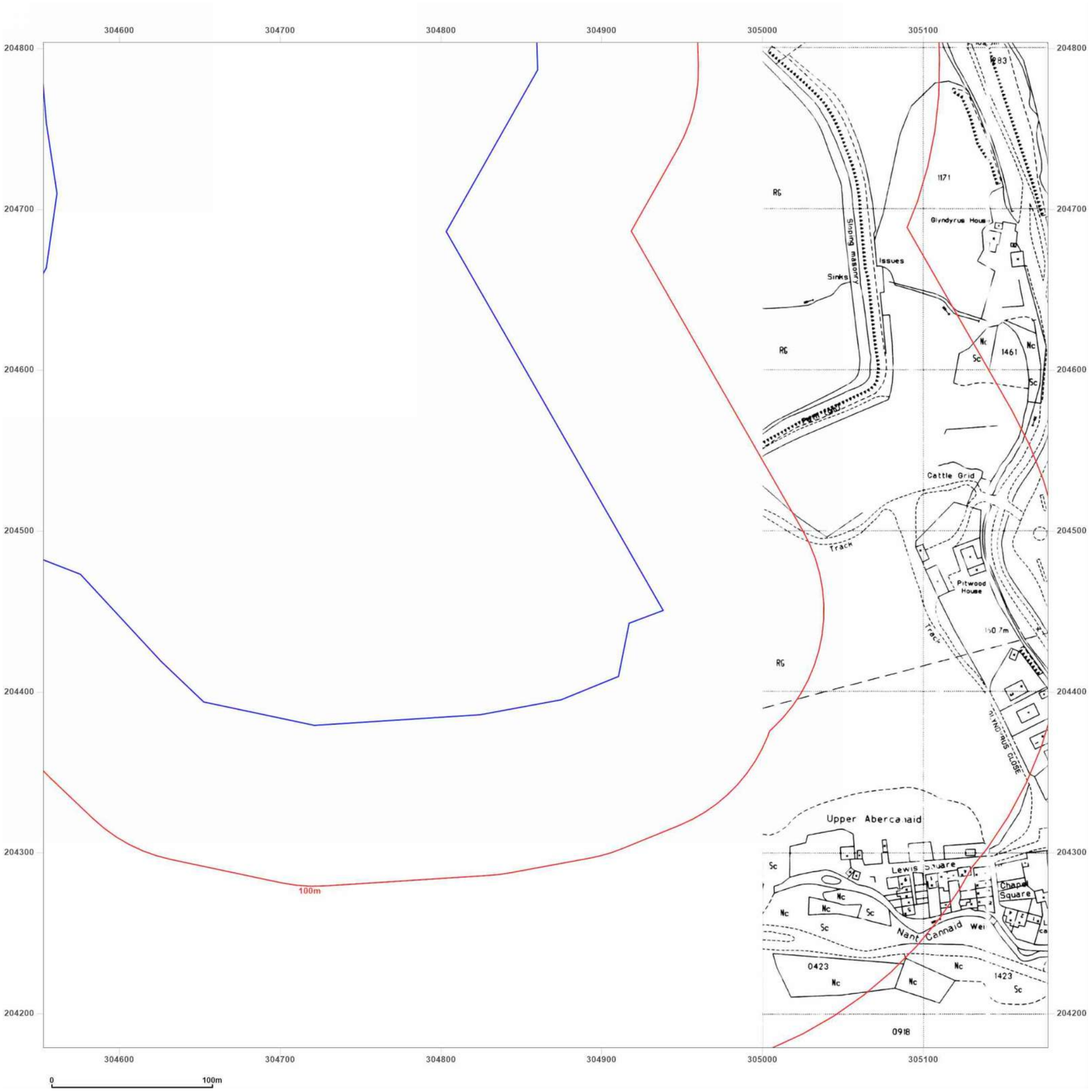
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_1
**Grid Ref:** 304865, 204491

**Map Name:** National Grid

**Map date:** **1993**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

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

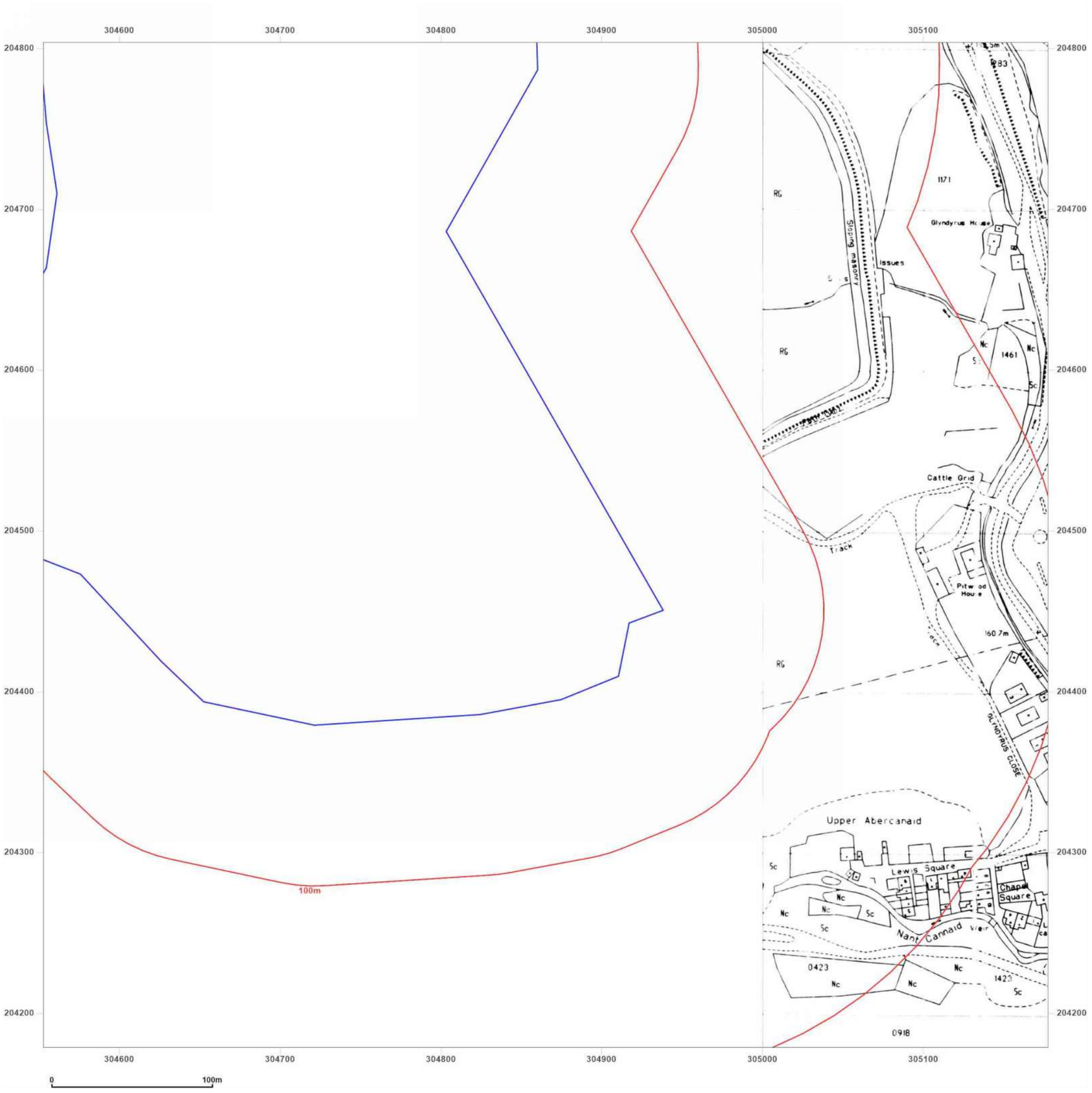
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_1
**Grid Ref:** 304865, 204491

**Map Name:** National Grid

**Map date:** **1993**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

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

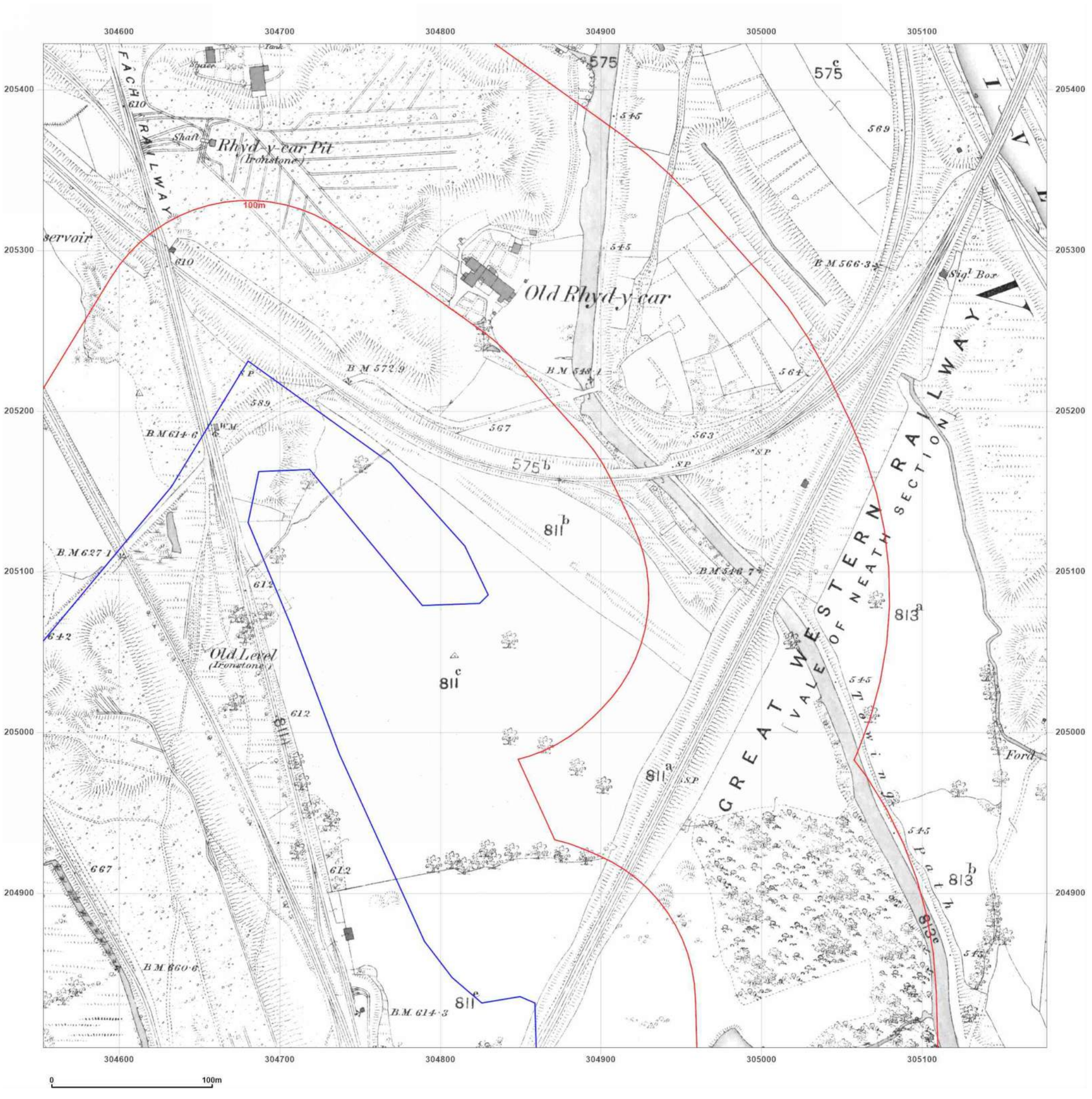
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_2
**Grid Ref:** 304865, 205116

**Map Name:** County Series

**Map date:** **1875**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

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

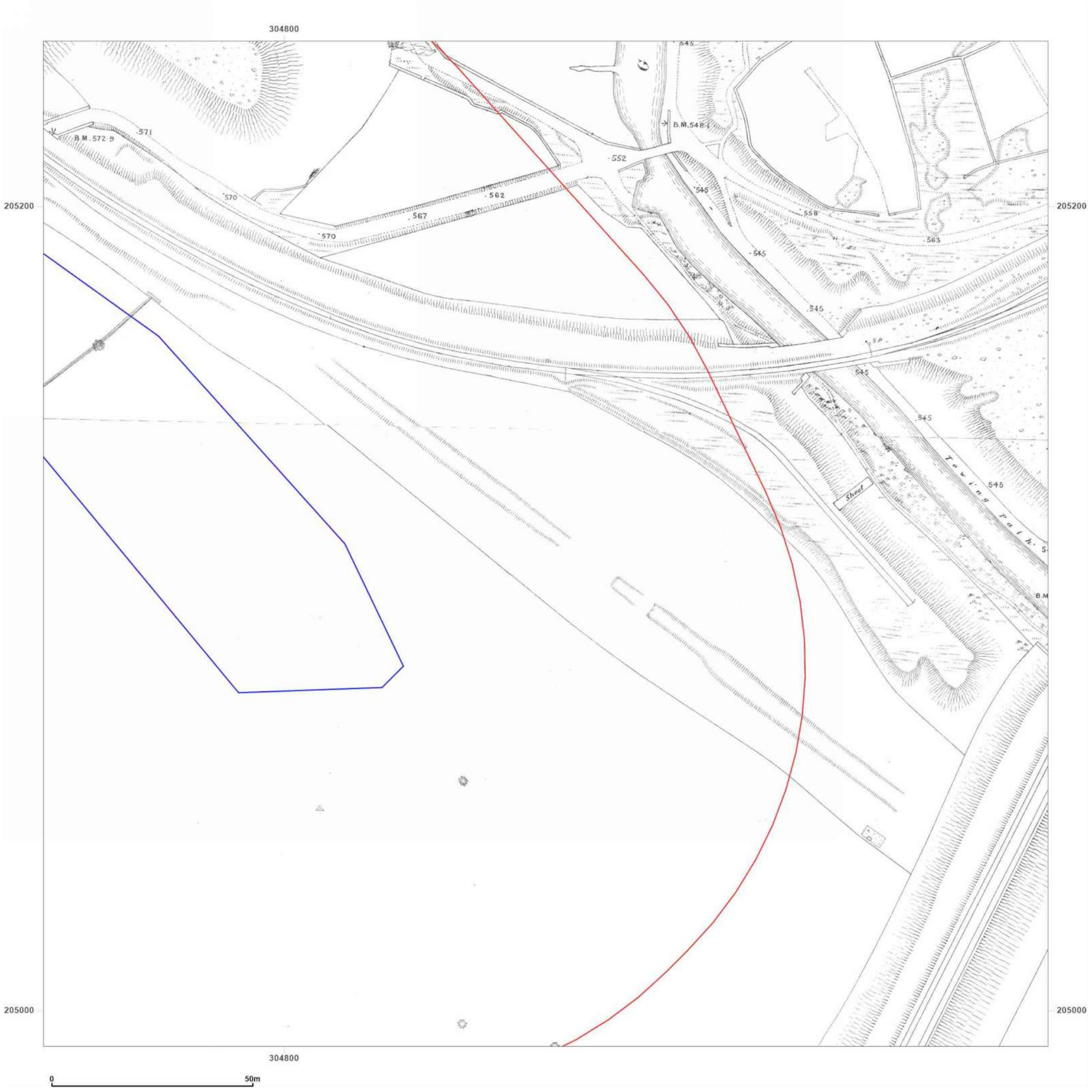
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_2
**Grid Ref:** 304865, 205116

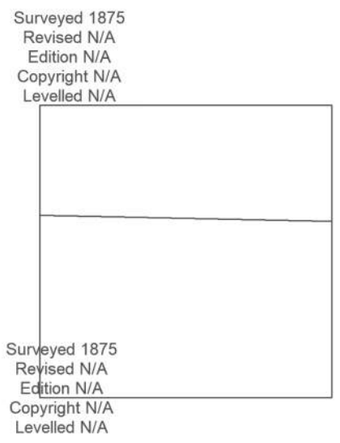
**Map Name:** County Series Town Plan

**Map date:** **1875**

**Scale:** 1:500

**Printed at:** 1:1,000

N
W E
S



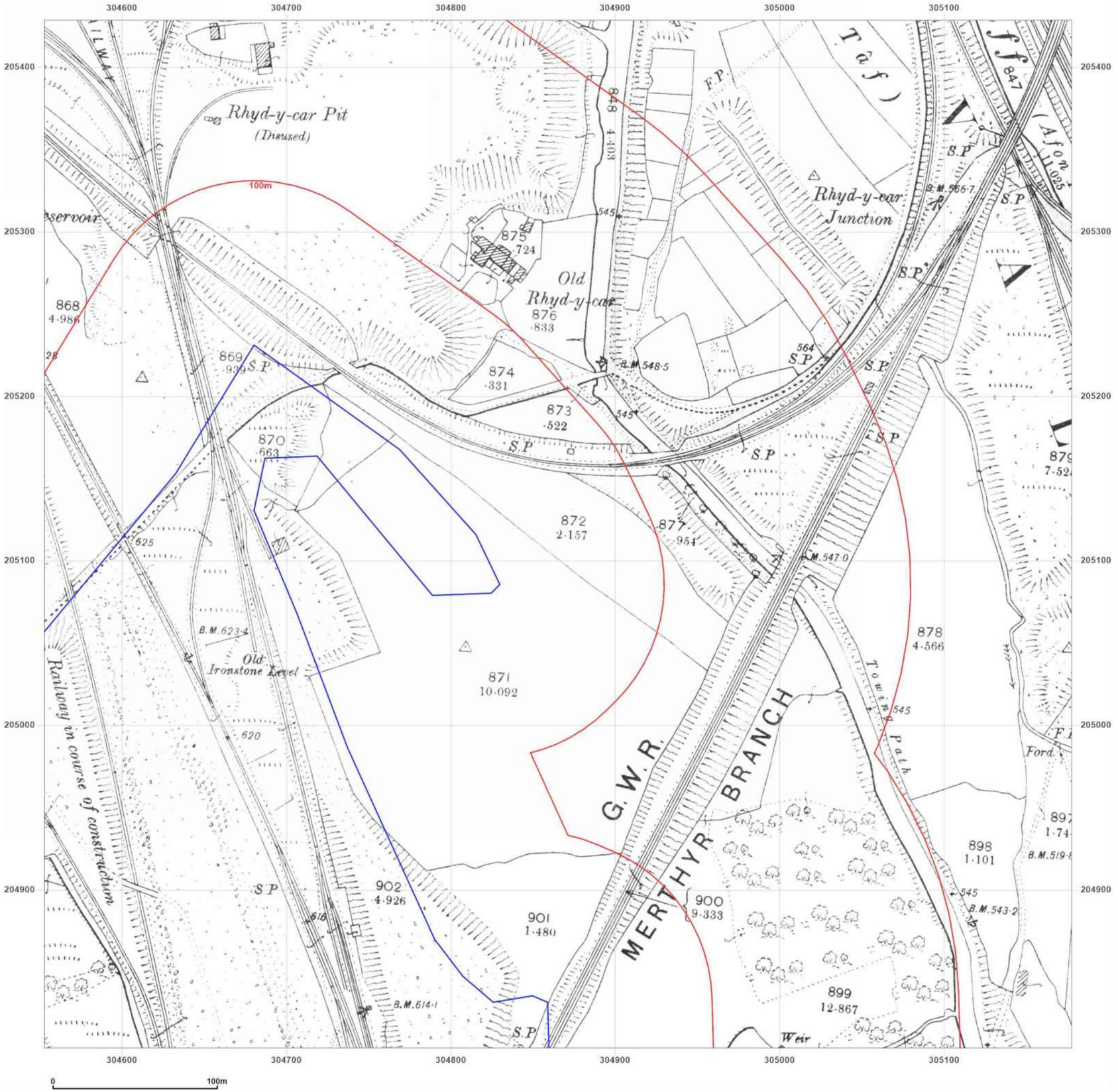

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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_2
**Grid Ref:** 304865, 205116

**Map Name:** County Series

**Map date:** **1900**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

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

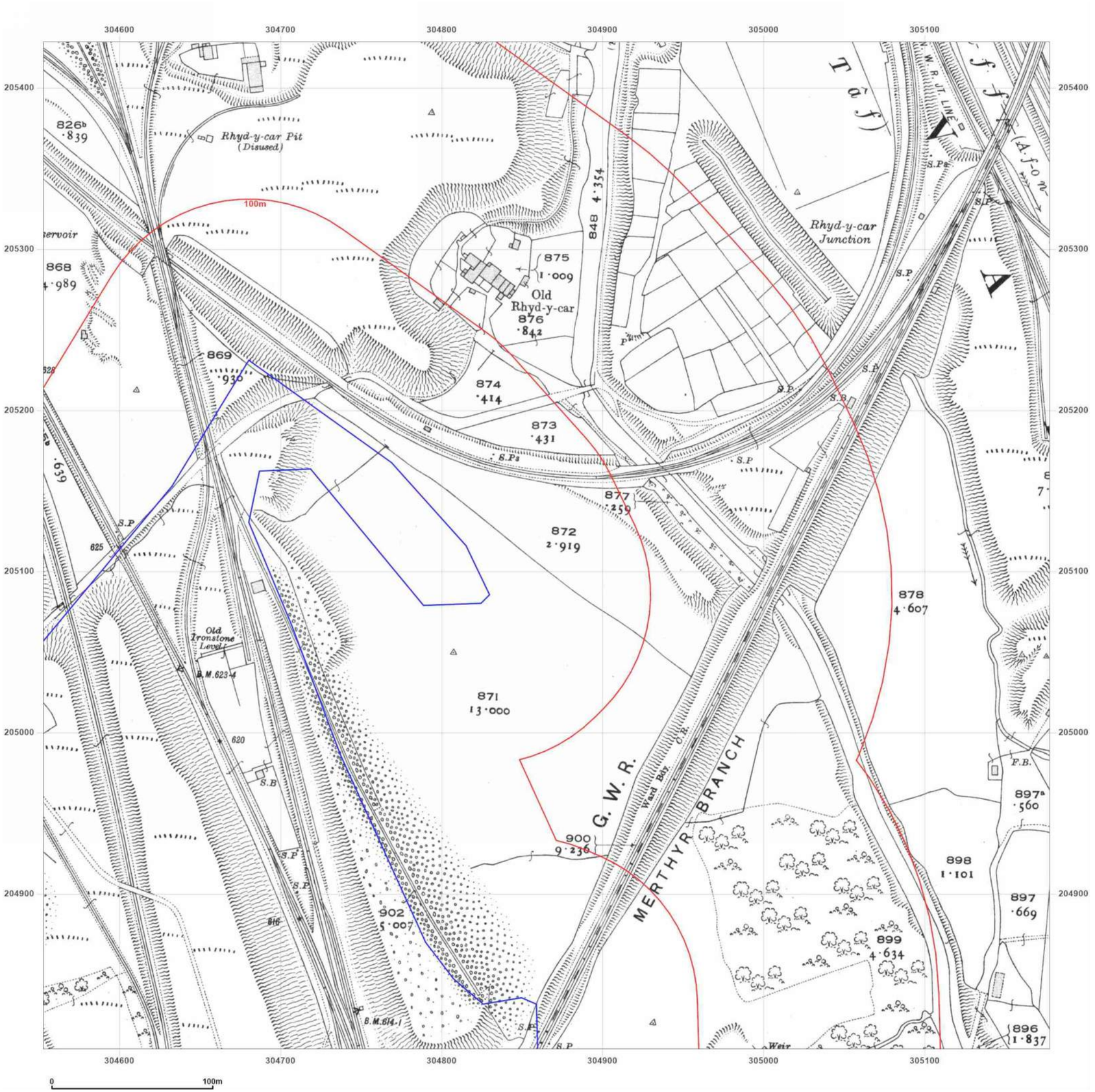
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_2
**Grid Ref:** 304865, 205116

