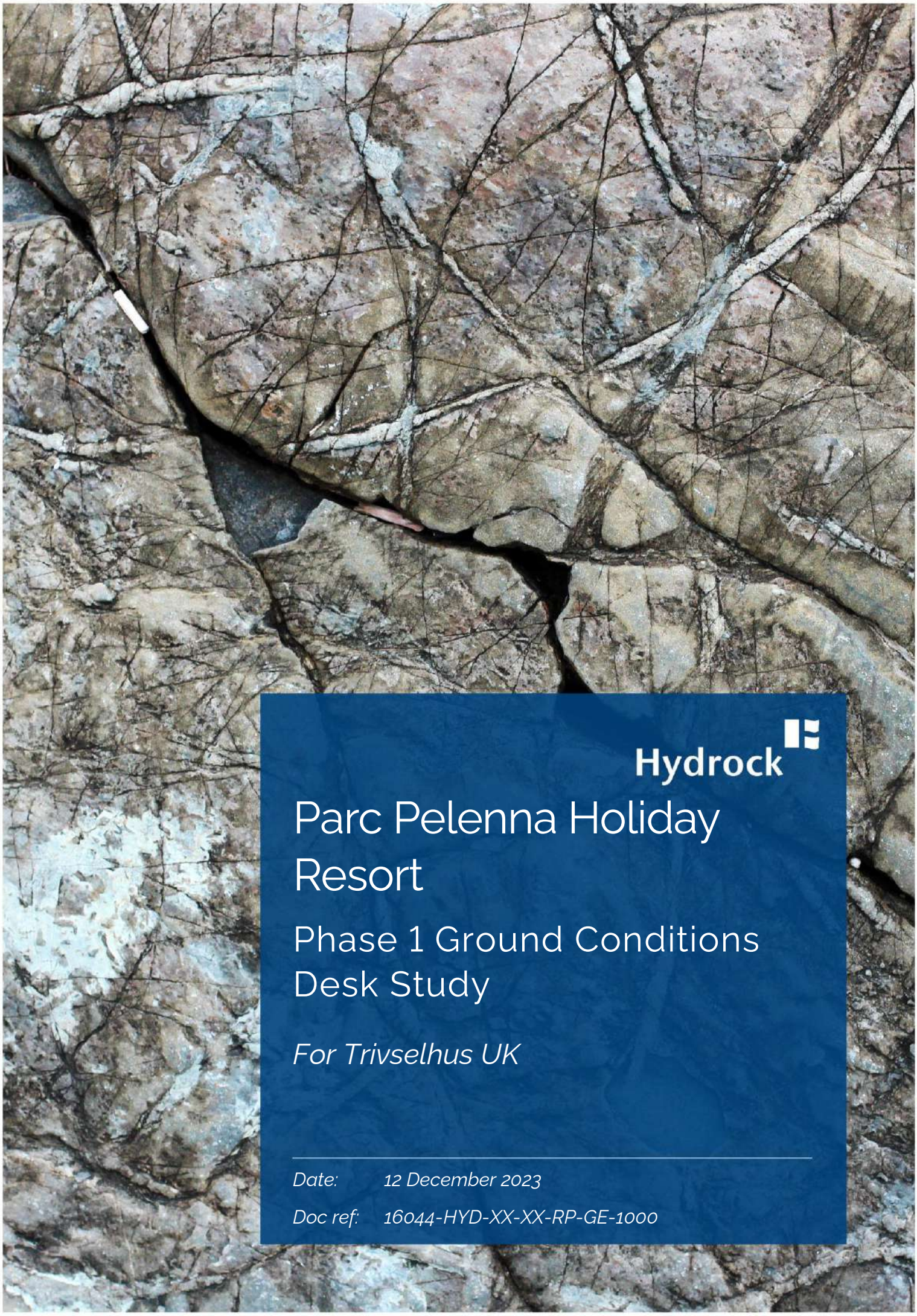

Hydrock

Parc Pelenna Holiday Resort

Phase 1 Ground Conditions Desk Study

For Trivselhus UK

Date: *12 December 2023*

Doc ref: *16044-HYD-XX-XX-RP-GE-1000*

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Contents

Tables

Figures

Appendices

Executive summary

Site information and setting	
Objectives	The objectives of the Phase 1 Ground Conditions Desk Study are to formulate a preliminary Ground Model and an initial Conceptual Site Model (CSM) of the site to identify and make a preliminary assessment of any potential geo-environmental and geotechnical risks to the proposed development.
Client	Trivselhus UK.
Site name and location	Parc Pelenna Holiday Resort. The site is situated to the northeast of Neath, Swansea with the nearest postcode being SA11 4ET.
Proposed development	The site development proposals are understood to comprise of 120 single-storey/split level lodges spread across the western half of the site within five clusters. Within this area there will be a single-storey community hub with amenities and an access road leading in from the north.
Site description	The site is situated on the north face of a hill meaning almost everywhere on-site slopes towards the north at varying angles. It is almost entirely vegetated with sections of forest, scrubland and managed lawns with some superficial and bedrock exposures. In the central area of the site lies a farm house, a farm building and a vacant holiday house with some small areas used for material storage. The site is bound by pastoral lands and forest on all sides with notable features being the River Neath 585m northwest, the Pelenna Forest abutting the southern boundary, and a gas distribution facility 55m west. The site is approximately 43.8Ha in area with an irregular rectangular shape.
Desk study summary	
Topography	The elevation across the site varies substantially due to it being situated on the side of a hill where the surface broadly slopes towards the north into the Vale of Neath. The elevation ranges from 250m Above Ordnance Datum (AOD) in the southwest of the site to 134m AOD in the north. However, on a smaller scale the topography varies across the site with areas of steep slopes, flat plateaus, track cuttings and terraced gardens.
Hydrology	Many drain systems lie on all sides of the site between 11m and 240m away. Other notable features include the Neath Canal 365m northwest and the River Neath 585m northwest.
Site History	The site comprised pastoral and forest land in the 1800s with some minor quarrying activities. In the first half of the 20th century the site was heavily mined for coal with the Cefn-mawr Colliery present in the northwest and many adits present in the east. By 1965 coal mining activities had ceased and the site has since been used for forestry.
Geology	Superficial: Peat Solid: Hughes Member and Brithdir Member
Natural geological hazards	» Organic matter (Peat) is expected to be present in the west of the site and possibly elsewhere.

Anthropomorphic geotechnical hazards	» Legacy issues pertaining quarring and mining activities in the north of the site. » Tracks have been cut into the site for access and has resulted in many superficial and bedrock exposures across the site. » Areas around farm house, farm building and storage area may have Made Ground and buried objects beneath.
Hydrogeology	Superficial: Peat – unproductive. Solid: Hughes Member and Brithdir Member – Secondary A aquifer.
UXO risk	A non-specialist UXO assessment indicates a low bomb risk.
Preliminary conceptual site model based on desk study	
Potential contaminant sources	» Made Ground, associated with the Cefn-mawr Colliery activities, possibly including elevated concentrations of metals, metalloids, asbestos fibres, Asbestos Containing Materials, PAHs, petroleum hydrocarbons, lubricants and solvents (S01). » Made Ground at the entrances of coal mine adits and used for backfilling, potentially containing metals and metalloids, asbestos fibres, asbestos containing materials, PAHs and petroleum hydrocarbons (S02). » Burnt fly tipped waste near the former quarry in the centre of the site including paint cans, plastics and metals, possibly a source of metals, metalloids, PAHs and petroleum hydrocarbons (S03). » Ground gases (methane and carbon dioxide) from organic materials in Made Ground / Peat / superficial weathered bedrock and worked coal seams (S04). » Farm building in the centre of the site which has an asbestos tile roof and contains an Above Ground Storage Tank, and the storage area in the southwest, possibly a source of petroleum hydrocarbons, PAHs, VOCs, asbestos fibres and Asbestos Containing Materials (S05). » Workshop near the house in the centre of the site, possibly a source of elevated concentrations of metals, metalloids, asbestos fibres, Asbestos Containing Materials, PAHs, petroleum hydrocarbons, lubricants and solvents (S06). » Naturally elevated concentrations of arsenic within the natural soils across the site (S07). » Radon (S08).
Potential contaminant linkages (for receptors for which there is or will be a pathway)	» People. » Development end use. » Groundwater. » Surface waters.
Preliminary geotechnical hazards	
Groundwork	» Uncontrolled Made Ground (variable strength and compressibility). » Soft / loose compressible ground (low strength and high settlement potential). » Variable lateral and vertical changes in ground conditions. » Attack of buried concrete by aggressive ground conditions. » Obstructions.

	» Existing below ground structures to remain (onsite tunnels). » Shallow groundwater. » Changing groundwater conditions. » Loose Made Ground, leading to difficulty with excavation and collapse of side walls. » Slope stability issues – general slopes. » Mining. » Relict slip surfaces.
Future considerations	
Further work	Following the ground investigation works undertaken to date, the following further works will be required: » Intrusive investigation to confirm the presence, depth and composition of Made Ground across the site at development locations; » Intrusive investigation to determine depth and distribution of mine workings beneath the site at development locations; » Foundation assessment at proposed development locations; » Slope stability assessment at proposed development locations; » Vegetation clearance and additional site walkovers to determine distribution of mine adits on site. » Assess trench stability, over break potential and 'diggability'; » Determine CBRs to assist with road pavement design; » Obtain information on soil sulphate conditions in terms of Aggressive Chemical Environment for Concrete Class (ACEC); » Determine depth to groundwater below the site; » Soil sampling for chemical and geotechnical laboratory testing; » Undertake ground gas monitoring and assessment; and » Complete a demolition / refurbishment asbestos survey of the existing buildings on site.

This Executive Summary forms part of Hydrock Consultants Limited report number 16044-HYD-XX-XX-RP-GE-1000 and should not be used as a separate document.

1. Introduction

1.1 Terms of reference

In October 2023, Hydrock Consultants Limited (Hydrock) was commissioned by Trivselhus UK (the Client) to complete a Phase 1 Desk Study at Parc Pelenna. The site is located to the northeast of Neath, Swansea with the nearest postcode being SA11 4ET.

The site is situated 5.2km northeast of Neath town centre roughly 760m southeast of the A465 highway on the north-facing slope of a hill side. The site is almost entirely vegetated with sections of forest, scrubland and managed lawns. In the central area of the site lies a farm house, a farm building and a vacant holiday house with some small areas used for material storage. The site is bound by pastoral lands and forest on all sides with notable features being the River Neath 585m to the northwest, the Pelenna Forest abutting the southern boundary and a gas distribution facility 55m to the west.

Hydrock understands that the proposed development layout has yet to be finalised, however it is expected to consist of 120 single-storey/split level lodges spread across the western half of the site within five clusters. Within this area there will be a single-storey community hub with amenities and an access road from the north. Much of the existing vegetation is likely to be retained and enhanced. The current development proposal for the site that this report has been based upon (Concept Masterplan: Parc Pelenna, 2304/SK001) is presented in Appendix A.

These Phase 1 works have been undertaken in accordance with Hydrock's proposal referenced (Ref: 16044-Parc Pelenna, dated 2 October 2023) and the Client's instructions to proceed (email from the Client 4th October 2023).

1.2 Objectives

The works have been commissioned to support the planning application and to assist with the design of the development.

The objectives of the Phase 1 Desk Study are to formulate a preliminary Ground Model and an Initial Conceptual Site Model (CSM) of the site to identify and make a preliminary assessment of any potential geo-environmental and geotechnical risks to the proposed development.

1.3 Scope

The site investigation includes a Phase 1 Desk Study and a Phase 2 Ground Investigation.

The scope of the Phase 1 Desk Study comprises:

- a field reconnaissance (walkover) to determine the nature of the site and its surroundings including current and former land uses, topography and hydrology;
- the acquisition and review of:
  - historical Ordnance Survey maps, to identify any; former potentially contaminative uses shown at the site and immediately surrounding it, and an assessment of the associated contamination risks;
  - a third-party environmental report to identify any; flooding warning areas, local landfills, pollution incidents, abstractions, environmental permits etc. All of which may have had the potential to have environmental impact on the site;
  - topographical, geological and hydrogeological maps;
  - British Geological Survey (BGS) archive records;
  - Zetica unexploded ordnance (UXO) maps;
  - a site-specific Coal Authority 'Consultants Coal Mining Report';

- the Coal Authority's Interactive Viewer;
- a site-specific BGS Radon report and Infiltration SuDS report;

- development of a preliminary Ground Model representing ground conditions at the site;
- development of an initial CSM, including identification of potential contaminant linkages;
- a qualitative assessment of any geo-environmental risks identified; and
- identification of any plausible geotechnical hazards.

1.4 Available information

The following documents, reports etc have been provided to Hydrock by the Client for use in the preparation of this report:

- Ross Peedle Architecture (RPA), n.d. 'Parc Pelenna: Concept masterplan'. Ref: 2304/SK001 (RPA, n.d); and
- Hywel John Surveys Ltd, October 2023. 'Parc Pelenna, Neath: Topographical Survey 1:1,500'. Ref: 4223 (Hywel John Surveys, 2023). It should be understood that the extent of the topographical survey at the time of writing did not cover the entire site.

It is understood that the Client defined in Section 1.1 commissioned assignment of the above documents and Hydrock has assumed that full reliance can be placed upon their contents. Should this not be the case, Hydrock should be informed at the earliest opportunity.

1.5 Regulatory context and guidance

The investigation work has been carried out in general compliance with recognised best practice, including (but not limited to) BS 5930:2015, BS 10175:2011+A2:2017 and the AGS (2006) 'Good Practice Guidelines for Site Investigations'.

The geo-environmental section of this report is written in broad accordance with BS 10175:2011+A2:2017, EA LCRM (2023) and the AGS (2006) 'Good Practice Guidelines for Site Investigations'.

The methods used follow a risk-based approach, the first stage of which is a Phase 1 Desk Study and field reconnaissance, with any potential geo-environmental risks assessed qualitatively. This is done using the 'source-pathway-receptor contaminant linkage' concept to assess risk as introduced in the Environmental Protection Act 1990 (EPA, 1990). Any potential geotechnical risks are also assessed from the Phase 1 desk study and site reconnaissance stage.

Professional judgement is then used to evaluate the findings of the risk assessments and to provide recommendations for the development.

The geo-environmental and geotechnical aspects are discussed in separate sections. Throughout the report the term 'geotechnical' is used to describe aspects relating to the physical nature of the site (such as foundation requirements). The term 'geo-environmental' is used to describe aspects relating to ground-related environmental issues (such as potential contamination). However, it should be appreciated that this is an integrated investigation and these two main aspects are inter-related. Designers should take all aspects of the investigation into account.

Remaining uncertainties and recommendations for further work are listed in Section 6 and Section 7.

2. Desk study (and field reconnaissance)

2.1 Data

A number of desk study sources have been used to assemble the following information. These are presented in Appendix C and Appendix D and include:

- Third-party environmental report (Groundsure report, Ref: GS-5IU-EWQ-VUE-VXL) (Appendix D);
- Historical Ordnance Survey mapping (Appendix C);
- BGS Archive Records (Appendix D);
- Zetica UXO Risk Map (https://zeticauxo.com/downloads-and-resources/risk-maps/) (Appendix D);
- Coal Authority 'Consultants Coal Mining Report' (Ref: 51003388903001) (Appendix D);
- Coal Authority's Interactive Viewer (http://mapapps2.bgs.ac.uk/coalauthority/home.html);
- BGS Radon report (Ref: BGS_335835/50064) (Appendix D); and
- BGS Infiltration SuDS report (Ref: BGS_335835/50063) (Appendix D).

2.2 Site referencing

Table 2.1: Site referencing information

Item	Brief Description
Site name	Parc Pelenna Holiday Resort.
Site address	The nearest postcode is SA11 4ET.
Site location and grid reference	The site is located 5.2km northeast of Neath town centre approximately 760m southeast of the A465 highway on the north-facing slope of a hill side. The National Grid Reference (NGR) of the approximate centre of the site is 280319E, 199507N. The site is approximately 43.8Ha in area with an irregular rectangular shape.
Site boundaries	The site is bound on all sides by pastoral land and forests with notable features including the River Neath 585m northwest, the Pelenna Forest abutting the southern boundary, and a gas distribution facility 55m west. Across the site the boundary varies from dry stone walls, metal livestock fencing and dense vegetation.

Figure 2.1: Site location

(Reproduced with permission from Groundsure)

Figure 2.2: Extract from the Ordnance Survey Map.

(OS licence 100023353).

A Site Location Plan (Ref: 16044-HYD-XX-XX-DR-GE-1000) is presented in Appendix A.

2.3 Site description and field reconnaissance survey

A field reconnaissance survey was undertaken on the 14 and 15 November 2023 to visually identify assess potential geotechnical hazards, contaminant sources for future investigation and identification of possible source-pathway-receptor linkages. The weather during the field reconnaissance survey was mostly dry with slippery ground conditions.

Selected photographs are presented as Figure 2.3 to Figure 2.6. Additional photographs are presented in Appendix B.

Table 2.2: Site description

Item	Brief Description
Site access	The site was accessed from the southwest via Fairyland Road.
Site area	The site has an irregular rectangular shape and has an area of approximately 43.8Ha.
Elevation, topography and any geomorphic features	The elevation across the site varies substantially due to it being situated on the side of a hill where the surface broadly slopes towards the north into the Vale of Neath. The elevation ranges from 250m Above Ordnance Datum (AOD) in the southwest of the site to 134m AOD in the north. The surface topography does vary across the site. In the eastern half of the site a flat trackway close to the southern boundary runs east to west and begins to dip steeply towards the north. The slope is densely forested with soft hummocky ground conditions. At the base of the forest is a trackway running east to west before transitioning into another steep slope. At the base of the second steep slope there is evidence of instability in the slope toe and a bricked-up coal mining adit was observed. In the western area of the site the southern portion is generally flat as this is part of the crest of the hill. From here the ground gradually slopes towards the north. In the far west of the site lies a forest with extremely boggy ground conditions, while in the central area there are no forests with several properties

	and managed lawns. The ground in the central area is terraced in places providing flat areas for some of the properties. In the far northwest of the site the slope becomes slightly less steep as it transitions to the valley floor. Across the site there are pathways cut into the slope which in some instances have created sub-vertical to vertical walls of superficial and bedrock material. Some of these reached over 4m tall and appeared to be unstable. Two former quarries exist across the west of the site and in one instance there are 10 to 15m high bedrock exposures.
Site boundaries and surrounding land	The northern boundary is demarcated by metal livestock fencing and vegetation with forests and some pastoral land immediately north of this. Beginning 330m northwest lies a railway line, Neath Canal (365m), River Neath (585m) and the A465 highway (760m). The eastern boundary is similarly demarcated by a metal livestock fence and immediately adjacent is an oak grove in the northeast while in the southeast lies pastoral land. The southern boundary is marked by a dry-stone wall and beyond the majority of this boundary lies the Pelenna Forest. In the southwest the site bounds pastoral land. The western boundary is marked by metal livestock fencing and immediately adjacent is pastoral land. A gas distribution facility is situated off site 55m from the western boundary.
Present land use	The land is mostly unoccupied and comprises mixed native and foreign plantation forest with areas of scrubland and managed lawns. The eastern half of the site is partly comprised of forest while the northeastern area appears to have been partially logged. The western half of the site is mostly comprised of forest with some areas of managed lawn, properties, material storage and beekeeping.
Vegetation	Dense forest consisting of coniferous and deciduous trees cover the majority of the site. Scrubland is scattered between the forests and consist of ferns, short shrubs and tree saplings. In the central area of the site the grounds are managed and currently consist of managed lawns.
General site sensitivity	The site is within a generally rural area with extensive ancient woodland to the west, north and east.

A Site Walkover Plan (Ref: 16044-HYD-XX-XX-DR-GE-1001) is presented in Appendix A.

Figure 2.3: Above ground fuel storage tank in the farm building in the south-central area of the site.

Figure 2.4: Sandstone bedrock exposure in the northwest of the site.

Figure 2.5: Site of the historical Cefn-mawr Colliery.

Figure 2.6: Mine adit in the north of the site.

2.4 Site history

A study of historical Ordnance Survey maps (Appendix D) has been undertaken to identify any former land uses at the site and surrounding areas which may have geotechnical or geo-environmental implications for the proposed development. The key findings are summarised in Table 2.3.

Table 2.3: Site history review

Reference	Key features on site	Key features off-site
OS Map[1] 1877: 1:10,560	The site mostly comprises open pastoral land with some forests in the northeast and along the northwest boundary. A farm lies roughly central in the site with a spring and quarry located to the slightly north of the farm. A tunnel connects to the quarry which run	100m west – Penrhiw Angharad Isaf farm with several buildings. 100m northeast – Engine house and air shaft associated with coal mining. 200m northeast – Small quarry. 330m northwest – Railway.

[1] Ordnance Survey Historical Map Information provided by Groundsure.

	offsite towards the west and links up with the railway. Two small quarries are present in the northeast of the site with a linear feature (likely a track) leading away from these towards the eastern boundary. Overall, the site is split into over 25 parcels of land, likely separated by drystone walls, ditches or fencing.	350m and 500m northeast – Tramways trending northwest to southeast connect to the railway. 365m northwest – Neath Canal. 585m northwest – River Neath. 750m north – Clyne Colliery.
OS Map 1877 1:2,500	'Old Drum' marked in the northwest of the site near the quarry and spring.	Tramway and interchange trending northwest to southeast immediately northeast of the site with two engine houses, an air shaft and old coal drift. 100m west – Old quarry next to the site of the farm. 200m northeast – area marked as old coal level next to the small quarry.
OS Map 1897 1:10,560	The main farm area has shifted 100m east from the positions seen in 1877. Mapping appears to show the two quarries in the northeast have combined into one and the linear feature next to this is now marked as a footpath and extends further into the site.	350m and 500m northeast – Tramways now marked as 'old tramways'. 450m north – Old coal pit. 750m north – Clyne Colliery has been renamed as the Resolven Tin Plate Works and has expanded.
OS Map 1899 1:2,500	No significant changes noted onsite.	Tramway interchange immediately northeast now remodelled into on continuous track and the two engine houses and air shaft are no longer marked.
OS Map 1919 1:2,500	The quarry in the northwest of the site is now marked as the Cefn-mawr Colliery with a tramway trending northeast to southwest passing from here to the north. A 'supply pipe' passes through the northern edge of the site generally trending southwest to northeast. Air valves are periodically marked above this feature. Two coal mining adits along the north of the site along the footpath and marked on the map as 'old coal level'. One adit lies where one of the quarries was. Possibility for a third adit based on the presence of a sluice valve coming from the area.	Three sluice valves noted coming from the northern boundary of the site and heading north (downhill). Tramway immediately northeast now marked as 'Old Tramway'.

OS Map 1921 1:10,560	Three 'rises' are marked in the north of the site with the sluice valves coming from these and heading north (downhill).	Forest land immediately northwest of the northwest boundary has been deforested. 10m northeast – Tramway now marked as 'Old Tramway'. 500 to 600m north – Two quarries and one old quarry now present along a stream.
OS Map 1948 1:10,560	No major changes noted other than some minor deforestation in the northeast and an electrical powerline now runs through the northwest of the site trending northeast to southwest. Tramway leading from the Cefn-mawr Colliery is not marked anymore.	The tunnel leading from the Cefn-mawr Colliery towards the northwest is no longer recorded.
OS Map 1962 - 1965 1:10,560	The Cefn-mawr Colliery is now marked as 'mine' while in the northeast the quarry is marked as disused. Some afforestation in the east of the site. 'Cairns' now present in the southwest of the site.	Large forest (Cwm Gwenffrwd) is now present immediately south and southeast of the site. 490m southwest – Roman Camp now marked. 750m north - Resolven Tin Plate Works no longer marked. Appears the main building has been demolished.
OS Map 1962 - 1964 1:2,500	Site of the Cefn-mawr Colliery now marked as a disused tip. Possibly two more coal mining adits present in the north of the site to the west of the previously mentioned ones. One of the adits in the far northeast now marked as disused and the sluice valves on site are marked as having 'issues'.	100m west – Sheep wash now marked next to the farm. 210m northwest – New road (B4434) constructed northeast to southwest.
OS Map 1973 1:10,560	Mine in the northwest of the site is now marked as disused. The land in the west of the site has become forested with plantation trees.	No significant changes noted. No map coverage for lands east of the site.
OS Map 1982 - 1987 1:10,560	Tip now present in the northwest of the site next to the disused mine. Unmarked tramway leading from the Mine is now marked as dismantled tramway.	No significant changes noted offsite. No map coverage for lands east of the site.
OS Map 1988 - 1991 1:10,560	No significant changes noted onsite.	No significant changes noted offsite.
OS Map 1993 1:2,500	No significant changes noted onsite.	Linear feature noted along the northwest boundary of the site leading

		northwest towards the Neath Canal. Possible utility. 100m west – Sheep wash no longer marked next to the farm.
OS Map 2001 1:10,560	Building or structure noted in the south-central area of the site.	760m northwest - A465 high now present.
Google Earth© Imagery 2006[2].	Most of the site except for the central area (area of the farm building which is grassland) is forested with footpaths and/or vehicle tracks crossing the site. Two ponds are now present near the farm house in the centre of the site and a possible quarry has opened up northeast of the farm house. A second building is noted in the south-central area of the site.	50m west – hardstanding pad with an access road leading up to it. Large areas of the forest to the south and southeast have been cut down.
OS Map 2010 1:10,000	Tip is no longer marked in the northwest and two more ponds are marked in the south.	No significant changes noted offsite.
Google Earth© Imagery 2013	Large strip of forest has been cut down along the north of the site with some minor cutting done across the site. A small compound is present in the southwest of the site with a possible storage container and an earth bund.	No significant changes noted offsite.
Google Earth© Imagery 2021	Large swathes of forest have been cut down in the east, north and northwest. Possible quarry northeast of the farm house does not appear active and is overgrown with trees.	No significant changes noted offsite.
OS Map 2023 1:10,000	No significant changes noted onsite.	No significant changes noted offsite.

The site comprised both pastoral and forest land in the 1800s with some minor quarrying activities. In the first half of the 20th century the site was heavily mined for coal with the Cefn-mawr Colliery present in the northwest and several adits present in the east. By 1965 coal mining activities had ceased and the area of the colliery was labelled as a tip. Mining and quarry activities largely ceased on site after this and the site has since been used for forestry.

[2] ©Infoterra Ltd & Bluesky, image date: 1/1/2006; ©Digital Globe, image date: 12/7/2013; ©Digital Globe, image date: 23/4/2013.

2.5 Geology

The geology of the site area is shown on the British Geological Survey (BGS) 1:50,000 geological map of Pontypridd (Sheet 248) map extract reproduced as part of the Groundsure report and is summarised below. Paper copies of the 1:10,560 geological mapping do not cover the entire site and only cover the western portion of the site. The geology for the western portion of the site is shown on the BGS 1:10,560 geological map SS79NE. Hydrock drawing 16044-HYD-XX-XX-DR-GE-1002 outlines the geological features on site including the inferred coal seams.

Table 2.4: Geology

Ref. for Figures	Location	Stratigraphic Name	Description
Superficial Deposits (Figure 2.7)			
1	On site (west).	Peat	Partially decomposed mass of semi-carbonised vegetation.
Solid Geology (Figure 2.8)			
8	On site.	Hughes Member	Green-grey 'Pennant sandstones' with thin mudstones/siltstone, seatearth interbeds and thin coals.
6	On site.	Brithdir Member	Green-grey 'Pennant sandstones' with thin mudstones/siltstone, seatearth interbeds and thin coals.

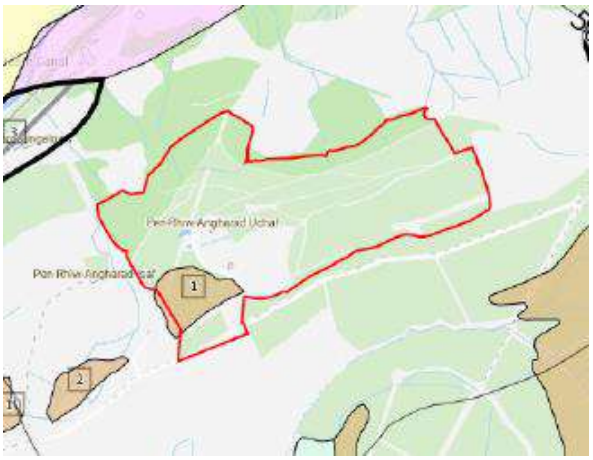

Figure 2.7: Superficial deposits.

(Reproduced with permission from Groundsure)

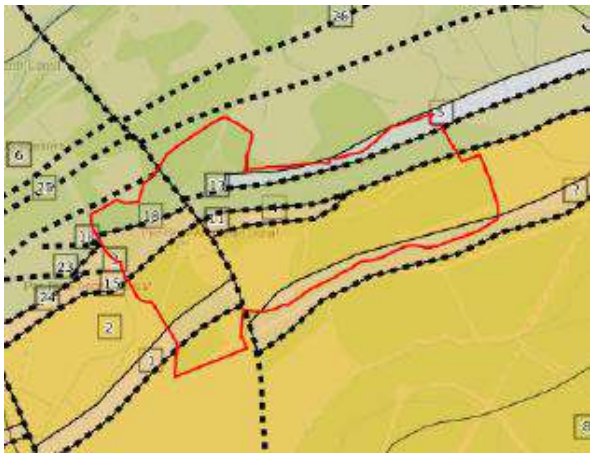

Figure 2.8: Solid geology.

(Reproduced with permission from Groundsure)

A fault, trending approximately northwest to south, with a downthrow to the west, passes through the western half of the site. The Ton-y Grugos Fault, trending parallel with this fault, with a downthrow to the west, is located 440m to the west of the site.

Three outcropping coal seams are present on site; (beginning in the south and moving north) these are the Mountain (also known as the Darren Ddu), Wenallt (also known as the Hughes) and

Glyngwilym seams. The Mountain seam is approximately 1 to 5 ft thick with an unknown dip angle. The Wenallt seam is approximately 3 to 4 ft thick and roughly dips at 0.7° to 7.8°. The Glyngwilym seam is approximately 2ft thick and has an unknown dip angle. It is likely that the Mountain and Glyngwilym seam dip angles are roughly the same as the Wenallt seam. These outcrops are roughly parallel and trend northeast to southwest with the seams dipping toward the south and southeast. The fault passing through the site displaces these outcrops. Furthermore, there are several other coal seams outcropping to the northwest of the site and these are likely to pass beneath the site at significant depth including the Brithdir Rider, Graig and the No.1 Rhondda.

BGS 1:10,000 mapping indicates a landslip occurred in the northwest of the site. It is unclear if any other landslips or types of mass movement have occurred on site due to limited coverage by the maps.

A number of borehole logs from the BGS archive have been reviewed. Selected records are summarised below:

- SN80SW2, located 430m to the north of the site at Clyne Pit (280720E, 200250N), drilled to a depth of 191.41m and recorded:
  - 0.00m to 4.57m walling (brick-lined pit wall).
  - 4.57m to 39.24m Coal Measures: rock with thin beds of clift (blocky or silty mudstone).
  - 39.24m to 39.50m coal seam (possible Brithdir).
  - 39.50m to 42.21m fireclay, rock and clift.
  - 42.21m to 42.24m coal seam.
  - 42.24m to 45.90m fireclay, rock and clift.
  - 45.90m to 53.34m white rock
  - 53.34m to 56.29m sequences of clift and coal.
  - 56.29m to 63.02m shale, fireclay and clift mixed with rock.
  - 63.02m to 190.55m rock, with thin beds of clift and discontinuous streaks of coal.
  - 190.55m to 191.62m No. 1 Rhondda coal seams.

The term 'clift' has been directly transcribed from the BGS borehole log, and it is believed to be 'blocky mudstone or silty mudstone'.

2.6 Hydrogeology

2.6.1 Aquifer designations

Based on the inferred geological sequence presented in Section 2.5 and the Natural Resources Wales (NRW) interactive aquifer designation map, the aquifer system presented in Table 2.5 applies.

Table 2.5: Aquifer system

Superficial Deposits		
Peat	Unproductive	Comprised of partially decomposed semi-carbonised vegetation. Permeability will likely be moderate to low and water is likely to follow heterogenous preferential pathways.
Solid Geology		

Hughes and Brithdir Members (Coal Measures)	Secondary A	Both these deposits are similar and form part of the Pennant Sandstone Formation. These are likely dominated by moderate primary permeability sandstone which is interbedded with low permeability layers of mudstone, seatearths and coal seams. Potentially faulted and fractured, with high secondary permeability. Coal workings are likely to have created a significant secondary porosity and permeability and large volumes of groundwater can be present in abandoned workings, with associated potentially high rates of flow.

2.6.2 *Groundwater abstraction*

There are no active licensed groundwater abstractions within 1000m of the site.

2.6.3 *Groundwater source protection zones and groundwater vulnerability*

The site is not within a groundwater Source Protection Zone (SPZ).

2.6.4 *Groundwater levels, recharge, and flow*

There is limited information available regarding groundwater depth as there were no historical boreholes located on or close to the site which mentioned the depth to groundwater. Nevertheless, looking at the historical maps it can be inferred that groundwater is likely to be close to the surface in the north of the site due to the presence of a spring in the northwest and the presence of sluice valves leaving the coal mining adits. The BGS Infiltration SuDS report indicates that ground water is likely to be more than 5m below ground level (bgl) throughout the year across much of the site, however in the north the report states groundwater will be less than 3m bgl for at least part of the year. Overall, groundwater is expected to be shallow in the north and at depth in the south.