**Map Name:** County Series

**Map date:** **1919**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

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

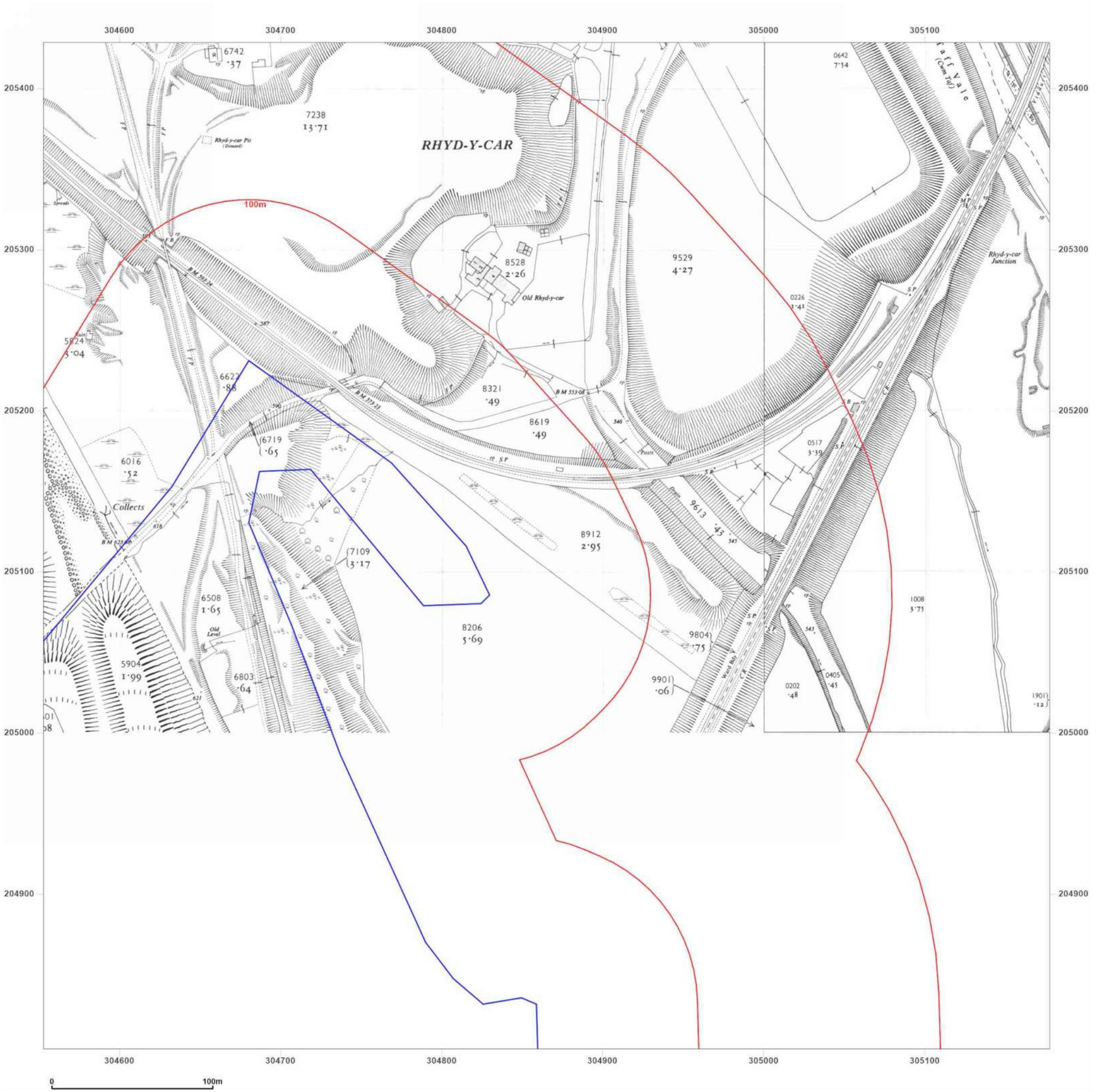
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_2
**Grid Ref:** 304865, 205116

**Map Name:** National Grid

**Map date:** **1958**

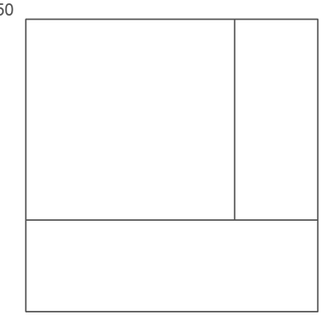
**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

Surveyed 1957
Revised 1957
Edition 1958
Copyright N/A
Levelled 1950

Surveyed 1956
Revised 1956
Edition 1958
Copyright N/A
Levelled 1950



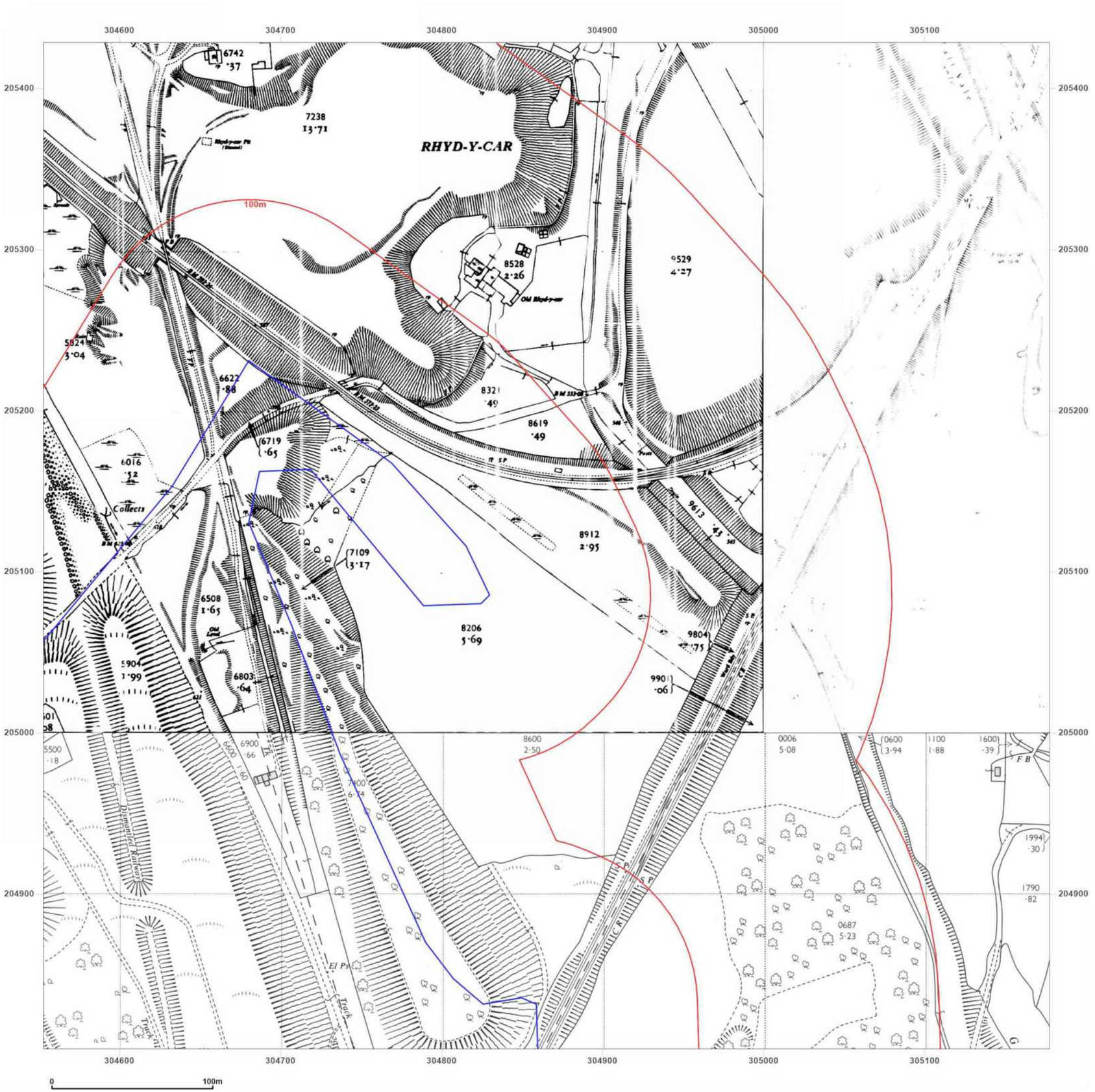
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**Site Details:**

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**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_2
**Grid Ref:** 304865, 205116

**Map Name:** National Grid

**Map date:** **1958-1962**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

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 1962
Revised 1962
Edition N/A
Copyright 1964
Levelled 1958

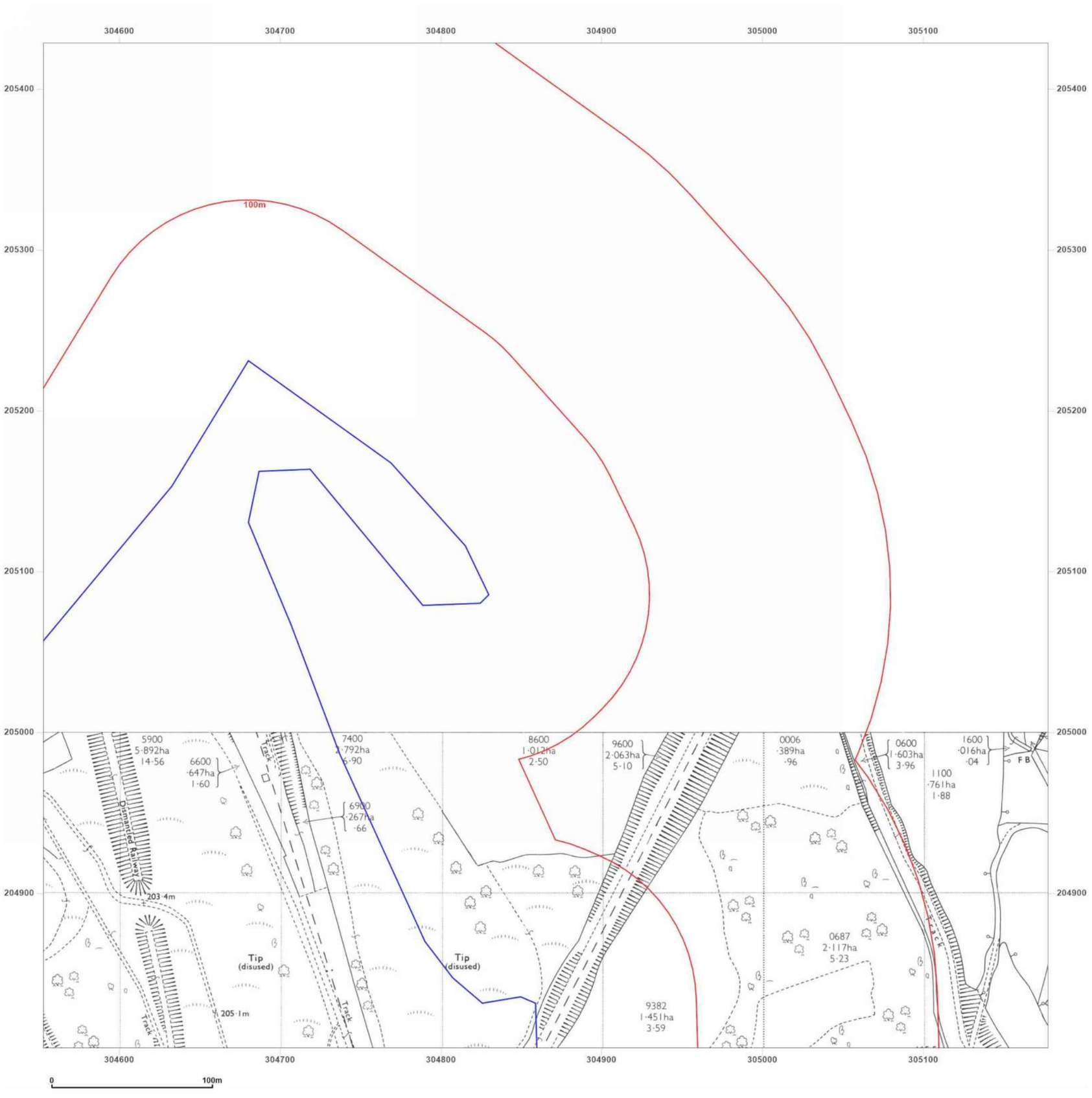
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**Site Details:**

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**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_2
**Grid Ref:** 304865, 205116

**Map Name:** National Grid

**Map date:** **1971**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1964

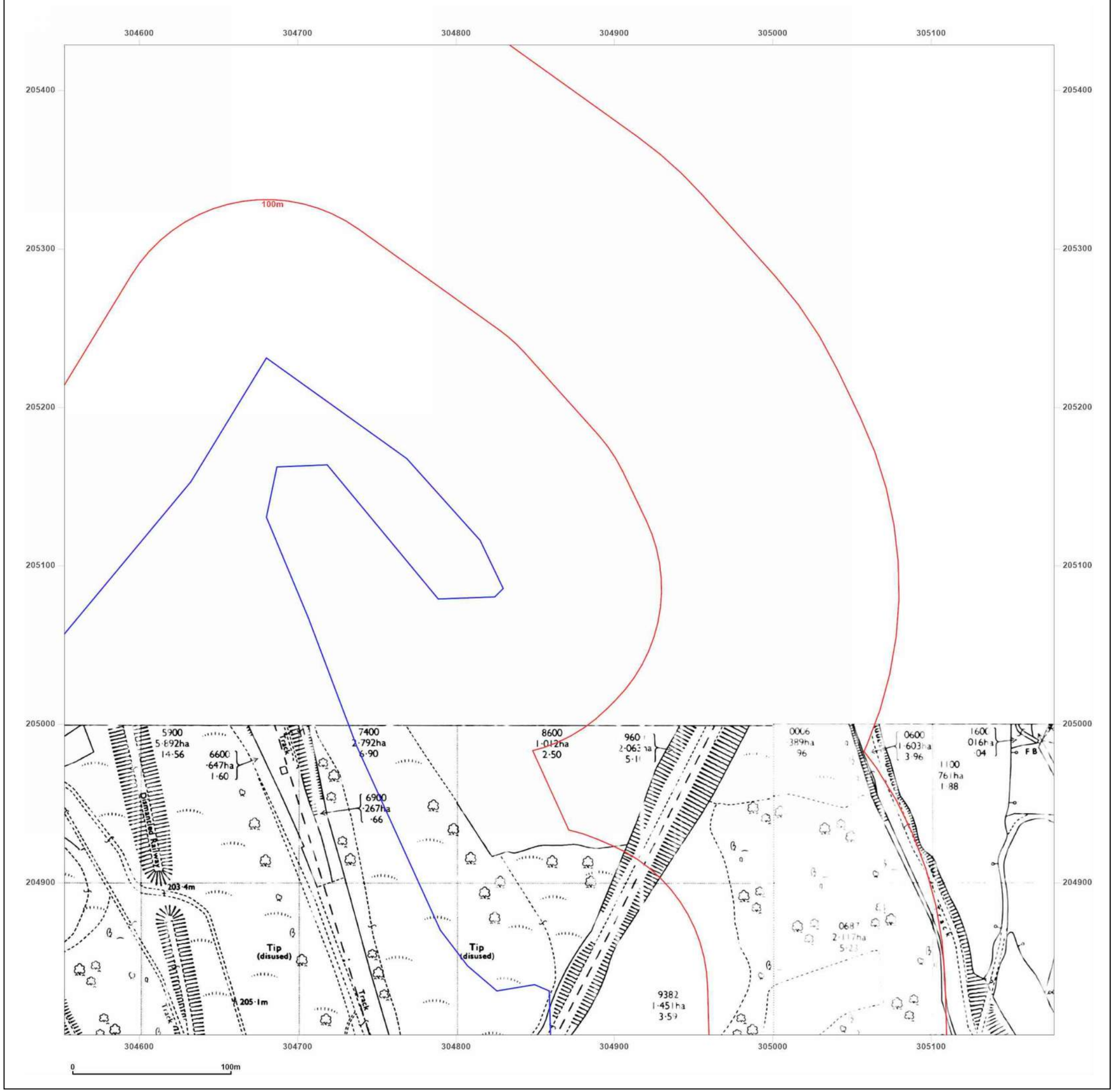
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**Site Details:**

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**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_2
**Grid Ref:** 304865, 205116

**Map Name:** National Grid

**Map date:** **1972**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

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

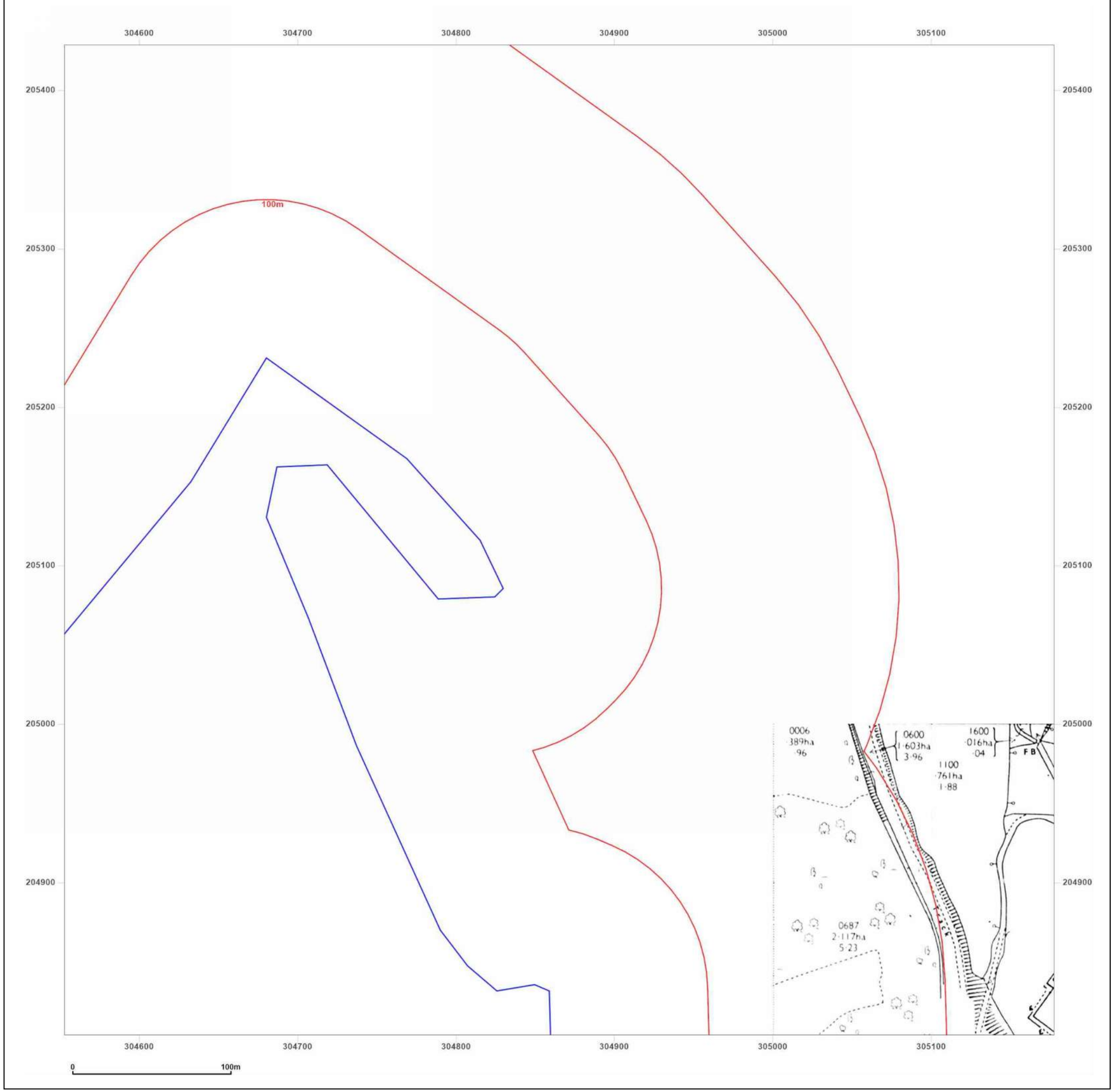
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**Site Details:**

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**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_2
**Grid Ref:** 304865, 205116

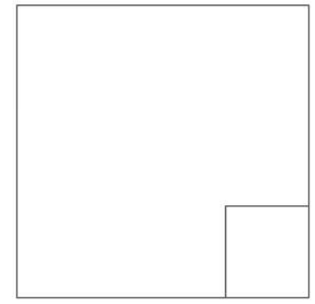
**Map Name:** National Grid

**Map date:** **1979**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
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Surveyed 1964
Revised 1979
Edition N/A
Copyright 1979
Levelled 1964

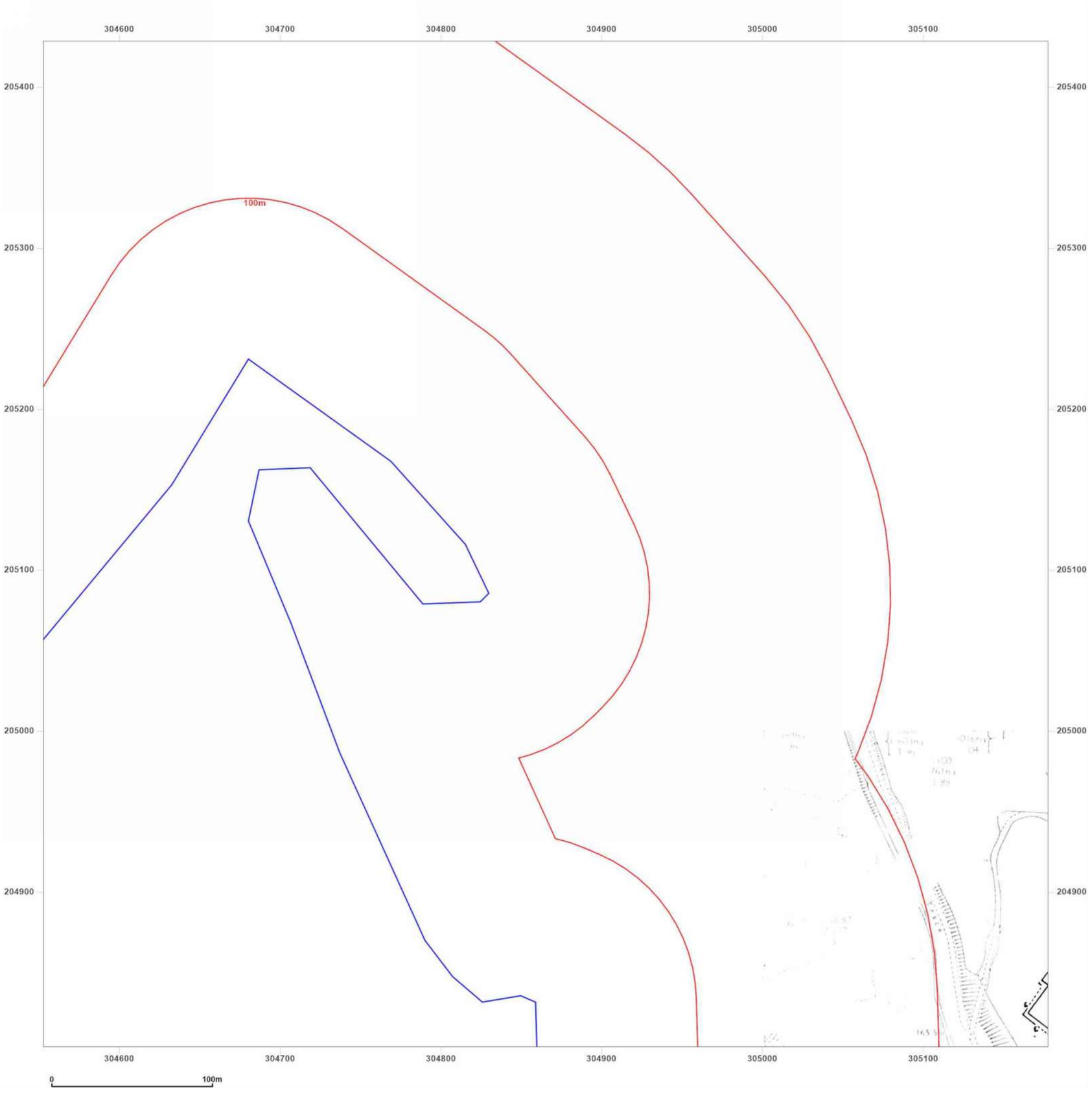
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_2
**Grid Ref:** 304865, 205116

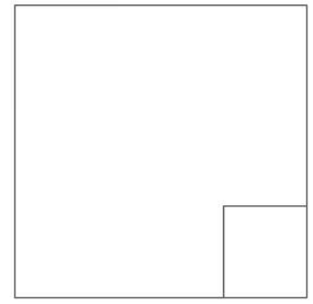
**Map Name:** National Grid

**Map date:** **1979**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1979
Levelled 1964

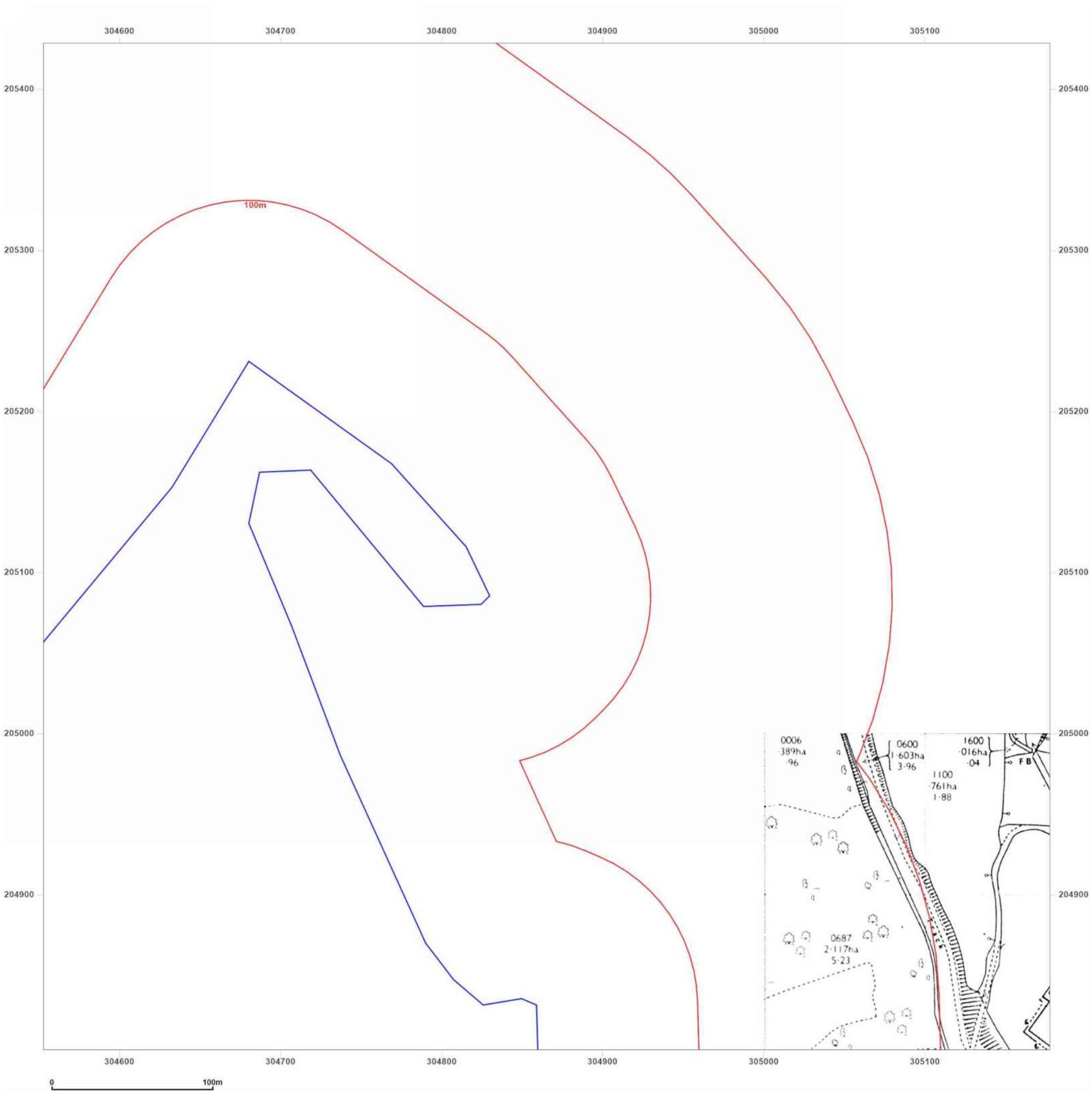
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_2
**Grid Ref:** 304865, 205116

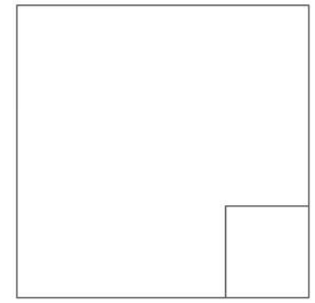
**Map Name:** National Grid

**Map date:** **1979**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
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Surveyed 1964
Revised 1979
Edition N/A
Copyright 1979
Levelled 1964

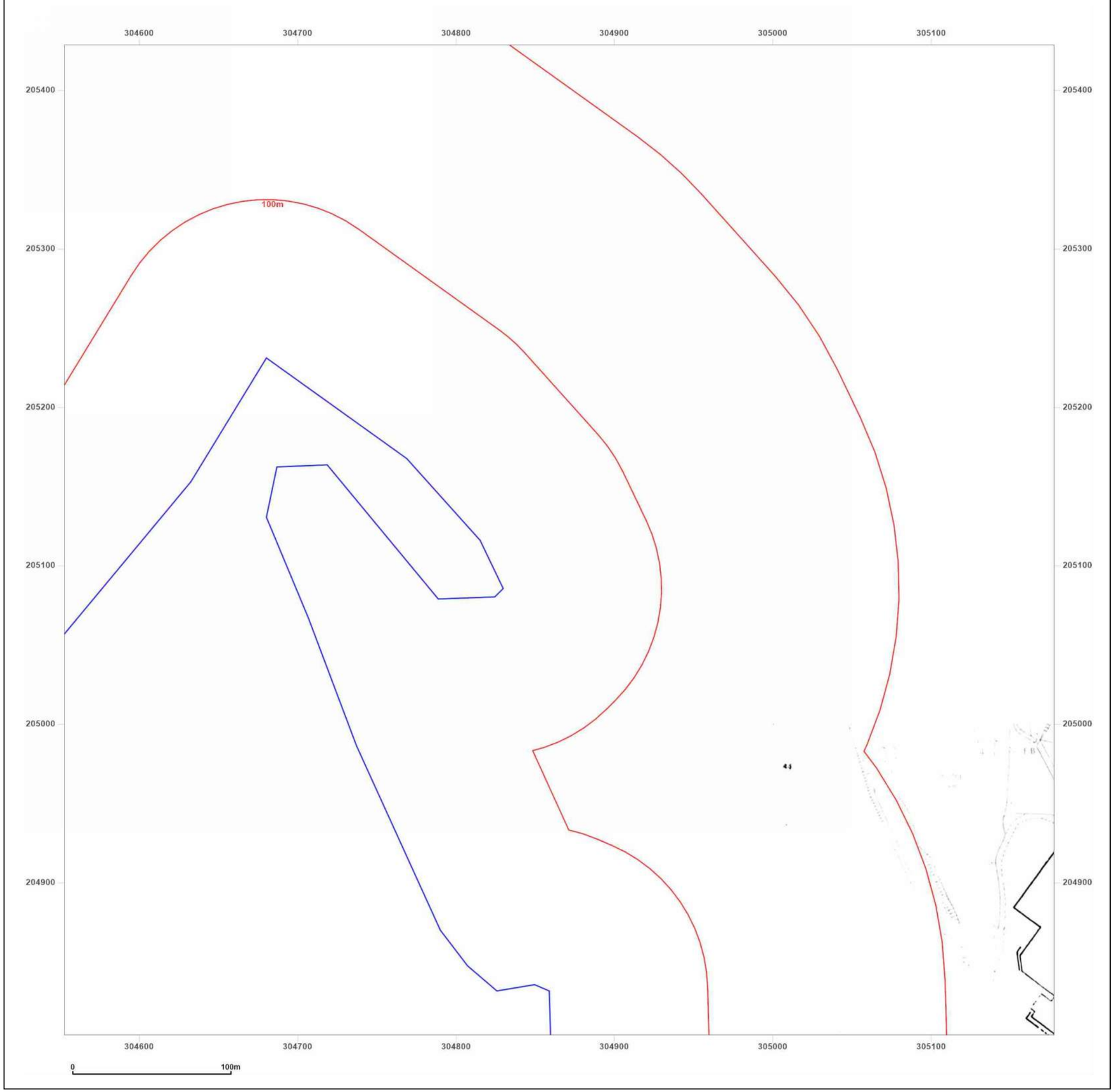
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_2
**Grid Ref:** 304865, 205116

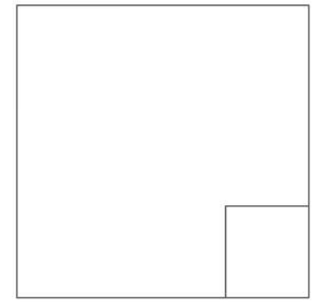
**Map Name:** National Grid

**Map date:** **1984**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1984
Levelled 1964

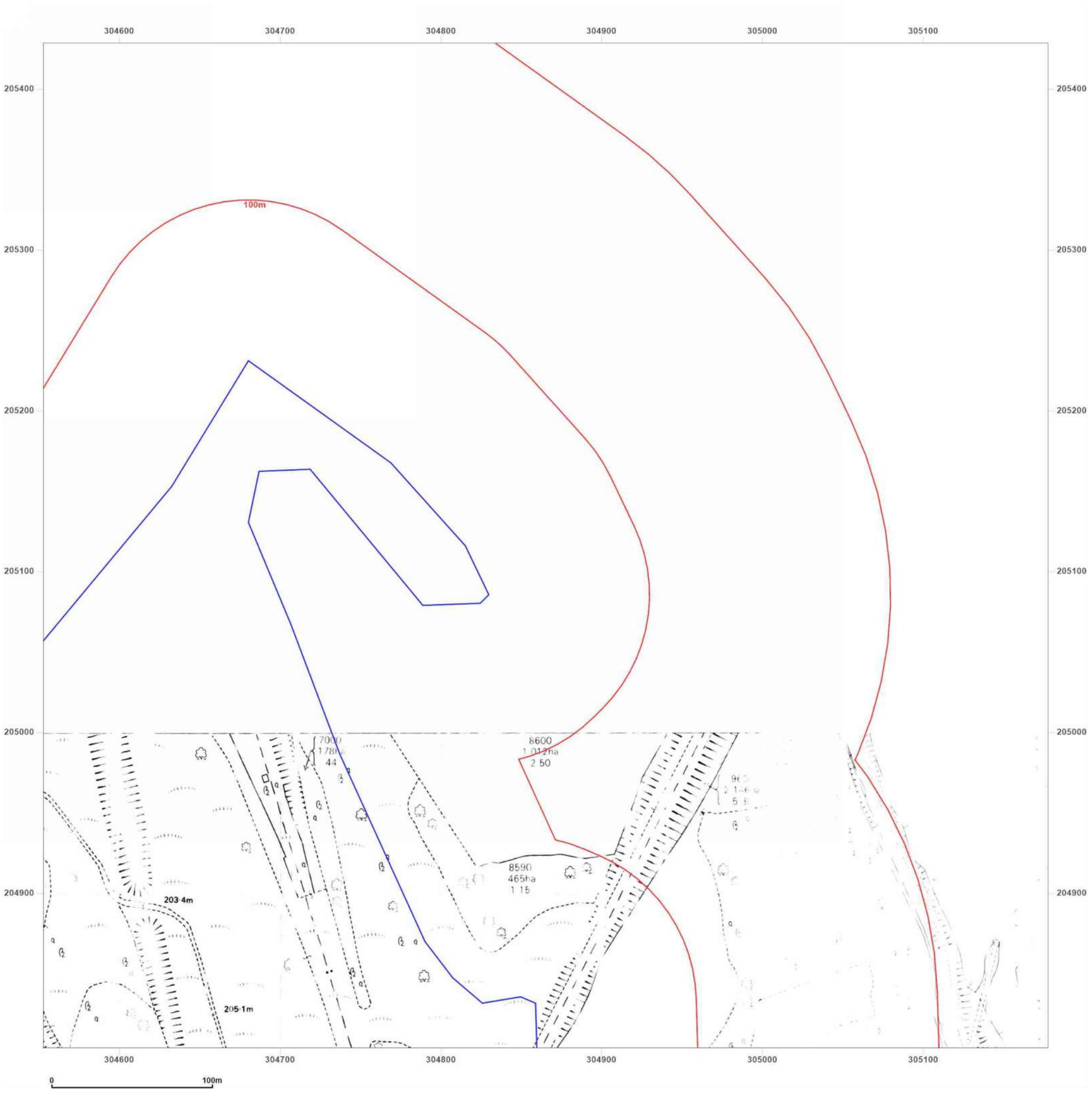
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**Site Details:**

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**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_2
**Grid Ref:** 304865, 205116

**Map Name:** National Grid

**Map date:** **1986**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
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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

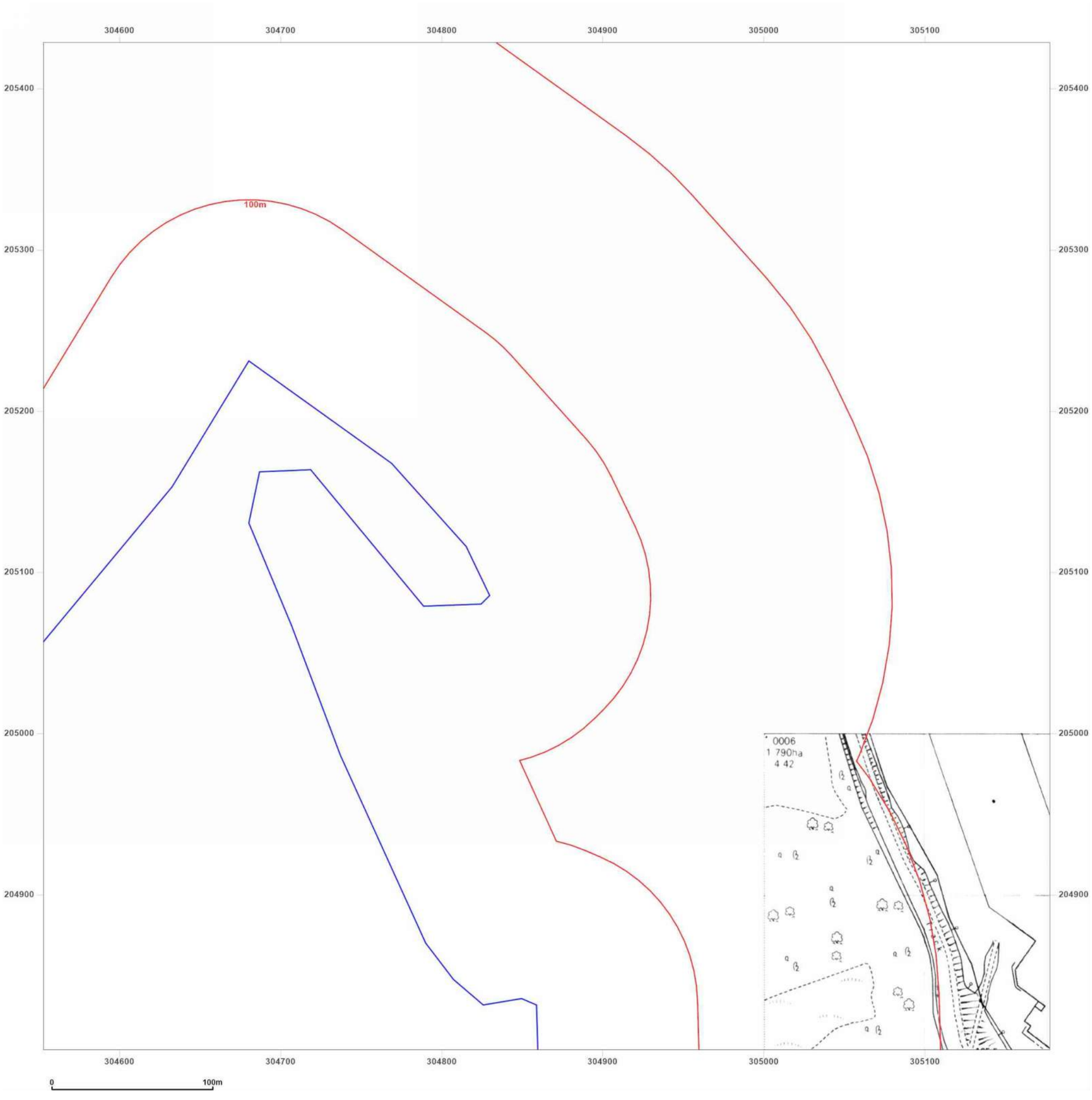
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_2
**Grid Ref:** 304865, 205116

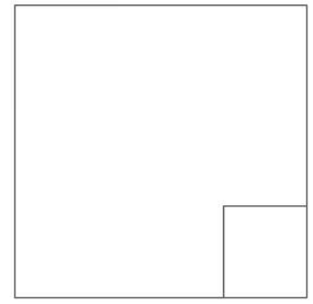
**Map Name:** National Grid

**Map date:** **1988**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S



Surveyed 1964
Revised 1984
Edition N/A
Copyright 1988
Levelled 1964

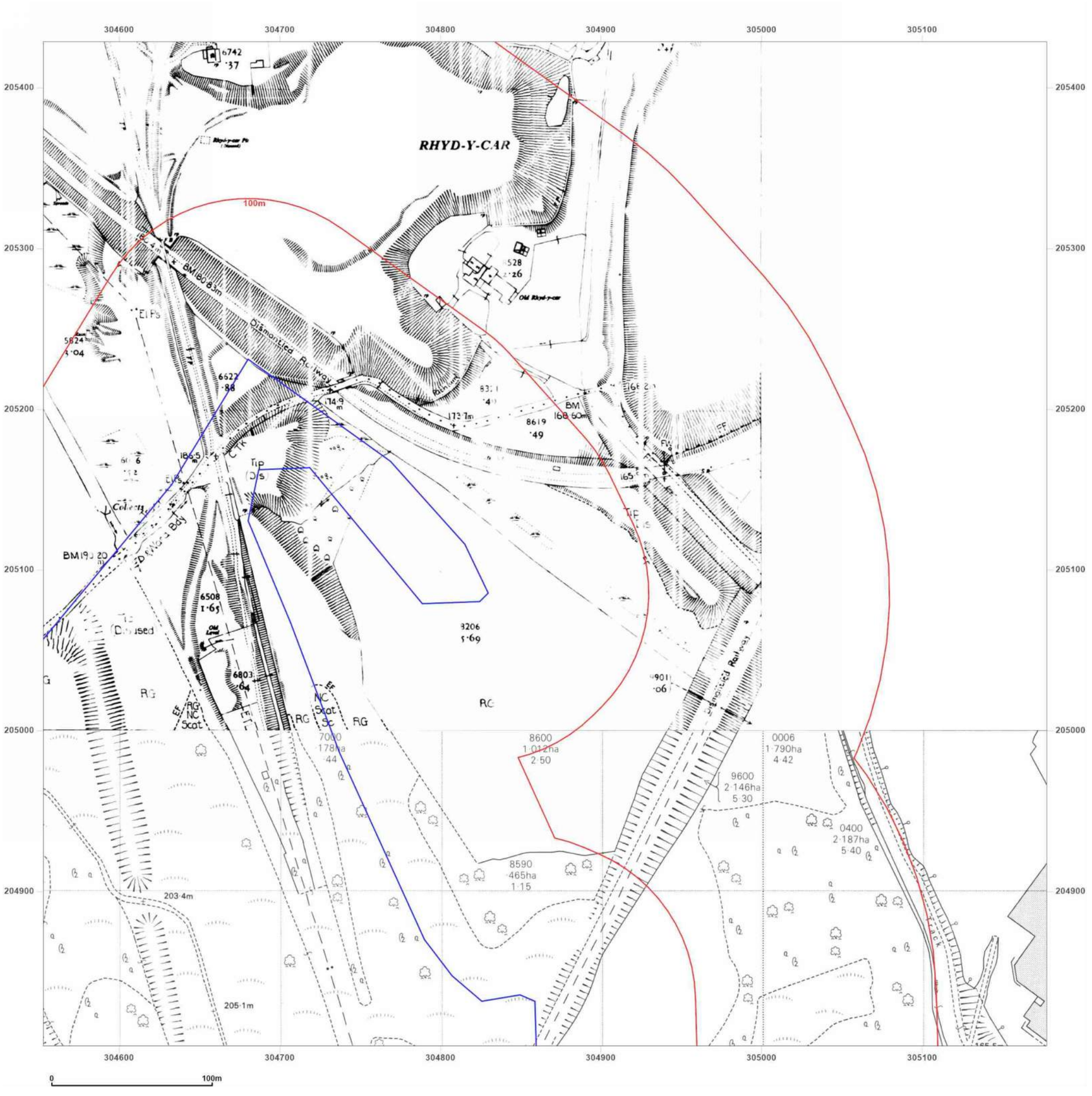
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Groundsure INSIGHTS