Superficial deposits are generally absent across the site except for a pocket of Peat in the west. These deposits are likely to act as sponge for surface water and gradually release it into the surrounding ground. The BGS Infiltration SuDS report supports this and shows the mapped superficial deposits to be poorly draining.

The Hughes and Brithdir Members are likely to exhibit heterogenous flow as these deposits are comprised of varying layers of sandstone, mudstone, seatearths and coal seams where intergranular permeability is expected to differ. A high secondary permeability via faulting and fracturing is likely to be present across both these Members, Historical coal workings are expected to be present beneath the site which will also lead to a significant secondary permeability and porosity. Due to the heterogenous spread of these features, it is likely that flows through the bedrock will be heterogeneous.

Recharge into the bedrock is expected to take place mainly via infiltration as the site surface is almost entirely exposed with only small areas of hardstanding. A degree of horizontal recharge is likely to take place in the south of the site where the ground slopes generally toward the north.

The site is generally located within one catchment which is expected to direct groundwater flows toward the north (downhill) into the Vale of Neath valley.

2.6.5 Groundwater quality

The groundwater body beneath the site (Swansea Carboniferous Coal Measures) is currently (2021 Cycle 3) classified under the Water Framework Directive as 'poor'.

The water body is currently provided a 'poor' status due to 'chemical dependant surface water body' conditions.

2.6.6 Groundwater flooding

The environmental data report indicates a negligible risk of groundwater flooding. The BGS Infiltration SuDS report indicates the site is within an area underlain by variably draining Hughes and Brithdir Member bedrock, however much of it is marked as being free draining. This is likely to enable moderate to high groundwater flows which should help to transport excess water off site. The site also slopes steeply towards the north which will help to drive surface water off-site. Finally, the SuDS report indicates groundwater across most of the site will be more than 5m bgl throughout the year which should provide a large area of unsaturated ground where water can be stored resulting is a lower likelihood of groundwater flooding.

2.7 Hydrology

2.7.1 Surface water system and drainage

The surface water features in the vicinity of the site are listed in Table 2.6 and, where appropriate, are marked on the Site Walkover Plan (Ref: 16044-HYD-XX-XX-DR-GE-1001) in Appendix A.

Table 2.6: Surface water features

Feature	Location Relative to Site Area
Drain system (leading to Twrch Brook)	11m northeast
Drain system	44m north
Drain system	61m northwest
Drain system	143m east
Drain system	183m northwest
Drain system	220m north
Drain system (Gwenffrwd)	238m south
Drain system	240m west
Neath Canal	365m northwest
River Neath	585m northwest

2.7.2 Surface water abstractions and discharges

There are no active surface water abstractions or discharges within 1km of the site.

2.7.3 Surface water quality

Reference to the third-party environmental report shows the site is almost entirely within one catchment, except for a small sliver in the southwest. The main catchment is called the 'Neath –

conf with Nedd Fechan and Mellte to TL'. The current (2021 cycle 3) overall status under the Water Framework Directive is described as 'moderate'.

The overall reason for the waterbody currently having a 'moderate' status is due to the plant life. The map also indicates the chemical condition of the catchment as 'high' and the driving contaminants are pH, arsenic, copper, iron, manganese, cadmium, lead, nickel and several PAHs.

2.7.4 Surface water flooding

The third-party environmental report indicates the site is not within a Flood Zone. Reference to the NRW 'Flood and Coastal Erosion Risk Maps' shows the site is not within an area at risk of flooding from rivers or the sea. However, it does indicate a low to medium risk of surface water and small watercourse flooding in some areas near existing site drains.

No further consideration of flood risk is undertaken in this report. Specialist flood risk advice should be sought with regard to drainage and flooding.

2.8 Mining and mineral extraction

2.8.1 Coal mining

Reference to the Coal Authority (CA) interactive map shows the site is within a Coal Mining Reporting Area and there are sections of the site which lie within a Development High Risk Area. Therefore, as there is potential for past mine workings being present in coal seams beneath the site a Consultants Coal Mining Report was obtained from the CA and is included in Appendix D. The key statements within the report are that:

- There are at least three workable seams which outcrop onsite. These are Mountain (also known as the 'Darren Ddu' buyt from herein referred to as the 'Mountain'), Wenallt (also known as the 'Hughes' but from herein referred to as the 'Wenallt') and Glyngwilym. The report also states there are other(s) which are unnamed.
- Significant past underground mining has occurred on site within the Wenallt seam with recorded workings between 53m and 81m bgl. The No.1 Rhondda is also present, however this at a significant depth (264m bgl) and is not of concern.
- There is a probability of unrecorded shallow workings.
- There are no spine roadways recorded at shallow depths.
- There are seventeen recorded mine entries on or within close proximity of the site. Some of these have been backfilled or blocked off.
- Eight abandoned mine plan catalogue numbers are available for beneath the site. Three mine abandonment plans are available for the seams within 100m of ground level have been reviewed.
- There are two major faults trending northwest to southeast on site which cut through the outcropping seams. Two minor faults trending northeast to southwest are also present in the southeast of the site
- There are no opencast mines or CA managed tips within 500m of the site. Whilst there mention of tips on site in historic maps, these are not managed by the CA.

BGS geological mapping shows three seams outcropping on site including the Mountain, Wenallt and the Glyngwillyn. The mapping also indicates the presence of a possible 'rider' seam deriving from the Wenallt seam. The positions of the mapped coal seam outcrops indicate that they dip towards the south / southwest, likely between 0° and 8°. Consequently, it is feasible for all seams to be present beneath the site.

The Consultants Coal Mining Report indicates that there are seventeen recorded mine entries on or in close proximity to the site with only one of these being a shaft and the rest being adits. During the

site walkover an adit (280199-007) was encountered and the surrounding soils contained coal tip material. Hydrock drawing 16044-HYD-XX-XX-DR-GE-1004 shows the slope angles across the site and in the north-east there appears to be multiple tear-drop shaped features on the surface which could represent the locations of the mine adit recorded by CA. The location of the mine adits are generally positioned along the length of the Wenallt seam outcrop

Historical mapping also records the presence of the Cefn-mawr Colliery in the northwest of the site from sometime between 1919 to 1964. According to the Welsh Coal Mines online forum the Cefn-Mawr Colliery extensively worked the Wenallt seam.

It is likely that shallow coal seams would have been worked on site and within the vicinity due to the general absence of superficial deposits. However, historical maps indicate that sluice valves came from the area of mining on site which may signify the presence of large volumes of water which needed to be pumped from the workings. This could have caused issues for the potentially extensive shallow workings.

Finally, the Consultants Coal Mining Report indicates several levels of worked seams beneath and surrounding the site from 53m to 283m bgl. Three existing coal abandonment plans were obtained from the CA, all from the Wenallt seam, and georeferenced (Appendix A). All three plans show significant shallow workings across the site with the shallowest areas likely to be in the north at the outcrop.

The conclusion, therefore, is that shallow coal seams are highly likely to be present beneath the site, especially in the northern section of the site where the outcrops lie, and are expected to have been worked. Thus, the risk of subsidence from shallow mine workings is considered to be moderate to high.

2.9 Natural ground instability

Generally, given the absence of superficial deposits on site it is unlikely to be unstable. However, the site generally slopes steeply towards the north and during the site walkover it was noted that there was a thickness of weathered bedrock and superficial deposits on some of the slopes. Slopes, in places, appeared unstable as there was evidence of localised unravelling and distinct slip surfaces. Elsewhere, during the site walkover the ground conditions in the east and west of the site, in the areas of plantation forests, were extremely boggy and soft. In the far west this also coincides with the area of mapped superficial Peat.

The BGS Infiltration SuDS report indicates ground instability problems are probably present in the areas surrounding the outcropping coal seams. Moreover, it shows that slope instability problems are probably present or have occurred in the past in these areas while in the rest of they may be present or anticipated. BGS geological mapping (1:10,560 mapping) also shows some areas of mass movement to the northwest and east of the site. For the remaining areas of the site these are likely to be stable.

2.10 Waste management

There are no current or historical waste management sites recorded within 250m of the site.

2.11 Regulatory Information

Information in the GroundSure Report (Appendix D), relating to various regulatory controls has been reviewed, with a summary presented below in Table 2.7.

Table 2.7: Regulatory information within 500m of the site

Regulatory Data	Distance from Site	Details	Potential Risk	Comment
Discharge Consents	N/A	No entries on discharge consents were recorded within 500m of the site.	No	-
Local Authority Pollution Prevention and Controls	N/A	No entries on local authority pollution prevention and controls were recorded within 500m of the site.	No	-
Pollution Incidents	326m southeast	March 2003, pollutant not identified, Category 3 – minor incident.	No	Due to its distance from the site and the Category 3 classification of the incident.
Trade Directory Entries	On site	Inactive Mine (coal mining)	Yes	Due to it being present on site.
	On site	Inactive Workings (quarrying)	No	Due to the small volumes of potential contaminants.
Fuel Station Entries	N/A	No entries on fuel station entries were recorded within 500m of the site.	No	-
Control of major accident hazards sites (COMAH)	N/A	No entries on COMAH sites within 500m of the site.	No	-
Registered radioactive substances	N/A	No entries on registered radioactive substances were recorded within 500m of the site.	No	-
Notification of installations handling hazardous substances	N/A	No entries on notification of installations handling hazardous substances were recorded within 500m of the site.	No	-

2.12 Natural soil chemistry

Information contained within the environmental report (Appendix D) gives indicative (estimated) concentration values for the natural soils at the site for a selection of Contaminants of Potential Concern (CoPC). These have been reproduced in Table 2.8.

Table 2.8: Natural soil chemistry

Element	Arsenic	Cadmium	Chromium	Lead	Nickel
Concentration (mg/kg)	60 – 120	1.8	60 - 90	100 - 200	30 - 45

The data in Table 2.8 is considered within the geo-environmental assessment. It is noted that the arsenic is of particular relevance as it is elevated, and may require further assessment.

2.13 Radon

The guidance indicates that the site is partially within a Radon Affected Area. It should be noted the site area extends beyond circular boundary used within the BGS Radon report and as such the risks have been discussed below for these areas.

Areas underlain by Peat are located in areas where radon levels in 10-30% of homes are above the action level and full radon protection measures are required for new buildings at these locations in line with current guidance.

Meanwhile, the remainder of the site is in an area where radon levels in up to 1-3% of homes are above the action level, therefore no radon protection measures are required for new buildings in these areas in line with current guidance. Consideration should be given to on-site testing to determine actual radon levels.

2.14 Unexploded ordnance (UXO)

In general accordance with CIRIA Report C681 (Stone et al 2009) a non-specialist UXO screening exercise has been undertaken for the purposes of ground investigation and is presented in Table 2.9 .

Table 2.9: Non-specialist UXO screening (for the purposes of ground investigation)

Data	Comment	Further Assessment Required
Site History	There is no indication of former military use from the desk study.	No
Post War Development	OS mapping indicates the site continued being used for coal mining before being used for forestry following the closure of the Cefn-mawr Colliery sometime between 1948 and 1965. Three buildings located 200m east of the site, once part of Troed-y-rhiw, are marked as ruins between 1948 and 1965 indicating possible bomb damage. The colliery was operational pre and post war, therefore it is unlikely that bombs would have remained undetected.	No
Geology Type	The ground conditions comprise a thin covering of unmapped superficial deposits (weathered bedrock), over	Yes for areas of peat only.

Data	Comment	Further Assessment Required
	Hughes and Brithdir Member sandstones. It is unlikely UXO would remain undetected. However, in the far west of the site is a zone of superficial Peat where it is likely that UXO would remain undetected.	
Surface Cover during WWII	The surface cover during WWII comprised open fields and forests. However, given the colliery was operationally during WWII it is considered unlikely that any UXO would remain undetected.	No.
Indicator of Aerial Delivered UXO	Screening against the site-specific bomb risk map Appendix D indicates the site to be in an area where the bomb risk is low.	No

The non-specialist UXO screening exercise has indicated that whilst there is the potential for UXO to remain undetected due to the presence of Peat in the west of the site, no further assessment is required with regard to UXO in relation to ground investigation as the site is situated in an area of low bomb risk and it is considered very unlikely that any potential bombs dropped on the site would land in the small area of peat or the heterogenous spread of thicker superficial weathered bedrock. Moreover, the Cefn-mawr Colliery was present in the northwest of the site during WWII and it is unlikely that any UXO would remain undetected. Nevertheless, further assessment may be considered prudent for construction activities.

3. Initial conceptual site model

3.1 Introduction

The initial CSM incorporates evidence from the site walkover, the Desk Study and previous investigations carried out at the site. The formulation of an initial CSM is a key component of the LCRM methodology, and incorporates: a Ground Model of the site physical conditions; and an exposure model of the possible contaminant linkages. It forms the basis for Generic Quantitative Risk Assessment (GQRA) in accordance with current guidelines.

3.2 Ground model

The preliminary Ground Model presented in Section 2 provides an understanding of the ground conditions and is the basis for preparing the preliminary geotechnical hazard assessment (Section 3.3) and the preliminary geo-environmental exposure model (Section 3.4).

3.3 Geotechnical hazard identification

3.3.1 Context

The preliminary geotechnical hazard identification has been undertaken in accordance with the general requirements of ICE/DETR Document 'Managing Geotechnical Risk' and the HE documents HD 41/15 and CD 622.

The following section sets out the identified geotechnical hazards and the development elements potentially affected (see Table E.1 in Appendix E for further information).

3.3.2 Plausible geotechnical hazards

Plausible geotechnical hazards identified at the site are:

- Uncontrolled Made Ground (variable strength and compressibility).
- Soft / loose compressible ground (low strength and high settlement potential).
- Variable lateral and vertical changes in ground conditions.
- Attack of buried concrete by aggressive ground conditions.
- Obstructions.
- Existing below ground structures to remain (onsite tunnels).
- Shallow groundwater.
- Changing groundwater conditions.
- Loose Made Ground, leading to difficulty with excavation and collapse of side walls.
- Slope stability issues – general slopes.
- Mining.
- Relict slip surfaces.

3.3.3 Potential development elements affected

Development elements potentially affected by geotechnical hazards are:

- Buildings – foundations.
- Buildings – floor Slabs
- Roads and pavements.
- Services.

- General slopes.
- Retaining walls.
- Gardens.
- Construction staff, vehicles and plant operators.
- Concrete below ground.
- Earthworks control, inability to place and compact fill.

Health and safety risks to site Contractors and maintenance workers have not been assessed during these works and will need to be considered separately during design.

The above plausible geotechnical hazards and development elements affected have been carried forward for investigation and assessment.

3.4 Geo-environmental exposure model

3.4.1 Context

The preliminary exposure model is used to identify geo-environmental hazards and to establish potential contaminant linkages, based on the source-pathway-receptor (SPR) approach.

A viable contaminant linkage requires all the components of an SPR to be present. If only one or two are present, there is no linkage and no further assessment is required.

3.4.2 Potential contaminants

For the purpose of this assessment the potential contaminants have been separated according to whether they are likely to have originated from an on-site or off-site source.

3.4.2.1 Potential on-site sources of contamination

- Made Ground, associated with the Cefn-mawr Colliery activities, possibly including elevated concentrations of metals, metalloids, asbestos fibres, Asbestos Containing Materials, PAHs, petroleum hydrocarbons, lubricants and solvents (S01).
- Made Ground at the entrances of coal mine adits and used for backfilling, potentially containing metals and metalloids, asbestos fibres, asbestos containing materials, PAHs and petroleum hydrocarbons (S02).
- Burnt fly tipped waste near the former quarry in the centre of the site including paint cans, plastics and metals, possibly a source of metals, metalloids, PAHs and petroleum hydrocarbons (S03).
- Ground gases (methane and carbon dioxide) from organic materials in Made Ground / Peat / worked coal seams (S04).
- Farm building in the centre of the site which has an asbestos tile roof and contains an Above Ground Storage Tank, and the storage area in the southwest, possibly a source of petroleum hydrocarbons, PAHs, VOCs, asbestos fibres and Asbestos Containing Materials (S05).
- Workshop near the house in the centre of the site, possibly a source of elevated concentrations of metals, metalloids, asbestos fibres, Asbestos Containing Materials, PAHs, petroleum hydrocarbons, lubricants and solvents (S06).
- Naturally elevated concentrations of arsenic within the natural soils across the site (S07).
- Radon (S08).

3.4.2.2 Potential off-site sources of contamination

No potential off-site sources of contamination have been identified.

3.4.3 Potential receptors

The following potential receptors in relation to the proposed land use have been identified.

- People (neighbours, site end users) (R01).
- Development end use (buildings and utilities) (R02).
- Flora and fauna (R03).
- Groundwater: Secondary A aquifer status of the Hughes and Brithdir Members (R04).
- Surface water: on-site and off-site drainage ditch networks and River Neath 585m northwest (R05).

3.4.4 Potential pathways

The following potential pathways have been identified.

- Ingestion, skin contact, inhalation of dust and outdoor air by people (P01).
- Ground gas and VOC ingress via permeable soils and/or construction gaps (P02).
- Root uptake by plants (P03).
- Migration of contaminant via leachate migration through the unsaturated zone towards the Hughes and Brithdir Members bedrock (P04).
- Migration of contaminant via leachate migration through the saturated zone towards the River Neath (P05).
- Surface water via overland flow (P06).

Health and safety risks to site development contractors and maintenance workers have not been assessed as part of this study and will need to be considered separately.

The above sources, pathways and receptors have been considered as part of the Preliminary Risk Assessment in accordance with LCRM (2023), are considered to be plausible in the context of this site and have been carried forward for investigation and assessment. An assessment of the Source – Pathway – Receptor linkages is undertaken following the assessment (Section 3.4) and is presented in Appendix F (Table F.1).

A summary of the plausible linkages is presented on the Initial Conceptual Site Model provided in Appendix A. (Ref: 16044-HYD-XX-XX-DR-GE-1003).

3.4.5 Potential implications of climate change

Climate change has the potential to change the risk profile for conceptual site models and associated contaminant linkages. The impact of climate change on the CSM is site-specific, and a qualitative assessment of the potential impact of climate change on the CSM for this site is summarised below. The assessment has primarily utilised the guidance in Environment Agency (2010)[3] and SoBRA (2022)[4] which set out the UK context to climate change and land contamination. Both guidance documents advocate a "what if" scenario approach in the context of changes in ambient temperatures, an increase in the frequency of extreme rainfall/storm events and heatwaves/droughts, and long-term changes in groundwater and sea levels.

Those "what if" scenarios that are relevant to this CSM are:

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[3] *Environment Agency, 2010. Guiding Principles for Land Contamination. Part 2. FAQs, technical information, detailed advice and references, March 2010.*

[4] *SoBRA, 2022. Guidance on Assessing Risk to Controlled Waters from UK Land Contamination Under Conditions of Future Climate Change, Society of Brownfield Risk Assessment, August 2022.*

- Increased long-term rainfall leading to increased infiltration and seasonally higher groundwater and water levels in surface waters.
- Increased frequency and/or magnitude of extreme rainfall events leading to short-term surface flooding, surface water run-off, groundwater flooding, and/or land-based erosion.
- Increased frequency and/or magnitude of storm events leading to short-term drops in barometric pressure and/or high winds.
- Occurrence of extreme cold and hot weather events leading to changes in ground conditions such as soil temperature, evapo(trans)piration, and soil moisture (for example freeze-thaw effects and desiccation), decreased infiltration and fall in groundwater and surface water levels.
- Long-term decrease in rainfall leading to lower infiltration and fall in groundwater and surface water levels.

4. Desk study conclusions

4.1 Site zonation geotechnical assessment

The below sections contain a high-level geotechnical appraisal of the proposed development areas on site and should be read in conjunction with the Hydrock drawing 16044-HYD-XX-XX-DR-GE-1008 which highlights each area. The below assessment is based on Hydrock's geotechnical experience using information obtained during site walkovers and information obtained from third-parties which is referenced and discussed within Section 2 of this report.

4.1.1 Lower Meadows

- BGS mapped area of Peat beneath the forest floor and joining the western boundary. Peat was found in the field to the west of the zone. Dependant on thickness, this poses significant settlement issues for any new development.
- Ground conditions across the forest floor were extremely soft and waterlogged, likely due to surface water retention caused by the mapped peat.
- Surface slope is shallow.
- An electricity transmission line passes through the site.
- Mine abandonment plans indicate that the Wenallt seam has been worked in the central-south part of the zone and a roadway passes in from the north, from the direction of the Cefn-mawr Colliery, and leaves towards the southeast.
- Overall geotechnical risk rating - **High**

4.1.2 Upper Meadows

- The terrain is generally flat, however it became increasingly steeper in the west of the zone in the area of the access track.
- A high-pressure gas pipeline passes through the south of the zone.
- Some sandstone boulders were present at the surface in the northwest of the zone which may signify shallow bedrock.
- Mine abandonment plans indicate the Wenalt seam has partially been worked in the south of this area from workings extending from the Cefn Mawr Colliery. Some workings extend from the north of this zone, possibly from adits within the outcrop. Hence, subsidence from mine workings is possible.
- Overall geotechnical risk rating – **Moderate**

4.1.3 Community Hub and The Ponds

- Two ponds are present and appear to be part of the surface drainage network on site.
- Terraced landscaping around the farm house with a minor rock exposure likely cut for track construction. Generally weathered bedrock, dipping 60 degrees north, appeared stable in present condition.
- Steep slope with dense vegetation to the northwest of the zone. Appeared stable in present condition.
- A bedrock exposure lies just beyond the zone in the west which is 5m to 15m high, thin to thickly bedded with frequent sub horizontal faults and joints. Generally observed to be stable however some sections appeared unstable with scree at the base.
- An electricity transmission line passes through the zone trending northeast to southwest.
- The mine abandonment plans indicate there are some limited mine workings in the west of the site and subsidence from mine workings is possible.

- Overall geotechnical risk rating – **Moderate**

4.1.4 *The Quarry*

- Disused quarry present in the east of the zone with 10m to 15m high vertical walls of competent thickly bedded sandstone bedrock with frequent vertical and subvertical joint sets. No clear signs of instability, however there could be the possibility for wedge failure to occur due to the orientation of joint sets.
- Large piles of sandstone blocks at the base of the disused quarry.
- Generally flat in the centre of the zone along the path with vertical walls to the south. Land to the north of the zone and in the west begins to slope towards the north up to 55 degrees and covered in loose sandstone blocks.
- Cuttings for the path in the west are 2m to 3m tall in superficial weathered bedrock material, roughly 50 degrees and densely vegetated. Appeared generally stable in present condition.
- The mine abandonment plans indicate some workings in the east of the site. One roadway appears to come from the outcropping seam in the north of the site and is recorded as starting on site, possibly indicating the presence of a mine adit. Moreover, due to quarrying activities, the ground level in this area has been reduced and this will decrease the distance to any potential shallow mine workings.
- Overall geotechnical risk rating – **High**

4.1.5 *The Lower Woods*

- Surface is hummocky and the slope angle is generally around 20 to 30 degrees which decreases towards the north.
- Ground conditions were boggy in places with standing water and streams frequently encountered.
- The eastern portion of the zone was densely vegetated with trees while the west was more open.
- The mine abandonment plans for the Wenallt seam do not indicate the presence of any mine workings beneath this zone.
- Overall geotechnical risk rating – **Moderate**

4.1.6 *The Upper Woods*

- The northern section of the zone was the site of the Cefn-mawr Colliery and a large tip. During the walkover the tip could be seen (covered with dense vegetation), however no evidence of adits were found.
- Outcrop of sandstone in the far northeast of the zone. It was heavily jointed with possible folding and conjugate joints which were generally vertical. Large amounts of scree were seen at the base of the outcrop. In its present condition the feature appeared to be unstable.
- The terrain slopes steeply from the south of the site beginning at 40 degrees towards the north and gradually flattens at the northern edge. The ground was generally hummocky.
- The mine abandonment plans for the Wenallt seam indicate the Cefn-mawr Colliery substantially worked this seam. As the colliery is present within this zone, it is likely that shallow workings will be present.
- Overall geotechnical risk rating - **High**

4.2 Geotechnical conclusions

The following plausible geotechnical risks are identified as:

- Uncontrolled Made Ground (variable strength and compressibility) – Made Ground is expected in areas of historical coal mining and quarrying activities, land surrounding the farm house, and land around the farm building and material storage area.
- Soft / loose compressible ground (low strength and high settlement potential) – Risk of shear failure and excessive foundation settlement.
- Variable lateral and vertical changes in ground conditions – Made Ground, Peat and superficial weathered bedrock likely to be heterogeneously spread across the site.
- Attack of buried concrete by aggressive ground conditions – The development site may contain sulphate bearing soils.
- Obstructions – Possible objects may remain in the Made Ground following historical developments.
- Existing below ground structures to remain (tunnels) – A historical tunnel was noted in the northwest of the site and tunnels are expected to protrude into the site from adit locations.
- Shallow groundwater – A spring was noted in the northwest of the site and groundwater is expected to be close to the surface, especially in the north.
- Changing groundwater conditions – Heterogeneous spread of faults and fractures alongside side worked coal seams are likely to induce a variable groundwater level.
- Loose Made Ground, leading to difficulty with excavation and collapse of side walls – Possibility for Made Ground to be loose and large objects to be present.
- Slope stability issues – general slopes – Slope toes in the northeast of the site showed signs of failure.
- Mining – The site is underlain by several coal seams which have been worked. A colliery and several adits were historically present on site.
- Relict slip surfaces – Potential for relict slip surfaces to be present within the steep areas of the site within the weathered superficial bedrock material.

4.3 Geo-environmental conclusions

Based on historical and current land uses:

- It is considered that it is likely that the site would be classified as Contaminated Land under Part 2A of the EPA 1990.
- The overall risk from land contamination at the site is considered to be moderate for the current development, as it is almost entirely open land with large areas of potentially contaminated Made Ground and because of the risk of significant rainwater infiltration leading to leaching. Moreover, there are several sources of ground gases across the entire site.
- The overall risk for a redeveloped site is assessed to be moderate, but this would need to be confirmed by appropriate intrusive investigation, testing and assessment of the results of the investigation.

The possible pollutant linkages (for risk levels of moderate or greater) on an unremediated redeveloped site, as determined by the desk study and walk-over, are summarised in Table 4.1:

Table 4.1: Possible Pollutant Linkages (for Risk Levels of Moderate or Greater)

Source(s)	◄ potential Impact on ►	Receptor(s)
Made Ground, associated with the Cefn-mawr Colliery activities, possibly including elevated concentrations of metals, metalloids, asbestos fibres, Asbestos Containing Materials, PAHs, petroleum hydrocarbons, lubricants and solvents (S01).		People Groundwater Surface waters Development end use
Made Ground at the entrances of coal mine adits and used for backfilling, potentially containing metals and metalloids, asbestos fibres, asbestos containing materials, PAHs and petroleum hydrocarbons (S02).		
Burnt fly tipped waste near the former quarry in the centre of the site including paint cans, plastics and metals, possibly a source of metals, metalloids, PAHs and petroleum hydrocarbons (S03).		
Farm building in the centre of the site which has an asbestos tile roof and contains an Above Ground Storage Tank, and the storage area in the southwest, possibly a source of petroleum hydrocarbons, PAHs, VOCs, asbestos fibres and Asbestos Containing Materials (S05).		
Garage / workshop near the house in the centre of the site, possibly a source of elevated concentrations of metals, metalloids, asbestos fibres, Asbestos Containing Materials, PAHs, petroleum hydrocarbons, lubricants and solvents (S06).		
Ground gases (methane and carbon dioxide) from organic materials in Made Ground / Peat / superficial weathered bedrock and worked coal seams (S04).		People Development end use
Radon (S08).		

5. Uncertainties and limitations

5.1 Site-specific comments

It is unknown whether there are any contaminative materials stored within the closed buildings on site as we could not see inside of these. Unfortunately, no-one was on site to ask at the time.

Not all recorded coal mining adits were located during the site walkovers due to extensive vegetation. There might also be unrecorded mine adits on site.

5.2 General comments

Hydrock Consultants Limited (Hydrock) has prepared this report in accordance with the instructions of Trivselhus UK (the Client), by e-mail dated October 2023 under the terms of appointment for Hydrock, for the sole and specific use of the Client and parties commissioned by them to undertake work where reliance is placed on this report. Any third parties who use the information contained herein do so at their own risk. Hydrock shall not be responsible for any use of the report or its contents for any purpose other than that for which it was prepared or for use of the report by any parties not defined in Hydrock's appointment.

This report details the findings of work carried out in November 2023. The report has been prepared by Hydrock on the basis of available information obtained during the study period. Although every reasonable effort has been made to gather all relevant information, not all potential environmental constraints or liabilities associated with the site may have been revealed.

Unless otherwise stated, the recommendations in this report assume that ground levels will remain as existing. If there is to be any re-profiling (e.g., to create development platforms or for flood alleviation) then the recommendations may not apply.

Information provided by third parties has been used in good faith and is taken at face value; however, Hydrock cannot guarantee its accuracy or completeness.

Where the existing report(s) prepared by others have been provided by the Client, it is assumed that these have been either commissioned by the Client, or can be assigned to the Client, and can be relied upon by Hydrock. Should this not be the case Hydrock should be informed immediately as additional work may be required. Hydrock is not responsible for any factual errors or omissions in the supplied data, or for the opinions and recommendations of others. It is possible that the conditions described may have since changed through natural processes or later activities.

The work has been carried out in general accordance with recognised best practice. Unless otherwise stated, no assessment has been made for the presence of radioactive substances or unexploded ordnance. Where the phrase 'suitable for use' is used in this report, it is in keeping with the terminology used in planning control and does not imply any specific warranty or guarantee offered by Hydrock.

Whilst the preliminary risk assessment process has identified potential risks to construction workers, consideration of occupational health and safety issues is beyond the scope of this report.

The non-specialist UXO screening has been undertaken for the purposes of ground investigation only (i.e., low risk activity in accordance with CIRIA Report C681). Further assessment should be undertaken with regards to other higher risk activities e.g., construction.

Please note that notwithstanding any site observations concerning the presence or otherwise of archaeological sites, asbestos-containing materials or invasive weeds, this report does not constitute a formal survey of these potential constraints and specialist advice should be sought.

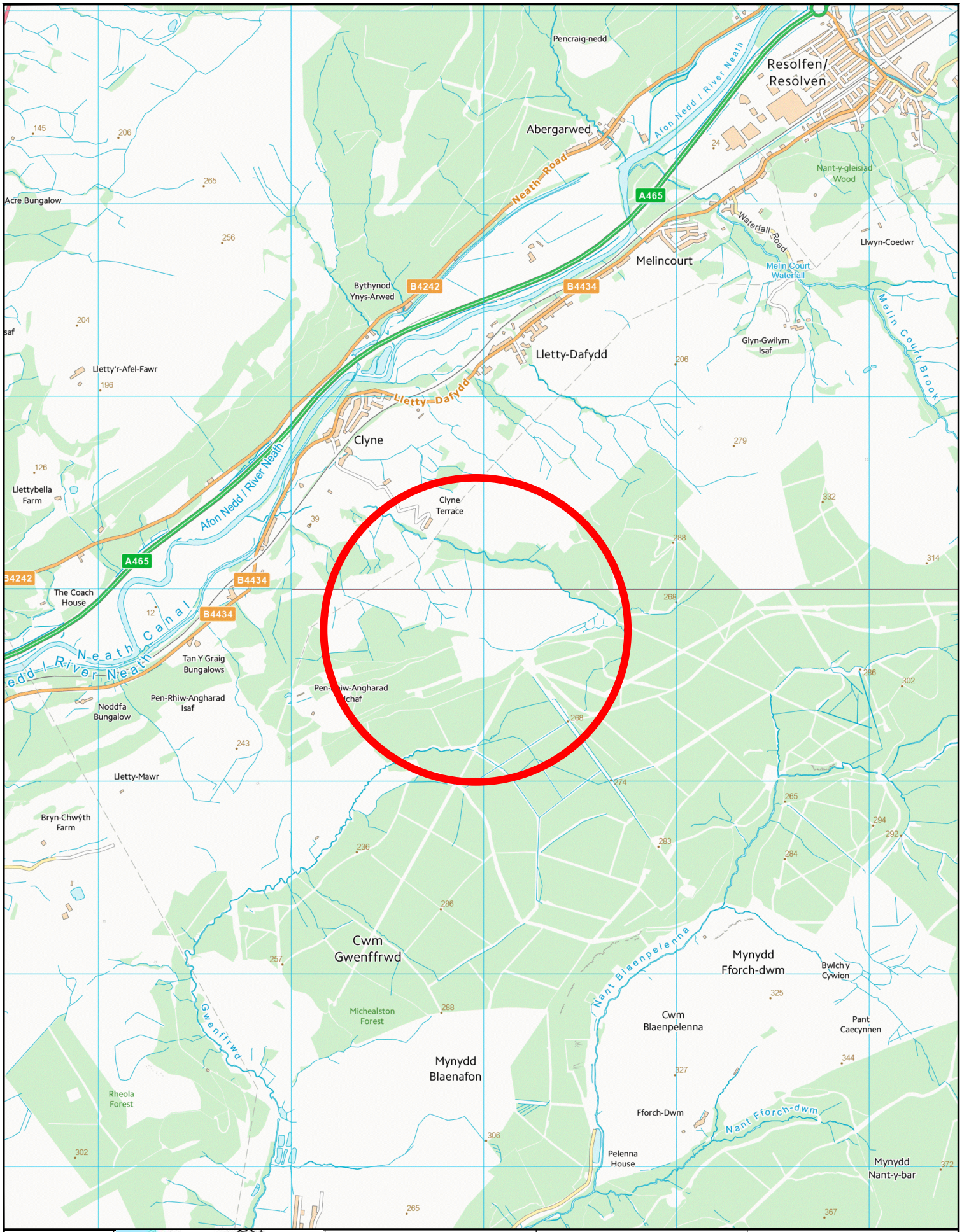
Any site boundary line depicted on plans does not imply legal ownership of land.