**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_2
**Grid Ref:** 304865, 205116

**Map Name:** National Grid

**Map date:** **1984-1989**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

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

Surveyed 1984
Revised 1984
Edition N/A
Copyright 1986
Levelled 1964

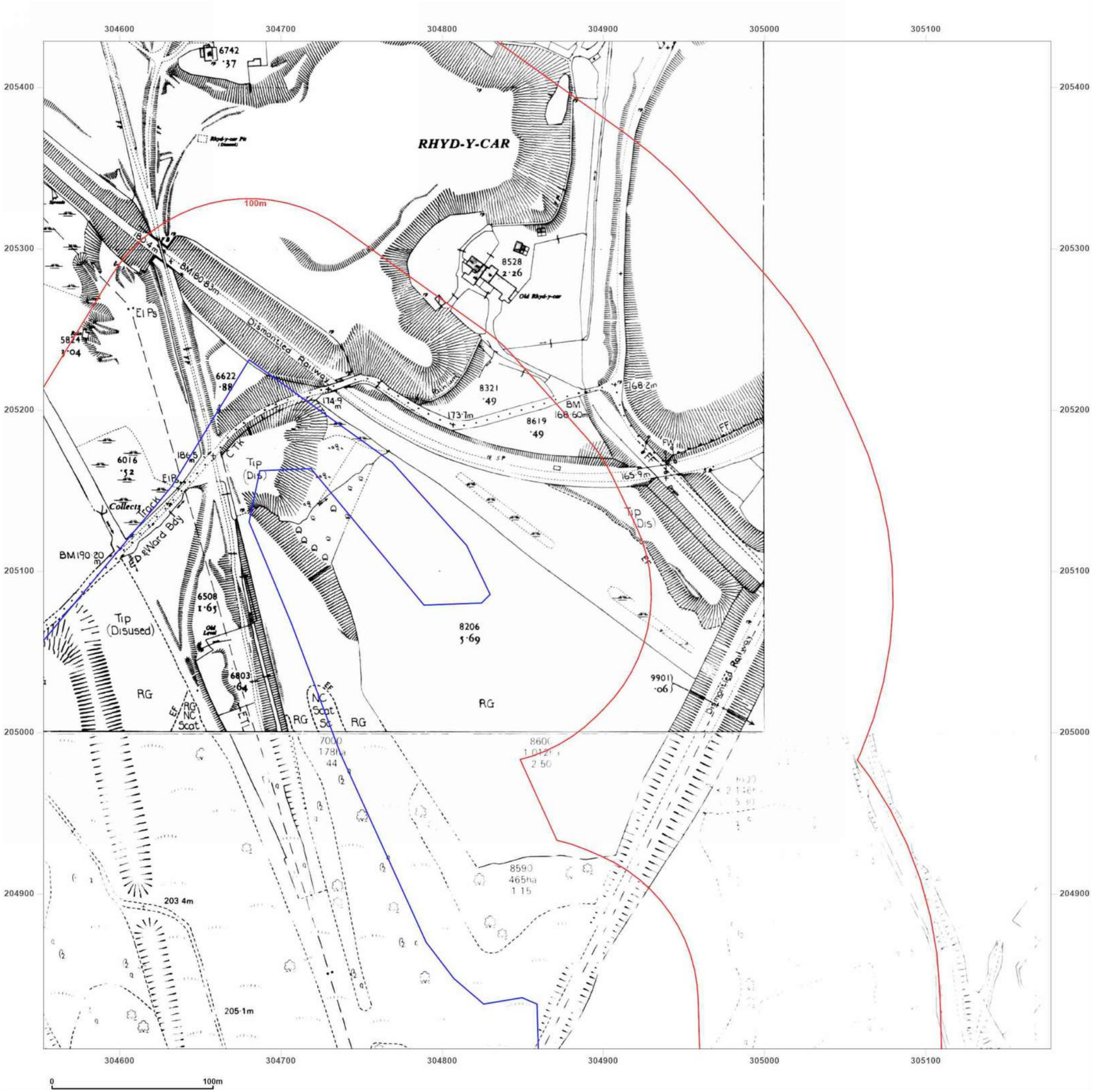
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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_2
**Grid Ref:** 304865, 205116

**Map Name:** National Grid

**Map date:** **1986-1989**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

Surveyed 1964
Revised 1989
Edition N/A
Copyright 1989
Levelled 1964

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

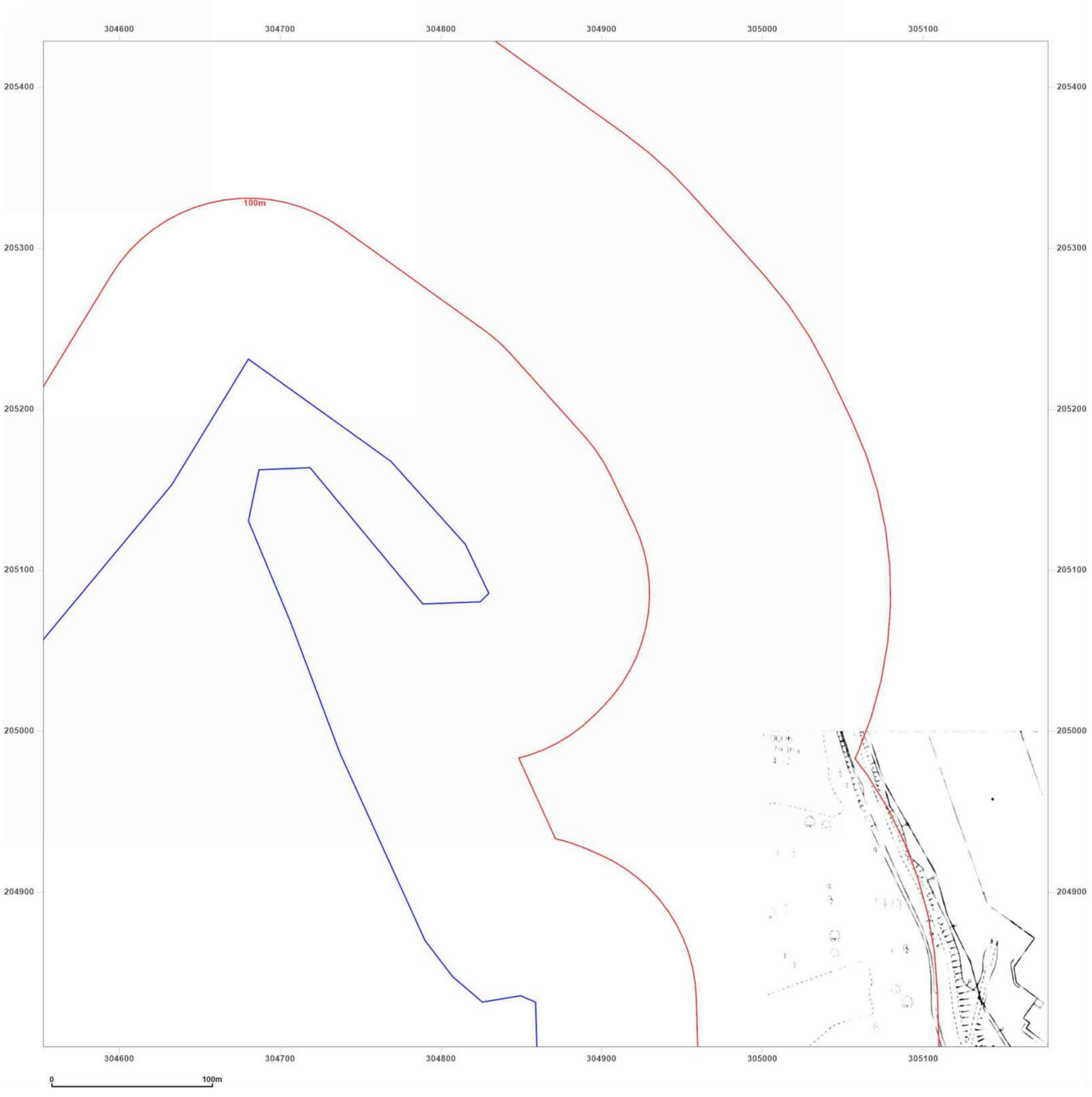
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Groundsure INSIGHTS

**Site Details:**

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**Client Ref:** 7002094_-_Rhyd_y_Car_
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**Grid Ref:** 304865, 205116

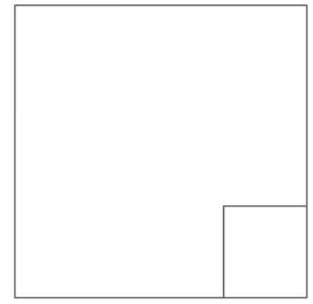
**Map Name:** National Grid

**Map date:** **1989**

**Scale:** 1:2,500

**Printed at:** 1:2,500

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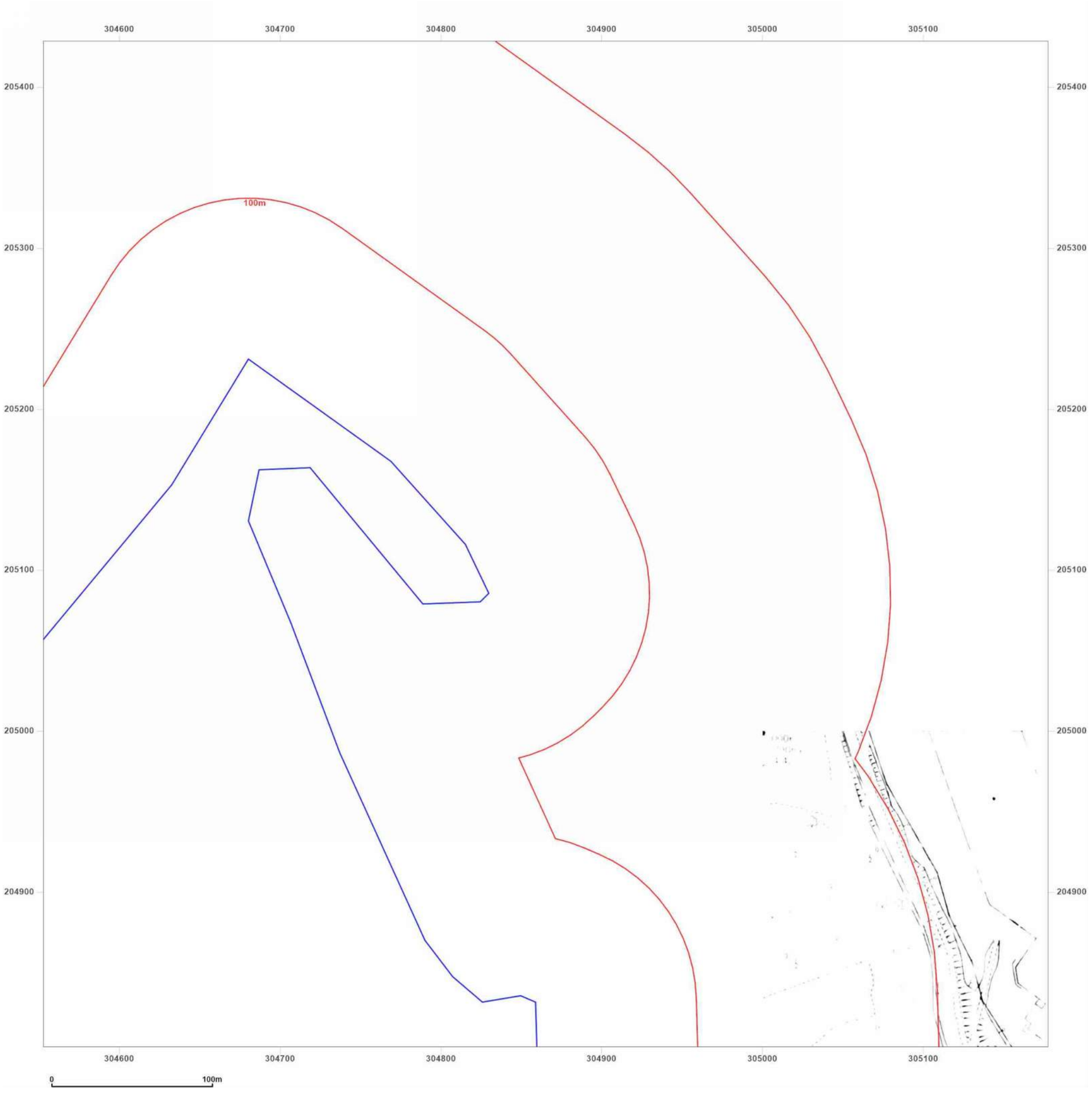

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**Site Details:**

304716, 204780

**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_2
**Grid Ref:** 304865, 205116

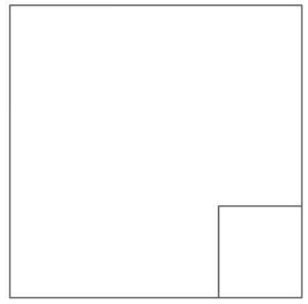
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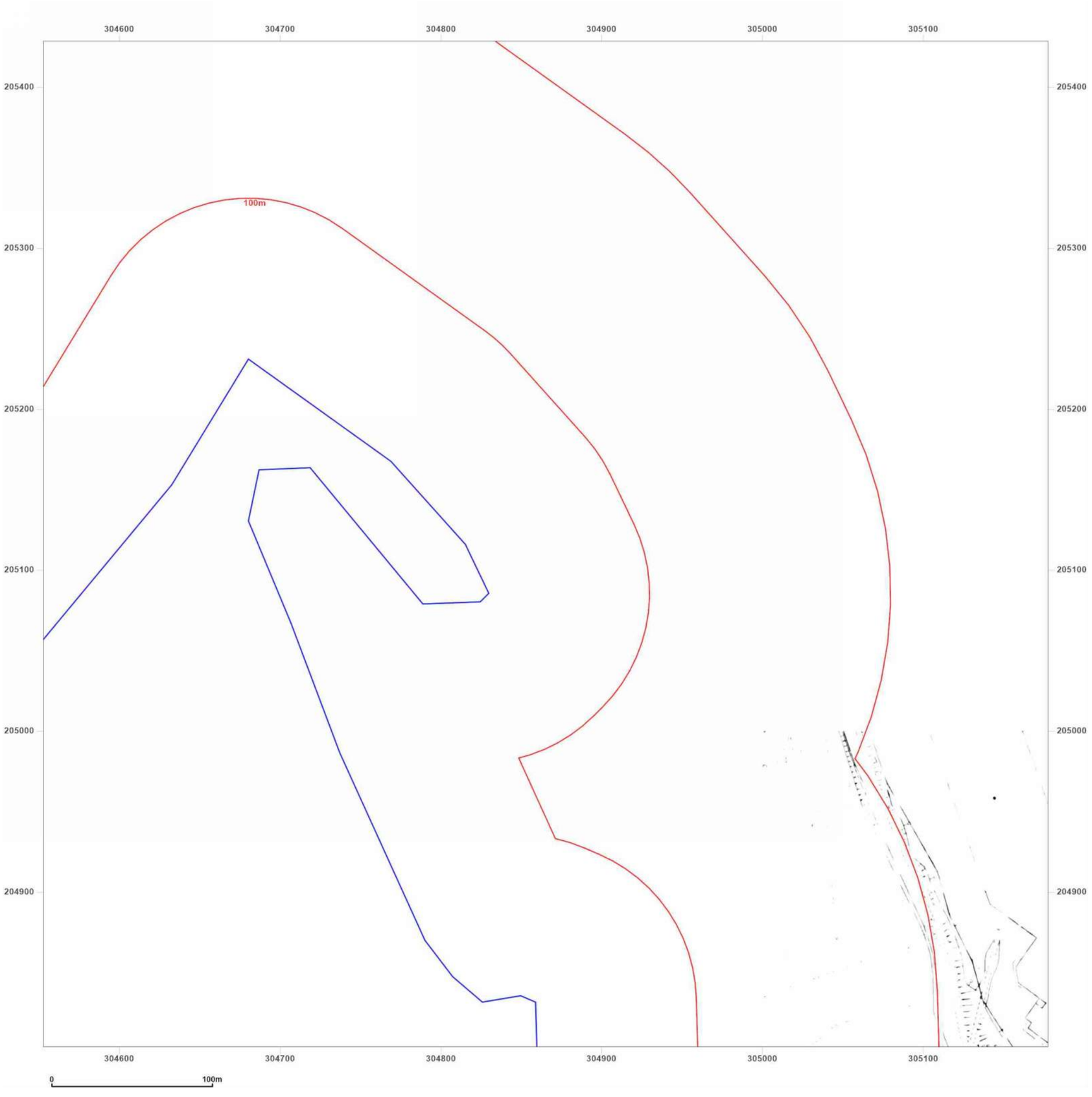

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**Grid Ref:** 304865, 205116

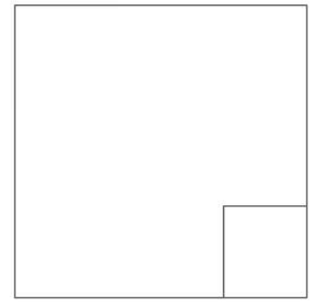
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**Scale:** 1:2,500

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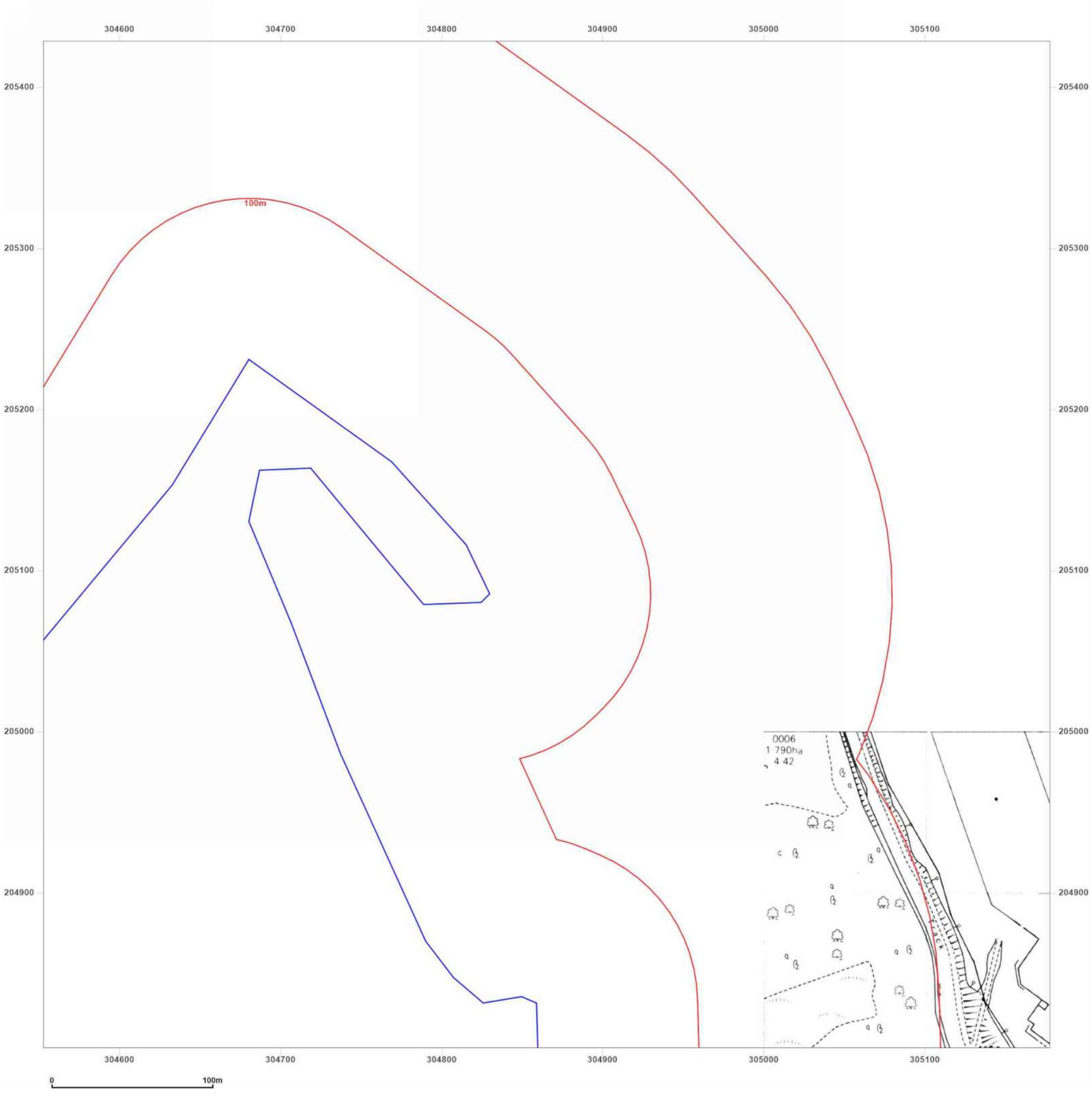

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**Grid Ref:** 304865, 205116

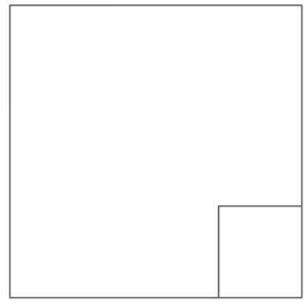
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**Map date:** **1992**

**Scale:** 1:2,500

**Printed at:** 1:2,500

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Surveyed 1964
Revised 1984
Edition N/A
Copyright 1992
Levelled 1964