6. Recommendations for further work

The following further works will be required:

- Intrusive investigation to confirm the presence, depth and composition of Made Ground across the site at development locations;
- Intrusive investigation to determine depth and distribution of mine workings beneath the site at development locations;
- Foundation assessment at proposed development locations;
- Slope stability assessment at proposed development locations;
- Vegetation clearance and additional site walkovers to determine distribution of mine adits on site.
- Assess trench stability, over break potential and 'diggability';
- Determine CBRs to assist with road pavement design;
- Obtain information on soil sulphate conditions in terms of Aggressive Chemical Environment for Concrete Class (ACEC);
- Determine depth to groundwater below the site;
- Soil sampling for chemical and geotechnical laboratory testing;
- Undertake ground gas monitoring and assessment; and
- Complete a demolition / refurbishment asbestos survey of the existing buildings on site.

Appendix A Drawings



OS NORTH

Site Ref: SS72

0 500 Metres

REV.	FIRST ISSUE					
P01	DK	23/11/23	MH	24/11/23	AE	24/11/23
	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

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CLIENT
TRIVSELHUS UK

PROJECT
PARC PELENNA HOLIDAY RESORT

TITLE
SITE LOCATION PLAN

HYDROCK PROJECT NO.	SCALE @ A4
C-16044	1:25,000

PURPOSE OF ISSUE	STATUS
SUITABLE FOR INFORMATION	S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	REVISION
16044-HYD-XX-XX-DR-GE-1000	P01

OS NORTH

KEY

Site Walkover Boundary

38 Photo location and number

NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.

2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.

REV.	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE
P01	FIRST ISSUE					
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CLIENT
TRIVSELHUS

PROJECT
PARC PELENNA HOLIDAY RESORT

TITLE
SITE WALKOVER PLAN

HYDROCK PROJECT NO.
C-16044

SCALE @ A3
1:3,300

PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

STATUS
S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)
16044-HYD-XX-XX-DR-GE-1001

REVISION
P01

CROSS SECTION
SOUTH

NORTH

m (AOD)

Site Boundary

Track

Material storage area

High pressure gas main

HUGHES MEMBER

Mountain Seam / Darren Ddu Seam

PEAT

Farm building

Workshop

Pond

Bedrock Exposure

Spring

Cefn-mawr Colliery site

HUGHES MEMBER

BRITHDIR MEMBER

BRITHDIR MEMBER

BRITHDIR MEMBER

Wenallt Seam / Hughes Seam

Glyngwilym Seam

Unknown Seam

Brithdir Rider Seam

Graig Seam

Distance along baseline

KEY

- Existing ground profile
- Conjectural geological boundary
- Conjectural groundwater level
- Made Ground
- Peat
- Hughes Member
- Brithdir Member
- Coal seam
- Known worked coal seam

NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.

2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.

REV.	REVISION NOTES/COMMENTS					
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CLIENT

TRIVSELHUS UK

PROJECT

PARC PELENNA HOLIDAY RESORT

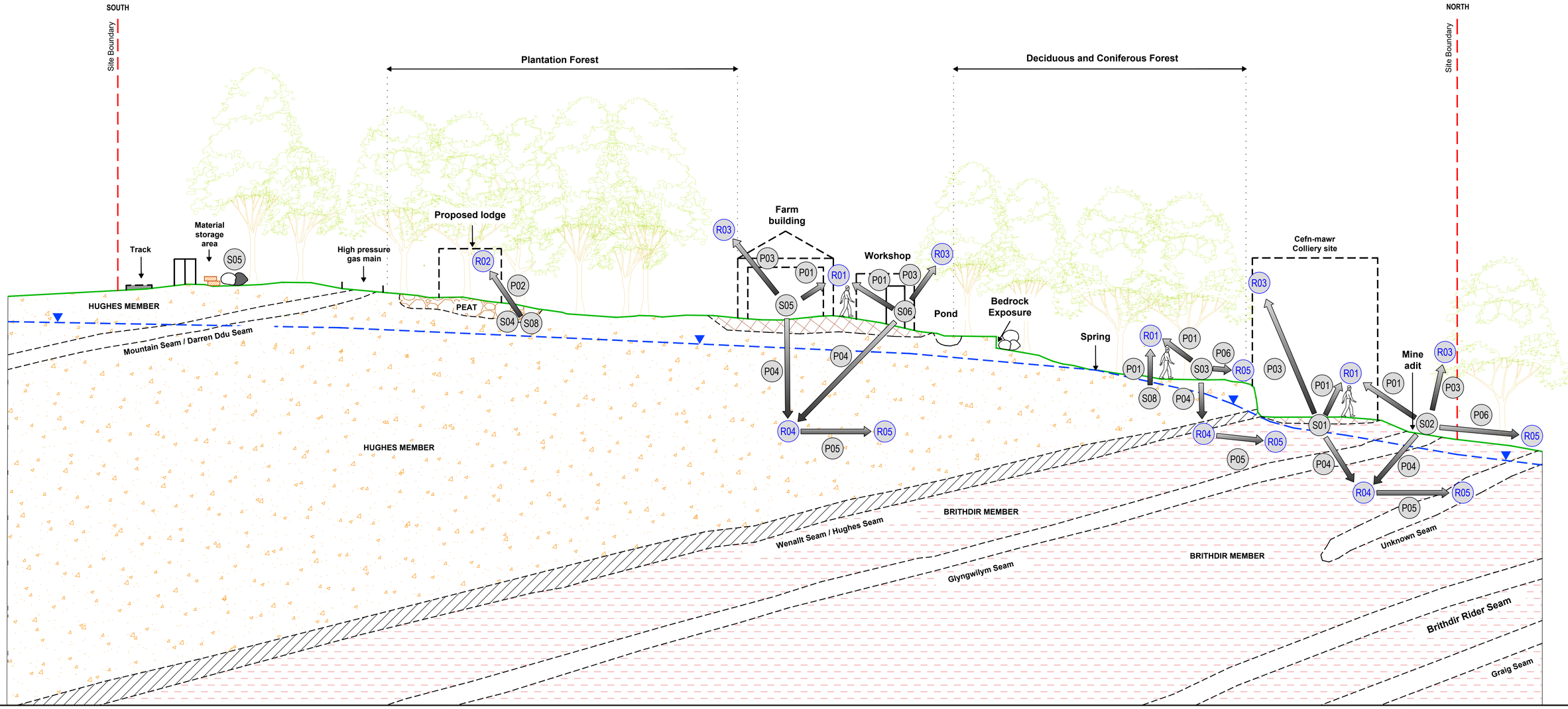
TITLE

GEOLOGICAL CROSS SECTION

HYDROCK PROJECT NO.	SCALE @ A1
C-16044-C	1:1100

PURPOSE OF ISSUE	STATUS
SUITABLE FOR INFORMATION	S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	REVISION
16044-HYD-XX-XX-DR-GE-1002	P01



Potential on-site sources of contamination

S01. Made Ground, associated with the Cefn-mawr Colliery activities, possibly including elevated concentrations of metals, metalloids, asbestos fibres, Asbestos Containing Materials, PAHs, petroleum hydrocarbons, lubricants and solvents.

S02. Made Ground at the entrances of coal mine adits and used for backfilling, potentially containing metals and metalloids, asbestos fibres, asbestos containing materials, PAHs and petroleum hydrocarbons.

S03. Burnt fly tipped waste near the former quarry in the centre of the site including paint cans, plastics and metals, possibly a source of metals, metalloids, PAHs and petroleum hydrocarbons.

S04. Ground gases (methane and carbon dioxide) from organic materials in Made Ground / Peat / superficial weathered bedrock and worked coal seams.

S05. Farm building in the centre of the site which has an asbestos tile roof and contains an Above Ground Storage Tank, and the storage area in the southwest, possibly a source of petroleum hydrocarbons, PAHs, VOCs, asbestos fibres and Asbestos Containing Materials.

S06. Workshop near the house in the centre of the site, possibly a source of elevated concentrations of metals, metalloids, asbestos fibres, Asbestos Containing Materials, PAHs, petroleum hydrocarbons, lubricants and solvents.

S07. Naturally elevated concentrations of arsenic within the natural soils across the site.

S08. Radon.

Potential off-site sources of contamination

No potential off-site sources of contamination have been identified.

Potential receptors

The following potential receptors in relation to the proposed land use have been identified.

R01. People (neighbours, site end users).

R02. Development end use (buildings and utilities).

R03. Flora and fauna.

R04. Groundwater: Secondary A aquifer status of the Hughes and Brithdir Members.

R05. Surface water: on-site and off-site drainage ditch networks and River Neath 585m northwest.

Potential pathways

The following potential pathways have been identified.

P01. Ingestion, skin contact, inhalation of dust and outdoor air by people.

P02. Ground gas and VOC ingress via permeable soils and/or construction gaps.

P03. Root uptake by plants.

P04. Migration of contaminant via leachate migration through the unsaturated zone towards the Hughes and Brithdir Members bedrock.

P05. Migration of contaminant via leachate migration through the saturated zone towards the River Neath.

P06. Surface water via overland flow.

KEY

- Existing ground profile
- Conjectural geological boundary
- Conjectural groundwater level
- Made Ground
- Peat
- Hughes Member
- Brithdir Member
- Coal seam
- Known worked coal seam

NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.

2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.

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CLIENT: TRIVSELHUS UK

PROJECT: PARC PELENNA HOLIDAY RESORT

TITLE: INICIAL CONCEPTUAL SITE MODEL

HYDROCK PROJECT NO.: C-16044-C

SCALE @ A1: NTS

PURPOSE OF ISSUE: SUITABLE FOR INFORMATION

STATUS: S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER): 16044-HYD-XX-XX-DR-GE-1003

REVISION: P01

279600E 279900E 280200E 280500E 280800E

199800N

199500N

199200N

A

B

N

0 100 200 m

KEY PLAN

Site Boundary

Slope angle (°)

0		20		45	
5		25		50	
10		30		55	
15		35		60	
		40		65	

A Cefn-mawr Colliery site

B Area of visible mine adits

NOTES

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TITLE

SLOPE ANGLE MAP

HYDROCK PROJECT NO. 16044

SCALE @ A3 1:3,500

CLIENT
TRIVSELHUS UK

PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

STATUS
S2

PROJECT
PARC PELENNA HOLIDAY RESORT

DRAWING NO.
16044-HYD-XX-XX-DR-GE-1004

REVISIC
P01

279900E

280200E

280800E

199500N

199200N

BUSH COLLIERY

Scale - 2 Chains to the Inch

WENALLT SEAM

NEW OPENING

MOUTH OF SLANT

PENRHIWÂNCHARAD-UCHAF

N

0 100 200 m

KEY PLAN

Site Boundary

NOTES

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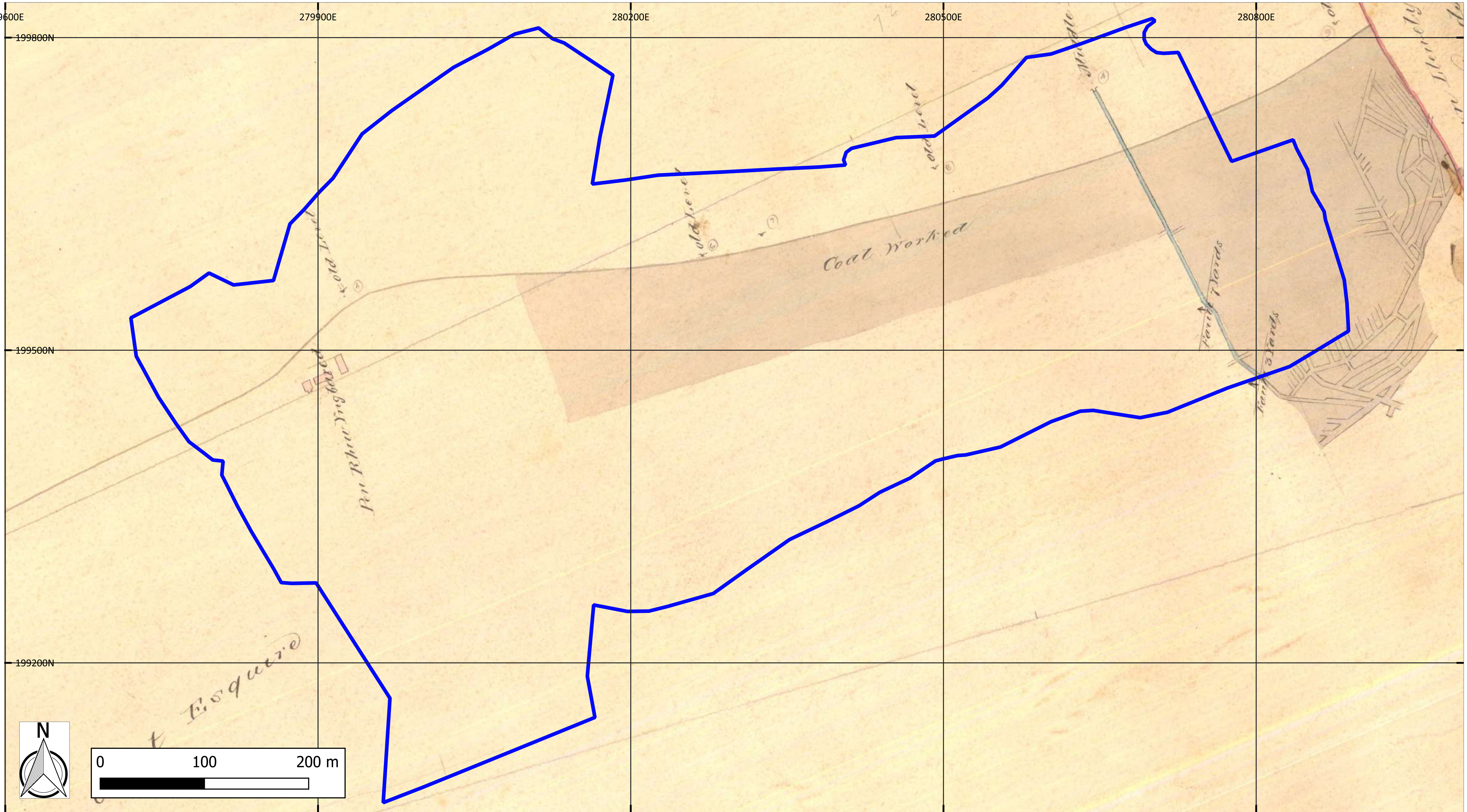
TITLE

MINE ABANDONMENT PLAN - SW2234

HYDROCK PROJECT NO.	SCALE @ A3
16044	1:3,500

CLIENT	PURPOSE OF ISSUE	STATUS
TRIVSELHUS UK	SUITABLE FOR INFORMATION	S2

PROJECT	DRAWING NO.	REVISIC
PARC PELENNA HOLIDAY RESORT	16044-HYD-XX-XX-DR-GE-1005	P01



KEY PLAN

Site Boundary

NOTES

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TITLE
MINE ABANDONMENT PLAN - R10966

HYDROCK PROJECT NO. 16044

SCALE @ A3
1:3,500

CLIENT
TRIVSELHUS UK

PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

STATUS
S2

PROJECT
PARC PELENNA HOLIDAY RESORT

DRAWING NO.
16044-HYD-XX-XX-DR-GE-1006

REVISIC
P01

279

280500E

280800E

199500N

199200N

Ordnance Bench Mark on Weigh Bridge.
Mouth of Slant.

Pen-rhiw-Anghared Uchaf

Pen-rhiw-Anghared Isaf

Old Workings

Tonygrisgos Fault

N

0 100 200 m

KEY PLAN

Site Boundary

NOTES

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TITLE
MINE ABANDONMENT PLAN - 6446

HYDROCK PROJECT NO. 16044

SCALE @ A3
1:3,500

CLIENT
TRIVSELHUS UK

PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

STATUS
S2

PROJECT
PARC PELENNA HOLIDAY RESORT

DRAWING NO.
16044-HYD-XX-XX-DR-GE-1007

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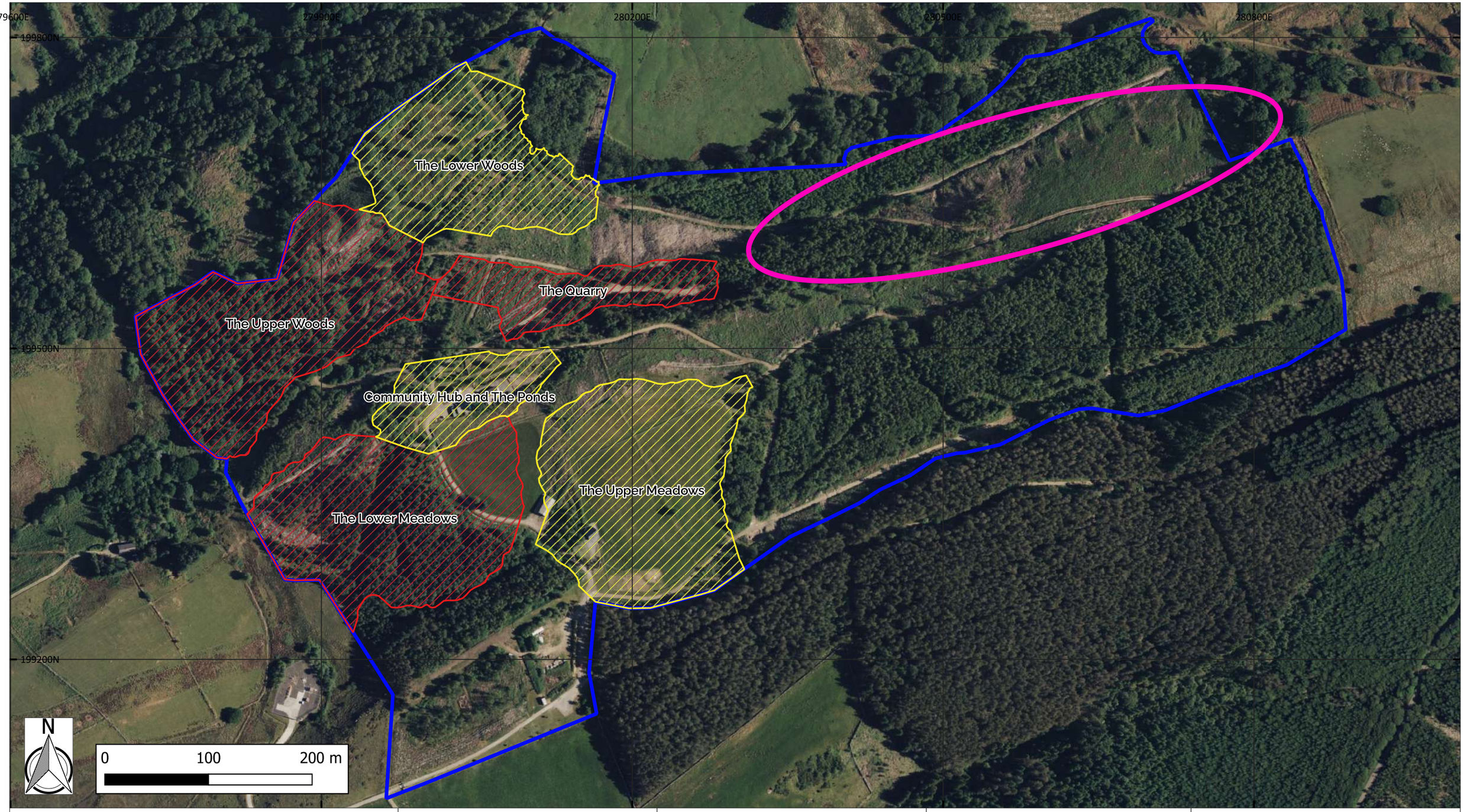
P01



KEY PLAN

- Site Boundary

Geotechnical Risk Rating

- High
- Moderate
- Low
- Area of visible mine adits

NOTES

1. Contains OS data © Crown copyright and database right (2022)
2. Magenta oval covering the area of mine adits associated with the Wenallt seam. During the walkover, areas of slope instability were identified in this area. The risk associated with this have not been assessed as the proposed development is not to planned entend into here.

REVISIONS

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TITLE
GEOTECHNICAL ZONATION PLAN

HYDROCK PROJECT NO. 16044

SCALE @ A3
1:3,500

CLIENT
TRIVSELHUS UK

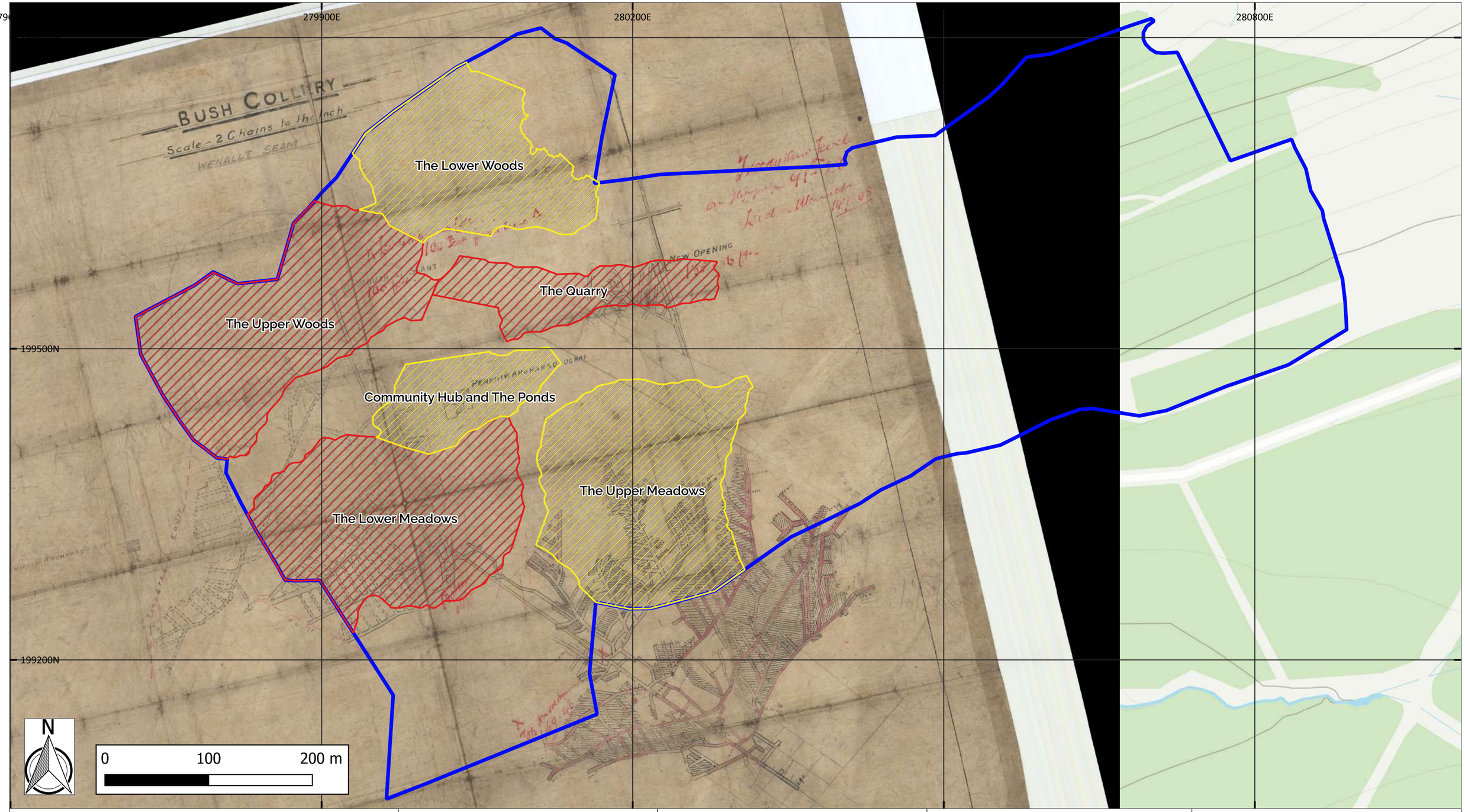
PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

STATUS
S2

PROJECT
PARC PELENNA HOLIDAY RESORT

DRAWING NO.
16044-HYD-XX-XX-DR-GE-1008

REVISIC
P01



KEY PLAN

- Site Boundary

Geotechnical Risk Rating

- High
- Moderate
- Low

NOTES

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TITLE
MINE ABANDONMENT PLAN - SW2234
WITH ZONATION OVERLAY

HYDROCK PROJECT NO. 16044

SCALE @ A3
1:3,500

CLIENT
TRIVSELHUS UK

PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

STATUS
S2

PROJECT
PARC PELENNA HOLIDAY RESORT

DRAWING NO.
16044-HYD-XX-XX-DR-GE-1009

REVISIC
P01

279600E
279900E
280200E
280500E
280800E
199800N
199500N
199200N

The Lower Woods
The Quarry
The Upper Woods
Community Hub and The Ponds
The Upper Meadows
The Lower Meadows

Coal Worked

N
0 100 200 m

KEY PLAN

Site Boundary

Geotechnical Risk Rating

High

Moderate

Low

NOTES

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TITLE
MINE ABANDONMENT PLAN - R10966
WITH ZONATION OVERLAY

HYDROCK PROJECT NO. 16044

SCALE @ A3
1:3,500

CLIENT
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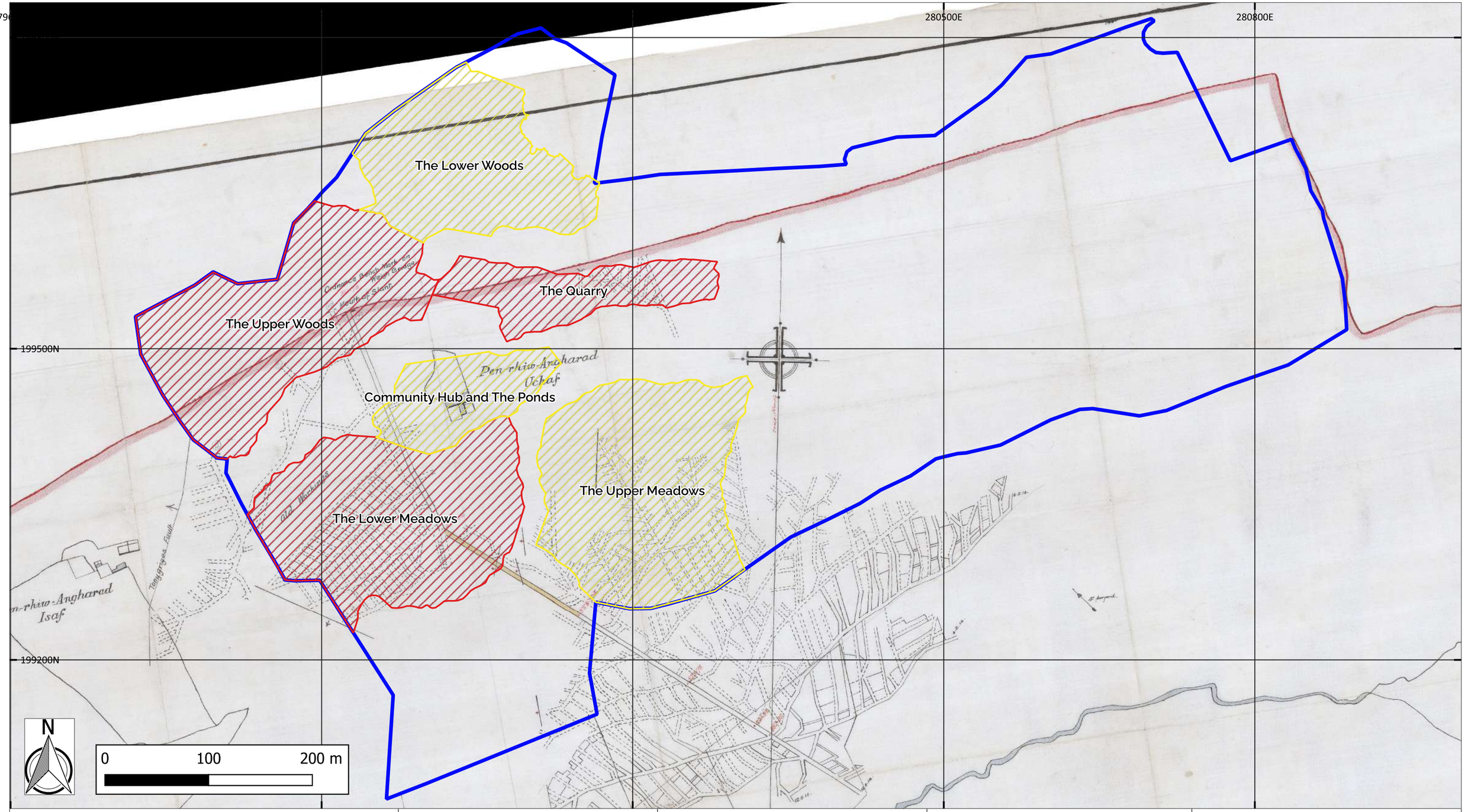
PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

STATUS
S2

PROJECT
PARC PELENNA HOLIDAY RESORT

DRAWING NO.
16044-HYD-XX-XX-DR-GE-1010

REVISIC
P01



KEY PLAN

- Site Boundary

Geotechnical Risk Rating

- High
- Moderate
- Low

NOTES

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TITLE
MINE ABANDONMENT PLAN - 6446 WITH ZONATION OVERLAY

HYDROCK PROJECT NO. 16044

SCALE @ A3
1:3,500

CLIENT
TRIVSELHUS UK

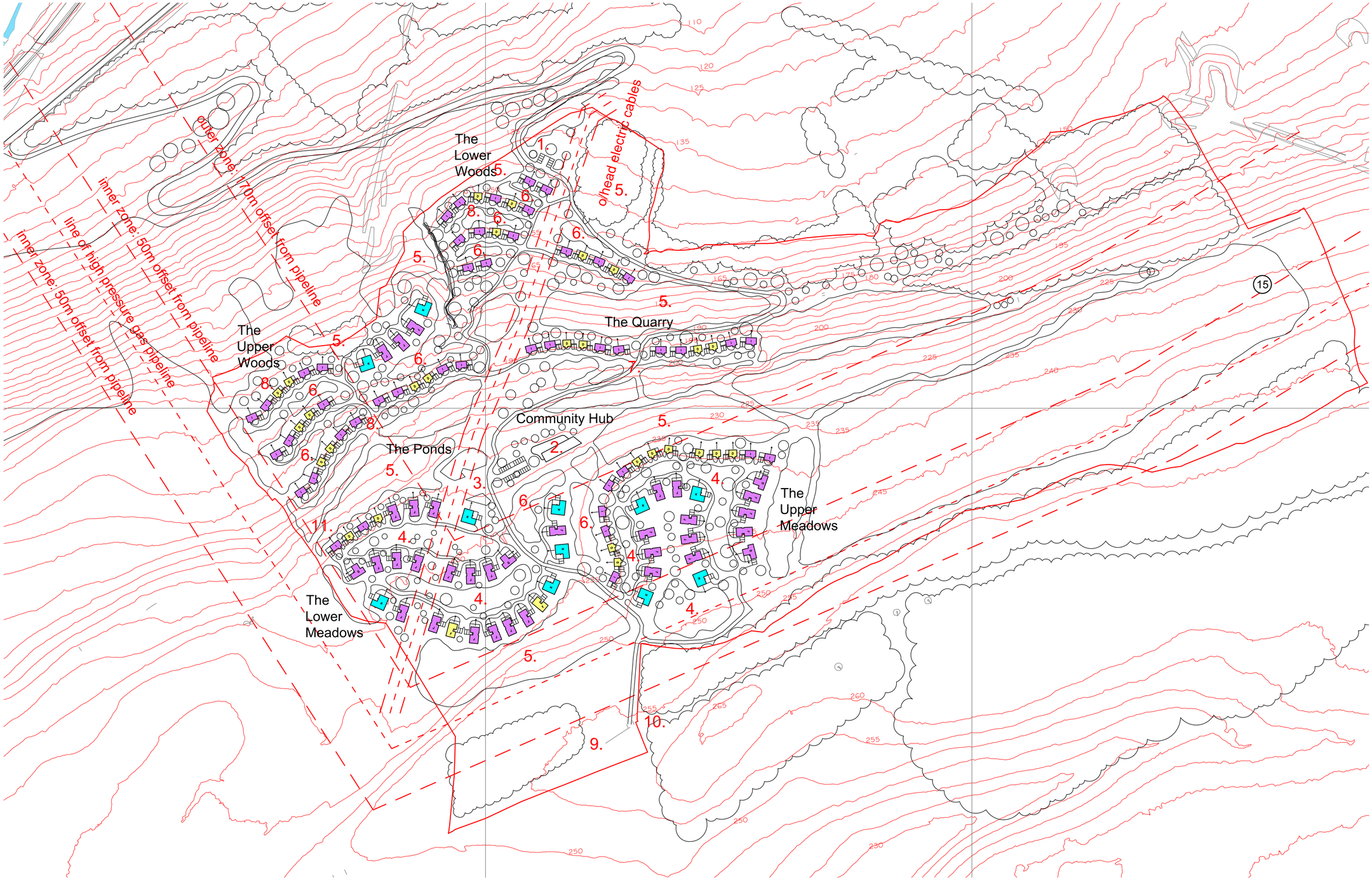
PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