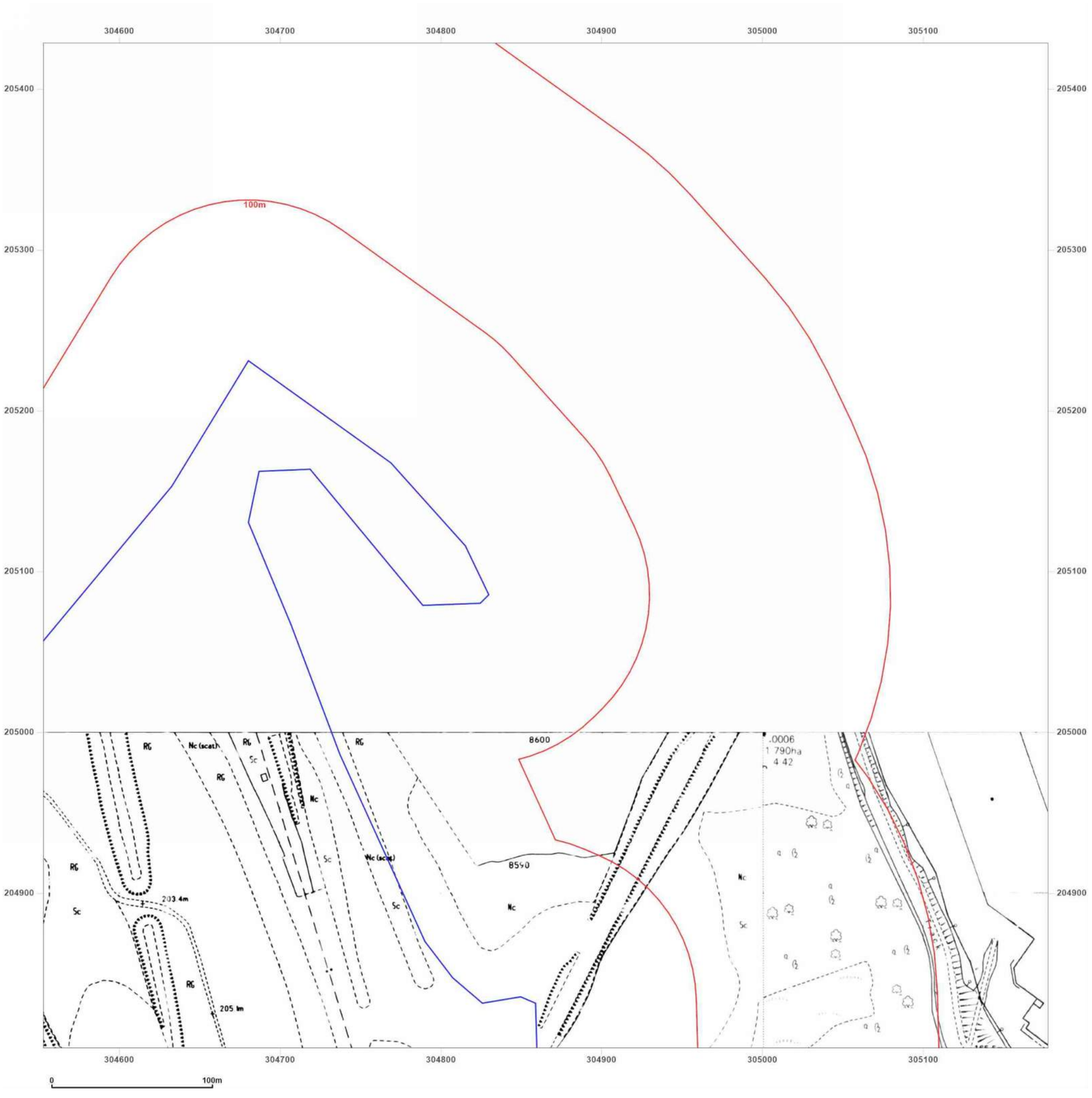
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**Report Ref:** GS-8054801_LS_2_2
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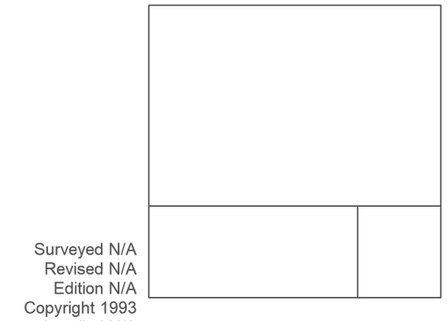
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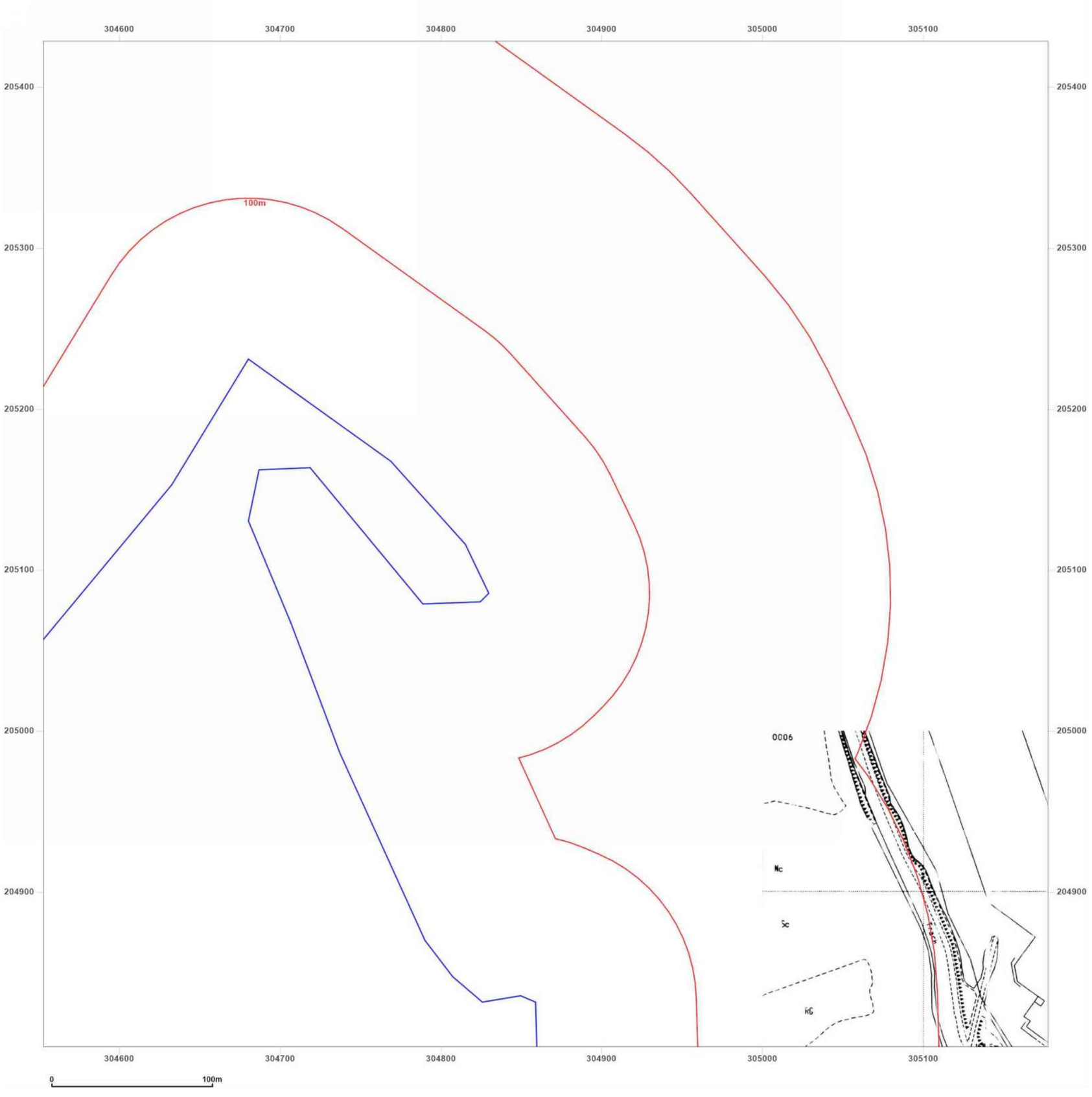

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**Client Ref:** 7002094_-_Rhyd_y_Car_
**Report Ref:** GS-8054801_LS_2_2
**Grid Ref:** 304865, 205116

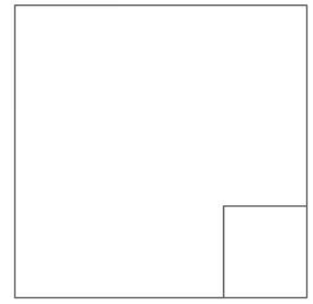
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**Map date:** **1993**

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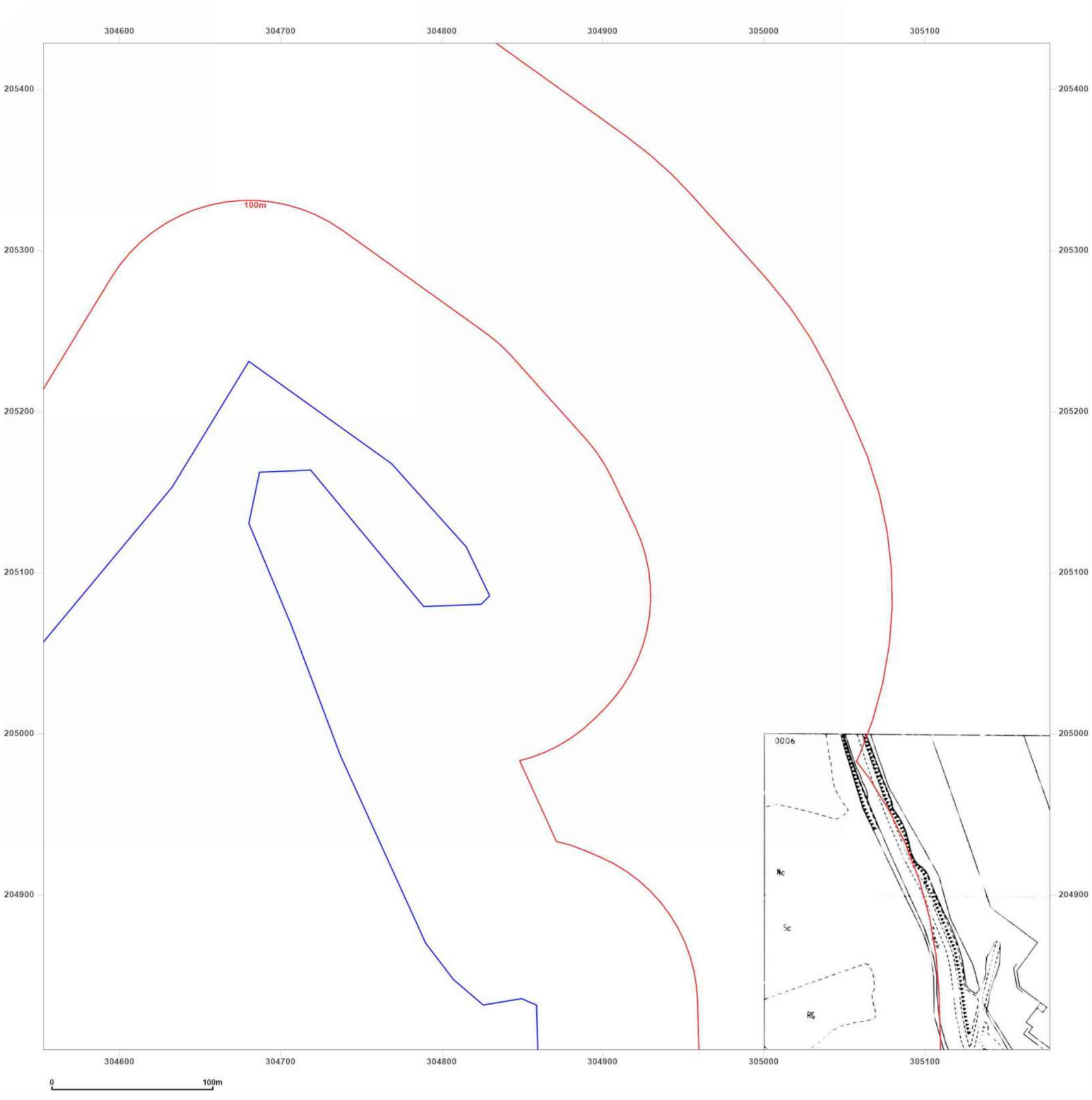

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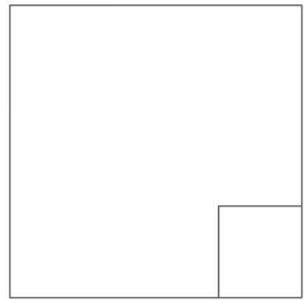
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**Map date:** **1993**

**Scale:** 1:2,500

**Printed at:** 1:2,500

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

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# APPENDIX D – COAL AUTHORITY REPORT

The Coal Authority,
Mining Reports Office,
200 LICHFIELD LANE,
BERRY HILL,
MANSFIELD.
NOTTINGHAMSHIRE,
NG18 4RG
Telephone: 0845 762 6848
DX 716176 MANSFIELD 5
www.coal.gov.uk

The COAL AUTHORITY

WILLIAM THOMAS CONSULTING,
CENTRE COURT,
TREFOREST INDUSTRIAL ESTATE,
TREFOREST,
MID GLAMORGAN, CF37 5YR

This matter is being dealt with by Louise Tipper

Our Ref: 056131-01

Your Ref: BRT SJC J042 A 2143

Date: 23 February 2001

RECEIVED
23 FEB 01
2151
J042/A

Dear Sir,

## Coal Mining Report
## LAND NEAR MERTHYR

I refer to the enquiry dated 22nd February 2001, received 22nd February 2001, in connection with the above.

This report is based on and limited to the records in the possession of The Coal Authority at the time the search is answered.

### Past Underground Mining

The property is within the likely zone of influence on the surface from workings in 15 seams of coal at shallow to 290m depth, the last date of working being 1963.

### Present Underground Mining

The property is not within the zone of likely physical influence on the surface from any present underground coal workings.

### Future Underground Mining

The property is not within a geographical area for which a licence to extract coal by underground methods is awaiting determination by the Coal Authority.

The property is not within a geographical area for which a licence to extract coal by underground methods has been granted.

The property is not within the zone of likely physical influence at the surface from plans of future workings in our possession.

However reserves of coal exist in the locality which could be worked at some time in the future subject to feasibility, licences, and planning consents.

We have no record of any notice of the risk of the land being affected by subsidence being given under S.46 of the Coal Mining Subsidence Act 1991.

**Shafts and Adits**

Within or withijn 20 metres of the property there are 210 mine entries which can be shown on an Ordnance Survey based plan and details supplied of any treatment works (if known), subject to your payment of an additional fee of £2310.00 inclusive of VAT.

The records held by the Coal Authority may be incomplete. Consequently, there may exist in this locality mine entries of which we have no knowledge.

**Surface Geology**

Records in our possession do not disclose any fault or other line of weakness at the surface as having affected the stability of the property.

**Past Opencast Mining**

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

**Present Opencast Mining**

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

**Future Opencast Mining**

The property is not within 800 metres of the geographical boundary of an opencast site for which a licence to extract coal by opencast methods is awaiting determination.

The property is within 800 metres of the geographical site boundary of the Colliers Row (Rhydycar West) prospective opencast site for which a licence to extract coal by opencast methods was granted in October 1994. The grant of this licence is conditional on the applicant securing any other rights, permissions (including planning permissions) and consents to enable him to carry out his operations.

The property is within 800 metres of the geographical site boundary of the Prospect House prospective opencast site for which a licence to extract coal by opencast methods was granted in October 1994. The grant of this licence is conditional on the applicant securing any other rights, permissions (including planning permissions) and consents to enable him to carry out his operations.

**Subsidence**

The records in our possession do not disclose any damage notice or claim having been given, made or pursued in respect of the property since 1 January 1984.

The records in our possession do not disclose any current "Stop Notice" affecting the property.

The records in our possession do not show any request having been made to execute preventative works under S.33 of the Coal Mining Subsidence Act 1991.

**Withdrawal of Support**

The property does not lie within a geographical area in respect of which a notice of entitlement to withdraw support has been publised.

The property does not lie within a geographical area in respect of which a notice has been given under S.41 of the Coal Industry Act 1994, revoking the entitlement to withdraw support.

**Working Facilities Orders**

The property is not within a geographical area that is the subject of an Order made under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

**Payments to Owners of Former Copyhold Land**

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

**Additional Remarks**

In view of the mining circumstances a prudent developer would seek appropriate technical advice before works are undertaken on site. All proposals should have regard to good engineering practice in mining areas as identified in authoritative publications on mining stability problems. In any event, no activities should be undertaken that intersect, disturb, or interfere with any coal or mines of coal without permission of the Coal Authority.

These replies are prepared in accordance with the Law Society's Guidance Notes 1998.

Yours faithfully

**Albert Schofield**

**Director of Operations**



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# APPENDIX E – EXTENT OF RECORDED SPOIL TIPS

# B023905 – Rhydycar West

## Summary Locations of Recorded Spoil Tips

The following information is presented for reference only. Recent topographical surveys are not available for the site. All information has been taken in good faith and the accuracy of the records cannot be guaranteed.

The following table presents a summary of tips on site, based on information presented in historical documents, including the following figures & reports.

- Williams Thomas Drawing reference J042/G/001/R (18th January 2002)
- Merebrook Project Limited drawings reference E561/310/001 and 002- Existing Surface Features Plan 1 & 2 (December 2005)
- Ove Arup & Partners Limited. April 2008. Land at Heolgerrig (Merthyr Village) Review of Site Stability and Remedial Options Volume 1: Review of Site Stability and Assessment of Potential Hazards. The Merthyr Village Land Trading Partnership.

The table should be read in conjunction with the figure attached to this document (reference B023905-TTE-00-XX-DR-U-1 PO1).

<table>
<tr><th>Ref</th><th>Name</th><th>Material</th><th>Comments</th><th>Arup (2008) comments</th></tr>
<tr><td>1</td><td>Cwm Upper and Lower Colliery</td><td>Colliery spoil</td><td></td><td>
<table>
<tr><th>Tip</th><th>Vol m³</th><th>Area Hect</th><th>Height (m)</th><th>Slope of Natural ground</th><th>Slope Direction</th></tr>
<tr><td>Cwm Pit Lower</td><td>110,000</td><td>2.6</td><td>22</td><td>1 to 6.5 (8.7°)</td><td>SE</td></tr>
<tr><td>Cwm Pit Upper</td><td>460,000</td><td>6.2</td><td>30</td><td>1 to 8 (7.1°)</td><td>ESE</td></tr>
<tr><td>Glyndyrus</td><td>620,000</td><td>6.7</td><td>18</td><td>1 to 10 (5.7°)</td><td>E</td></tr>
<tr><td>Fan</td><td>75,000</td><td>1.4</td><td>20</td><td>1 to 7 (8.13°)</td><td>E</td></tr>
<tr><td>Black Pins South</td><td>5,000</td><td>0.4</td><td>9</td><td>1 to 5 (11.3°)</td><td>SE</td></tr>
<tr><td>David Lloyds New</td><td>1,000</td><td>0.1</td><td>4</td><td>1 to 8 (7.1°)</td><td>E</td></tr>
<tr><td>David Lloyds Old</td><td>1,000</td><td>0.1</td><td>4</td><td>1 to 8 (7.1°)</td><td>E</td></tr>
<tr><td>Total</td><td>1,272,000</td><td>17.5</td><td></td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>2</td><td>Un-named</td><td>Slag</td><td>Included in area of Scheduled Ancient Monument for Cwm Pit and Head of Railway</td><td></td></tr>
<tr><td>3</td><td>Un-named</td><td>Unknown</td><td>Potentially re-profiled</td><td></td></tr>
<tr><td>4</td><td>David Lloyds New Level</td><td>Unknown</td><td></td><td>See (1) above</td></tr>
<tr><td>5</td><td>New Colliers Row Drifts</td><td>Unknown</td><td></td><td></td></tr>
<tr><td>6</td><td>Glyndyrys Tip</td><td>Ironstone</td><td>Northern end located within proposed development (leisure complex)</td><td>See (1) above</td></tr>
<tr><td>7</td><td>Fan Tip</td><td>Red ash, colliery spoil</td><td>Noted to be have been re-profiled</td><td>See (1) above</td></tr>
</table>

| Ref | Name | Material | Comments | Arup (2008) comments |
|---|---|---|---|---|
| | | | Lower part of ski slope crosses northern extent of spoil tip. | |
| 8 | Un-named | Unknown | | |
| 9 | Un-named | Unknown | | |
| 10 | Un-named | Unknown | | |
| 11 | Un-named | Unknown | | |
| 12 | Un-named | Unknown | | |
| 13 | Un-named | Unknown | | |
| 13a | Un-named | unknown | Further small heap located to the west of tip. | |
| 14 | Un-named | Unknown | | |
| 15 | Colliers Row | Mainly colliery spoil | Located adjacent to– Cyfatha Central Level | |
| 16 | Black Pins North | Ironstone | Partially located within area of Scheduled Ancient Monument – Black Pins Early Ironstone Workings (Quarry) | See (22) to (31) below. |
| 17 | Un-named | Unknown | | |
| 18 | Un-named | Unknown | | |
| 19 | Spoil from various levels (Dai Galdys Level, Wm Morgans Level, Pen Machine Level, Gomer Williams Level | Colliery spoil (assumed) | Numerous additional small unnamed tips within adjacent areas | |

| Ref | Name | Material | Comments | Arup (2008) comments |
|---|---|---|---|---|
| | Pig & Whistle Level | | | |
| 20 | Un-named | Unknown | | |
| 21 | Wm Hughes<br>Wm Morgans<br>Jno Jenkins | Unknown | | See (37) to (48) below. |
| 22 | Upper Cwmglo | Colliery spoil | Mid Glamorgan CC latterly MTCBC inspection records dating from 1975 to 2017 referencing Cwmglo East provides grid reference linked to these locations – identified as Tip 87. Indicates two tips of differing elevations. All reports note the tip remains in a satisfactory condition with ongoing monitoring required, some minor erosion around access paths and from cattle. | |
| 23 | Lower Cwmglo | Colliery spoil (predominantly) Some iron stone | | |
| 24 | Un-named | Unknown<br><br>Area to the rear of (23) however this area is not marked as a mixture of ironstone spoil and colliery spoil. | | |
| 25 | Cwmglo Patches | Mainly ironstone, some coal | | |
| 26 | Cwmglo West | Ironstone | | |
| 27 | Cwmglo South | Ironstone and colliery spoil | Tip 88 'Upper Wern' within Mid Glam CC/MTCBC | |