STATUS
S2

PROJECT
PARC PELENNA HOLIDAY RESORT

DRAWING NO.
16044-HYD-XX-XX-DR-GE-1011

REVISIC
P01



NORTH

SCALE

0m 20m 40m 60m 80m 100m

Lodges

- Type D: 2 bed split level
- Type F: 2 bed single storey
- Type G: 3 bed single storey
- Type I: 3 bed split level
- Type J: 3 bed single storey
- Type K: 4 bed single storey

Accommodation Schedule

lodge type	bedrooms	area (m2)	area (sqft)	number	%
type D	2	92.9	1000	27	23%
type F	2	106.9	1150	4	3%
type G	3	111.5	1200	4	3%
type J	3	125.5	1350	28	23%
type I	3	125.5	1350	46	38%
type K	4	148.7	1600	11	9%
			total	120	100%

Legend

1. the welcome centre
2. the community hub - single storey structure built into hillside with green roof over. Pool, gym, sports, bike hire, shop, management offices
3. the ponds - picnic spots and wild swimming
4. the meadows - single storey lodges on plateaus and gentle slopes, arranged around wild meadows
5. existing tree belts retained and enhanced
6. new tree belts to break up views from afar
7. the quarry - split level lodges on steep slopes with valley views
8. Terraced woodlands - split level lodges on steep slopes with woodland belts between clusters to break up views from afar. Lodges and access tracks follow existing contours to minimise engineering works and loss of existing trees and habitats.
9. no development near Scheduled Ancient Monument
10. link to National Cycle Route 47
11. existing PRoW retained within development

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client: Trivselhus UK

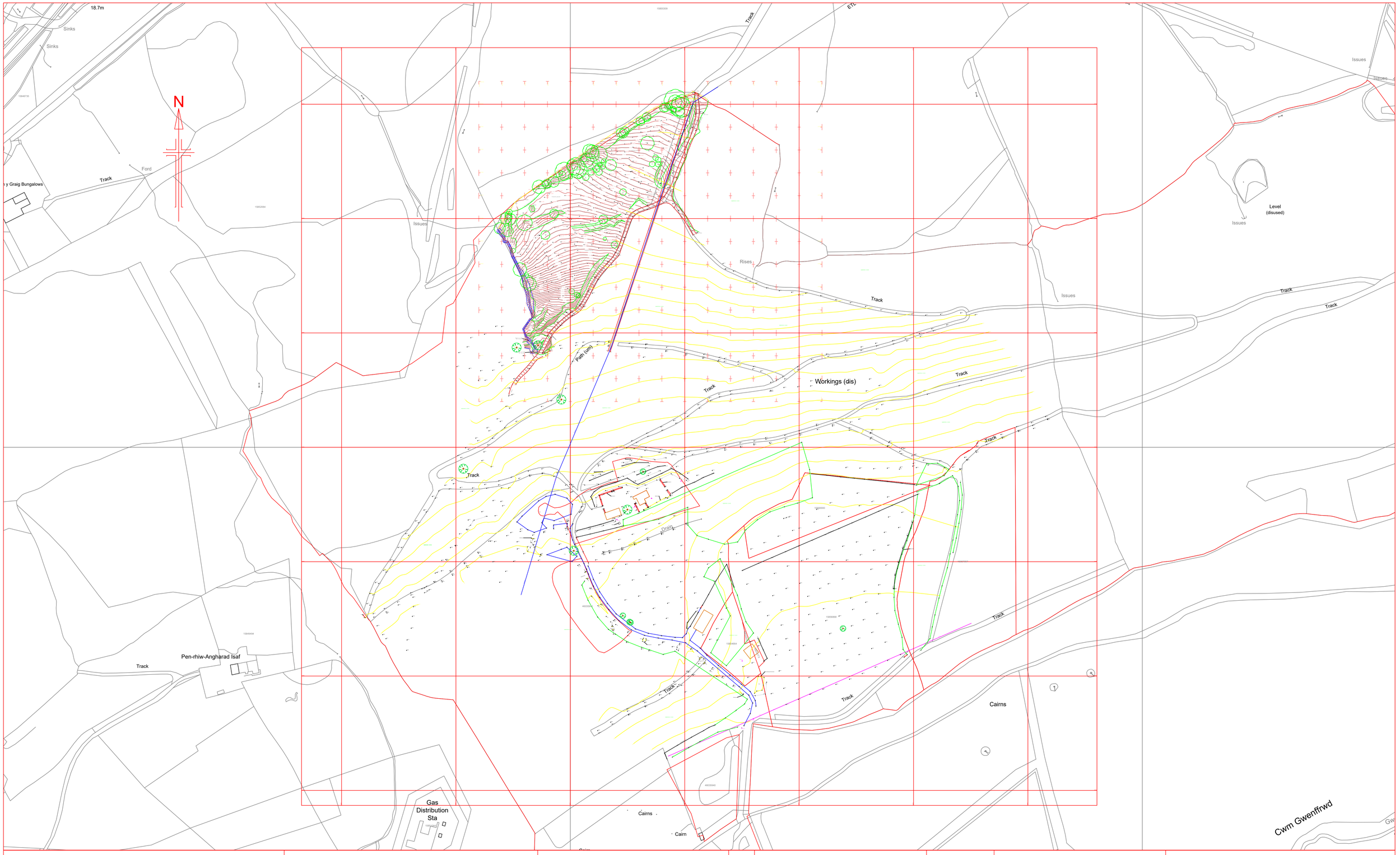
project: Parc Pelenna

drawing: concept masterplan

number: 2304/ SK001

revision: -

scale: 1:2000 @ A1



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Abbreviations

BD: Bollard	RW: Retaining Wall	RS: Road Sign
ER: Earth Rod	PR: Post & Rail	IR: Iron Railings
DP: Drain Pipe	BT: British Telecom	WL: Wall
TR: Traffic Lights	PW: Post & Wire	EL: Eaves Level
FH: Fire Hydrant	IC: Inspection Cover	RL: Ridge Level
GY: Road Gulley	ST: Stop Tap	TH: Threshold
MH: Manhole	GV: Gas Valve	FL: Floor Level
LP: Lamp Post	WM: Water Meter	PB: Post Box
BH: Borehole	CB: Crash Barrier	BN: Bin

Topographical Survey

Levels related to OS using GPS equipment

Issue	Remarks	Date

Project
Parc Pelenna
Neath

Client
Trivselhus

Drawn:	Date:
HJ	22/10/23
Scale:	Drawing Number:
A1 1 : 1500	4223

Appendix B Field reconnaissance photographs

Desk Study Photograph 1	
Date: 14/11/23	
Direction Photograph Taken: Southeast.	
Description: Exposure of superficial weathered bedrock ~60-degree slope. Likely cut during track construction.	

Desk Study Photograph 2	
Date: 14/11/23	
Direction Photograph Taken: West.	
Description: Terraced lawn in the centre of the site, north of the farm house.	

Desk Study Photograph 3	
Date: 14/11/23	
Direction Photograph Taken: West.	
Description: One of the two ponds west of the farm house.	

Desk Study Photograph 4	
Date: 14/11/23	
Direction Photograph Taken: Northeast.	
Description: Looking northeast across the site, north of the farm house.	

Desk Study Photograph 5	
Date: 14/11/23	
Direction Photograph Taken: Southeast.	
Description: Track cutting exposing superficial weathered bedrock. 2m to 3m high and appeared unstable.	

Desk Study Photograph 6	
Date: 14/11/23	
Direction Photograph Taken: West.	
Description: Flat track area west of the disused quarry.	

Desk Study Photograph 7	
Date: 14/11/23	
Direction Photograph Taken: East.	
Description: Pile of sandstone blocks at the base of the disused quarry.	

Desk Study Photograph 8	
Date: 14/11/23	
Direction Photograph Taken: Southeast.	
Description: walls of the disused quarry. 10m to 15m high, competent, thickly bedded sandstone. Vertical to sub-vertical wide joints.	

Desk Study Photograph 9	
Date: 14/11/23	
Direction Photograph Taken: South.	
Description: wall of the disused quarry.	

Desk Study Photograph 10	
Date: 14/11/23	
Direction Photograph Taken: South.	
Description: pile of waste including burned paint cans, metals and plastics.	

Desk Study Photograph 11	
Date: 14/11/23	
Direction Photograph Taken: Northwest.	
Description: Steep slope covered in tree stumps and conifer saplings. Slope was 45 to 70 degrees and steepens to the east.	

Desk Study Photograph 12	
Date: 14/11/23	
Direction Photograph Taken: Northwest.	
Description: Looking northwest down one of the tracks on site in the north.	

Desk Study Photograph 13	
Date: 14/11/23	
Direction Photograph Taken: Southwest.	
Description: weathered superficial bedrock material, likely exposed by cutting for track construction.	

Desk Study Photograph 14	
Date: 14/11/23	
Direction Photograph Taken: Southeast.	
Description: Waterlogged ground in the north of the site.	

Desk Study Photograph 15	
Date: 14/11/23	
Direction Photograph Taken: West.	
Description: Looking across the northern area of the site.	

Desk Study Photograph 16	
Date: 14/11/23	
Direction Photograph Taken: East.	
Description: bedrock exposure of vertically jointed with possible folding/faulting sandstone. Some conjugate jointing. Appeared unstable.	

Desk Study Photograph 17	
Date: 14/11/23	
Direction Photograph Taken: South.	
Description: Steep curved slope in the north of the site in the area of the former Cefn-mawr Colliery. Roughly 15m to 20m high and densely vegetated.	

Desk Study Photograph 18	
Date: 14/11/23	
Direction Photograph Taken: Northeast.	
Description: Plateau in the northwest of the site.	

Desk Study Photograph 19	
Date: 14/11/23	
Direction Photograph Taken: North.	
Description: Steep slope in the northwest roughly 20 to 40 degrees and densely vegetated.	

Desk Study Photograph 20	
Date: 14/11/23	
Direction Photograph Taken: Northwest.	
Description: Mature vegetation in the northwest of the site.	

Desk Study Photograph 21	
Date: 14/11/23	
Direction Photograph Taken: Northeast.	
Description: Hummocky land in the west of the site along a track.	

Desk Study Photograph 22	
Date: 14/11/23	
Direction Photograph Taken: North.	
Description: Pile of excavated material which appeared natural.	

Desk Study Photograph 23	
Date: 14/11/23	
Direction Photograph Taken: South.	
Description: Dark runoff indicating possible presence of Peat.	

Desk Study Photograph 24	
Date: 14/11/23	
Direction Photograph Taken: West.	
Description: Excavated material possibly consisting of Peat.	

Desk Study Photograph 25	
Date: 14/11/23	
Direction Photograph Taken: Southwest.	
Description: Plateau in the central area of the site which appeared to be cut and fill.	

Desk Study Photograph 26	
Date: 14/11/23	
Direction Photograph Taken: East.	
Description: Bedrock exposure, thin to thickly bedded, frequently faulted and jointed with some folding. 5m to 15m high. Appeared mostly stable.	

Desk Study Photograph 27	
Date: 14/11/23	
Direction Photograph Taken: North.	
Description: Bedrock exposure showing some instability, however this appeared to be human caused.	

Desk Study Photograph 28	
Date: 14/11/23	
Direction Photograph Taken: Southeast.	
Description: Materials and waste stored on the cut and fill plateau in the central area of the site.	

Desk Study Photograph 29	
Date: 14/11/23	
Direction Photograph Taken: Southeast.	
Description: Garage / workshop adjacent to the farm house.	

Desk Study Photograph 30	
Date: 14/11/23	
Direction Photograph Taken: Southeast.	
Description: Side of the garage / workshop showing an outlet leading from the structure.	

Desk Study Photograph 31	
Date: 14/11/23	
Direction Photograph Taken: West.	
Description: Localised shallow circular failure in the slope.	

Desk Study Photograph 32	
Date: 14/11/23	
Direction Photograph Taken: East.	
Description: Superficial weathered bedrock exposure. 15 to 20 degree slope, roughly 2m high.	

Desk Study Photograph 33	
Date: 14/11/23	
Direction Photograph Taken: East.	
Description: Managed lawn area in the south-central area of the site showing a generally smooth and flat topography.	

Desk Study Photograph 34	
Date: 14/11/23	
Direction Photograph Taken: West.	
Description: Superficial weathered bedrock exposure roughly 3m high with standing water at the base. Appeared fairly stable.	

Desk Study Photograph 35	
Date: 14/11/23	
Direction Photograph Taken: Northeast.	
Description: Track in the south of the site showing the high-pressure gas main trending east to west.	

Desk Study Photograph 36	
Date: 14/11/23	
Direction Photograph Taken: South.	
Description: Above Ground Storage Tank with a fuelling hose attached in the farm building in the central area of the site. Appeared in good condition with no signs of leaks.	

Desk Study Photograph 37	
Date: 14/11/23	
Direction Photograph Taken: Northeast.	
Description: Equipment and vehicle storage in the farm building in the central area of the site.	

Desk Study Photograph 38	
Date: 14/11/23	
Direction Photograph Taken: Southeast.	
Description: Farm building in the south-central area in the site showing the asbestos tiled roof.	

Desk Study Photograph 39	
Date: 14/11/23	
Direction Photograph Taken: Southwest.	
Description: Looking across the managed lawn in the south-central area of the site.	

Desk Study Photograph 40	
Date: 14/11/23	
Direction Photograph Taken: Northwest.	
Description: Metal storage containers in the storage area in the southwest of the site.	

Desk Study Photograph 41	
Date: 14/11/23	
Direction Photograph Taken: Southeast.	
Description: Plastic pipe and pallet storage in the southwest storage area. Note the earth bund in the background which is roughly 2m high.	

Desk Study Photograph 42	
Date: 14/11/23	
Direction Photograph Taken: Northeast.	
Description: Sparsely vegetated path of the high-pressure gas main.	

Desk Study Photograph 43	
Date: 14/11/23	
Direction Photograph Taken: Southeast.	
Description: Looking across the southwest of the site showing a wooden storage shed.	

Desk Study Photograph 44	
Date: 14/11/23	
Direction Photograph Taken: Northwest.	
Description: Looking over to the gas distribution station 50m west of the site.	

Desk Study Photograph 45	
Date: 14/11/23	
Direction Photograph Taken: Southwest.	
Description: Excavator and equipment at the entrance to the forest in the west of the site.	

Desk Study Photograph 46	
Date: 14/11/23	
Direction Photograph Taken: Southwest.	
Description: Concrete cylinder in the forest in the west. Possibly a well.	

Desk Study Photograph 47	
Date: 14/11/23	
Direction Photograph Taken: West.	
Description: Exposure of peat in the land west of the site.	

Desk Study Photograph 48	
Date: 15/11/23	
Direction Photograph Taken: Northeast.	
Description: Looking northeast across the pathway of the high-pressure gas main.	

Desk Study Photograph 49	
Date: 15/11/23	
Direction Photograph Taken: West.	
Description: Hummocky ground at the northern base of the forest in the east. Boggy conditions encountered frequently.	

Desk Study Photograph 50	
Date: 15/11/23	
Direction Photograph Taken: Southwest.	
Description: Wooden planked bridge crossing over the high-pressure gas main.	

Desk Study Photograph 51	
Date: 15/11/23	
Direction Photograph Taken: West.	
Description: Steep slope in the east of the site. 45 to 55 degrees, stable at the crest and becoming unstable at the toe. Covered in tree trunks and dense vegetation.	

Desk Study Photograph 52	
Date: 15/11/23	
Direction Photograph Taken: East.	
Description: Looking east across the lands at the eastern boundary. Note the ancient woodland in the left side of the photograph.	

Desk Study Photograph 53	
Date: 15/11/23	
Direction Photograph Taken: East.	
Description: Superficial weathered bedrock exposure, ~1.5m high and appearing stable.	

Desk Study Photograph 54	
Date: 15/11/23	
Direction Photograph Taken: South.	
Description: Close-up of the exposed superficial weathered bedrock.	

Desk Study Photograph 55	
Date: 15/11/23	
Direction Photograph Taken: South.	
Description: Possible washout features on one the slopes in the east of the site.	

Desk Study Photograph 56	
Date: 15/11/23	
Direction Photograph Taken: Southeast.	
Description: Sandstone bedrock exposure. Thickly bedded with horizontal and vertical fractures and joints. Appeared unstable in places. Scree at the base.	

Desk Study Photograph 57	
Date: 15/11/23	
Direction Photograph Taken: South.	
Description: Culvert coming down the slope in the north of the site.	

Desk Study Photograph 58	
Date: 15/11/23	
Direction Photograph Taken: South.	
Description: Superficial weathered bedrock exposure, possibly a failure plane. 3m to 4m high. Note the band of coal.	

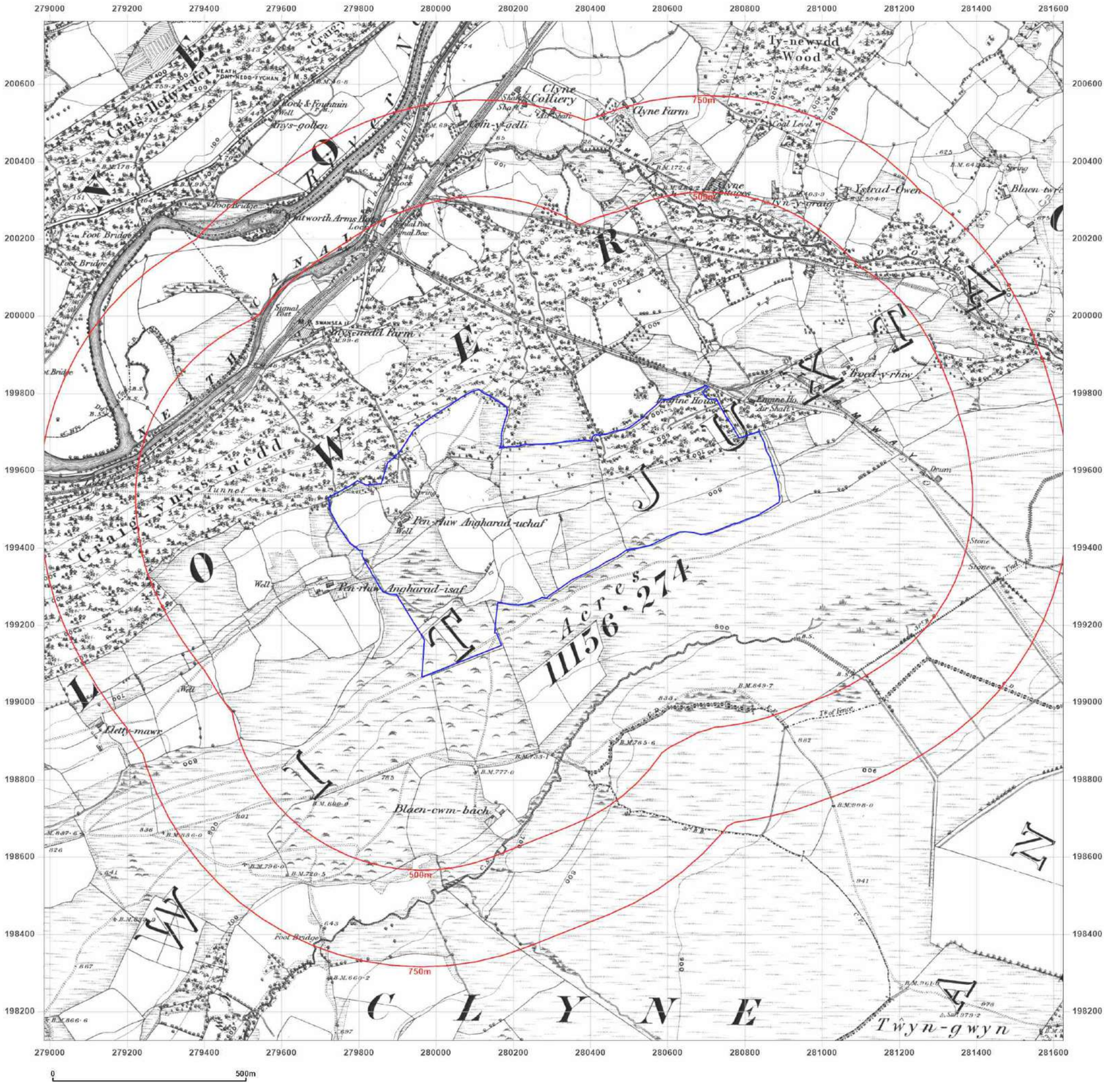
Desk Study Photograph 59	
Date: 15/11/23	
Direction Photograph Taken: South.	
Description: Failure in the superficial weathered bedrock at the base of the slope.	

Desk Study Photograph 60	
Date: 15/11/23	
Direction Photograph Taken: South.	
Description: Coal tip material at the base of the slope in the north of the site.	

Desk Study Photograph 61	
Date: 15/11/23	
Direction Photograph Taken: South.	
Description: Bricked up mine adit at the base of the slope in the north of the site.	

Desk Study Photograph 62	
Date: 15/11/23	
Direction Photograph Taken: South.	
Description: Photograph showing the inside of the mine adit.	

Appendix C Historical ordnance survey maps



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Grid Ref: 280304, 199443

Map Name: County Series

Map date: **1877**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1877
Revised 1877
Edition N/A
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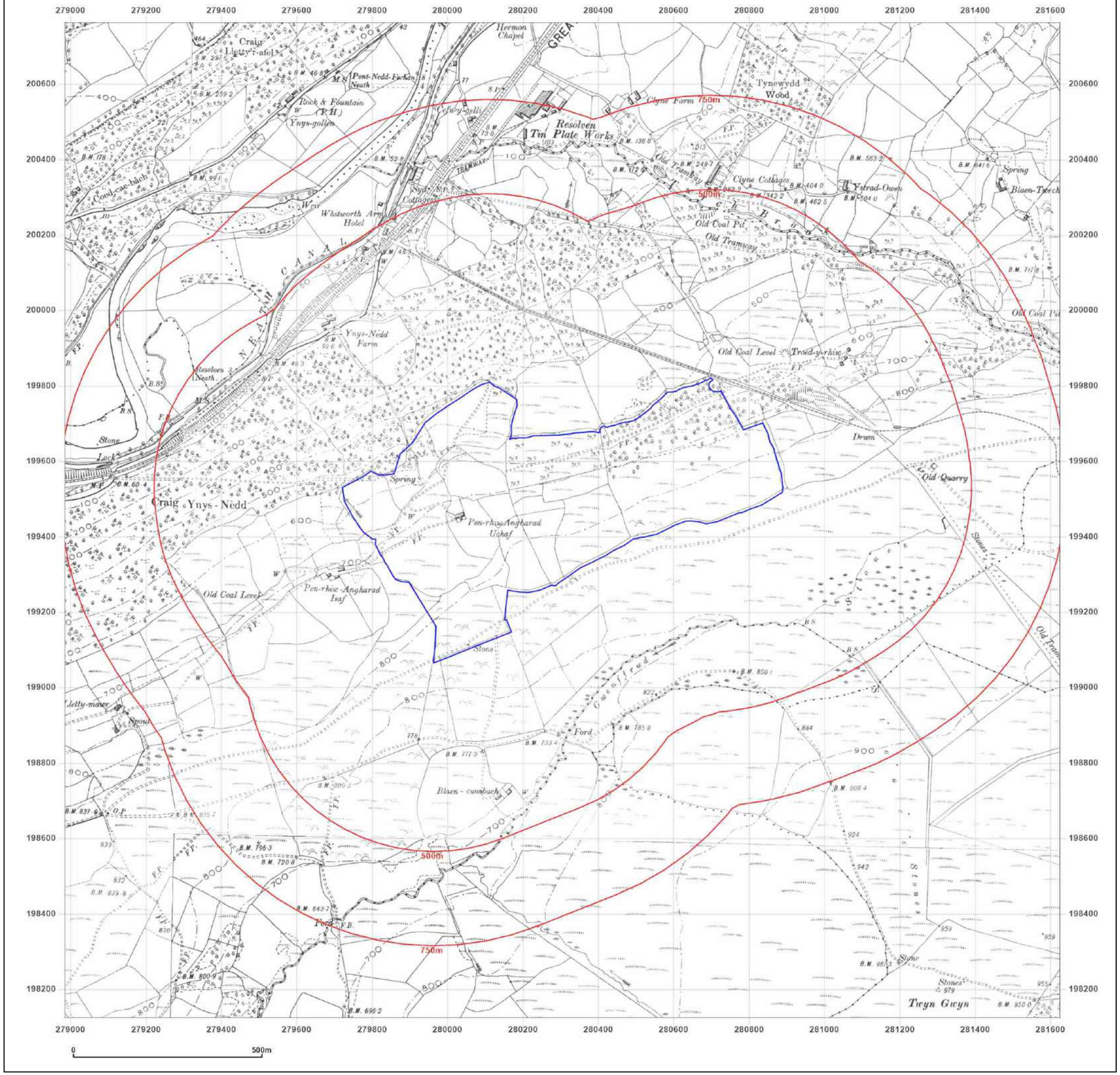

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Map Name: County Series

Map date: **1897**

Scale: 1:10,560

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Surveyed 1877
Revised 1897
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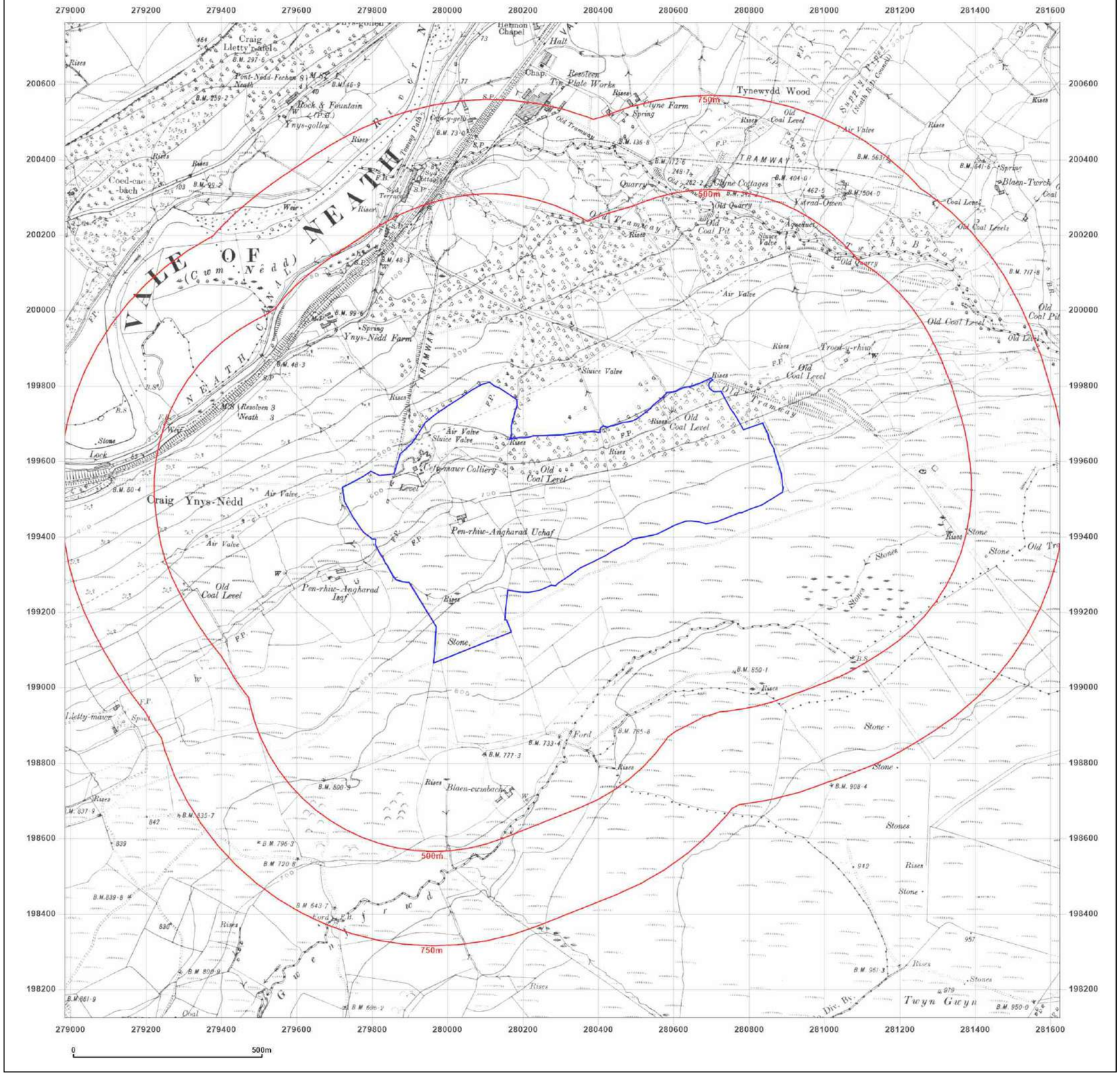

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Client Ref: PO30015
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Grid Ref: 280304, 199443

Map Name: County Series

Map date: **1921**

Scale: 1:10,560

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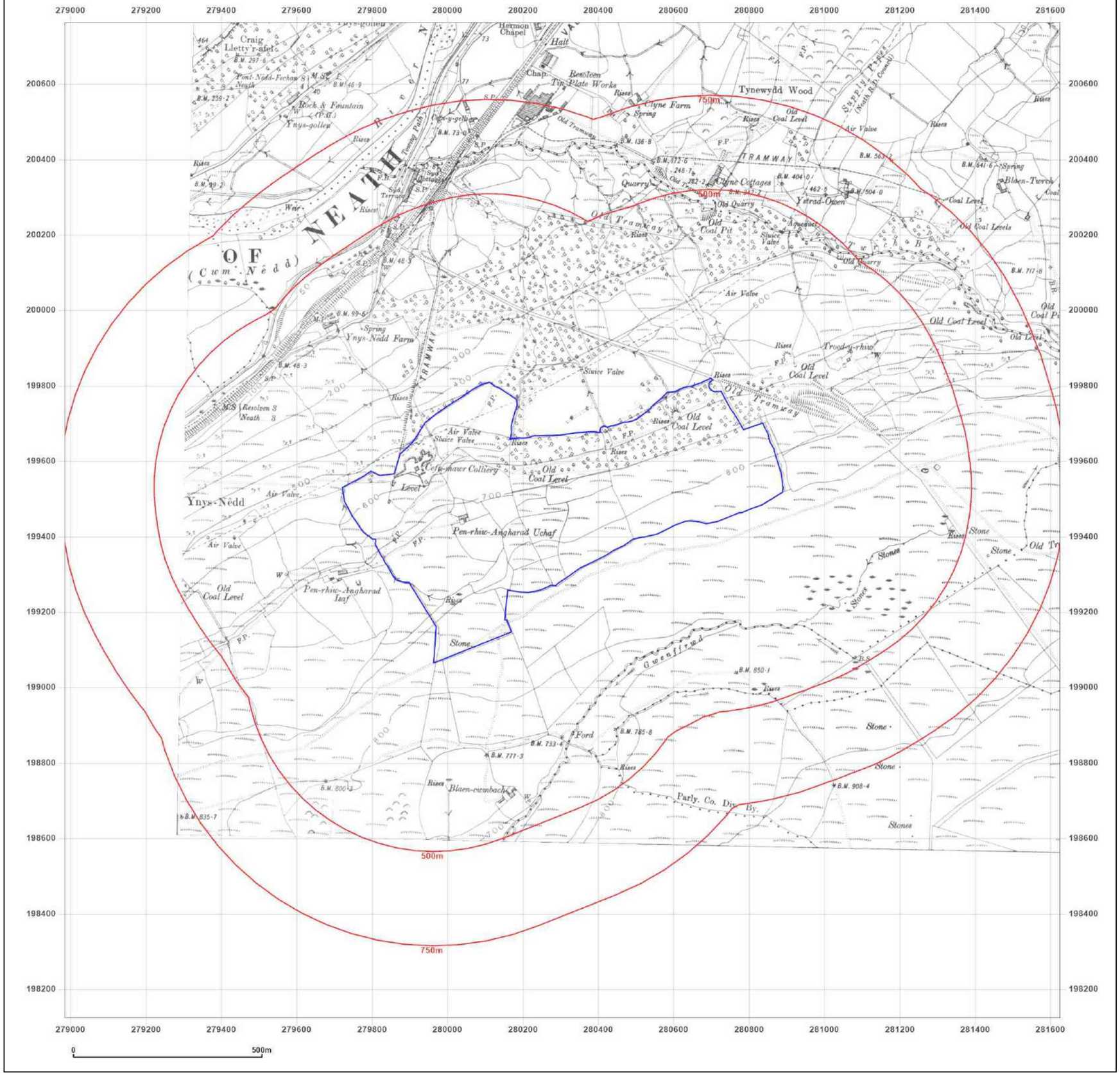

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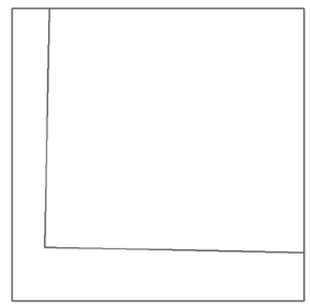