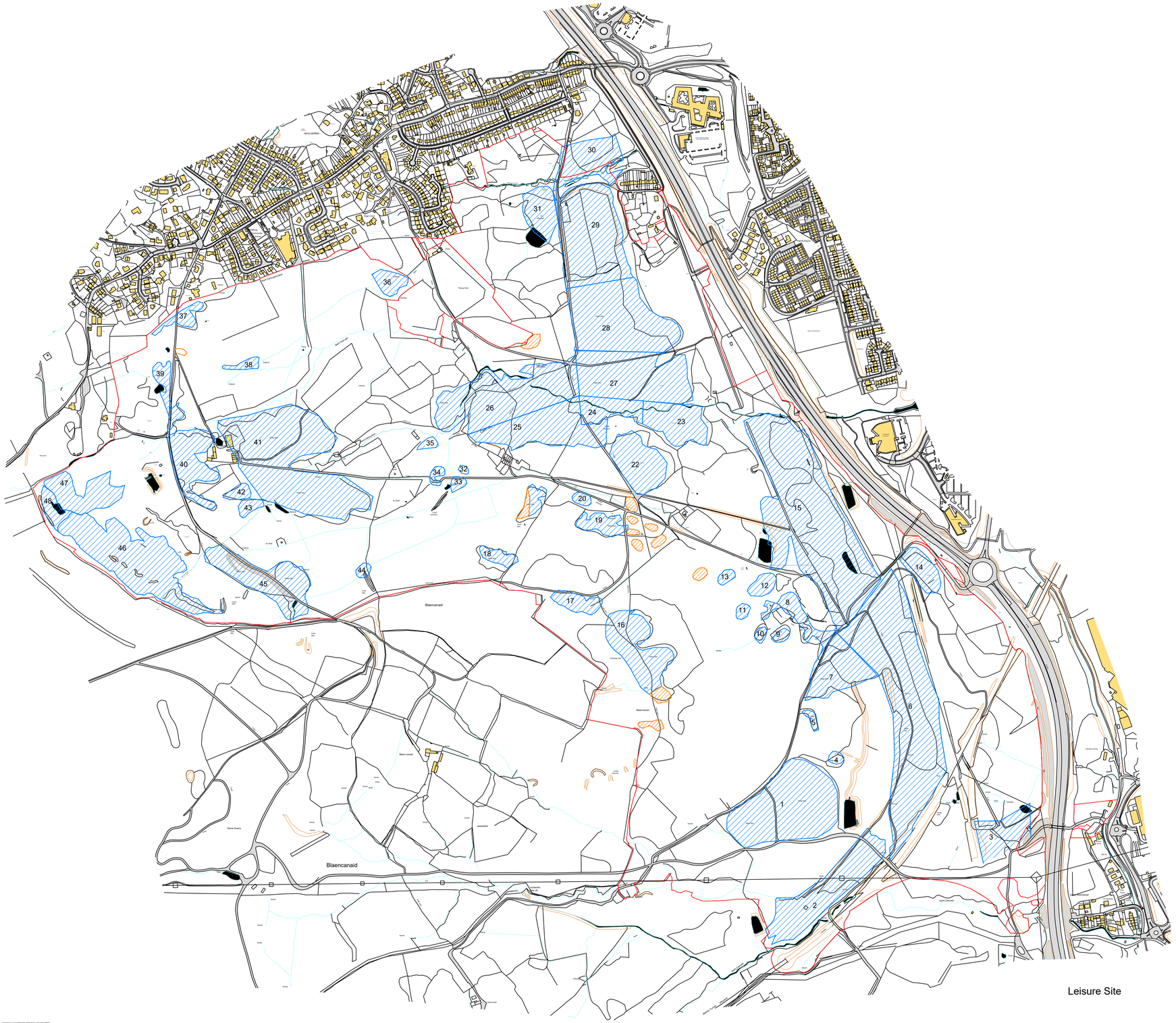
| Tip | Volume m³ | Area Ha | Height m | Slope of natural ground | Slope Direction |
|---|---|---|---|---|---|
| Coedcae North | 201,500 | 3 | 16 | 1 in 20 (2.86°) | NE |
| Coedcae South | 267,000 | 3.3 | 14 | 1 in 13 (4.4°) | E |
| Coedcae West | 34,000 | 1 | 6 | 1 in 12.5 (4.6°) | NE |
| Cwmglo North | 450,000 | 4.6 | 24 | 1 in 8 (7.1°) | NE |
| Cwmglo South | 210,000 | 3 | 20 | 1 in 11.5 (5°) | NE, E, SE |
| Cwmglo West | 28,500 | 0.8 | 10 | 1 in 7 (8.1°) | SSE |
| Lower Cwmglo | 96,500 | 1.5 | 18 | 1 in 7 (8.1°) | NE, SE, E |
| Upper Cwmglo | 74,500 | 1.5 | 20 | 1 in 6.5 (8.7°) | NE |
| Cwmglo Patches | 131,000 | 5.2 | 28 | 1 in 5.5 (10.3°) | NE |
| Colliers Row | 184,000 | 4.7 | 8 | 1 in 14 (4.1°) | NE |
| Pond Level | 28,500 | 0.7 | 10 | 1 in 6.5 (8.7°) | NE, E |
| Rhyd y Car | 506,600 | 5.7 | 20 | 1 in 20 (2.86°) | NE |
| Black Pins North | 62,000 | 5.1 | 12 | 1 in 11.5 (5°) | NE, E, SE |
| **Total** | **2,274,000** | **40.1** | | | |

| Ref | Name | Material | Comments | Arup (2008) comments |
|---|---|---|---|---|
| | | *(27) identified as Scheduled Ancient Monument – Cwm Glo Pit and Ironstone Tip.* | records dating from 1975 to 2017.<br><br>Very steep slopes noted on eastern side.<br><br>Spring at base of tip noted to have caused minor, localised erosion and 'minor movement' (1997)<br><br>3/12/1997 – 'area south of the spring showing some signs of bulging at the toe'.<br><br>18/4/1999. Noted that some minor movement in vicinity of spring was noted with new slump area former 3m high and 5m wide dropped circa 300mm. Hole appeared on top of southern section of tip 1,5m diameter and 1.0m deep.<br><br>15.1.07 Fenced off area noted around circular depression at south eastern edge of tip. | |
| 28 | Cwmglo North | Ironstone and colliery spoil | | |
| 29 | Coedcae South | Mainly ironstone (8m of ironstone spoil over 6.5m of colliery spoil) based on borehole information | | |
| 30 | Coedcae North | Ironstone and colliery spoil | | |
| 31 | Coedcae West | Mainly ironstone | | |
| 32 | Un-named | Unknown | | |

| Ref | Name | Material | Comments | Arup (2008) comments |
|---|---|---|---|---|
| 33 | Un-named | Unknown | | |
| 34 | Un-named | Unknown | | |
| 35 | Un-named | Unknown | Located adjacent to Scheduled Ancient Monument – Cwm Glo Chapel | |
| 36 | Unnamed | Unknown | | |
| 37 | Corrywaun | Unknown | | Calculated to hold 640,000m$^3$ of material covering a combined area of 15.1ha. Maximum height 34m. |
| 38 | Wm Harris Tip | Unknown | | |
| 39 | Level forty | Unknown | | |
| 40 | Cwmdu Quarry Tip | Quarry and iron stone spoil | | |
| 41 | Cwmdu West, North, East, South Wm Lewis | Colliery spoil | | |
| 42 | Un-named | Unknown | | |
| 43 | Un-named | Unknown | | |
| 44 | Level C8 Tip | | | |
| 45 | Lower Llyn yr Eos | SW – ironstone spoil<br>NE colliery spoil | | |
| 46 | Upper Llyn yr Eos | Composite from various sources & types of mining | | |
| 47 | Un-named | Ironstone | | |
| 48 | Un-named | Ironstone | | |

| Tip | Vol (m$^3$) | Area (ha) | Height (m) | Slope | Slope Direction |
|---|---|---|---|---|---|
| Cwmdu North | 240,000 | 3.2 | 22 | 1 in 12 (4.76°) | ENE |
| Cwmdu East | 165,000 | 2.5 | 18 | 1 in 9 (6.3°) | NE |
| Cwmdu West | 45,000 | 1.2 | 10 | 1 in 8 (7.1°) | ENE |
| Cwmdu South | 1,000 | 0.1 | 2 | 1 in 10 (5.7°) | ENE |
| Wm Lewis | 3,000 | 0.2 | 3 | 1 in 9 (6.3°) | ENE |
| Lower Llwyn yr Eos | 40,000 | 1.9 | 16 | 1 in 7 (8.1°) | NE |
| Upper Llwyn yr Eos | 96,000 | 3.5 | 18 | 1 in 6 (9.5°) | NE |
| Cwmdu Quarry | 29,000 | 1.1 | 34 | 1 in 5 (11.3°) | ENE |
| Corrywaun | 9,000 | 0.4 | 6 | 1 in 11 (5.2°) | ENE |
| Level Forty | 6,000 | 0.4 | 5 | 1 in 10 (5.7°) | ENE |
| Wm Harris | 4,000 | 0.2 | 6 | 1 in 11 (5.2°) | ENE |
| Wm Hughes | 1,000 | 0.1 | 8 | 1 in 2 (26.5°) | N |
| Wm Morgans | 1,000 | 0.1 | 3 | 1 in 10 (5.7°) | NE |
| Jno Jenkins | 1,000 | 0.1 | 5 | 1 in 10 (5.7°) | NE |
| Level C8 | 1,000 | 0.1 | 2 | 1 in 10 (5.7°) | N |
| **Total** | **624,000** | **15.1** | | | |

N




Legend:

- Site Boundary
- Extent of spoil heap mapped presented in Williams Thomas Drawing reference J042/G/001/R
- Additional features identified in Merebrook Project Limited drawings reference E561/310/001 and 002- Existing Surface Features Plan 1 & 2

Note:
Locations of spoil tips are based on historical plans as referenced above and the information is taken in good faith. Further tips may be present on the site not identified within the drawing. This information is presented for reference only and is not to scale. All locations and extents are approximate and should not be used for design purposes.

PRELIMINARY ISSUE

| Rev | Description | Date | Drn | Chk | App |
|---|---|---|---|---|---|
| P01 | PRELIMINARY FIRST ISSUE | 15.02.21 | PP | SR | |

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Issuing Office

**Tetra Tech Cardiff**
5th Floor, Longcross Court,
47 Newport Road, Cardiff,
United Kingdom, CF24 0AD
***Tel:*** +44 (0)29 2082 9200
www.tetratecheurope.com

TETRA TECH

Client

MARVEL LTD

Project Name

RHYDYCAR WEST

Sheet Title

SUMMARY LOCATIONS OF RECORDED SPOIL TIPS

| TTE Project Number | Drawn By | Date | Checked By | Date | Approved By | Date | Scale @ A1 | Suitability |
|---|---|---|---|---|---|---|---|---|
| 784-B023905 | PP | FEB '21 | SR | FEB '21 | - | FEB '21 | 1:500 | S0 |

| Client Project Number | Originator | Volume/System | Level/Location | Type/Code | Role | Number | Revision |
|---|---|---|---|---|---|---|---|
| B023905 | TTE | 00 | XX | DR | U | 1 | P01 |

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TTE_MT_v1

# APPENDIX F – HISTORICAL BOREHOLE LOGS

Per I.G.S.
SO 00 NW/214

NO. 2 SOUTH MIDLAND REGION

CORED SAMPLE ADVISE NOTE / BOREHOLE REPORT

From: Area Opencast Geologist,
LONDON Area

To: Area Chief Scientist,
South Wales Area.
Laboratory

Date Submitted

Site Name COLLIERS ROW DEEP
Site No. 070 846 A
B.H. No. 4110 on B.H. No. 217
National Grid Co-ordinates:-
E 304214 N 205314
Core Diameter 0.076m

Plants at S.G.1.6

SAMPLE CORE

| Bag | Base Depth | Thickness | Recovery | Description of Strata | Remarks |
|---|---|---|---|---|---|
| | 17.00 | | | | OPEN HOLE. |
| | 17.00 | | | | CORE RUN 1 (Box 1). |
| | 17.33 | 0.33 | NIL | LOST CORE. | |
| | 17.45 | 0.12 | 0.12 | COAL. | |
| | | | | Very soft and friable. Shaly. | RQD 0. |
| | 17.90 | 0.45 | 0.45 | SEATEARTH. | RQD 0. |
| | | | | Very soft, shaly. | |
| | 20.60 | | | | CORE RUN 2 (Boxes 2 and 3). |
| | 18.09 | 0.19 | 0.19 | COAL | RQD 0. |
| | | | | Clean, bright, very soft and friable. | |
| | | | | INTERFACE B. | |
| | 19.29 | 1.20 | 1.20 | SEATEARTH ——— 1.05 in Box 2 | |
| | | | | Firm, broken into 5cm pieces, silty ——— 0.15 in Box 3 | |
| | | | | | RQD 0. |
| | 19.50 | 0.21 | 0.21 | MUDSTONE. | RQD 55. |
| | | | | Firm, broken stick. | |
| | 19.63 | 0.13 | 0.13 | SILICEOUS MUDSTONE. | RQD 100. |
| | | | | Very hard, brittle and splintery stick. | |
| | 20.60 | 0.97 | 0.97 | MUDSTONE. | RQD 65. |
| | | | | Firm, broken stick, some plant remains present. | |
| | 22.80 | | | | CORE RUN 3 (Boxes 4 and 5) |
| | 22.80 | 2.20 | 2.20 | GREY MUDSTONE. | RQD 45 |
| | | | | Firm, broken stick nearly vertical splitting. Plant remains present. | 0.73 in Box 4. |
| | | | | | 1.47 in Box 5. |

Date Cored 2.4.76

Date Returned

O.G. [signature]
2.4.76
Date

NO. 7 SOUTH WESTERN REGION

CORED SAMPLE ADVISE NOTE / BOREHOLE REPORT

From: Area Opencast Geologist,
NORTH K ..... Area

To: Area Chief Scientist,
South Wales Area.
..... Laboratory

Date Submitted .....

Floats at S.G.1.6

Site Name COLLIERS ROW DEEP
Site No. 070.....846A.....
B.H. No. ....4110..... on B.H. No. 217
National Grid Co-ordinates:-
E ....304214..... N .....205344.....
Core Diameter ..9.976m.....

| Bag | Base Depth | Thickness | Recovery | Description of Strata | Remarks |
|---|---|---|---|---|---|
| | 25.40 | | | | RUN 4 (Boxes 6 & 7 |
| | 25.40 | 2.60 | 2.60 | GREY MUDSTONE. | 1.12 in Box 6. |
| | | | | As Run 2 above. | 1.48 in Box 7. |
| | 27.00 | | | | RUN 5 (Box 8) |
| | 27.00 | 1.60 | 1.60 | GREY MUDSTONE. | |
| | | | | As Run 3 above. | |
| | 29.30 | | | | CORE RUN 6 (Boxes 9 and 10). |
| | 29.02 | 2.02 | 2.02 | GREY MUDSTONE. | 1.09 in Box 9 |
| | | | | As Run 3 above. | 0.93 in Box 10. |
| | 29.06 | 0.04 | 0.04 | SANDSTONE. | |
| | | | | Very hard, stick a cross bedded unit. | |
| | 29.30 | 0.24 | 0.24 | SILTSTONE. | RQD 60. |
| | | | | Hard, with a few thin sandy bands, brittle. Vertical joints present. | |
| | 31.40 | | | | CORE RUN 7 (Boxes 11 and 12). |
| | 29.74 | 0.44 | 0.44 | SILTSTONE. | |
| | | | | As Run 6 above. | |
| | 29.94 | 0.20 | 0.20 | MUDSTONE. | RQD.95 |
| | | | | Dark, firm, stick, lingulids present. | AMMAN MARINE BAND |
| | 30.35 | 0.41 | 0.41 | GREY MUD TONE. | End Box 11. |
| | | | | Firm, broken sticks. | Box 12. |
| | | | | INTERFACE A. | |
| | 30.66 | 0.31 | 0.31 | COAL | RQD 95. |
| | | | | Hard, bright, clean. Cone in cone structure and a few thin pyrite bands present. | 2 YARD SEAM. |

Date Cored ....2.4.76.....
Date Returned .....

O.C. .....
Date .....2.4.76.....

So 00 NW/214

3.

NO. 7 SOUTH WESTERN REGION

CORED SAMPLE ADVISE NOTE / BOREHOLE REPORT

From: Area Opencast Geologist,
...NORTHERN..... Area

To: Area Chief Scientist,
South Wales Area.
..... Laboratory

Date Submitted .....

Floats at S.G.1.6

Site Name ...COLLIERS ROW DEEP.....
Site No. 070....846.....
B.H. No. 4119..... on B.H. No. 217.....
National Grid Co-ordinates:-
E ...304214..... N .....205344.....
Core Diameter ..0.076m.....

| Bag | Base Depth | Thickness | Recovery | Description of Strata | Remarks |
|---|---|---|---|---|---|
| | 31.40 | 0.74 | 0.74 | SEATEARTH.<br>Firm, broken stick, silty. | ROD 60 |
| | 33.66 | | | | CORE RUN 8. (Boxes 13 and 14). |
| | 31.74 | 0.34 | 0.34 | SEATEARTH<br>Firm, stick, silty. | ROD 45 |
| | 32.00 | 0.26 | 0.26 | DARK SHALE WITH COAL TRACES.<br>Soft and fissile shale with thin coal bands<br>Broken into 1 cm pieces. | ROD 0. |
| | 32.10 | 0.10 | 0.10 | SEATEARTH<br>Hard, stick, silty. | ROD 0. |
| | 32.48 | 0.38 | 0.38 | DARK SHALE WITH COAL TRACES.<br>Soft fissile shale with thin coal bands | ROD C.<br>---0.10 in Box 13<br>0.28 in Box 14. |
| | 33.66 | 1.18 | 1.18 | SEATEARTH.<br>Firm, broken stick silty. | ROD 55 |
| | 36.16 | | | | CORE RUN 9 (Boxes 15 and 16) |
| | 34.37 | 0.71 | 0.71 | MUDSTONE<br>Firm, broken into 5cm pieces. | ROD 0. |
| | 34.58 | 0.21 | 0.21 | SHALE WITH COAL TRACES<br>Soft and fissile. Broken into 2 cm pieces. INTERFACE C | ROD 0. |
| | 34.96 | 0.38 | 0.38 | COAL<br>Bright hard, clean, stick. Cone in cone structure present. | ROD 90.<br>0.27 in box 15.<br>0.11 in Box 16. |
| | 34.99 | 0.03 | 0.03 | MUDSTONE INTERFACE A<br>Hard. | |

Date Cored .....2.4.76.....
Date Returned .....

O.G. .....
Date .....2.4.76.....

Date Cored 2.4.76.....

Date Returned .....

O.G. .....

Date 2.4.76.....

British Geological Survey British Geological Survey British Geological Survey

So 00 NW/214

5.

NO. 7 SOUTH WESTERN REGION

CORED SAMPLE ADVISE NOTE / BOREHOLE REPORT

From: Area Opencast Geologist,
NORTHERN Area

To: Area Chief Scientist,
South Wales Area.
..... Laboratory

Date Submitted .....

Site Name COLLIERY ROW DEEP
Site No. 070 846 A
B.H. No. A110 on B.H. No. 217
National Grid Co-ordinates:-
E 304214 N 205344
Core Diameter 0.076m

Floats at S.G.1.6

| Bag | Base Depth | Thickness | Recovery | Description of Strata | Remarks |
|---|---|---|---|---|---|
| | 43.06 | | | | RUN 13 (Box 22) |
| | 43.06 | 0.36 | 0.36 | SILICEOUS MUDSTONE. Hard, brittle, splintery stick. | RQD 85 |
| | 43.86 | 0.80 | 0.80 | SILTY MUDSTONE. Hard, broken stick with vertical jounts. | RQD 75. |
| | 44.56 | | | | CORE RU 14 (Box 2 |
| | 44.56 | 0.70 | 0.70 | MUDSTONE. Hard, stick, with vertical joints. | RQD 90. |
| | 45.66 | | | | COR RUI 15 (Box24 |
| | 45.66 | 1.10 | 1.10 | SANDY SILTSTONE. Hard, stick, with cross laminated sandy bands. Vertical joints present. | RQD 85. |
| | 46.33 | | | | CORE RUN 16 (Box 25) |
| | 46.33 | 0.67 | 0.67 | SANDSTONE Hard, broken stick, fine grained. Joints dipping at 80° | RQD 25. |
| | 47.11 | | | | CORE RUN 17 (Box2 |
| | 47.11 | 0.78 | 0.78 | SILTY MUDSTONE. Hard, broken stick, with sandy bands. Joints dipping at 80° | RQD 35. |
| | 48.51 | | | | CORE RUN 18 (Box27 |
| | 47.76 | 0.65 | 0.65 | SANDSTONE. Hard, broken stick, fine grained. Joints dipping at 80° | RQD 45. |
| | 48.02 | 0.26 | 0.26 | GREY MUDSTONE. Firm, Broken into 3cm pieces. | RQD 0. |

Date Cored 2.4.76

Date Returned .....

O.G. .....

Date 2.4.76

So 00 NW/214

6.

## CORED SAMPLE ADVISE NOTE / BOREHOLE REPORT

From: Area Opencast Geologist,
NORTHERN Area

To: Area Chief Scientist,
South Wales Area.
Laboratory

Date Submitted .....

Site Name ...COLLIERY FOR DE.P.....
Site No. 070...846 A.....
B.H. No. ..4110..... on B.H. No. 217....
National Grid Co-ordinates:-
E .314214..... N .....215344.....
Core Diameter ...0.076.....

Floats at S.G.1.6

| Bag | Base Depth | Thickness | Recovery | Description of Strata | Remarks |
|---|---|---|---|---|---|
| | 48.15 | 0.13 | 0.13 | SANDSTONE. Hard, stick, fine grained. | RQD 100. |
| | 48.51 | 0.36 | 0.36 | GREY MUDSTONE. Firm, broken into 3cm pieces. | RQD 0. |
| | 50.16 | | | | CORE RUN 19 (Boxes 28 and 29). |
| | 48.88 | 0.37 | 0.37 | GREY MUDSTONE. Firm, broken into 1cm pieces. | RQD 0. |
| | | | | INTERFACE C | |
| | 49.62 | 0.74 | 0.74 | COAL Bright, broken into 3cm pieces. Very soft and friable. | RQD 0. |
| | | | | INTERFACE C | |
| | 49.93 | 0.31 | 0.31 | SEATEARTH. Shaly, firm with soft clay bands. | RQD 0. SEVERE FAULT. |
| | | | | INTERFACE C | |
| | 50.16 | 0.23 | 0.23 | COAL. Bright, broken into 2cm pieces. Soft and friable. | RQD 0. |
| | 52.51 | | | | CORE RUN 20 (Boxes 30 and 31 |
| | 50.34 | 0.18 | 0.18 | COALBright very soft and friable. | |
| | 50.56 | 0.22 | 0.22 | SEATEARTH. Soft and shaly. | RQD 0. |
| | 52.51 | 1.95 | 1.95 | MUDSTONE. Hard, broken stick, rooty at top. Vertical joints present. | RQD 60. |
| | 54.51 | | | | CORE RUN 21 (Boxes 32 and 33). |

Date Cored .....2.4.76.....
Date Returned .....

O.G. .....
Date ....2.4.76.....

SO 00 NW/214

7.

CORED SAMPLE ADVISE NOTE / BOREHOLE REPORT

From: Area Opencast Geologist,
NORTHE N Area

To: Area Chief Scientist,
South Wales Area.
Laboratory

Date Submitted .....

Site Name COLLIERS .C. DEEP

Site No. 070 846 A

B.H. No. 4110 on B.H. No. 217

National Grid Co-ordinates:-

E 304214 N 205344

Core Diameter 0.076m

Floats at S.G.1.6

| Bag | Base Depth | Thickness | Recovery | Description of Strata | Remarks |
|---|---|---|---|---|---|
| | 54.06 | 1.55 | 1.55 | GREY MUDSTONE. Firm, broken into 3cm pieces, with plant impressions. Close vertical jointing present. | 0.50 in Box 32. 1.05 in Box 33. RQD 0. |
| | | | | INTERFACE C | |
| | 54.24 | 0.18 | 0.18 | COAL. Firm, broken into 1cm pieces, bright. | RQD 0. |
| | | | | INTERFACE C | |
| | 54.29 | 0.05 | 0.05 | MUDSTONE. Firm, broken into 1cm pieces. | RQD 0 |
| | | | | INTERFACE C | |
| | 54.51 | 0.22 | 0.22 | COAL. Hard, broken, bright, mostly vitrain. | RQD 0 |
| | 57.51 | | | | |
| | 54.66 | 0.15 | 0.15 | COAL. Very soft and friable, bright. | |
| | 54.97 | 0.31 | 0.31 | SHALY SEATEARTH. Soft and friable. | RQD 0. |
| | 56.08 | 1.11 | 1.11 | SEATEARTH. Firm, broken stick, with ironstone nodules. Joints present dipping at 50° | RQD 60. 0.93 in box 34. 0.18 in box 35. |
| | 56.18 | 0.10 | 0.10 | DARK SHALE WITH COAL TRACES. Soft and fissile. | RQD 0. |
| | 56.28 | 0.10 | 0.10 | SEATEARTH. Firm, broken into 5cm pieces. | RQD 0. |

UPPER [illegible] FIVE FEET SEAM.

CORE R[illegible] 22(Boxes 34 and 35

Date Cored 2.4.76

Date Returned .....

O.G. .....

Date 2.4.76

So 00 NW/214.

8.

# CORED SAMPLE ADVISE NOTE / BOREHOLE REPORT

From: Area Opencast Geologist, NORTHERN Area

To: Area Chief Scientist, South Wales Area.

..... Laboratory

Date Submitted .....

Site Name COLLIERS ROW DEEP

Site No. 070/846 A

B.H. No. 364214 4110 on B.H. No. 217

National Grid Co-ordinates:-

E 304214 N 205344

Core Diameter 0.076m

Floats at S.G.1.6

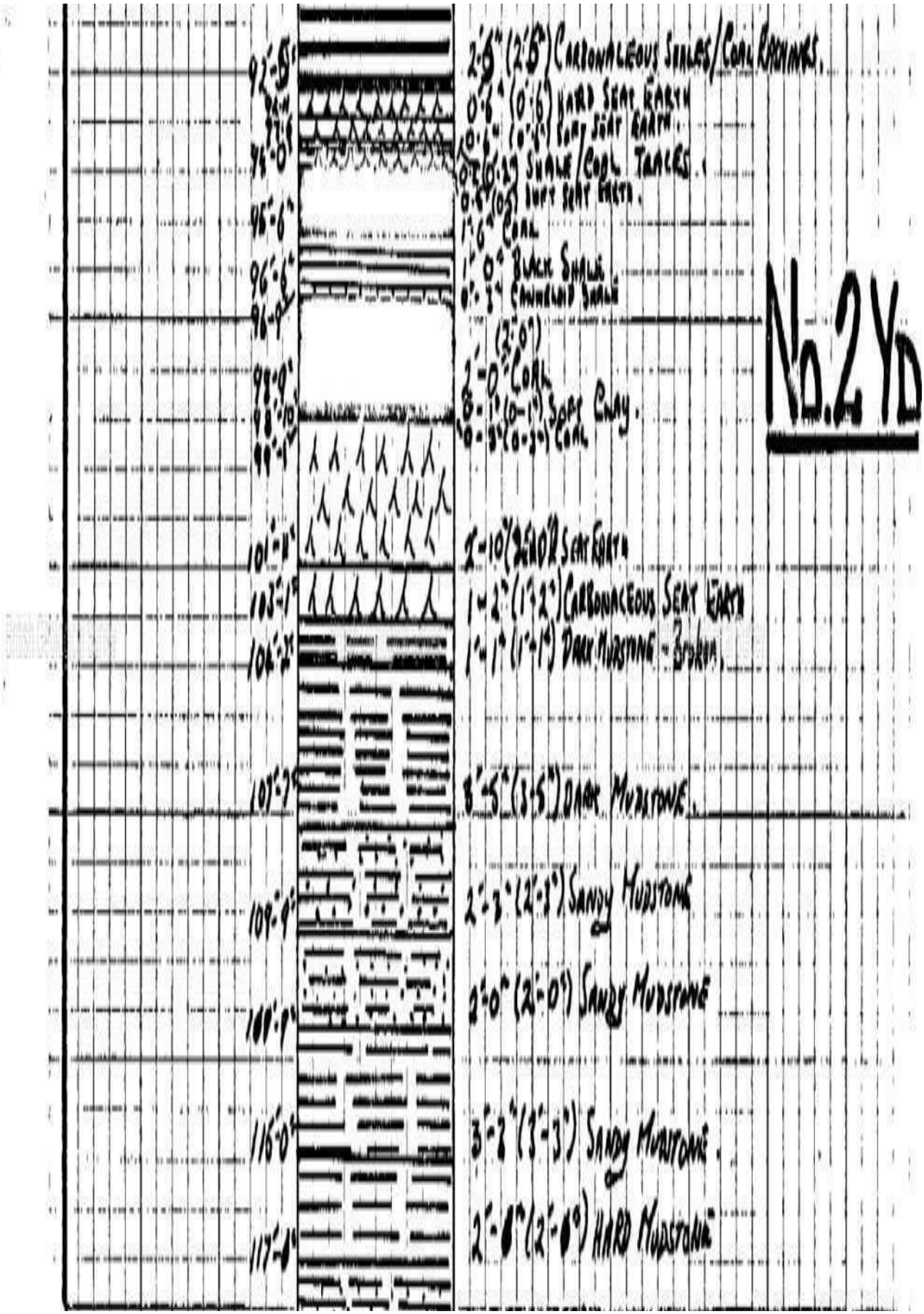
| Bag | Base Depth | Thickness | Recovery | Description of Strata | Remarks |
|---|---|---|---|---|---|
| | 56.70 | 0.42 | 0.42 | COAL. Bright, stick, with a few thin bands of fusain, shale, and pyrite. | ROD 85. |
| | | | | INTERFACE C. | MIDDLE FIVE FE |
| | 56.76 | 0.06 | 0.06 | DARK SHALE. Soft and fissile. | |
| | | | | INTERFACE C | |
| | 56.93 | 0.17 | 0.17 | COAL. Bright, stick, within few thin bands of fusain, shale and pyrite. | ROD 100 |
| | | | | INTERFACE C | |
| | 57.51 | 0.58 | 0.58 | SEATEARTH. Firm broken stick. | ROD 65. |
| | 60.51 | | | | CORE RUN 23 (Box 36 and 37) |
| | 57.84 | 0.33 | 0.33 | SEATEARTH. Firm, broken stick. | ROD 45. |
| | 60.51 | 2.67 | 2.67 | SANDSTONE. Hard, broken stick. Silty at top grading downwards to hard fine grained sandstone. | ROD 75. |
| | 66.00 | | | | OPEN HOLE. |
| | | | | BOR HOLE COMPLETE. | |

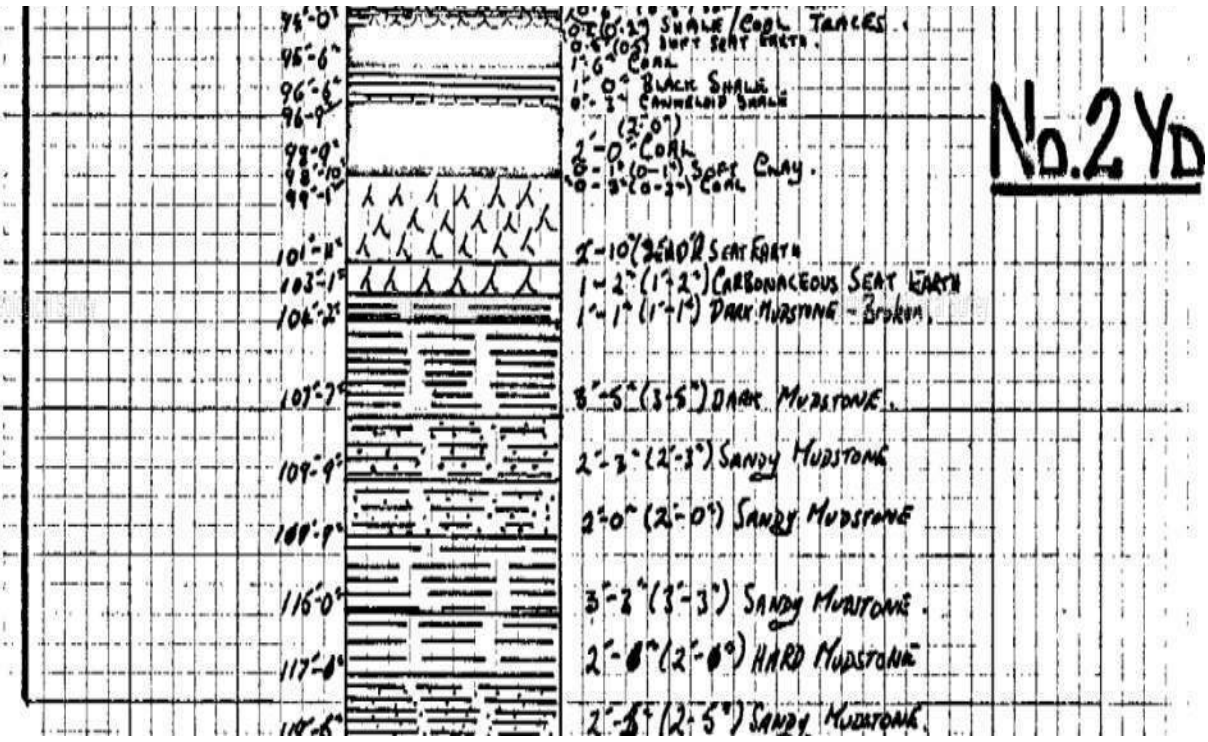
Date Cored ....2.4.76.....

Date Returned .....

O.G. .....

Date ....2.4.76.....


No. 2 Yd


No.2 Yd
95'-0"
95'-6"
96'-6"
96'-9"
98'-9"
98'-10"
99'-1"
101'-11"
103'-1"
104'-2"
107'-7"
109'-9"
109'-9"
116'-0"
117'-8"
0'-(0-2) Shale / Coal Tables
0'-6"(0-6) Dirt Seat Earth.
1'-6" Coal
1'-0" Black Shale
0'-2" Cannelloid Shale
(2'-0")
2'-0" Coal
0'-1"(0-1") Soft Clay.
0'-3"(0-3") Coal
2'-10"(2'-0") Seat Earth
1'-2"(1'-2") Carbonaceous Seat Earth
1'-1"(1'-1") Dark Mudstone - Broken.
8"-5"(3-5") Dark Mudstone.
2'-3"(2'-3") Sandy Mudstone
2'-0"(2'-0") Sandy Mudstone
3'-2"(3'-3") Sandy Mudstone.
2'-8"(2'-8") Hard Mudstone
2'-5"(2'-5") Sandy Mudstone.

| | | | | | |
|---|---|---|---|---|---|
| 96' 9" | 96' 9" | 0' 2" | 0' 2" | Coal, very [illegible] - [illegible] - fragmentary | BOX 12. |
| 98' 9" | 98' 10" | 0' 1" | 0' 1" | Soft Clay | |
| 98' 10" | 99' 1" | 0' 3" | 0' 3" | Coal, and roofings - very fragmentary NO. 2 YARD SEAM | |

British Geological Survey British Geological Survey

(continued)

.....E. Evans...P.O.

OE/7/DEV.451.

...15/7/63....Date.

(4)

So 00 NW/215

N.C.B. - OPENCAST EXECUTIVE.

DEVELOPMENT BRANCH.

REPORT ON CORED BOREHOLE.

Site No. and Name...070246...

B.H. No:...218... Type of Drill...Reich... Core Diameter:...3⅝...

| From | To | Thick-ness | Core Recover-ed. | Description of Strata | Remarks. |
|---|---|---|---|---|---|
| 99' 1" | 115' 0" | 15' 11" | 15' 11" | (continued) Fire. 0' 3" Clay, soft friable - fragmentary<br>0' 2" Very hard, rooty, Seat Earth with fygoides Leaves<br>0' 3" Seat Earth, firm, broken<br>2' 0" Very hard rooty Seat Earth - sticks<br>1' 2" Highly carbonaceous seat Earth, rooty, firm - broken in discs up to 2"<br>— — — — — — — — — — Box 13.<br>1' 1" Dark rooty Mudstone - firm broken<br>3' 5" Dark Mudstone, hard, mainly in sticks, partly broken<br>— — — — — — — — — — Box 14<br>2' 3" Firm dark Mudstone becoming harder towards the base - fractured sticks<br>0' 3" Sandy Mudstone with abundant leaf fronds - sticks<br>0' 3" Very hard Sandy Mudstone - sticks<br>1' 6" Hard Sandy Rooty Mudstone - broken<br>— — — — — — — — — — Box 15.<br>3' 3" Hard Sandy Mudstone passing into 6" of Soft Friable Sandy at the base partly sticks, partly broken.<br>— — — — — — — — — — Box 16.<br><br>(continued) | |

E. Evans .....P.O.

OE/7/DEV.451.

15/7/63 .....Date.

So 00 NW/215

N.C.B. - OPENCAST EXECUTIVE.

DEVELOPMENT BRANCH.

REPORT ON CORED BOREHOLE.

Site No. and Name 070546 Pullham Rose

B.H. No: 217 Type of Drill Reid Core Diameter: 3 5/8

| From | To | Thick-ness | Core Recover-ed. | Description of Strata | Remarks. |
|---|---|---|---|---|---|
| | | | | (continued) | |
| 115' 0' | 130' 0 | 15' 0 | 6' 10 | (From 115-120) | |
| | | | | 1' 5 From very dark M udstone showing vertical planes - broken fragmentary | |
| | | | | 6 Very hard Mudstone - black | |
| | | | | 6' Dark Sandy Mudstone much vertical planes | |
| | | | | 1' 9' Extremely hard sandy mudstone vertical planes - broken - 17 | |
| | | | | (From 120-122 6) | |
| | | | | 2' 4" From dark silty mudstone - broken | |
| | | | | (From 122'6 to 130' No core recovered. Driller records broken shale At 130' to 135' Old Workings were present in the Deven Fl. Seam | All Core Extracted B.H. Dia. from top to bottom |

T. E. Edmund P.O.

19/7/63 Date.

OE/7/DEV.451.




(continued)

British Geological Survey British Geological Survey

.....E. Evans...P.O.

OE/7/DEV.451.

.....17/7/63....Date.

(2)

50 00 NW/215

N.C.B. - OPENCAST EXECUTIVE.

DEVELOPMENT BRANCH.

REPORT ON CORED BOREHOLE.

Site No. and Name. 070.066...Ballers Pond

B.H. No:.....216..... Type of Drill..Reich.. Core Diameter:..3 5/8.....

(continued)

| From | To | Thickness | Core Recovered. | Description of Strata | Remarks. |
|---|---|---|---|---|---|
| 43' 0" | 50' 0 | (continued) | | 0' 9" Very hard Sandy Mudstone - fractured sticks | |
| | | | | 1' 7" Firm dark Mudstone - broken in discs between ½ and ¾ long. | |
| | | | | 2' 2" Firm Dark Mudstone, no plant debris - broken sticks | |
| | | | | | Box 5. |
| | | | | 5' 0" Firm hard sandy mudstone - top 1'6" broken remainder fractured sticks | |
| | | | | | Box 6. |
| | | | | 5' 0" Firm hard sandy mudstone no plant debris - top 2'0" fractured sticks - remainder in broken sticks and broken | |
| | | | | | Box 7. |
| | | | | 2' 0" Hard firm Sandy mudstone - fractured stick | |
| | | | | 1' 3" Less Sandy Dark Mudstone, fractured sticks | |
| 50' 0" | 51' 0" | 1' 0" | 1' 0" | Coal, very bright, brittle - broken stick. | |
| | | | | RIDER SEAM. | |
| 51' 0" | 55' 0" | 4' 0" | 4' 0" | 0' 4" Soft Dead Earth | Box 8. |
| | | | | 3' 8" Firm hard Mudstone top half very broken remainder fractured sticks | |
| | | | | | Box 9. |
| | | | | (Continued) | |

E. Evans P.O.

OE/7/DEV.451.

17/7/43.....Date.

# Norwest Holst Soil Engineering Ltd.

Borehole No. **B34**

## BOREHOLE LOG

## CABLE PERCUSSION

Contract No. F8827
Location A470 Pentrebach to Cefn Coed Improvement
Client Welsh Office
Method of Boring Cable Percussion
Diameter of Borehole 250mm

SO 00 NW/223

Sheet 1 of 2
Co-ords E304846.1 N205106.5
Ground Level 179.60 m.A.O.D.
Date 19-21 6/90

| Description of Strata | Legend | Depth (mbgl) Daily Progress | O.D. Level (m) | Sampling Depth (m) | Sampling | SPT/CPT mm: 0 to 75 | 76 to 150 | 150 to 225 | 225 to 300 | 300 to 375 | 375 to 450 | 'N' (UTP) (blows) | Daily Progress |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Firm to stiff grey sandy silty CLAY with some fine to coarse angular to subrounded gravel of mudstone and sandstone occasional fine and medium subangular gravel of coal, occasional coarse gravel sized pockets of clayey fine to coarse sand and occasional cobbles and boulders. (possible made ground) | | | | 1.00-1.45 U1<br>B2<br>1.45-1.50<br>1.50-2.00 B3<br>2.00-2.45 U4<br>B5<br>2.45-2.50<br>2.50-3.00 B6<br>3.00-3.45 U7<br>B8<br>3.45-3.50<br>3.50-4.00 B9<br>4.00 U10 | | | | | | | | (64)<br>(82)<br>(130) | |
| ...becoming very sandy below 4.50m | | | | 4.25-4.70 U11 | | 2 | 5 | 7 | 8 | 7 | 9 | 5"31" | |
| | | | | 4.70-5.20 B12<br>5.13 + | | | | | | | | | |
| | | | | 5.75-6.20 B14 | | 1 | 1 | 2 | 2 | 3 | 1 | 5"8" | 19.5 |
| | | 6.50 | 173.10 | | | | | | | | | | |
| Dark grey clayey silty fine to coarse SAND with occasional thick laminae of fine and medium subangular to subrounded gravel of sandstone and mudstone. | | | | 6.50-6.95 U15<br>7.40-7.80 B16<br>8.00-8.45 U17<br>8.45-8.50 U18 | | | | | | | | (100)<br>(94) | |
| | | 8.90 | 170.70 | | | | | | | | | | |
| Stiff grey sandy silty CLAY with some fine to coarse angular to subrounded gravel. | | | | 9.00-9.45 U19<br>U20 | | | | | | | | (100) | |
| | | 9.50 | 170.10 | 9.45-9.50 | | | | | | | | | |
| SAND with gravel * | | 9.70 | 169.90 | 9.70-10.20 B21 | | | | | | | | | |
| Very stiff grey slightly sandy silty CLAY (See following sheet) | | | | | | | | | | | | | |

### LEGEND

Is S.P.T. ▮ U100
Ic C.P.T. ▨ U100 Partial Recovery
0 Jar △ Water Samples
● Bulk

**Remarks** Water strike at 6.50m, rising to 5.40m in 20 minutes, casing at 6.00m
Water strike at 9.50m, rising to 8.30m in 20 minutes, casing at 9.00m

* Drillers description
\+ SPT 5.75-6.20m sample not recovered

Standpipe installed as per attached sheet. Casing maintained just above base of borehole. Sampling & testing at all times.

British Geological Survey

# Norwest Holst Soil Engineering Ltd.

Borehole No. B34

## BOREHOLE LOG

## CABLE PERCUSSION

Contract No. F8827
Location A470 Pentrebach to Cefn Coed Improvement
Client Welsh Office
Method of Boring Cable Percussion
Diameter of Borehole 250mm
SO 00 NW/223

Sheet 2 of 2
Co-ords E304846.1 N205106.5
Ground Level 179.6 m.A.O.D.
Date 19-21/6/90

| Description of Strata | Legend | Depth (mbgl) Daily Progress | O.D. Level (m) | Sampling Depth (m) | Sampling | SPT/CPT mm: 0 to 75 | 75 to 150 | 150 to 225 | 225 to 300 | 300 to 375 | 375 to 450 | N (U100 blows) | Daily Progress |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| With much fine to coarse subangular to rounded gravel of mudstone and occasional thin laminae of light brown silty fine sand. (see previous sheet) | | 10.70 | 168.90 | 10.50-10.95 U22 | | | | | | | | (100) | 20.6 |
| Grey thickly laminated moderately weathered MUDSTONE, weak. | | 11.00 | 168.60 | 10.95-11.00 D23 S24 | C | 19 | 50 | | | | | S 69, for 150mm | |
| Cable percussion boring complete at 11.00m | | | | | | | | | | | | | |

LEGEND

Is S.P.T. ■ U100
Ic C.P.T. ▰ U100 Partial Recovery
0 Jar △ Water Samples
● Bulk

Remarks * Seating blows only

Standpipe installed as per attached sheet. Casing maintained just above base of borehole. Sampling & testing at all times.