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Edition 1921
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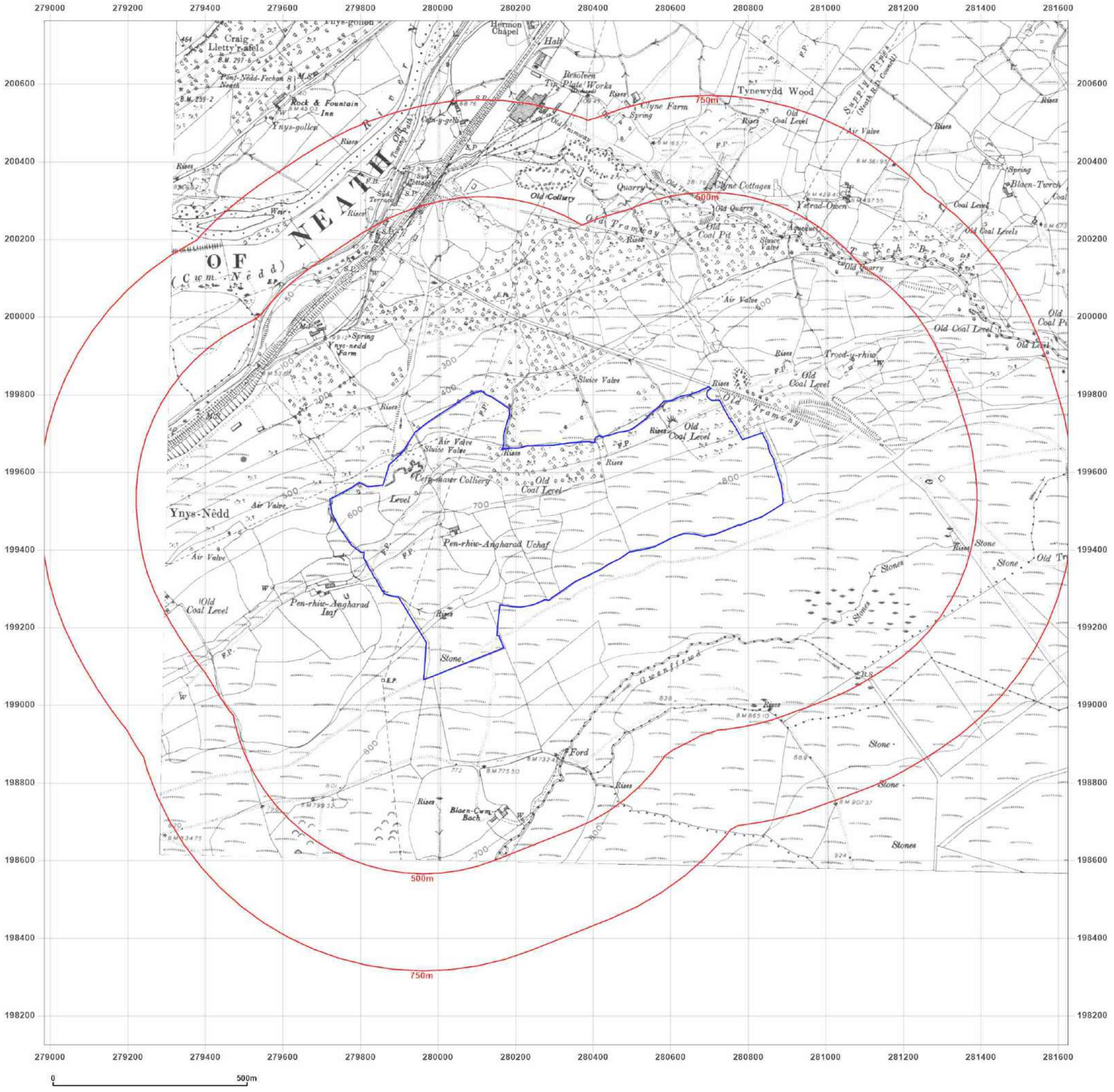

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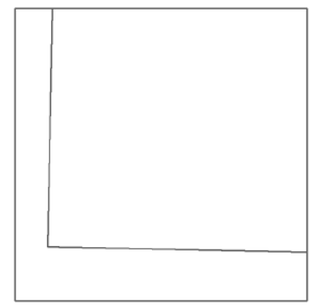

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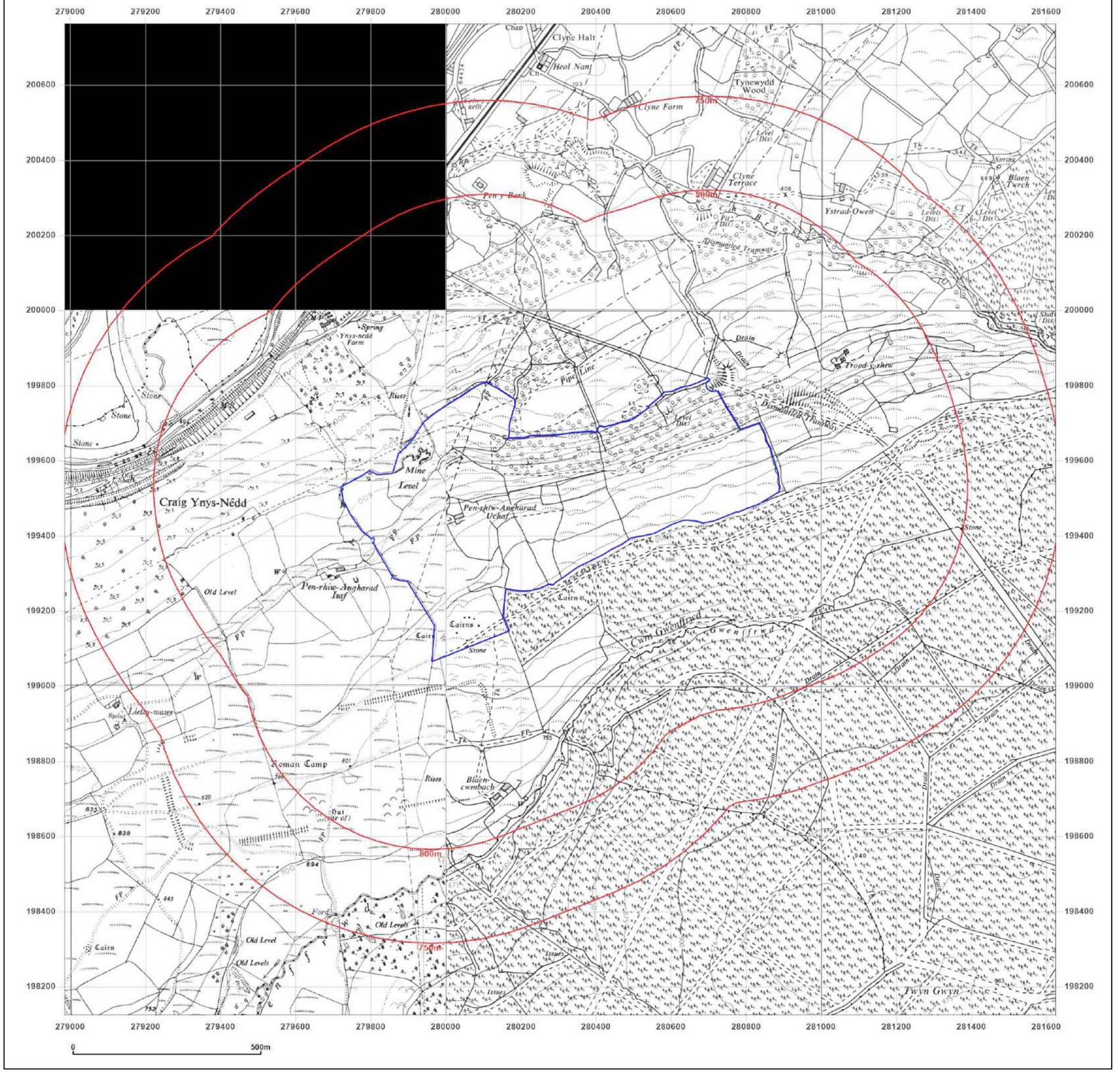

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Map Name: Provisional
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Printed at: 1:10,560

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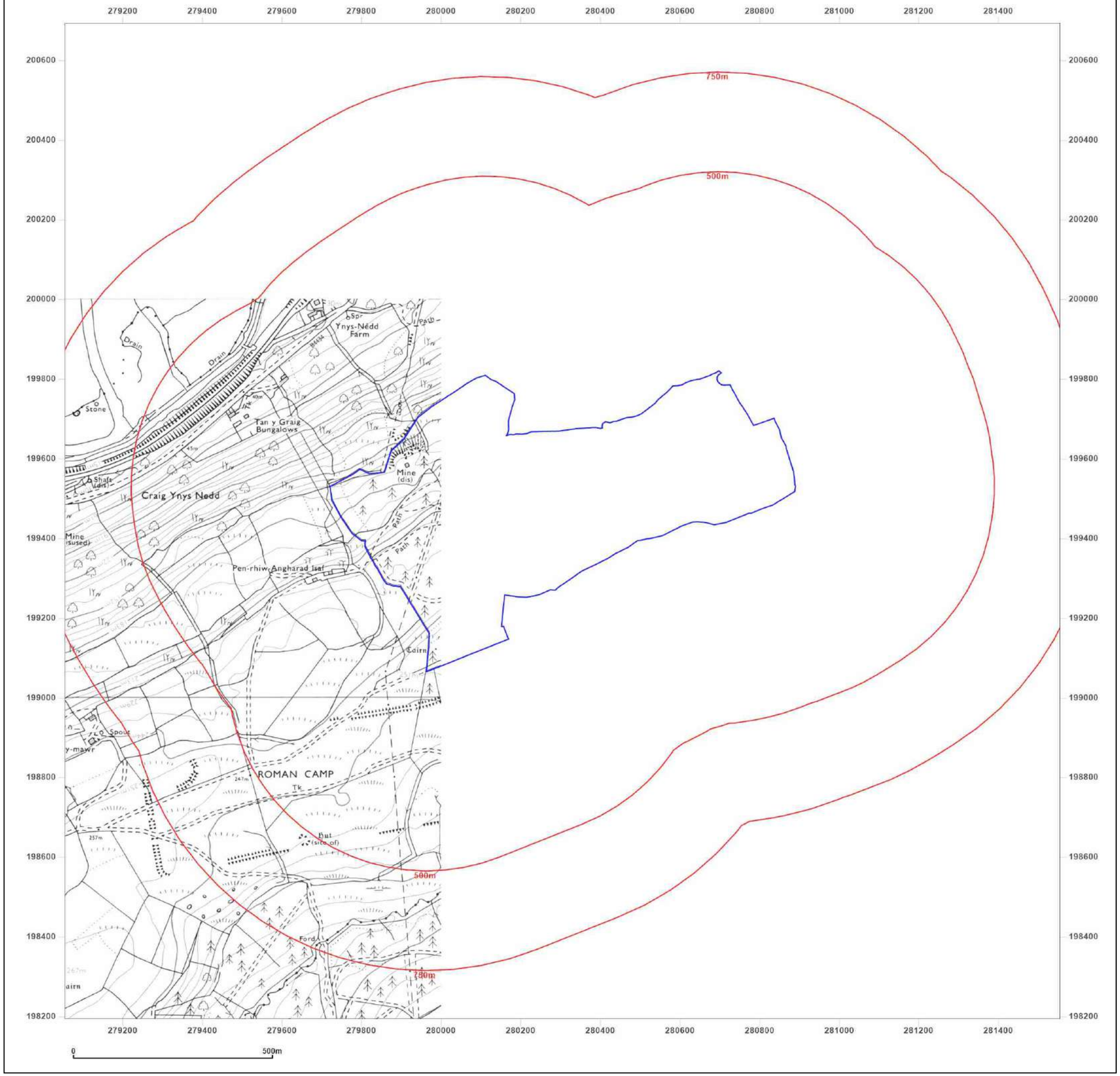

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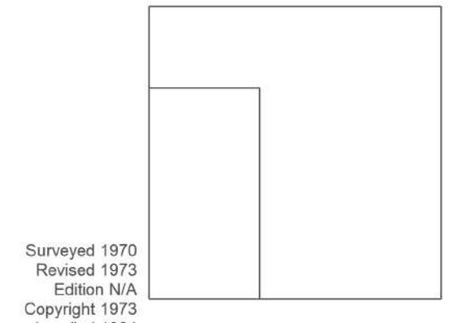

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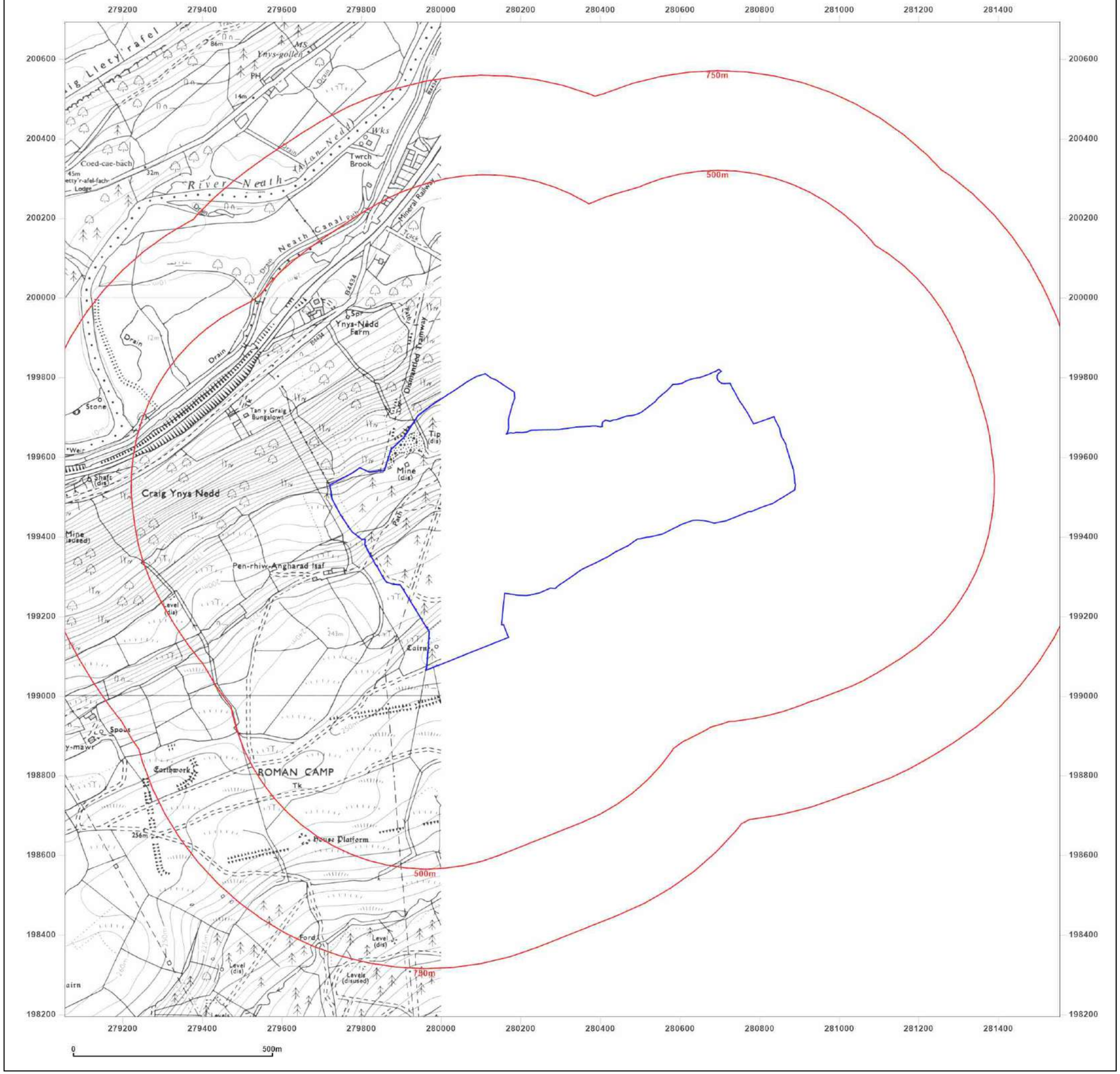

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Grid Ref: 280304, 199443

Map Name: National Grid

Map date: **1982-1987**

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Edition N/A
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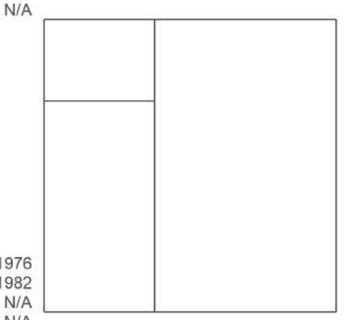

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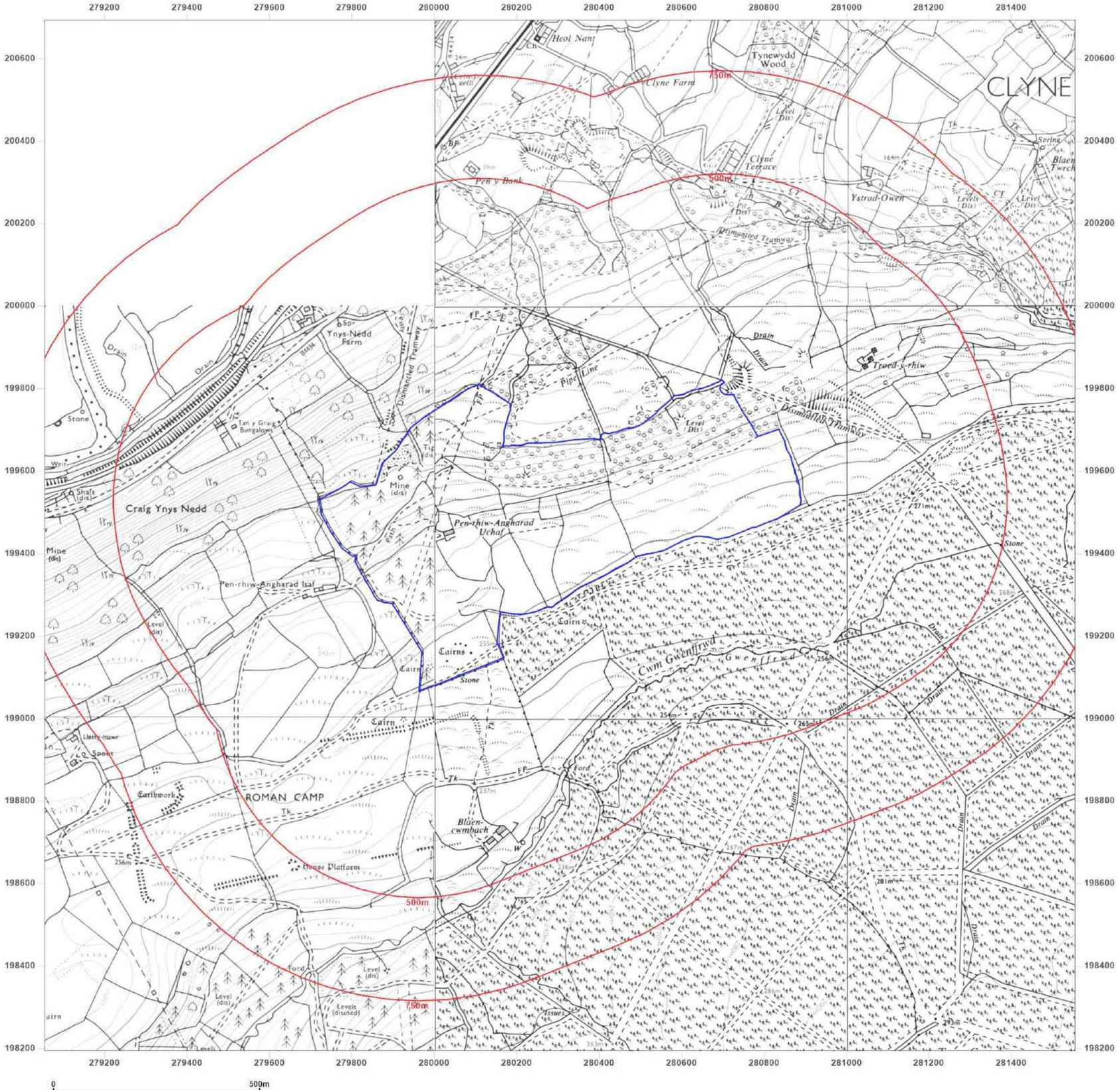

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Map Name: National Grid

Map date: **1988-1991**

Scale: 1:10,000

Printed at: 1:10,000

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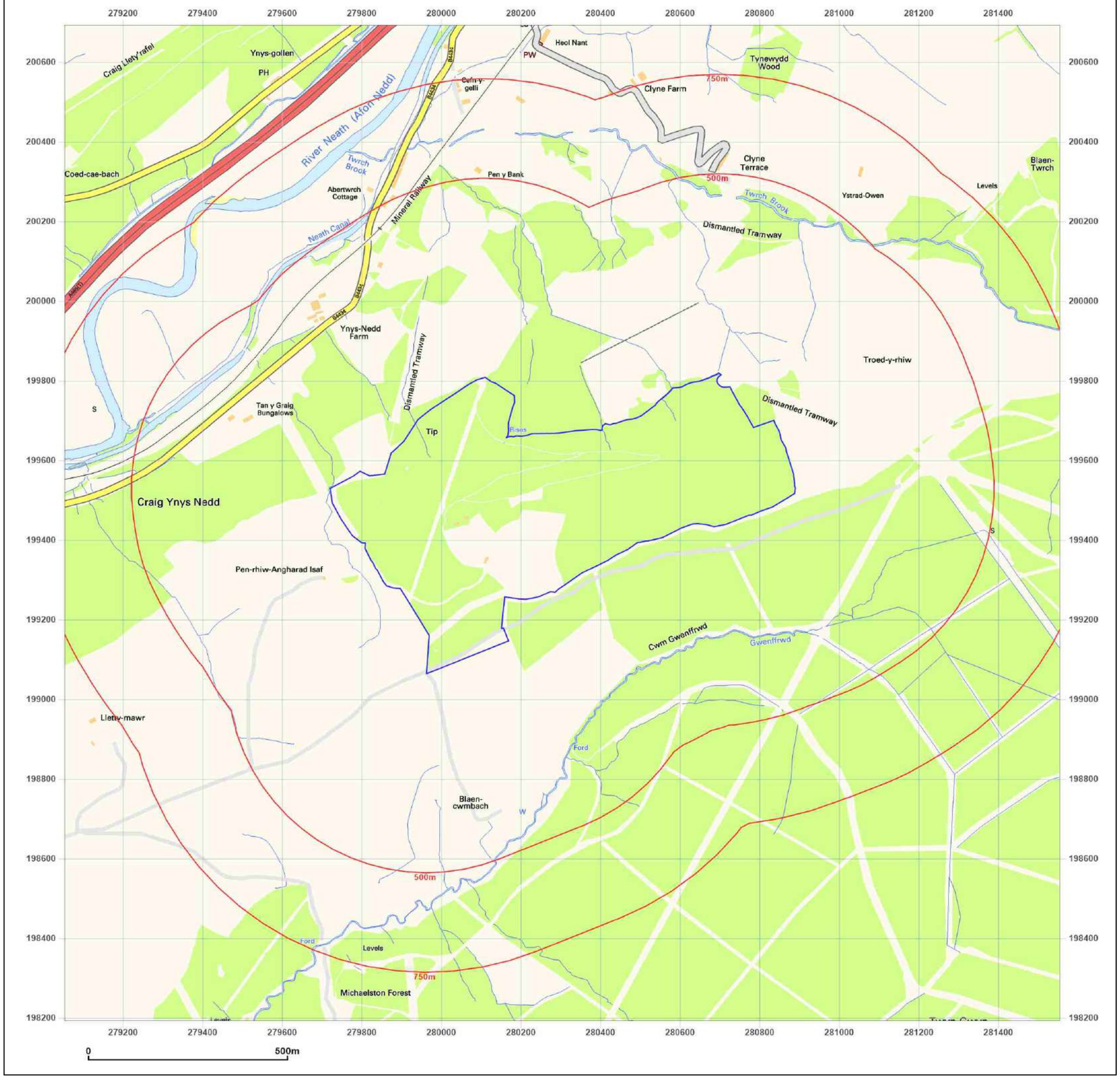

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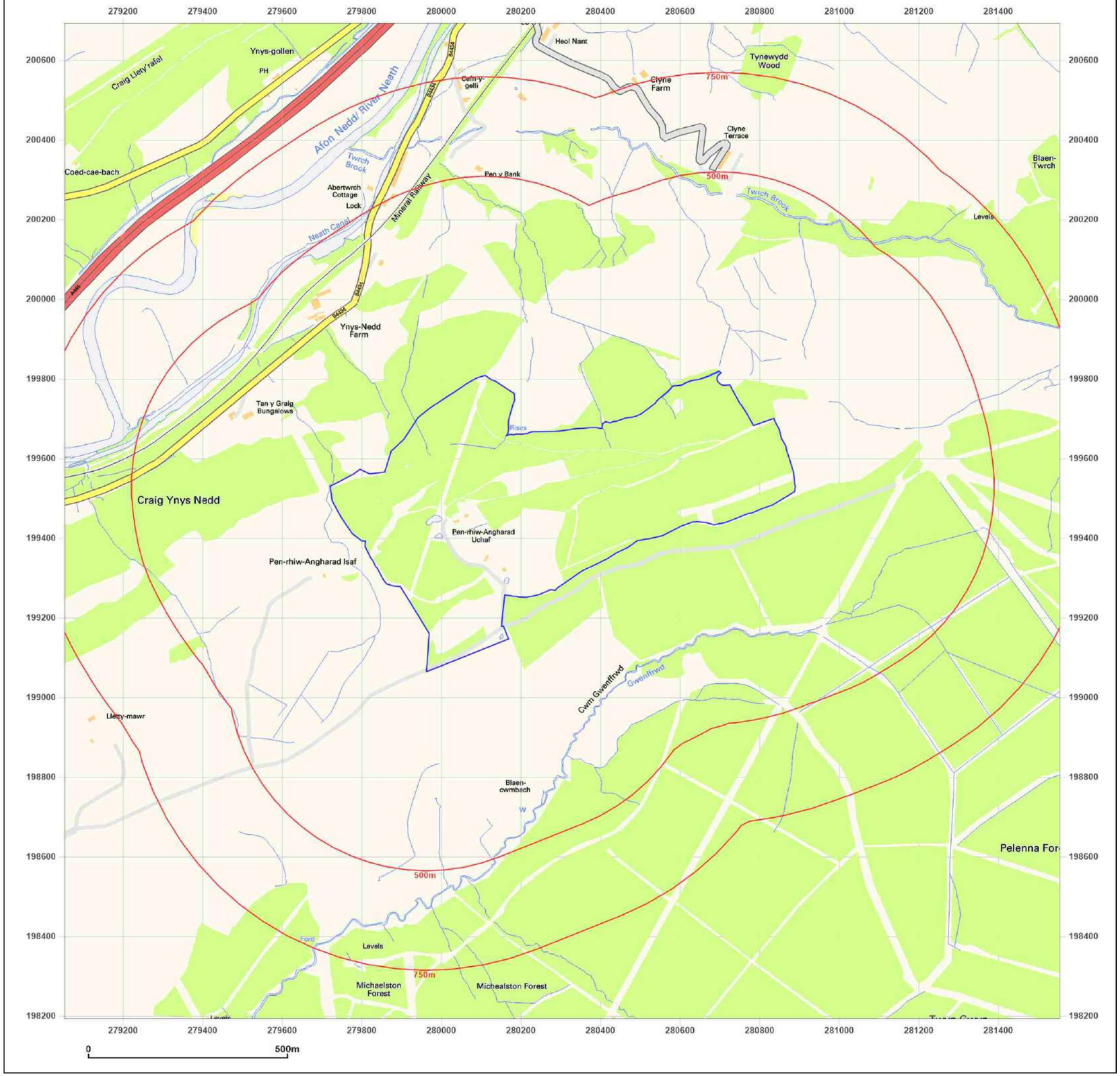

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Map Name: National Grid
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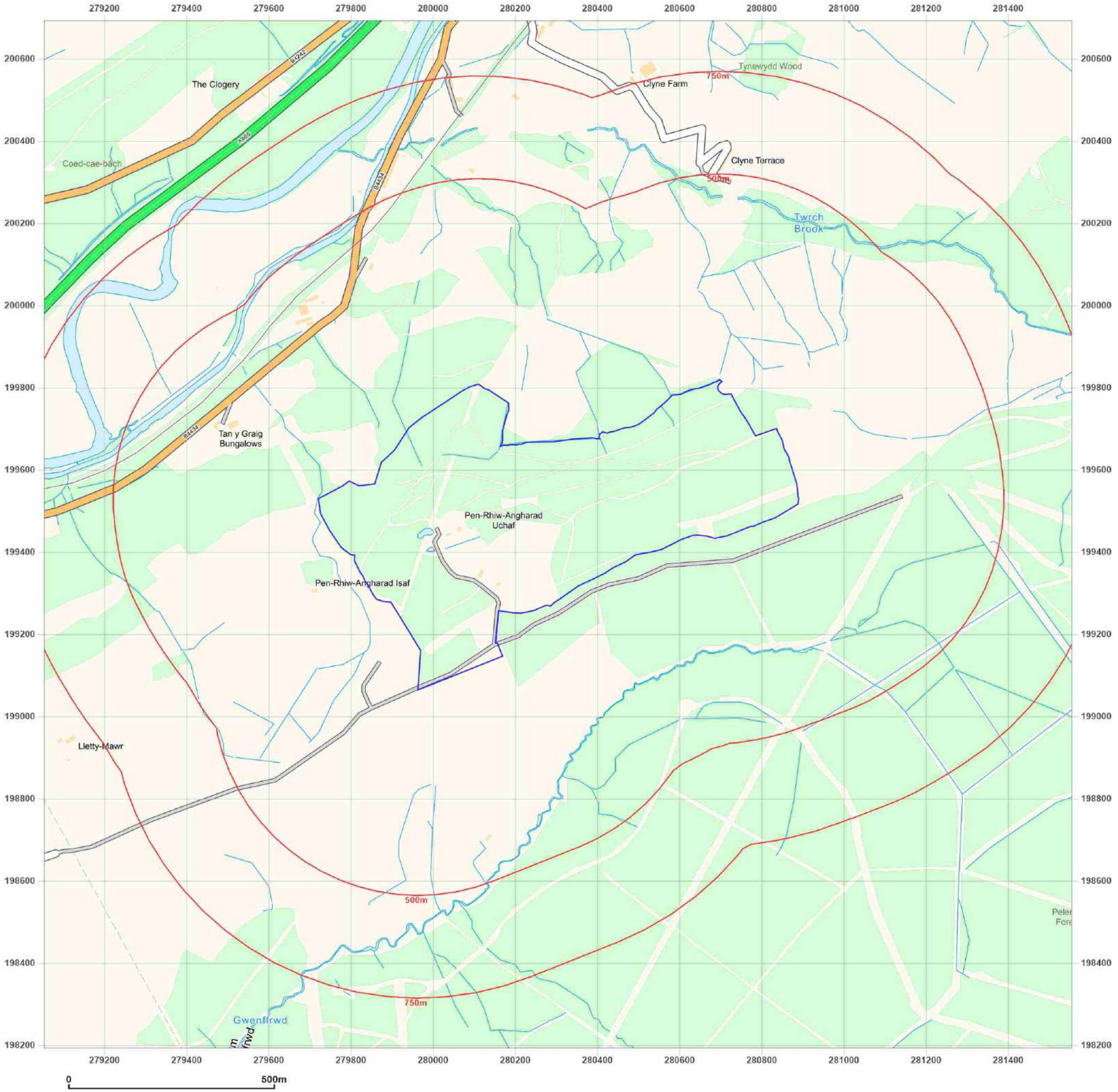

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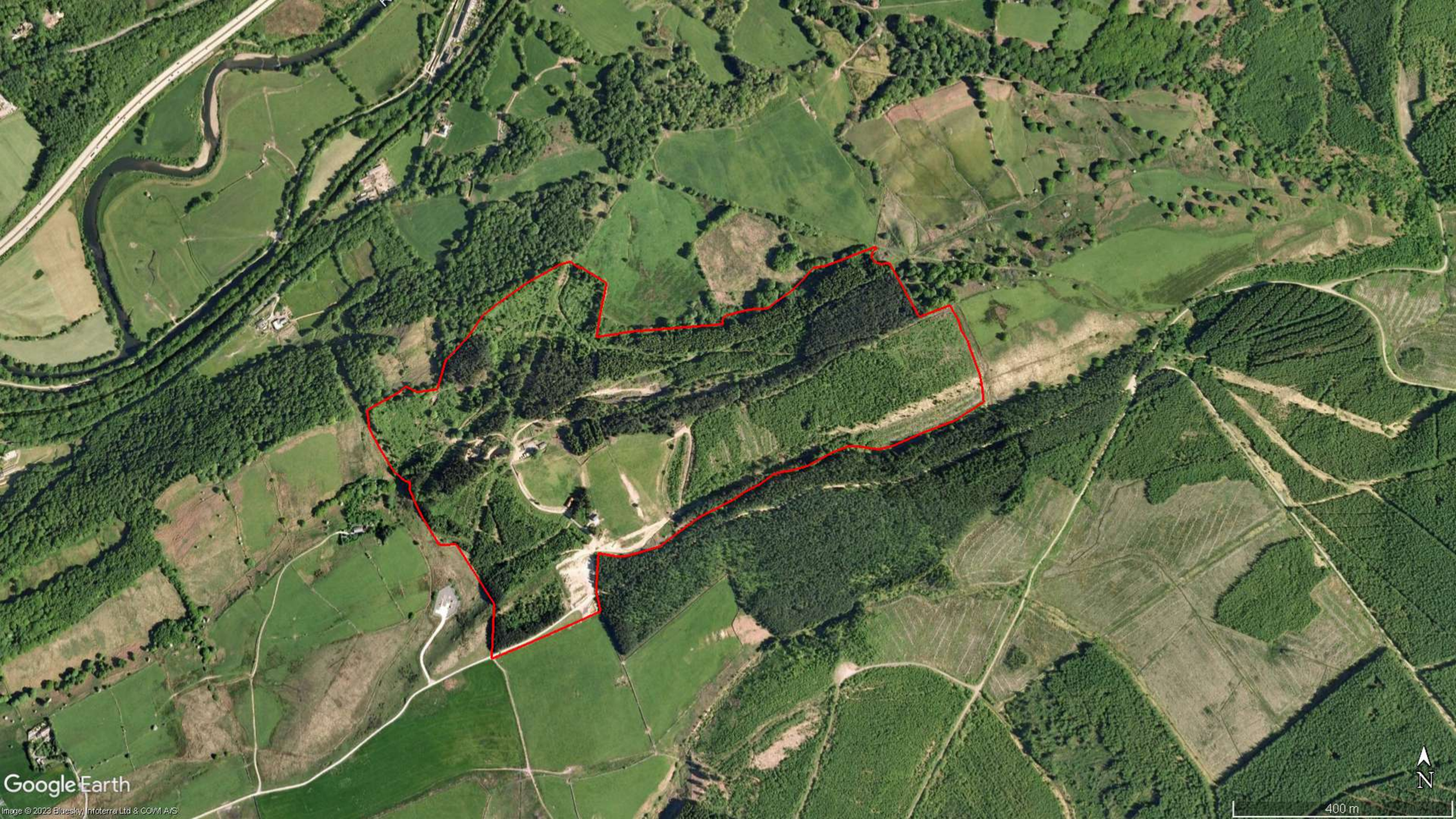
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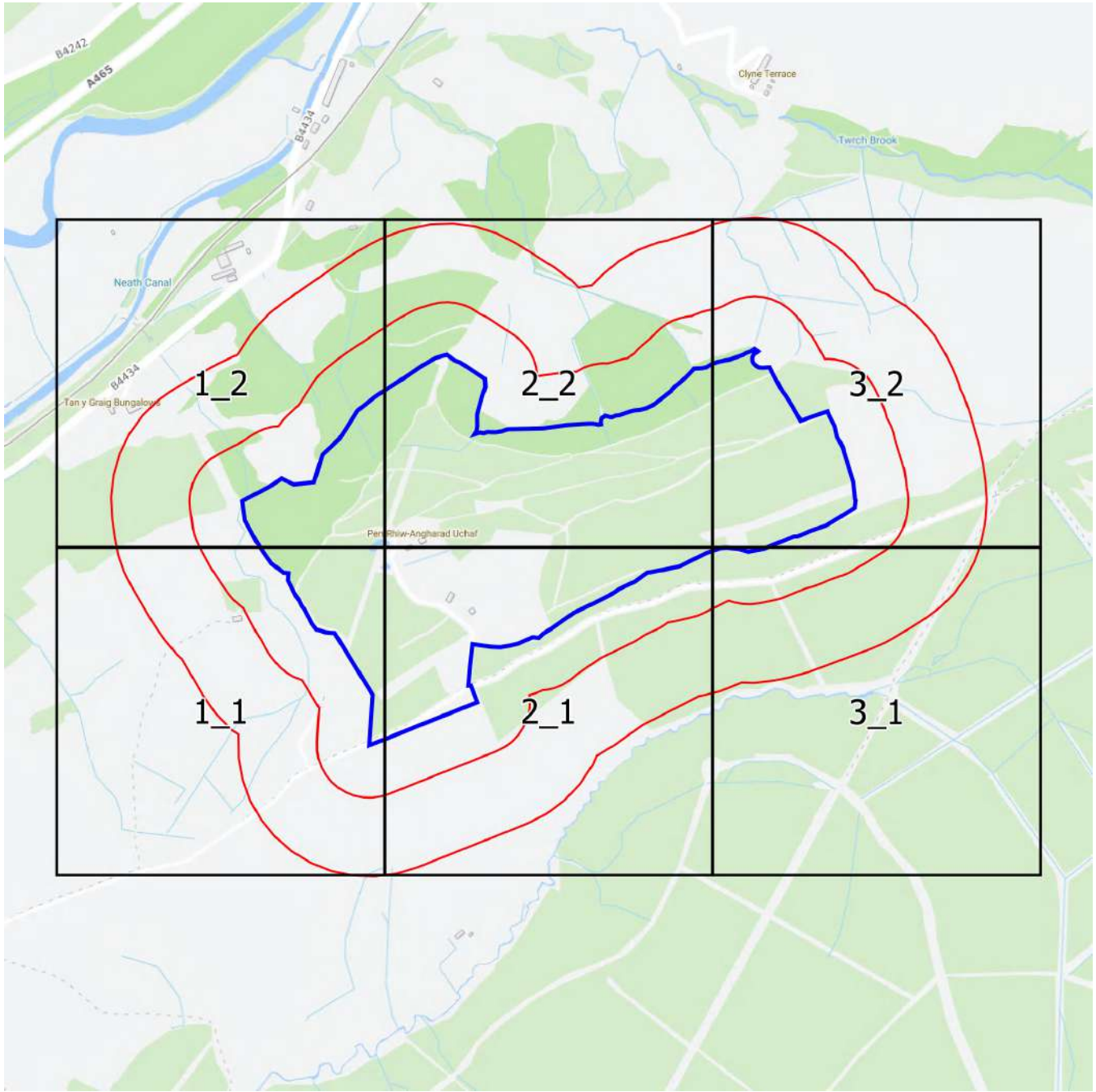

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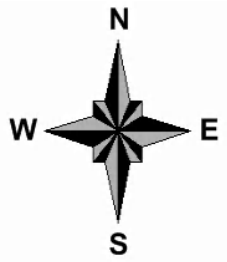

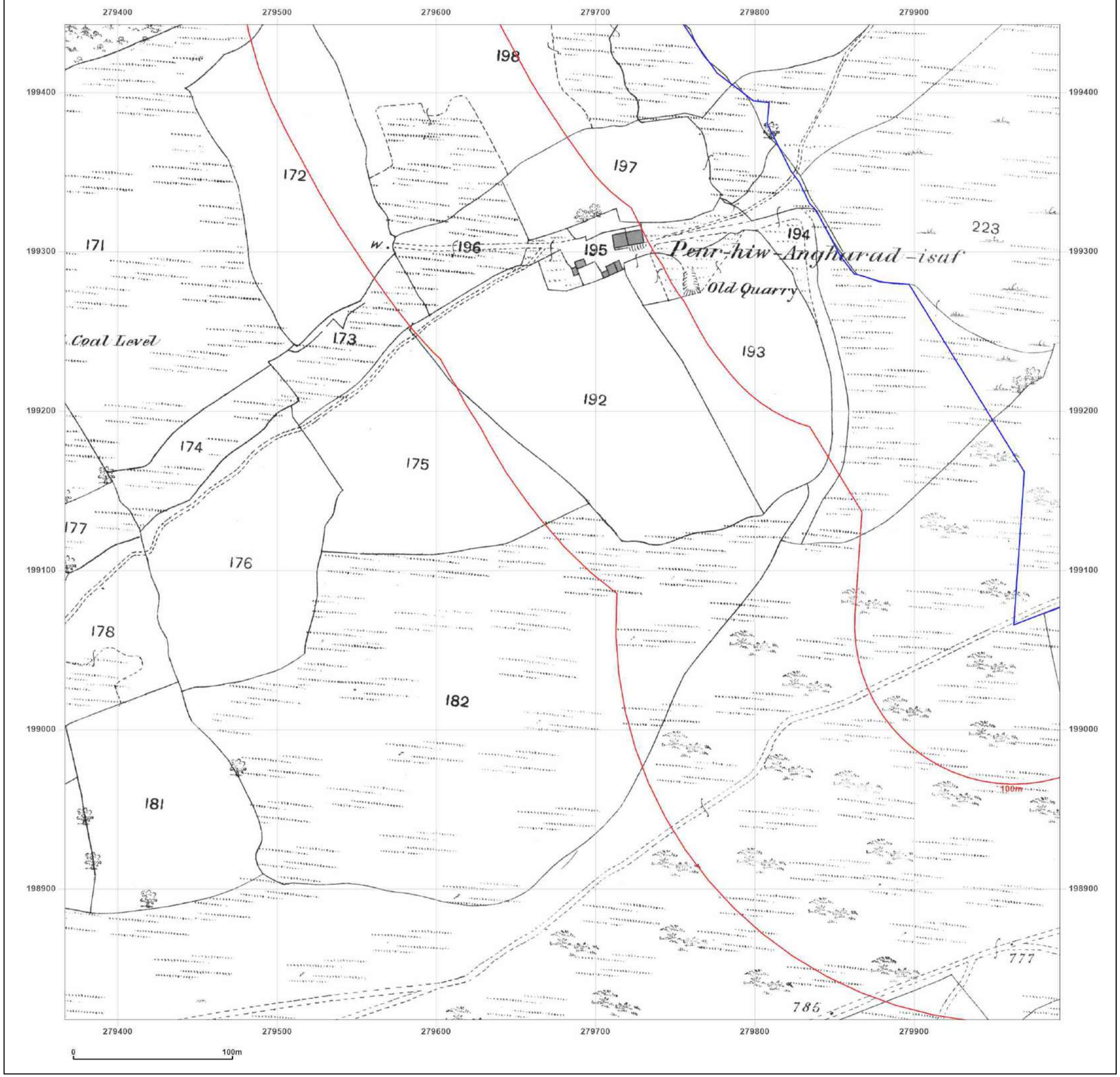

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_1_1
Grid Ref: 279679, 199130

Map Name: County Series
Map date: **1877**
Scale: 1:2,500
Printed at: 1:2,500

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

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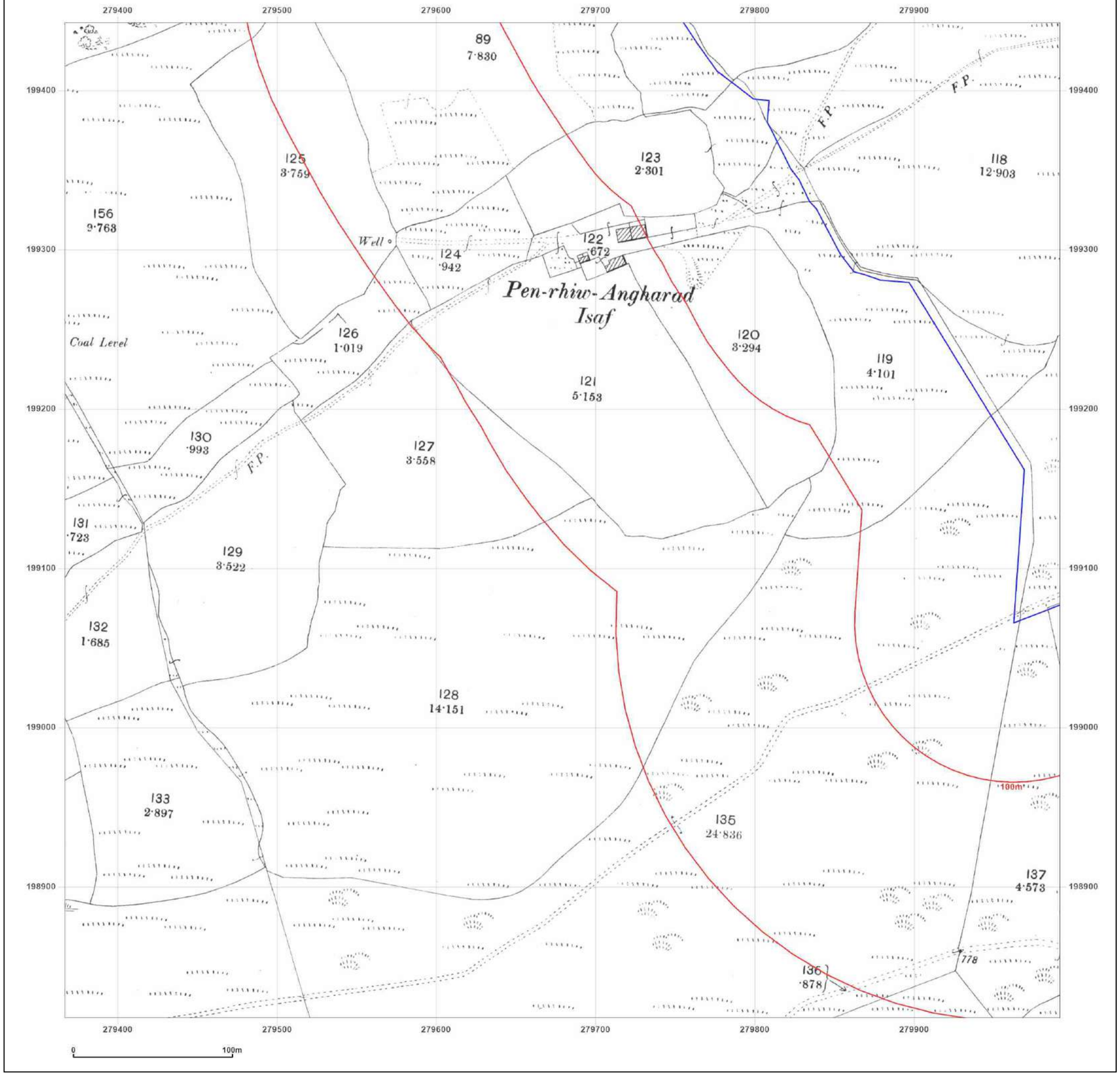

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_1_1
Grid Ref: 279679, 199130

Map Name: County Series
Map date: **1899**
Scale: 1:2,500
Printed at: 1:2,500

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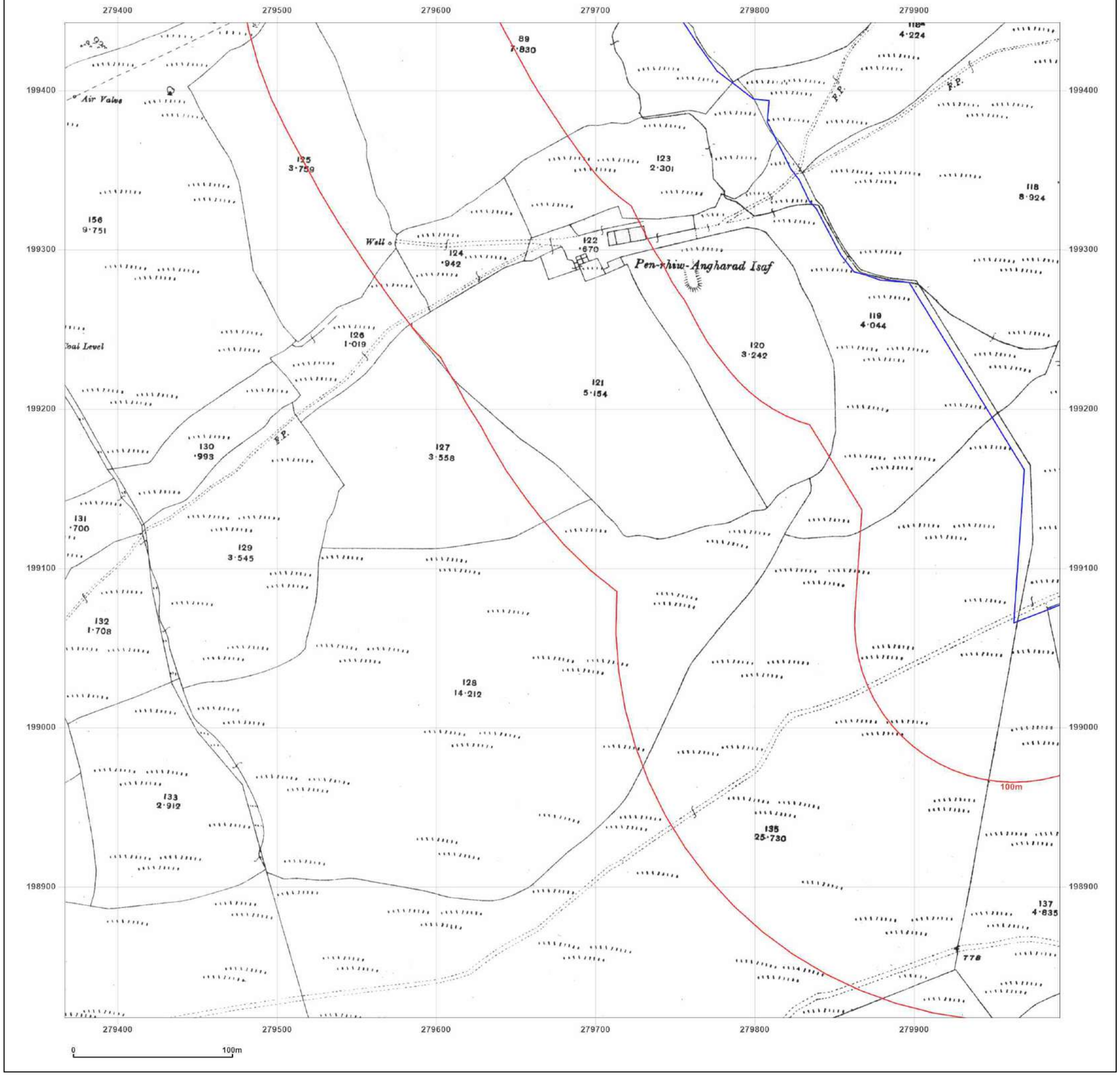

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_1_1
Grid Ref: 279679, 199130

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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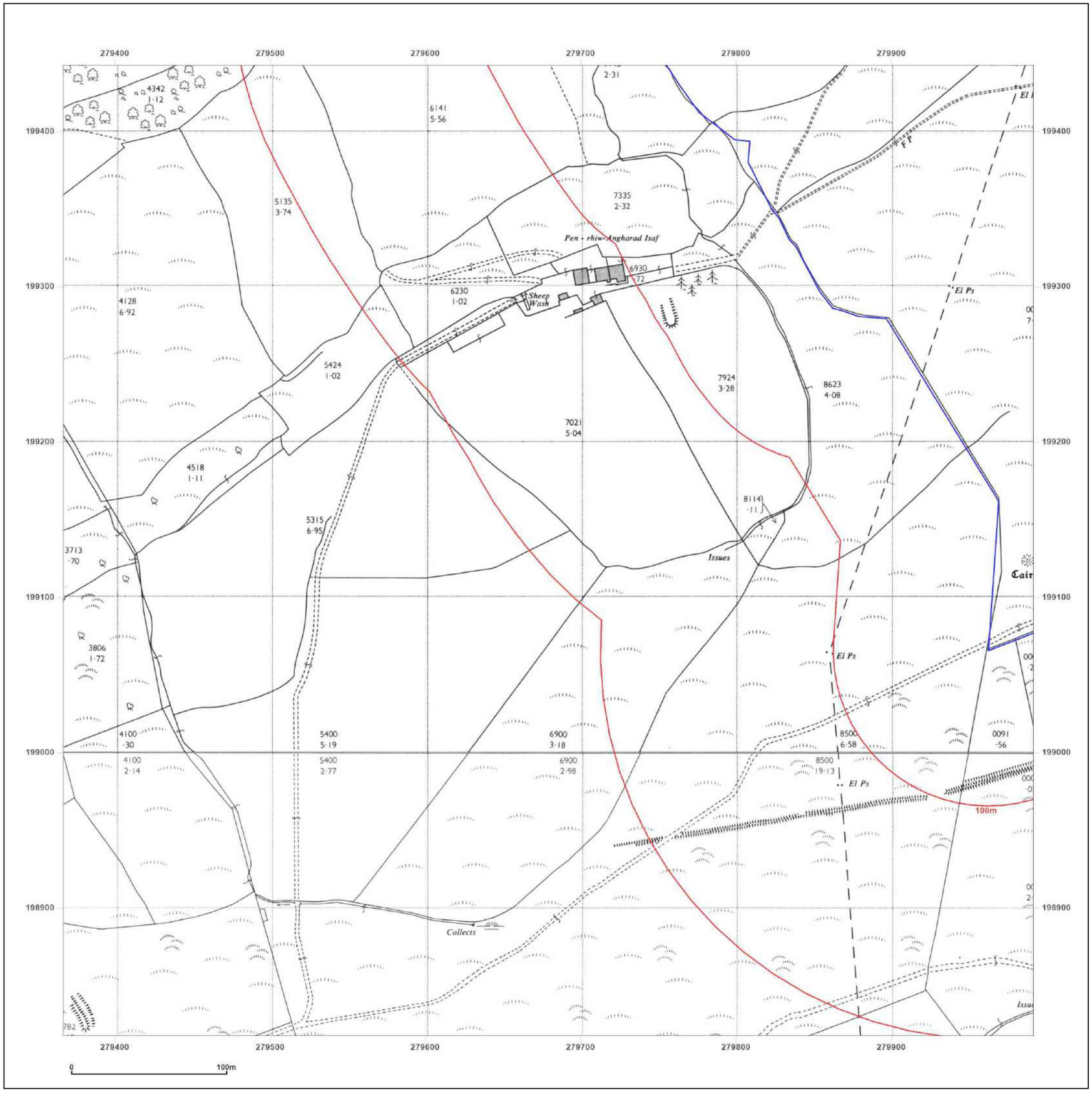

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_1_1
Grid Ref: 279679, 199130

Map Name: National Grid
Map date: **1962-1963**
Scale: 1:2,500
Printed at: 1:2,500

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Surveyed 1962
Revised 1962
Edition N/A
Copyright 1964
Levelled 1956

Surveyed 1963
Revised 1963
Edition N/A
Copyright 1964
Levelled 1956

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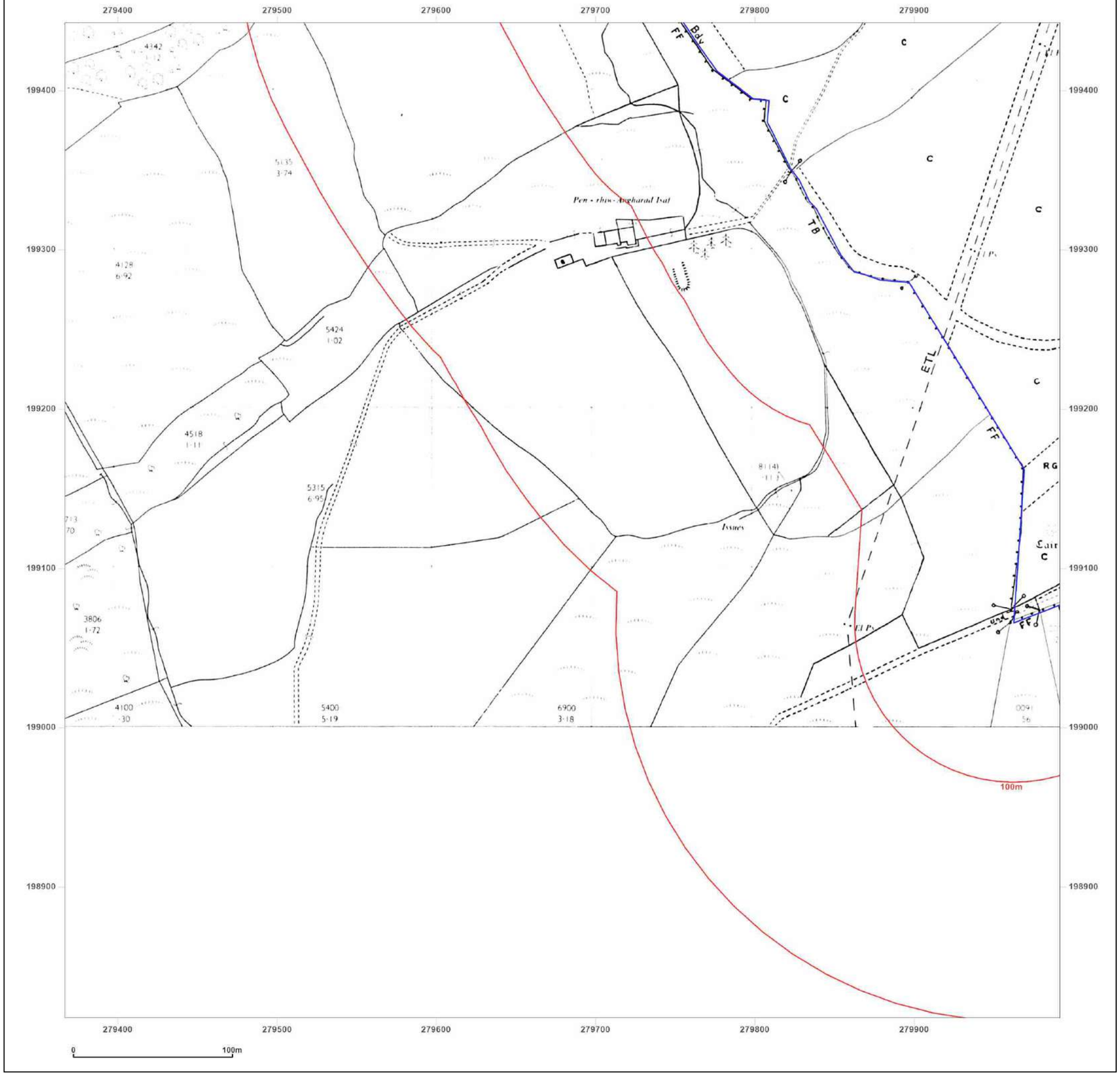

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_1_1
Grid Ref: 279679, 199130

Map Name: National Grid
Map date: **1963**
Scale: 1:2,500
Printed at: 1:2,500

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

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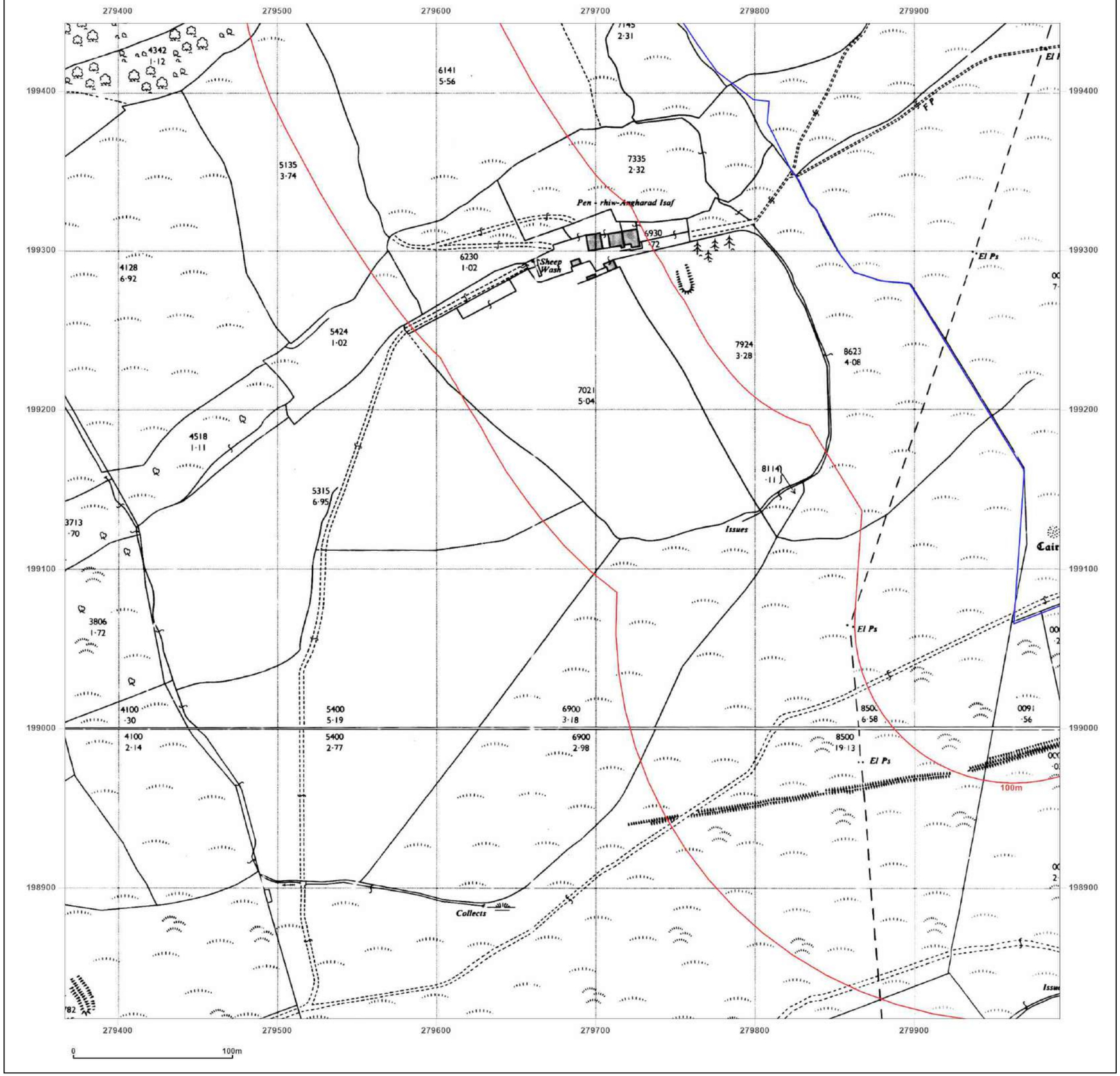

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Site Details:

280265.4930125342,199499.25649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_1_1
Grid Ref: 279679, 199130

Map Name: National Grid
Map date: **1964**
Scale: 1:2,500
Printed at: 1:2,500

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

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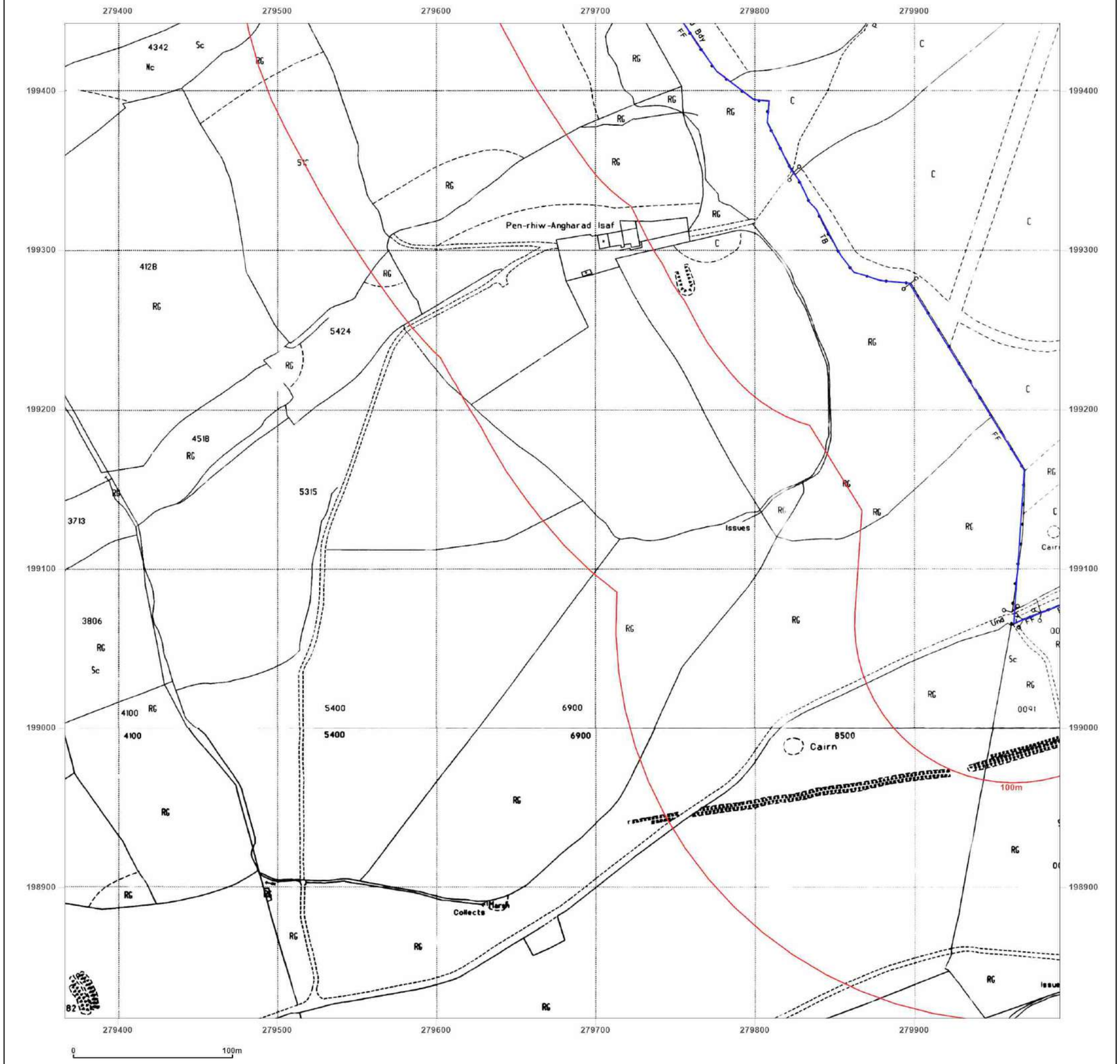

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Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_1_1
Grid Ref: 279679, 199130