British Geological Survey

# Norwest Holst Soil Engineering Ltd.

Borehole No. B34

## BOREHOLE LOG

Contract No. F8827
Location A470 Pentrebach to Cefn Coed Improvement
Client Welsh Office
Method of Boring Rotary Coring
Diameter of Borehole 105mm

ROTARY

Sheet 1 of 5
Co-ords E304646.0 N205106.5
Ground Level 179.60 m.A.O.D.
Date 11.7.90 to 12.7.90

SO 00 NW/223

| Description | Legend | Depth mbgl | O.D. Level (m) | Sampling Depth (m) | Sampling | T.C.R. (%) | S.C.R. (%) | R.Q.D. (%) | F.F. (/m) | "N" (UCS MPa) | Daily Progress |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cable Percussion boring from G.L. to 11.00m. | | 11.00 | 168.60 | 11.00 | | | | | | | |
| Black, thinly laminated, fresh, carbonaceous MUDSTONE, moderately weak, with some coarse gravel sized fragments of coal. (YARD SEAM SUBCROP) | | 11.42 | 168.18 | | | | | | | | 11/7 |
| Dark brownish grey thickly bedded, fresh, CLAYSTONE, very weak with many medium to coarse gravel sized fragments of carbonaceous mudstone and plant fossil remains. | | | | | | 68 | 36 | 32 | NI | | |
| ...dark grey ironstone from 15.66-15.80m. | | | | | | | | | | | |
| ...core loss 13.15 to 14.00m | | 13.15 | 166.45 | | | | | | | | |
| | Core loss | 14.00 | 165.60 | 14.00 | | | | | | | |
| | | | | | | 97 | 16 | 13 | NI | | |
| | | 15.80 | 163.80 | 15.80 | | | | | | | |
| Dark grey, irregularly bedded, fresh CLAYSTONE, weak to moderately weak with many coarse gravel and cobble sized angular fragments of dark grey mudstone randomly orientated. | | | | | | | | | | | |
| ... many closed and healed irregular discontinuities throughout. | | | | | | | | | | | |
| ... Becomes a mudstone breccia in parts. | | | | | | 100 | 7 | 7 | NI | | |
| ... 18.50 to 19.90m Cobble sized and irregularly orientated fragments of mudstone. | | | | 18.90 | | | | | | | |
| | | 20.00 | 159.60 | | | | | | | | |

LEGEND

Is S.P.T. U100
Ic C.P.T. Rotary core
0 Jar △ Water
● Bulk

Remarks EDECO T90 Rig, with '412' double tube core barrel, tungsten bits, giving 76mm cores.
Air flush, with water injection, no circulation loss.
'PX' Casing installed to 15.00m.
Groundwater: 11/7: am WL at 3.90m; seepage at 25.00m; pm WL at 24.00m.
12/7: am WL at 29.20m; pm WL at 28.10m.
Standpipe installed to 53.00m for geophysical logging

Water levels are subject to seasonal or tidal variations and should not be taken as constant

# Norwest Holst Soil Engineering Ltd.

Borehole No. B34

## BOREHOLE LOG

Contract No. 88827
Location A470 Pentrebach to Cefn Coed Improvement
Client Welsh Office
Method of Boring Rotary Coring
Diameter of Borehole 105mm

ROTARY

SO 00 NW/223

Sheet 2 of 5
Co-ords E304846.0 N205106.5
Ground Level 179.60 m.A.O.D.
Date 11 - 12/7/90

| Description | Legend | Depth mbgl | O.D. Level (m) | Sampling Depth (m) | Sampling | T.C.R. (%) | S.C.R. (%) | R.Q.D. (%) | F.F. (mm) | "N" (U100 blows) | Daily Progress |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dark grey, irregularly bedded, fresh CLAYSTONE, weak to moderately weak with many coarse gravel and cobble sized angular fragments of dark grey mudstone randomly orientated. | | 20.00 | 159.60 | | | 98 | 64 | 56 | NI >25 | | 11 |
| | | 21.90 | 157.70 | 21.90 | | | | | | | |
| Dark grey to black thickly bedded, fresh slightly silty MUDSTONE, moderately strong to strong. Many very closely and closely spaced irregular rough fractures, predominantly sub-horizontal and sub-vertical.<br>...22.50m, strata dip 3°. | | | | | | 68 | 0 | 0 | NI | | |
| | | 23.50 | 156.10 | | | | | | | | |
| Bright COAL - recovered as sand and gravel sized fragments - core loss in coal (SEVEN FEET SEAM)<br>23.68-24.50m Core loss. | Core loss | 23.68 | 155.92 | | | | | | | | |
| | | 24.50 | 155.10 | 24.50 | | | | | | | |
| Brownish grey to black, thinly laminated fresh CLAYSTONE, very weak with many carbonaceous and coal laminae (Seatearth) | | 24.55 | 155.05 | | | | | | | | |
| | | 24.80 | 154.80 | | | | | | | | |
| Dark grey to black, thickly bedded, fresh MUDSTONE moderatley weak with some very stiff clay. Extremely and very closely spaced irregular randomly orientated fractures throughout. | | | | | | 97 | 10 | 0 | NI | | |
| | | 26.60 | 153.00 | 26.20 | | | | | | | |
| Dark grey thickly bedded, fresh, silty MUDSTONE, moderately strong. Many extremely and very closely spaced irregular rough fractures, open, occasionally clay and broken rock filling. Core very broken, reworked as coarse gravel and cobble sized rock fragments.<br>... below 28.80m some very thin beds of grey muddy siltstone.<br>bedding sub-horizontal<br>...28.90m, strata dip 5°. | | | | | | 97 | 14 | 6 | NI | | |
| | | | | 27.80 | | | | | | | |
| | | | | | | 100 | 14 | 11 | NI | | |
| | | | | 29.20 | | | | | | | |
| | | 30.00 | 149.60 | | | 100 | 4 | 0 | NI | | 12 |

LEGEND

Is S.P.T. ▮ U100
Ic C.P.T. ▮ Rotary core
0 Jar △ Water
● Bulk

Remarks

British Geological Survey

# Norwest Holst Soil Engineering Ltd.

Borehole No. B34

## BOREHOLE LOG

Contract No. FN827
Location A470 Pontrebach to Cefn Coed Improvement
Client Welsh Office
Method of Boring Rotary Coring
Diameter of Borehole 105mm

ROTARY

SO 00NW/223

Sheet 3 of 5
Co-ords E304846.0 N205106.5
Ground Level 179.60 m.A.O.D.
Date 11 - 12/7/90

| Description | Legend | Depth mbgl | O.D. Level (m) | Sampling Depth (m) | Sampling | T.C.R. (%) | S.C.R. (%) | R.Q.D. (%) | F.F. (/m) | "N" (UTP) (blows) | Daily Progress |
|---|---|---|---|---|---|---|---|---|---|---|---|
| As above | | 30.00<br>30.20 | 149.60<br>149.40 | | | | | | | | |
| Dark grey to black thinly bedded to thinly laminated fresh MUDSTONE, weak to moderately weak. Core recovered as coarse gravel angular and tabular fragments. | | | | | | | | | NI | | |
| ...from 31.00 becoming carbonaceous mudstone. | | | | 30.80 | | | | | | | |
| | | 31.40 | 148.20 | | | | | | NI | | |
| Black bright COAL. (UPPER FIVE FEET SEAM) | | | | | | | | | | | |
| ...31.53 to 31.56 carbonaceous mudstone. | | | | | | | | | 15 | | |
| ...32.09 to 32.13 carbonaceous mudstone. | | 32.15 | 147.45 | | | 91 | 19 | 5 | | | |
| Dark grey to black thinly to thickly laminated fresh CLAYSTONE with much carbonaceous and plant fossil material - (Seatearth). Core recovered as coarse gravel sized angular and tabular fragments. | | | | | | | | | NI | | |
| | | | | 33.00 | | | | | | | |
| Uncertain Boundary. | | 33.95 | 145.65 | | | 82 | 7 | 7 | | | |
| Black bright COAL...possible core loss 34.15 to 34.40. (LOWER FIVE FEET SEAM) | | 34.15 | 145.45 | | | | | | | | |
| | Core Loss | 34.40 | 145.20 | | | | | | | | |
| Black thinly laminated fresh CLAYSTONE very weak with many extremely closely spaced fractures, showing listric surfaces. | | 34.70 | 144.90 | 34.40 | | | | | >25 | | |
| Black bright COAL (GELLIDEG SEAM) | | 35.55 | 144.05 | | | | | | | | |
| Light brownish grey massive bedded fresh very silty CLAYSTONE, moderately strong to strong with some fossil plant material - (Seatearth) and occasional pyrite. Some medium spaced horizontal fractures, rough open. | | | | | | | | | | | |
| ...36.50 Clay Ironstone nodules 40 x 50mm | | | | | | | | | | | |
| ...37.70-37.74 Clay ironstone nodules 30 x 40 x 70mm. (BLACK PINS IRONSTONE BAND) | | | | | | 98 | 65 | 50 | | | |
| ...36.20-36.35 irregular sub-vertical rough open fracture. gradational boundary. | | 37.20 | 142.40 | | | | | | | | |
| Light grey, thickly laminated to thinly bedded fresh slightly sandy SILTSTONE, moderately strong to strong with occasional laminae of fine sandstone. Medium spaced sub horizontal rough open fractures. | | | | 37.40 | | | | | 5 | | |
| ...37.50m, strata dip 4°. | | | | | | | | | | | |
| ...39.08 to 39.35. Very closely spaced, irregular random fractures. | | | | | | 96 | 83 | 78 | | | |
| Bedding sub-horizontal. | | 40.00 | 139.60 | | | | | | | | 11/7 |

**LEGEND**

Is S.P.T. U100
Ic C.P.T. Rotary core
0 Jar Δ Water
● Bulk

**Remarks**

# Norwest Holst Soil Engineering Ltd.

Borehole No. B34

## BOREHOLE LOG

Contract No. F8827
Location A470 Pentrebach to Cefn Coed Improvement
Client Welsh Office
Method of Boring Rotary Coring
Diameter of Borehole 105mm

ROTARY

Sheet 4 of 5
Co-ords E304846.0 N205106.5
Ground Level 179.60 m.A.O.D.
Date 11 - 12/7/90

SO 00 NW/223

| Description | Legend | Depth mbgl | O.D. Level (m) | Sampling Depth (m) | Sampling | TCR (%) | SCR (%) | ROD (%) | F.F. (/m) | "N" (UTSG 60mm) | Daily Progress |
|---|---|---|---|---|---|---|---|---|---|---|---|
| As above | | 40.00 | 139.60 | | | | | | | | |
| Grey fine massive quartzitic SANDSTONE, very strong | | 40.40 | 139.20 | 40.40 | | | | | 25 | | |
| Light grey thickly laminated to thinly bedded fresh SILTSTONE, moderately strong to strong with occasional laminae of light grey fine sandstone ("striped beds") ...41.90m strata dip 5° | | 40.13 | 139.47 | | | 95 | 59 | 48 | 5 | | |
| Gradational Boundary | | | | | | | | | | | |
| Black thinly bedded fresh MUDSTONE moderately weak, recovered as angular coarse gravel and cobble sized fragments. | | 42.00 | 137.60 | | | | | | >25 | | |
| | | 42.50 | 137.10 | 42.50 | | | | | | | |
| Grey thinly laminated, fresh muddy SILTSTONE moderately strong to strong with a few thin beds of grey silty mudstone. ...42.60-42.80 fine sandstone, very strong ...42.85 Clay ironstone, very strong 50mm (BIG BLUE IRONSTONE) ...44.07 Clay ironstone, very strong, 120mm | | 42.85 | 136.75 | | | - | | | 6 | | |
| | | 44.07 | 135.53 | | | 96 | 52 | 47 | | | |
| Dark grey thinly laminated to thinly bedded fresh silty MUDSTONE with some fissile silty mudstone. Many extremely closely spaced sub horizontal bedding fractures. ...grey ironstone very strong from 44.80 to 44.90. ...from 44.90 recovered as angular and tabular coarse gravel sized fragments. ...44.90m, clay ironstone, very strong 100mm. | | 44.10 | 135.50 | | | | | | NI | | |
| | | 44.90 | 134.70 | 44.80 | | | | | 12 | | |
| | | 46.05 | 133.55 | 46.00 | | 100 | 7 | 0 | NI | | 11.7 12/7 |
| Dark grey to black, thinly laminated to thinly bedded fresh MUDSTONE, moderately strong, with much carbonaceous material. ...47.70 to 47.90 extremely to very closely spaced smooth, clean planar joints, 70° from horizontal. | | | | | | | | | 6 | | |
| | | | | | | 100 | 37 | 13 | NI | | |
| | | | | 47.50 | | | | | | | |
| Gradational boundary. | | 48.15 | 131.45 | | | | | | 8 | | |
| Grey thinly laminated, fresh SILTSTONE moderately strong to strong with some very thin beds of dark grey fissile mudstone. ...49.11m, Clay ironstone band very strong; quartz veined, 110mm. | | 49.11 | 130.49 | | | 98 | 16 | 36 | >25 | | |
| ...49.38m, Clay ironstone, very strong, 70mm. | | 49.38 | 130.22 | | | | | | | | |
| ...49.72m, Clay ironstone, very strong, 40mm. (? LITTLE BLUE IRONSTONE) | | 49.72 | 129.88 | | | | | | | | |
| | | 50.00 | 129.60 | | | | | | | | |

**LEGEND**

Is S.P.T. U100
Ic C.P.T. Rotary core
0 Jar △ Water
● Bulk

**Remarks**

Note:- The eight ironstone bands between 42.80 and 57.80m correlate with the Big Blue Ironstone and perhaps part of the underlying little Blue Ironstone.

# Norwest Holst Soil Engineering Ltd.

Borehole No. B34

## BOREHOLE LOG

Contract No. F8827
Location A470 Pentrebach to Cefn Coed Improvement
Client Welsh Office
Method of Boring Rotary Coring
Diameter of Borehole 105mm

ROTARY

Sheet 5 of 5
Co-ords E304846.0 N205106.5
Ground Level 179.60 m.A.O.D.
Date 11 - 12/7/90

SO 00 NW/223

| Description | Legend | Depth mbgl | O.D. Level (m) | Sampling Depth (m) | Sampling | T.C.R. (%) | S.C.R. (%) | R.Q.D. (%) | F.F. (°/m) | "N" (U100 blows) | Dens. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| As above. | | 50.00 | 129.60 | | | | | | | | |
| ... 50.49m, Clay ironstone, very strong, 70mm. | | | | 50.30 | | | | | 7 | | |
| ... 51.80m, Clay ironstone, very strong, 100mm. | | | | | | 100 | 35 | 24 | | | |
| | | 51.80 | 127.80 | | | | | | | | |
| Dark grey thinly laminated fissile, fresh slightly silty MUDSTONE moderately weak. | | | | | | | | | | | |
| bedding sub-horizontal. | | | | | | | | | NI | | |
| Borehole Complete at 53.00m | | 53.00 | 126.60 | 53.00 | | - | | | | | |

LEGEND

Is S.P.T. U100
Ic C.P.T. Rotary core
0 Jar △ Water
● Bulk

Remarks

The core for this borehole has been examined by clients geologist and badly broken in parts.

Water levels are subject to seasonal or tidal variations and should not be [illegible]

British Geological Survey

# APPENDIX G – EXTENT OF RECORDED COAL MINE WORKINGS

DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND REPORT ANY OMISSIONS OR ERRORS

N

KEY

SITE BOUNDARY

MINE WORKING EXTENTS




# EXISTING MINE WORKINGS PLAN - 2 FT 9

(SCALE 1 : 10,000)

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DRAFT ISSUE

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GENEVA BUILDING,
LAKE VIEW DRIVE,
SHERWOOD BUSINESS PARK,
ANNESLEY, NOTTINGHAMSHIRE
NG15 0ED

TEL: +44 (0)1623 684 550
e-mail: nottingham@wyg.com

Project:
RHYDYCAR WEST

Drawing Title:
WORKINGS - 2 FT 9

| Scale @ A3 | Drawn | Date | Checked | Date | Approved | Date |
|---|---|---|---|---|---|---|
| 1 : 10,000 | LA | 27.08.15 | SC | 27.08.15 | SC | 27.08.15 |

| Project No. | Office | Type | Drawing No. | Revision |
|---|---|---|---|---|
| A093819 | 51 | E | 101 | - |

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KEY

SITE BOUNDARY

MINE WORKING EXTENTS

Blaencanaid

Blaencanaid

# EXISTING MINE WORKINGS PLAN - 2 FT 9 (B.L.)

(SCALE 1 : 10,000)

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LAKE VIEW DRIVE,
SHERWOOD BUSINESS PARK,
ANNESLEY, NOTTINGHAMSHIRE
NG15 0ED

TEL: +44 (0)1623 684 550
e-mail: nottingham@wyg.com

Project:
RHYDYCAR WEST

Drawing Title:
WORKINGS - 2 FT 9 (B.L.)

| Scale @ A3 | Drawn Date | Checked Date | Approved Date |
|---|---|---|---|
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KEY

SITE BOUNDARY

MINE WORKING EXTENTS




# EXISTING MINE WORKINGS PLAN - 2 FT 9 MIDLEAF

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SHERWOOD BUSINESS PARK,
ANNESLEY, NOTTINGHAMSHIRE
NG15 0ED

TEL: +44 (0)1623 684 550
e-mail: nottingham@wyg.com

Project:
RHYDYCAR WEST

Drawing Title:
WORKINGS - S FT 9 MIDLEAF

| Scale @ A3 | Drawn | Date | Checked | Date | Approved | Date |
|---|---|---|---|---|---|---|
| 1 : 10,000 | LA | 27.08.15 | SC | 27.08.15 | SC | 27.08.15 |

| Project No. | Office | Type | Drawing No. | Revision |
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KEY

SITE BOUNDARY

MINE WORKING EXTENTS

# EXISTING MINE WORKINGS PLAN - 4 FT

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LAKE VIEW DRIVE,
SHERWOOD BUSINESS PARK,
ANNESLEY, NOTTINGHAMSHIRE
NG15 0ED

TEL: +44 (0)1623 684 550
e-mail: nottingham@wyg.com

Project:
RHYDYCAR WEST

Drawing Title:
WORKINGS - 4 FT

| Scale @ A3 | Drawn | Date | Checked | Date | Approved | Date |
|---|---|---|---|---|---|---|
| 1 : 10,000 | LA | 27.08.15 | SC | 27.08.15 | SC | 27.08.15 |

| Project No. | Office | Type | Drawing No. | Revision |
|---|---|---|---|---|
| A093819 | 51 | E | 104 | - |

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KEY

SITE BOUNDARY

MINE WORKING EXTENTS




# EXISTING MINE WORKINGS PLAN - 5 FT GELLIDEG

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LAKE VIEW DRIVE,
SHERWOOD BUSINESS PARK,
ANNESLEY, NOTTINGHAMSHIRE
NG15 0ED

TEL: +44 (0)1623 684 550
e-mail: nottingham@wyg.com

Project:
RHYDYCAR WEST

Drawing Title:
WORKINGS - 5 FT GELLIDEG

| Scale @ A3 | Drawn | Date | Checked | Date | Approved | Date |
|---|---|---|---|---|---|---|
| 1 : 10,000 | LA | 27.08.15 | SC | 27.08.15 | SC | 27.08.15 |

| Project No. | Office | Type | Drawing No. | Revision |
|---|---|---|---|---|
| A093819 | 51 | E | 105 | - |

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KEY

SITE BOUNDARY

MINE WORKING EXTENTS




# EXISTING MINE WORKINGS PLAN - 6 FT BOTTOM LEAF

(SCALE 1 : 10,000)

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LAKE VIEW DRIVE,
SHERWOOD BUSINESS PARK,
ANNESLEY, NOTTINGHAMSHIRE
NG15 0ED

TEL: +44 (0)1623 684 550
e-mail: nottingham@wyg.com

Project:
RHYDYCAR WEST

Drawing Title:
WORKINGS - 6 FT BOTTOM LEAF

| Scale @ A3 | Drawn Date | Checked Date | Approved Date |
|---|---|---|---|
| 1 : 10,000 | LA 27.08.15 | SC 27.08.15 | SC 27.08.15 |

| Project No. | Office | Type | Drawing No. | Revision |
|---|---|---|---|---|
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# EXISTING MINE WORKINGS PLAN - BLACK PINS IRONSTONE

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LAKE VIEW DRIVE,
SHERWOOD BUSINESS PARK,
ANNESLEY, NOTTINGHAMSHIRE
NG15 0ED

TEL: +44 (0)1623 684 550
e-mail: nottingham@wyg.com

Project:
RHYDYCAR WEST

Drawing Title:
WORKINGS - BLACK PINS IRONSTONE

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LAKE VIEW DRIVE,
SHERWOOD BUSINESS PARK,
ANNESLEY, NOTTINGHAMSHIRE
NG15 0ED

TEL: +44 (0)1623 684 550
e-mail: nottingham@wyg.com

Project:
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# EXISTING MINE WORKINGS PLAN - GORLLWYN

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SHERWOOD BUSINESS PARK,
ANNESLEY, NOTTINGHAMSHIRE
NG15 0ED

TEL: +44 (0)1623 684 550
e-mail: nottingham@wyg.com

Project:
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# EXISTING MINE WORKINGS PLAN - LOWER 4 FT

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SHERWOOD BUSINESS PARK,
ANNESLEY, NOTTINGHAMSHIRE
NG15 0ED

TEL: +44 (0)1623 684 550
e-mail: nottingham@wyg.com

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# EXISTING MINE WORKINGS PLAN - LOWER 7 FT BOTTOM LEAF

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SHERWOOD BUSINESS PARK,
ANNESLEY, NOTTINGHAMSHIRE
NG15 0ED

TEL: +44 (0)1623 684 550
e-mail: nottingham@wyg.com

Project:
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# EXISTING MINE WORKINGS PLAN - LOWER 9 FT

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SHERWOOD BUSINESS PARK,
ANNESLEY, NOTTINGHAMSHIRE
NG15 0ED

TEL: +44 (0)1623 684 550
e-mail: nottingham@wyg.com

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# EXISTING MINE WORKINGS PLAN - UPPER GELLIDEG

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SHERWOOD BUSINESS PARK,
ANNESLEY, NOTTINGHAMSHIRE
NG15 0ED

TEL: +44 (0)1623 684 550
e-mail: nottingham@wyg.com

Project:
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# EXISTING MINE WORKINGS PLAN - UPPER 6 FT

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SHERWOOD BUSINESS PARK,
ANNESLEY, NOTTINGHAMSHIRE
NG15 0ED

TEL: +44 (0)1623 684 550
e-mail: nottingham@wyg.com

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# EXISTING MINE WORKINGS PLAN - UPPER 6 FT RIDER

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SHERWOOD BUSINESS PARK,
ANNESLEY, NOTTINGHAMSHIRE
NG15 0ED

TEL: +44 (0)1623 684 550
e-mail: nottingham@wyg.com

Project:

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# EXISTING MINE WORKINGS PLAN - YARD

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SHERWOOD BUSINESS PARK,
ANNESLEY, NOTTINGHAMSHIRE
NG15 0ED

TEL: +44 (0)1623 684 550
e-mail: nottingham@wyg.com

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# APPENDIX H – CIRIA C552 RISK METHODOLOGY

The following tables are derived from CIRIA C552 and have been used to define the risk rating presented in the Qualitative Risk Assessment matrix.

**Classification of consequence**

| Classification | Definition |
|---|---|
| **Severe** | Short term (acute) risk to human health likely to result in 'significant harm' as defined by the Environment Protection Act 1990, Part IIA. Short term risk of pollution (note; Water Resources Act contains no scope for considering significant pollution) of sensitive water resource. Catastrophic damage to building/property. A short-term risk to a particular ecosystem, or organism forming part of such ecosystem. (Note the definitions of ecological systems within the Draft Circular on Contaminated Land DETR, 2000). |
| **Medium** | Chronic damage to human health ('significant harm', as defined In DETR, 2000). Pollution of sensitive water resources (note; Water Resources Act contains no scope for considering significant pollution). A significant change in a particular ecosystem, or an organism forming part of such an ecosystem. (Note the definitions of ecological systems within the Draft Circular on Contaminated Land DETR, 2000). |
| **Mild** | Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm', as defined In DETR, 2000). Damage to sensitive buildings/structures/services or the environment. |
| **Minor** | Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve. Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc). Easily repairable effects of damage to buildings, structures and services. |

**Classification of probability**

| Classification | Definition |
|---|---|
| **High likelihood** | There is a pollution linkage and an event that either appears very likely in the short term and almost inevitable over the long term or there is evidence at the receptor of harm or pollution. |
| **Likely** | There is a pollutant linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term. |
| **Low likelihood** | There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period that such an event would take place, and is even less likely in the shorter term. |
| **Unlikely** | There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long term. |

**Matrix of consequence against probability to gain a risk classification**

| | | **Consequence** | | | |
|---|---|---|---|---|---|
| | | **Severe** | **Medium** | **Mild** | **Minor** |
| **Probability** | **High Likelihood** | Very High Risk | High Risk | Moderate Risk | Moderate/Low Risk |
| | **Likely** | High Risk | Moderate Risk | Moderate/Low Risk | Low Risk |
| | **Low likelihood** | Moderate Risk | Moderate/Low Risk | Low Risk | Very Low Risk |
| | **Unlikely** | Moderate/Low Risk | Low Risk | Very Low Risk | Very Low Risk |