Map Name: National Grid
Map date: **1993**
Scale: 1:2,500
Printed at: 1:2,500

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

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Revised N/A
Edition N/A
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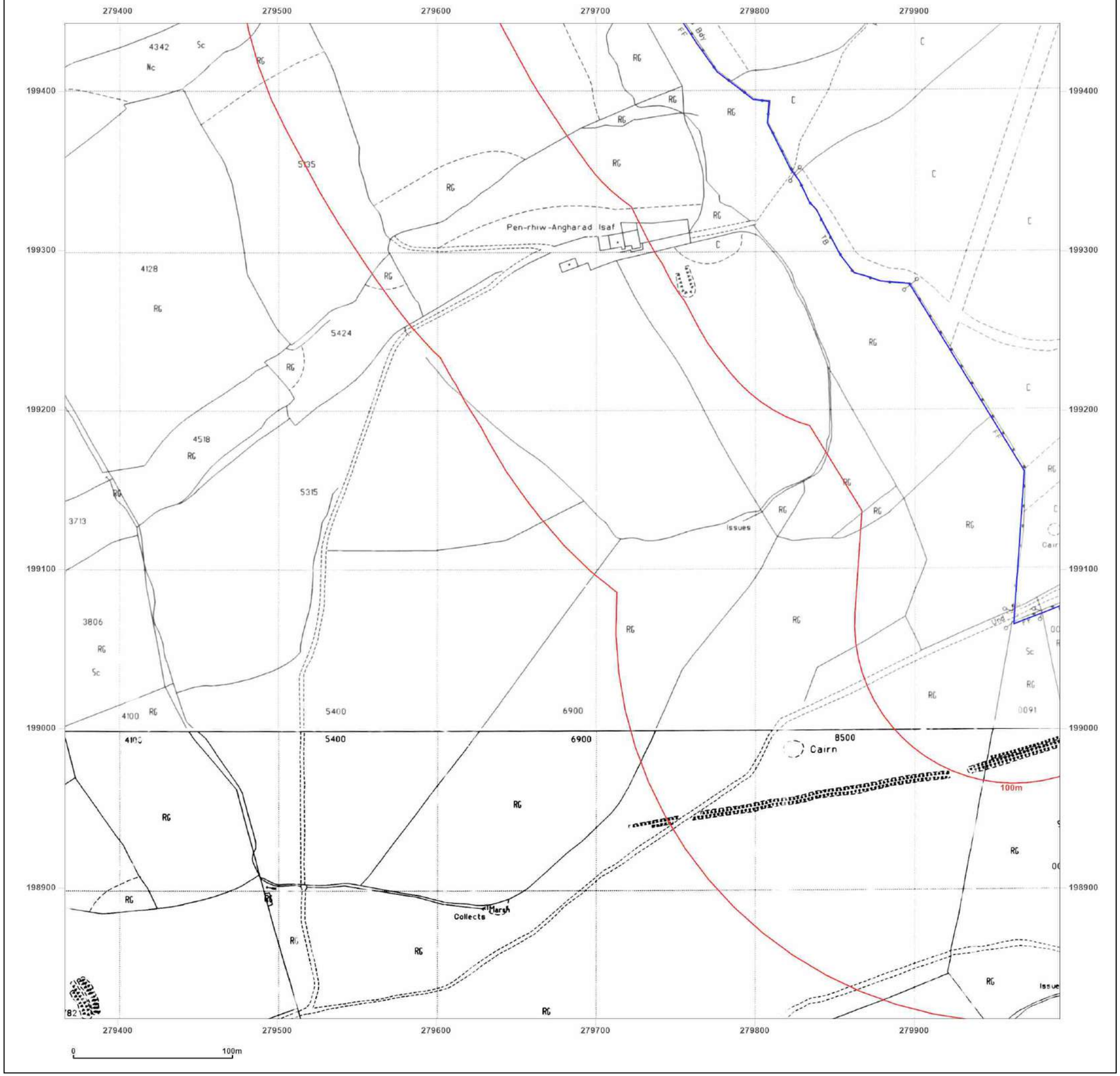

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649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_1_1
Grid Ref: 279679, 199130

Map Name: National Grid
Map date: **1993**
Scale: 1:2,500
Printed at: 1:2,500

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

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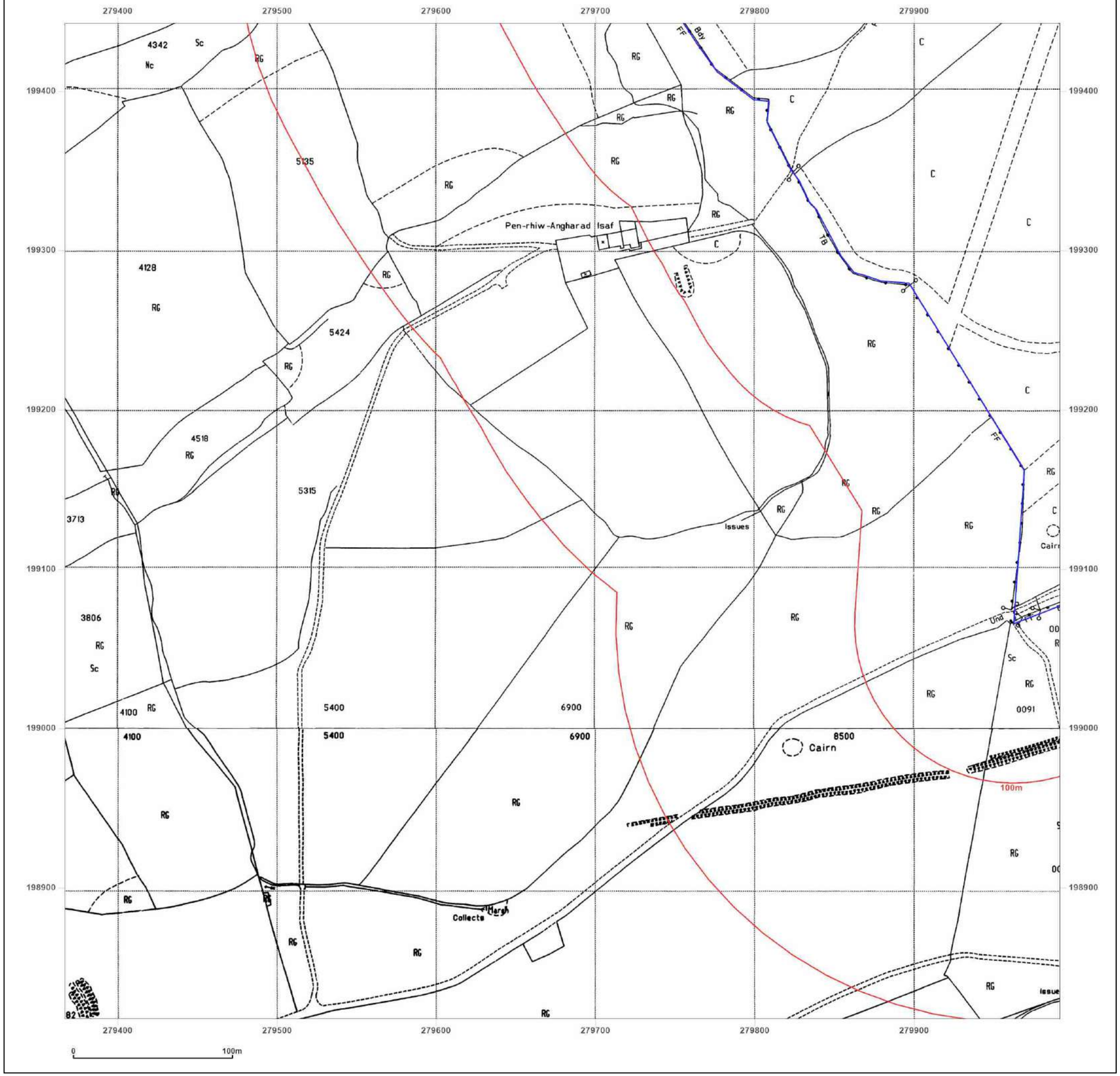

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Site Details:

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649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_1_1
Grid Ref: 279679, 199130

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

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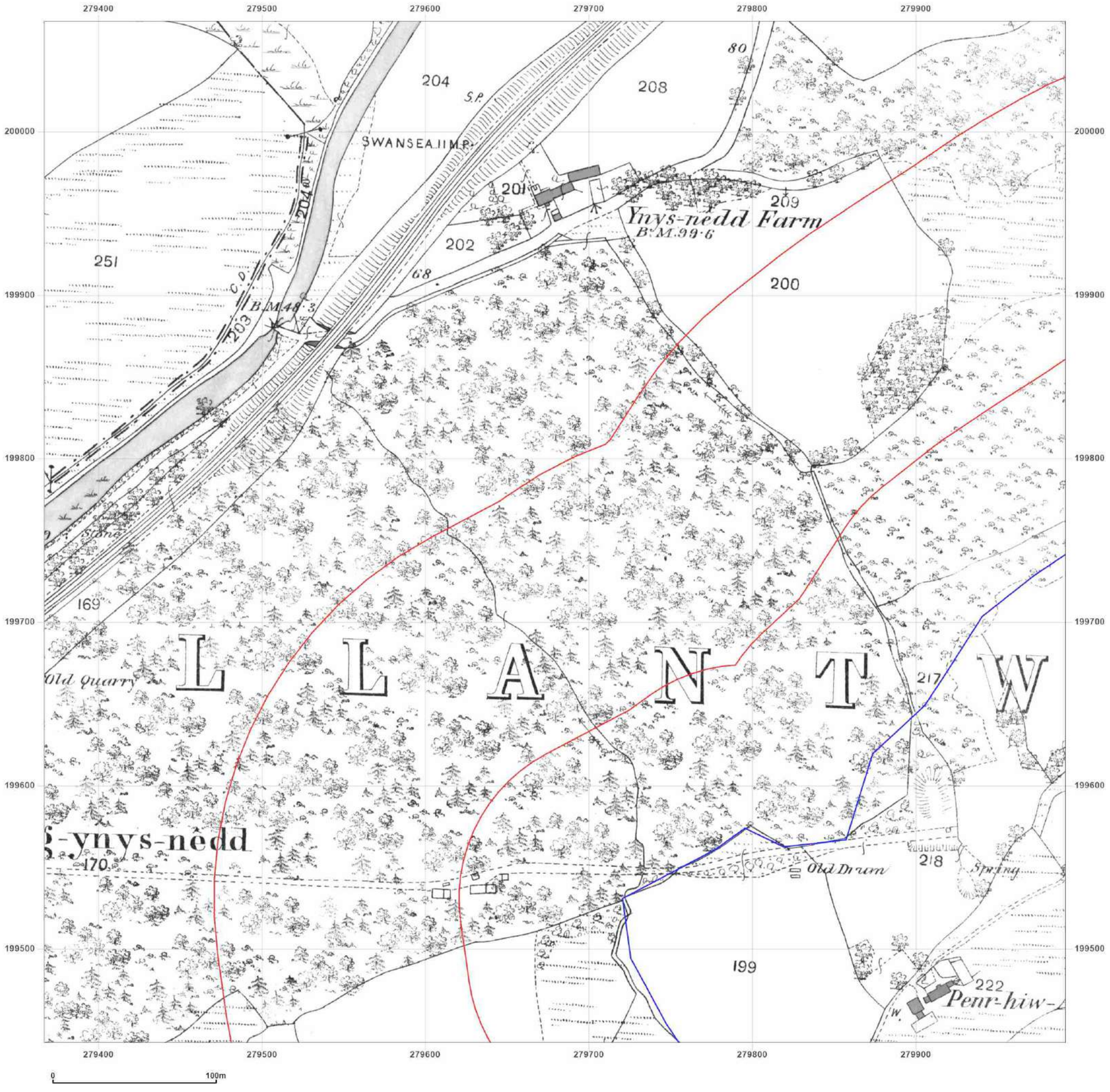

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Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_1_2
Grid Ref: 279679, 199755

Map Name: County Series

Map date: **1877**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1877
Revised 1877
Edition N/A
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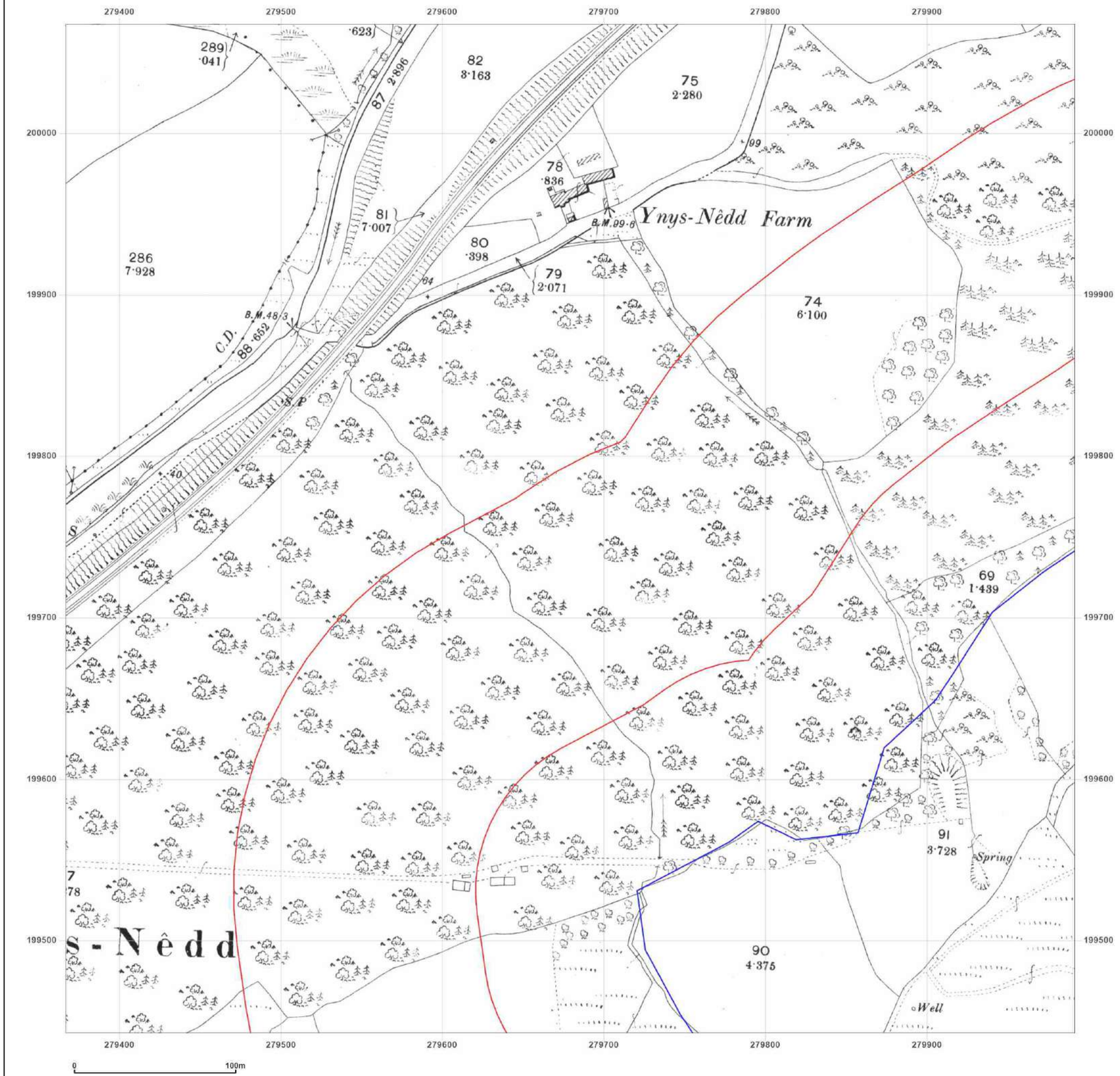

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Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_1_2
Grid Ref: 279679, 199755

Map Name: County Series
Map date: **1899**
Scale: 1:2,500
Printed at: 1:2,500

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

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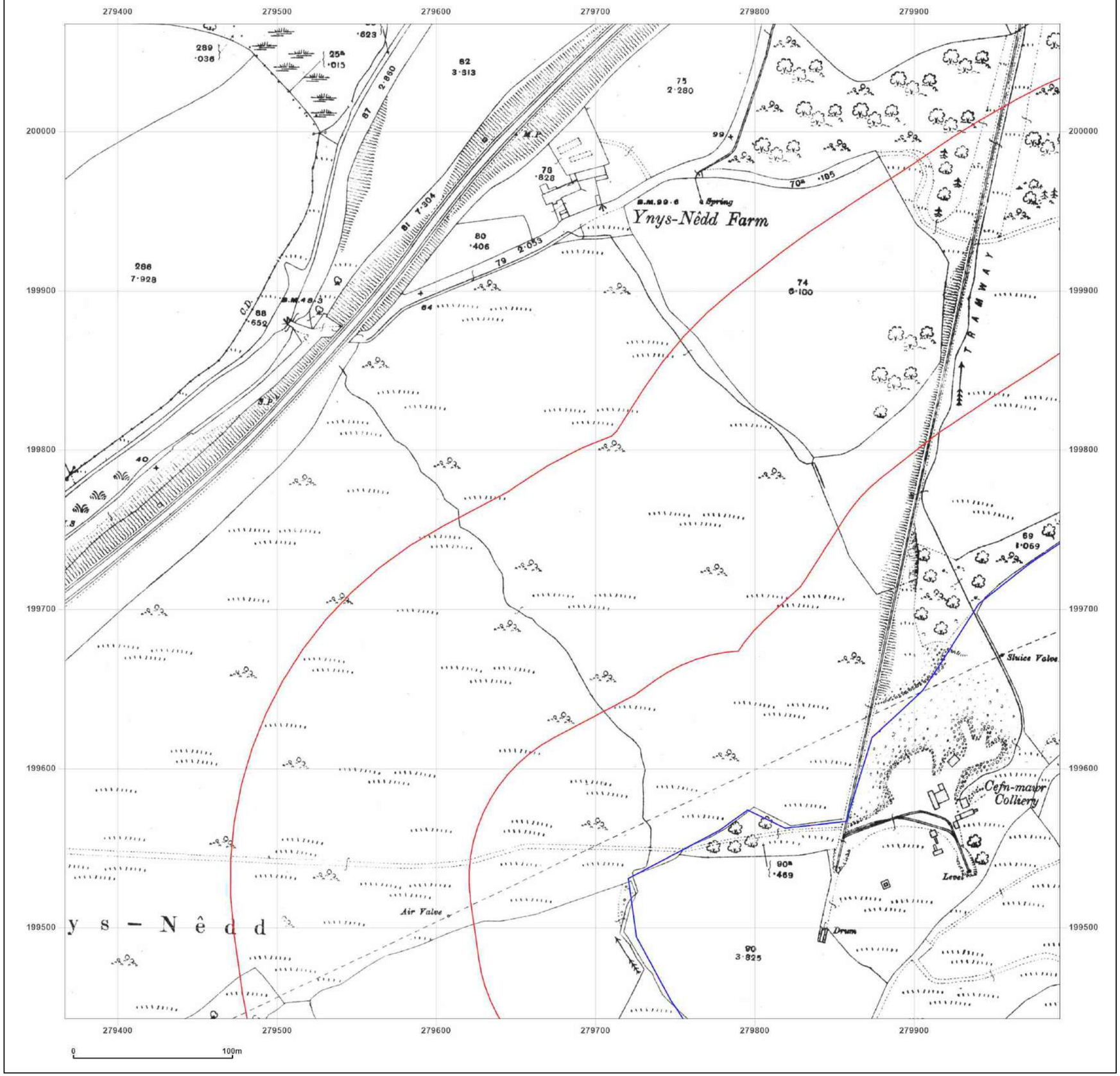

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Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_1_2
Grid Ref: 279679, 199755

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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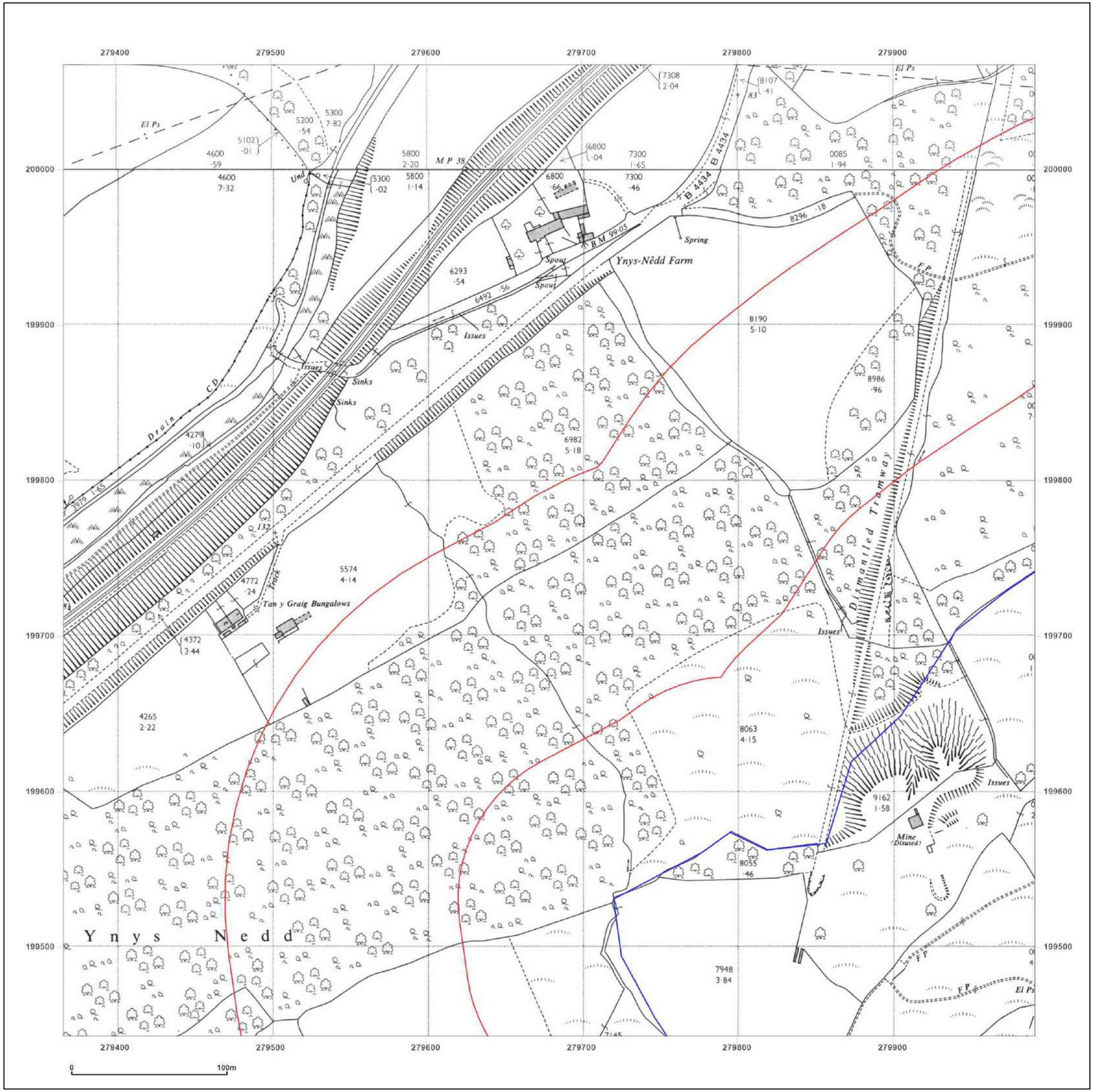

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_1_2
Grid Ref: 279679, 199755

Map Name: National Grid

Map date: **1962**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1962
Revised 1962
Edition N/A
Copyright 1964
Levelled 1956

Surveyed 1962
Revised 1962
Edition N/A
Copyright 1964
Levelled 1956

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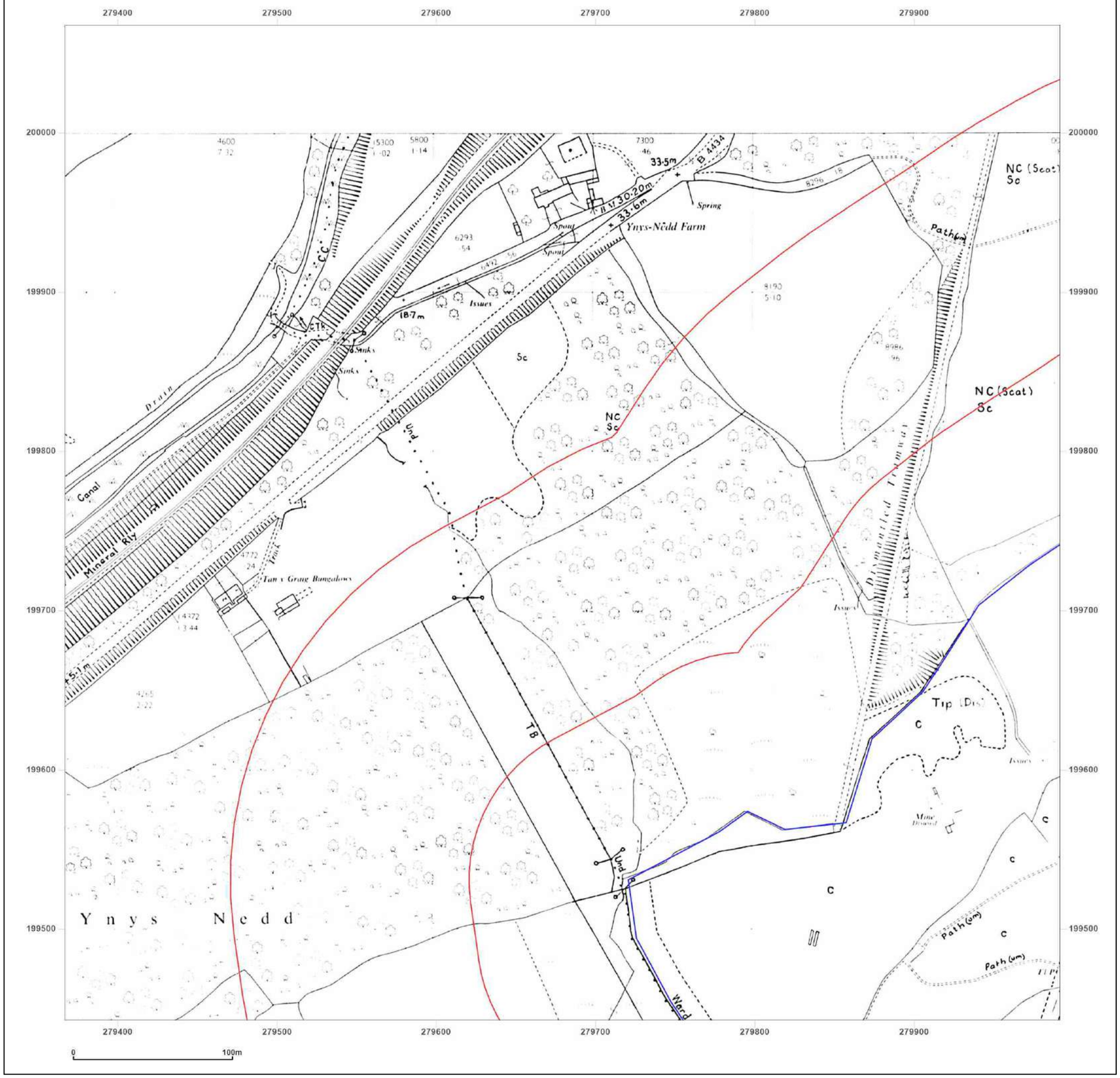

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Site Details:

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649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_1_2
Grid Ref: 279679, 199755

Map Name: National Grid
Map date: **1963**
Scale: 1:2,500
Printed at: 1:2,500

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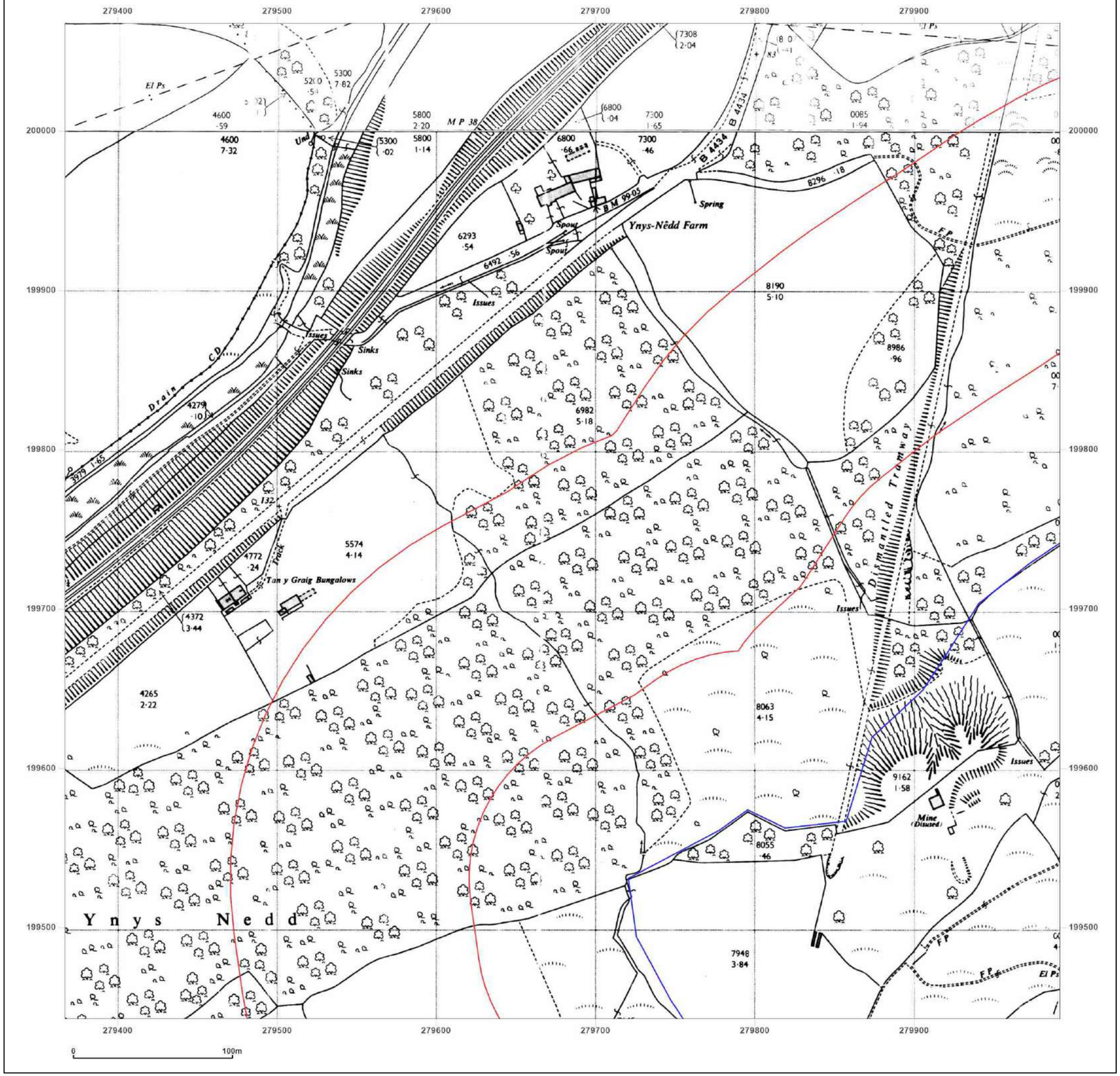

Groundsure INSIGHTS

Site Details:

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649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_1_2
Grid Ref: 279679, 199755

Map Name: National Grid

Map date: **1964**

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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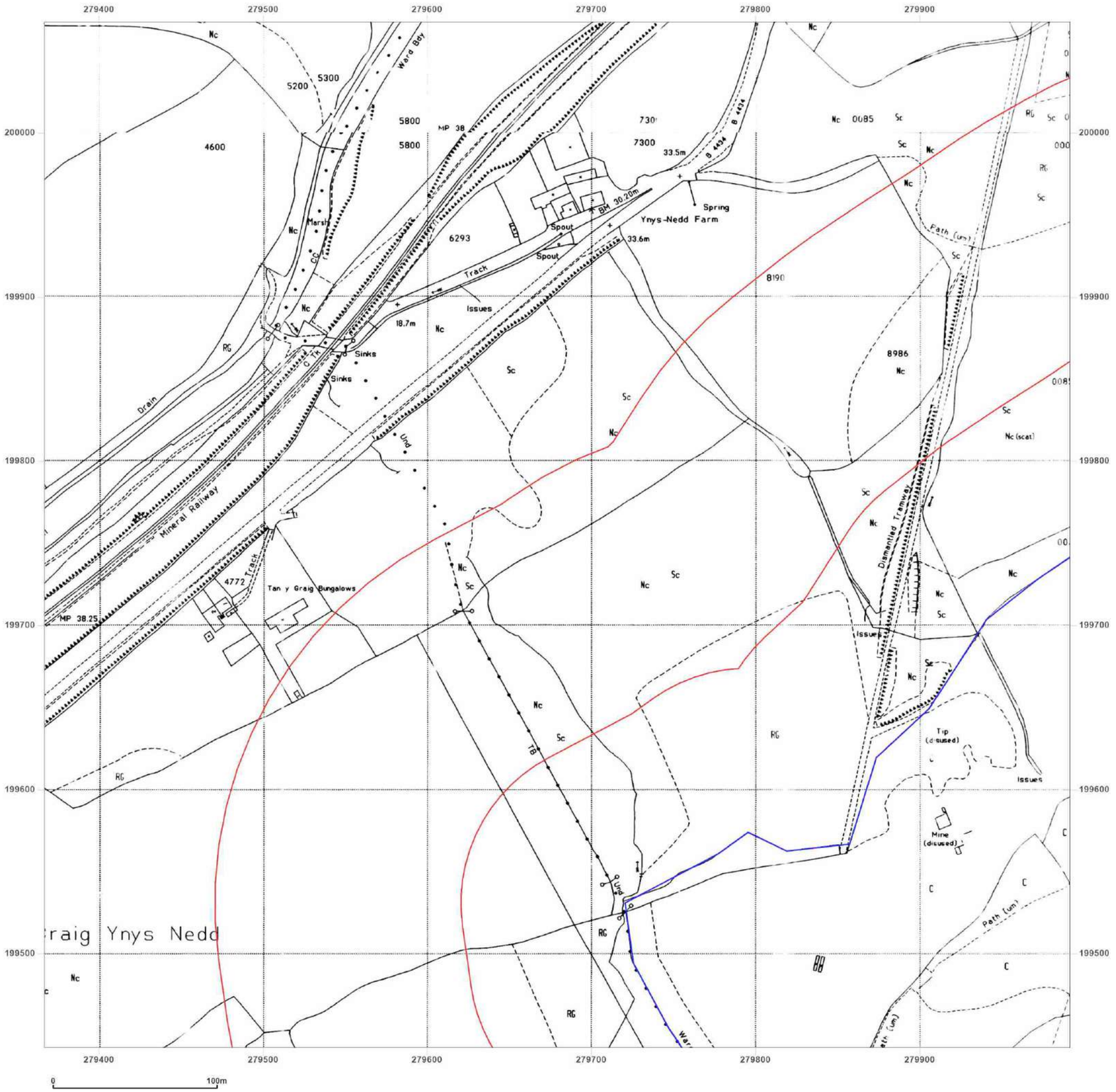

Groundsure INSIGHTS

Site Details:

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649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_1_2
Grid Ref: 279679, 199755

Map Name: National Grid
Map date: **1993**
Scale: 1:2,500
Printed at: 1:2,500

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

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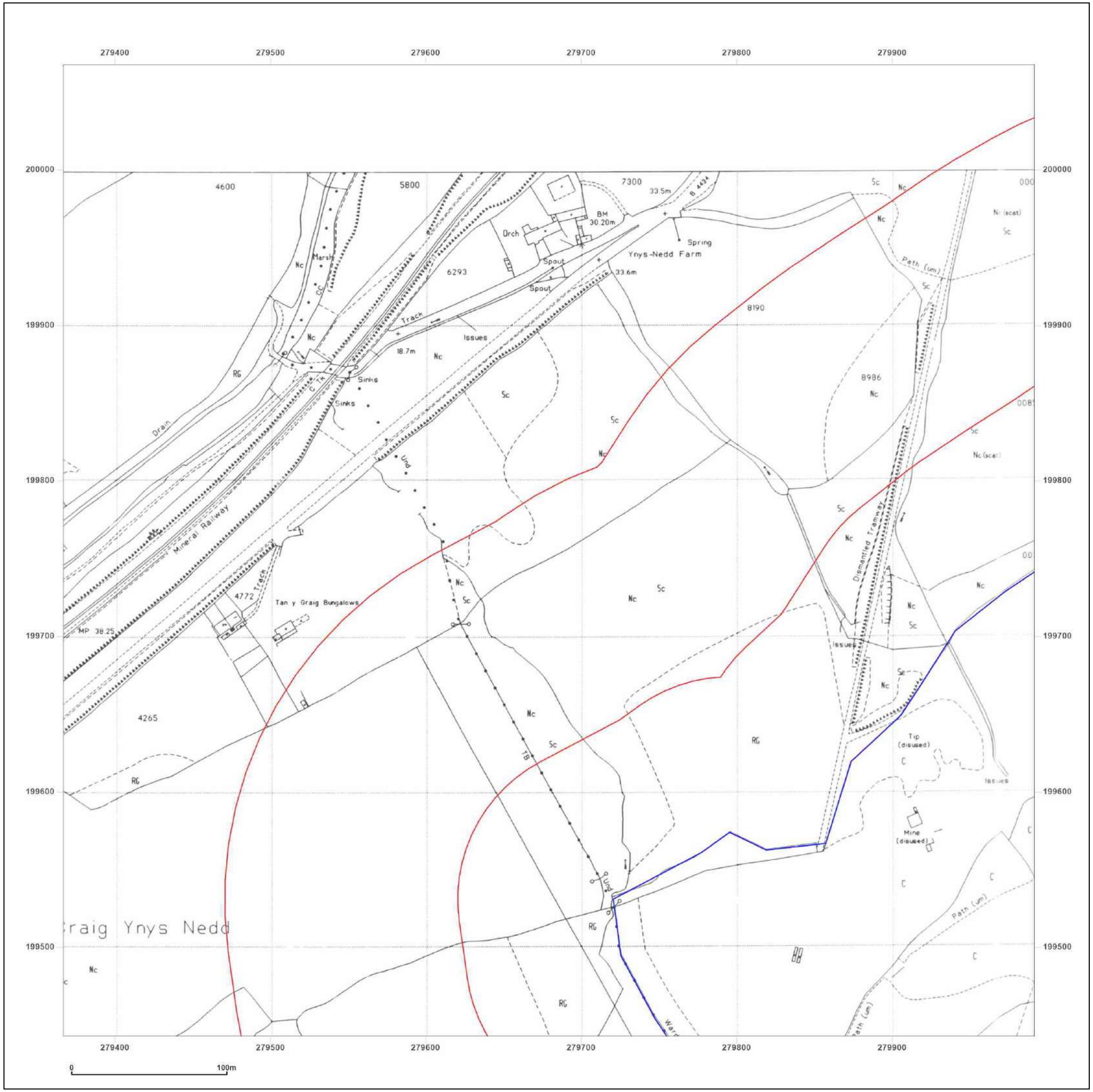

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649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_1_2
Grid Ref: 279679, 199755

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

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

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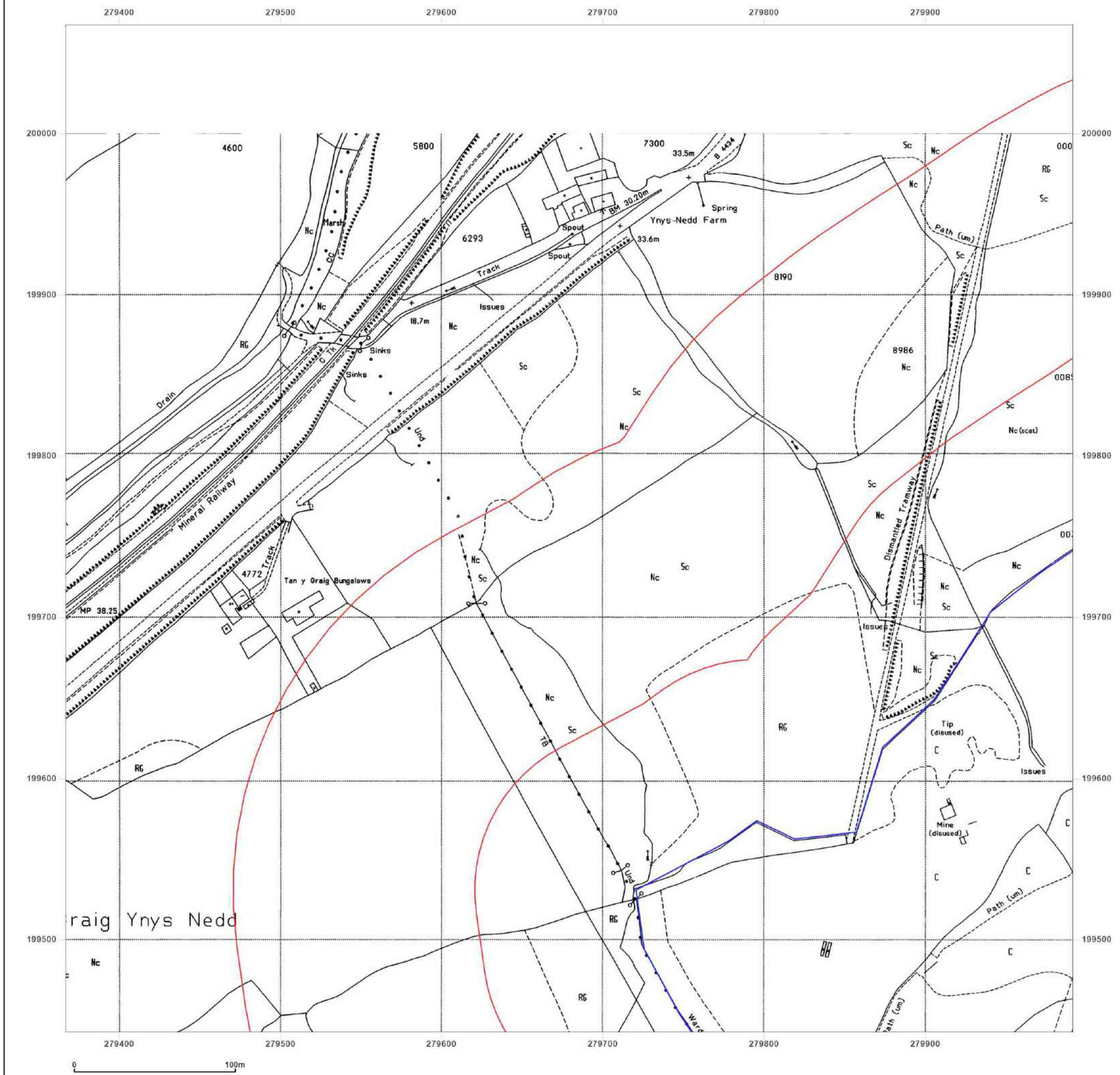

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Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_1_2
Grid Ref: 279679, 199755

Map Name: National Grid
Map date: **1993**
Scale: 1:2,500
Printed at: 1:2,500

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

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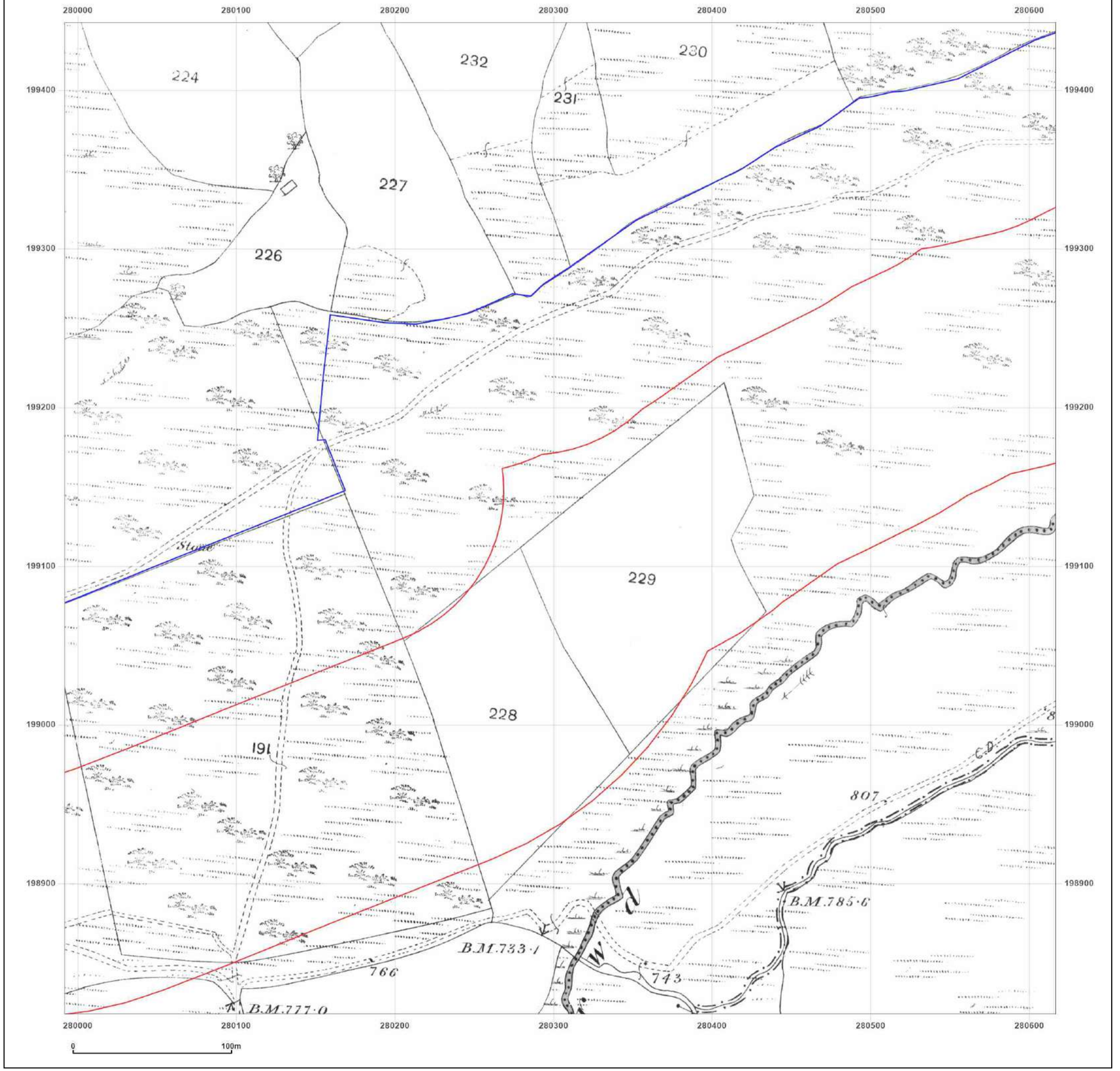

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_2_1
Grid Ref: 280304, 199130

Map Name: County Series

Map date: **1877**

Scale: 1:2,500

Printed at: 1:2,500

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

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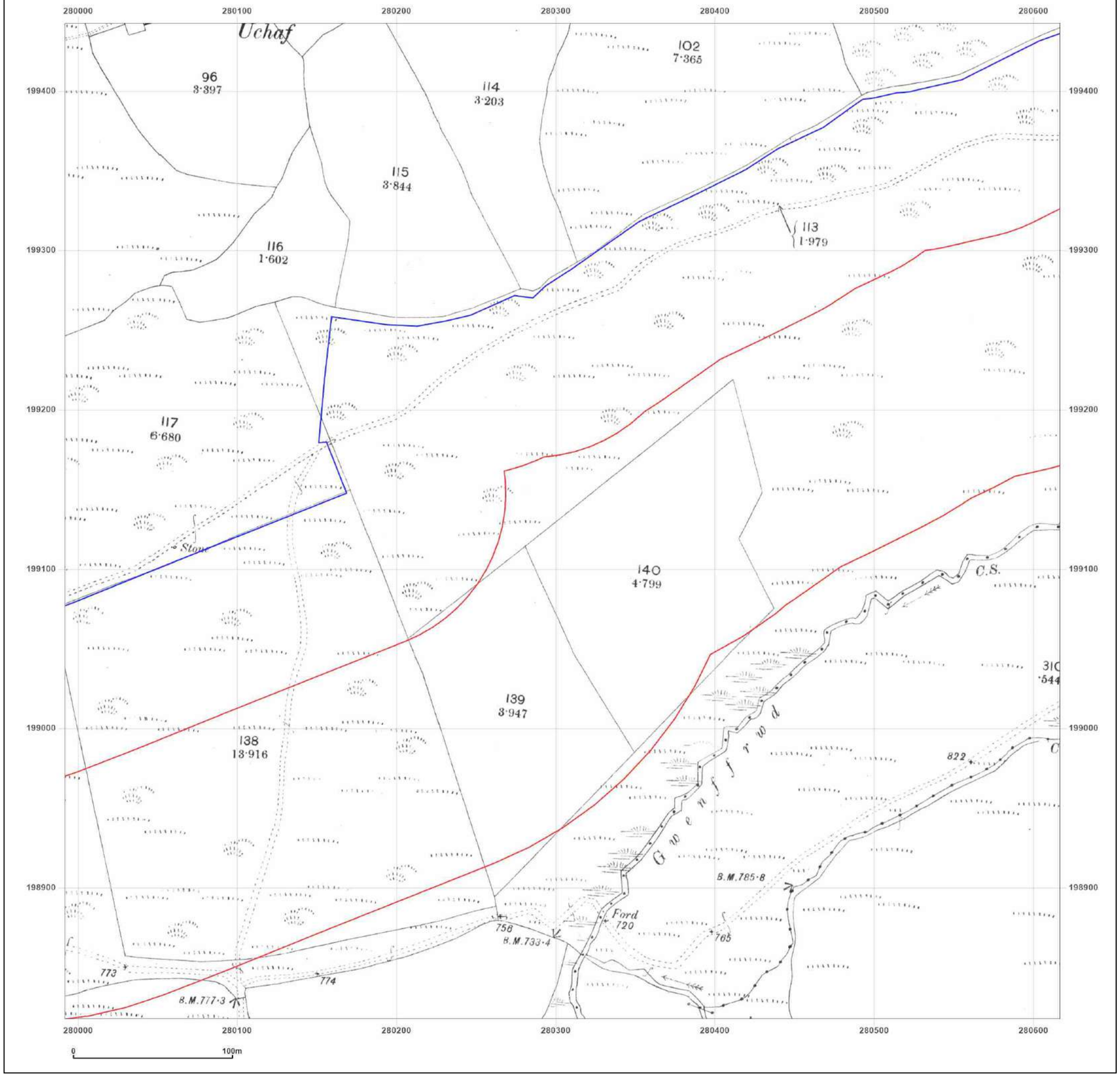

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649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_2_1
Grid Ref: 280304, 199130

Map Name: County Series

Map date: **1899**

Scale: 1:2,500

Printed at: 1:2,500

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

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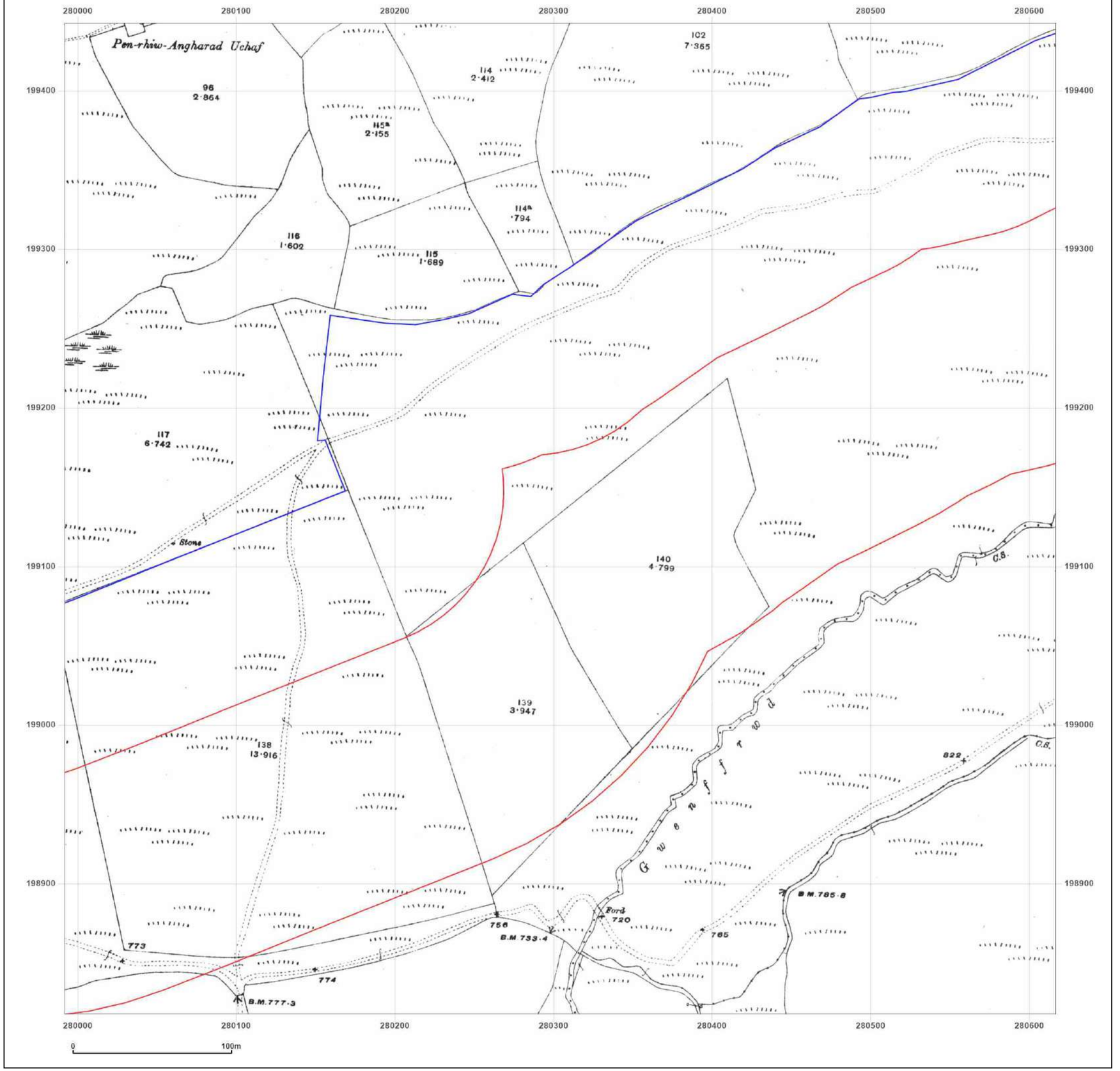

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Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_2_1
Grid Ref: 280304, 199130

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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Map legend available at:
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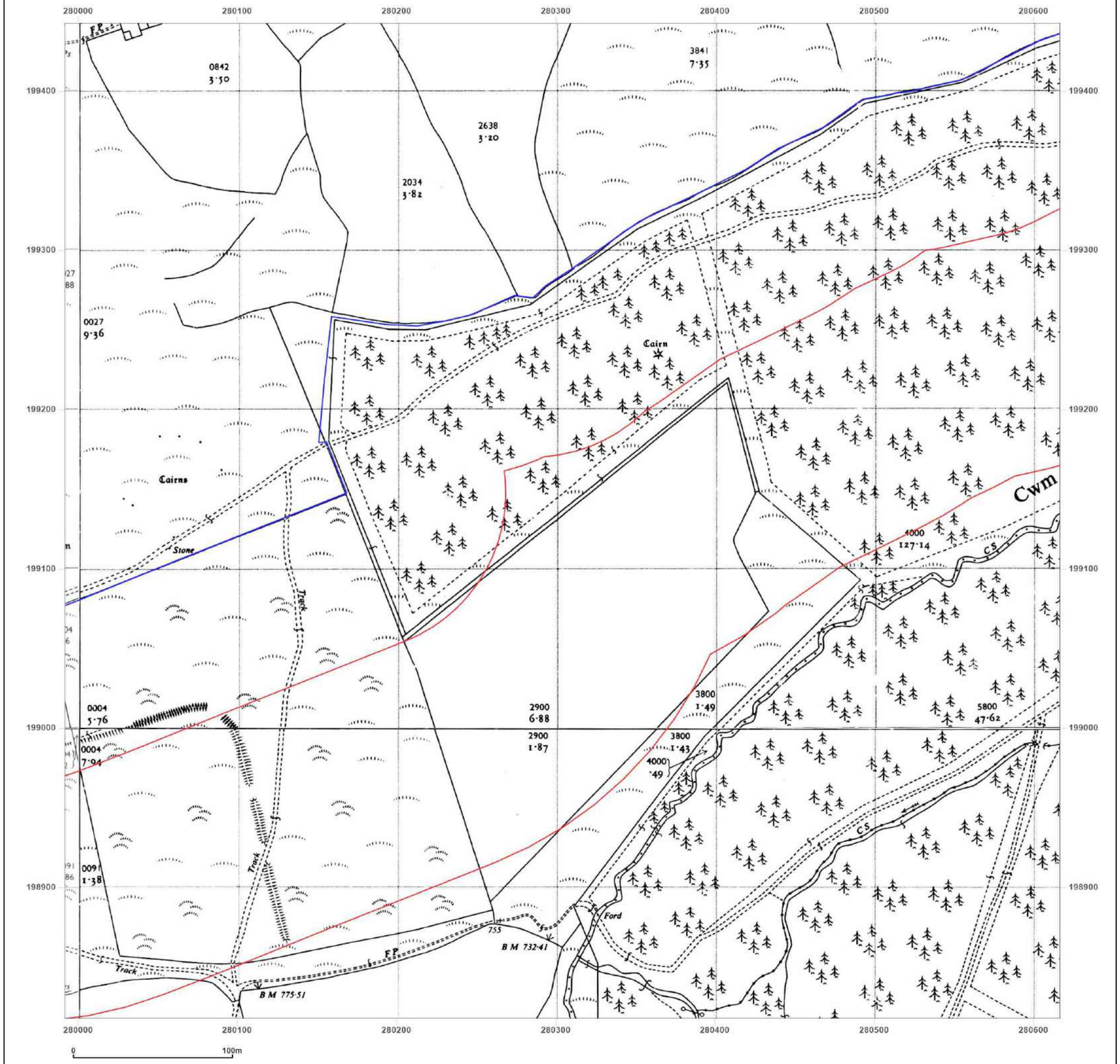

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_2_1
Grid Ref: 280304, 199130

Map Name: National Grid
Map date: **1962-1963**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1962
Revised 1962
Edition N/A
Copyright 1964
Levelled 1956

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

Surveyed 1963
Revised 1963
Edition N/A
Copyright 1964
Levelled 1956

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

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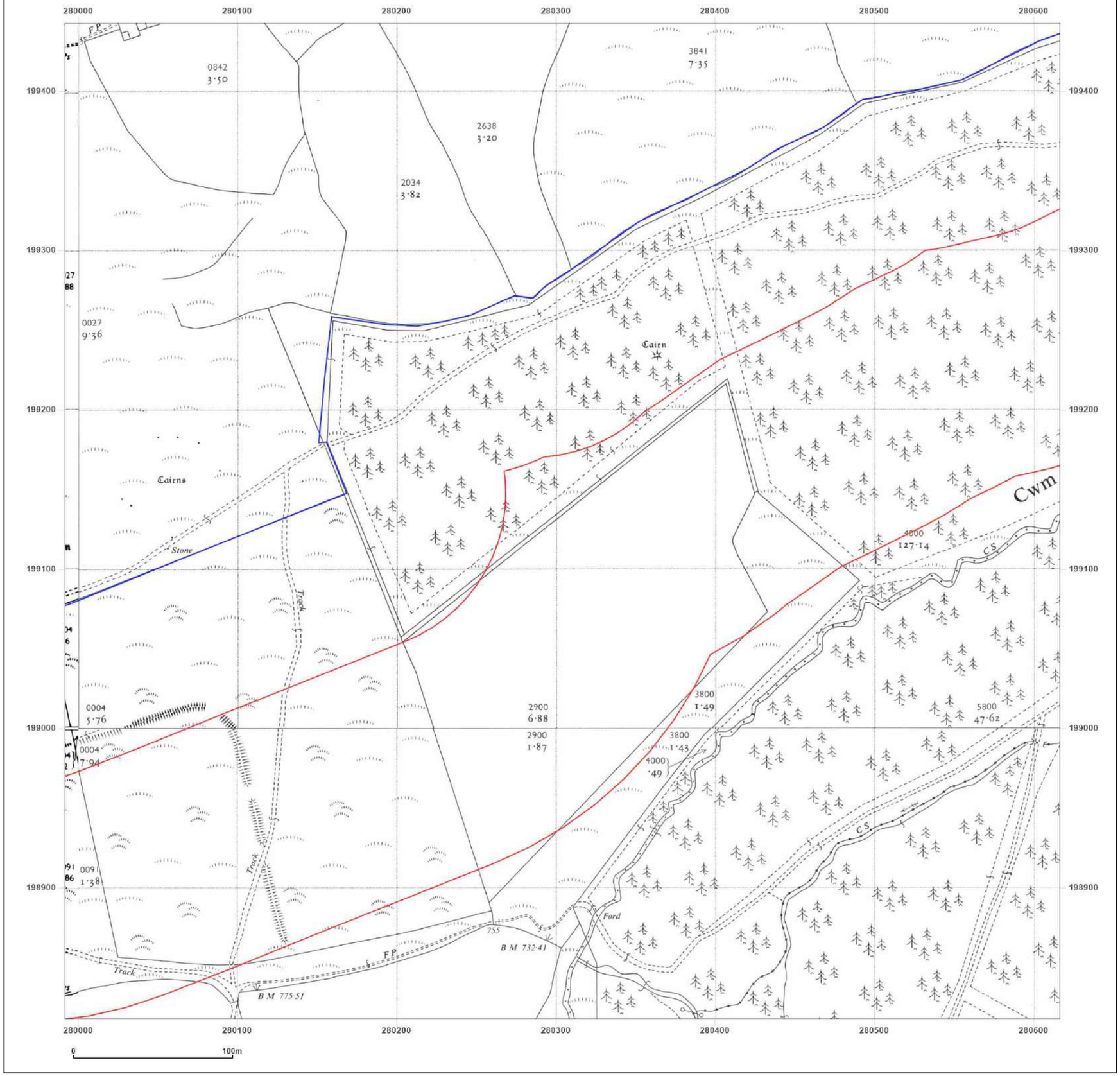
Production date: 13 November 2023

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_2_1
Grid Ref: 280304, 199130

Map Name: National Grid
Map date: **1962-1964**
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 1962
Revised 1962
Edition N/A
Copyright 1962
Levelled 1950

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

Surveyed 1962
Revised 1962
Edition N/A
Copyright 1962
Levelled 1950

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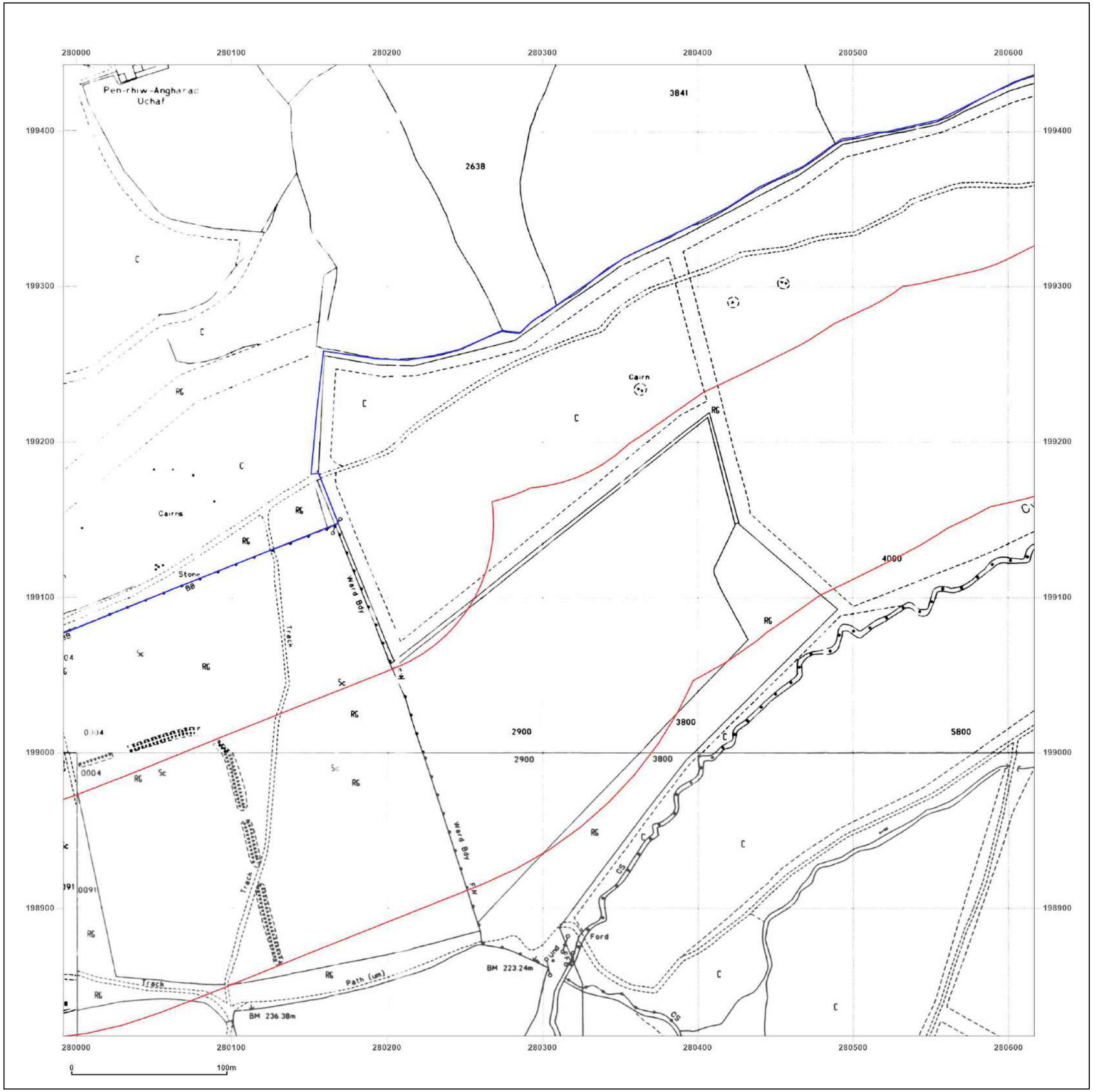

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_2_1
Grid Ref: 280304, 199130

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 N/A
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

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

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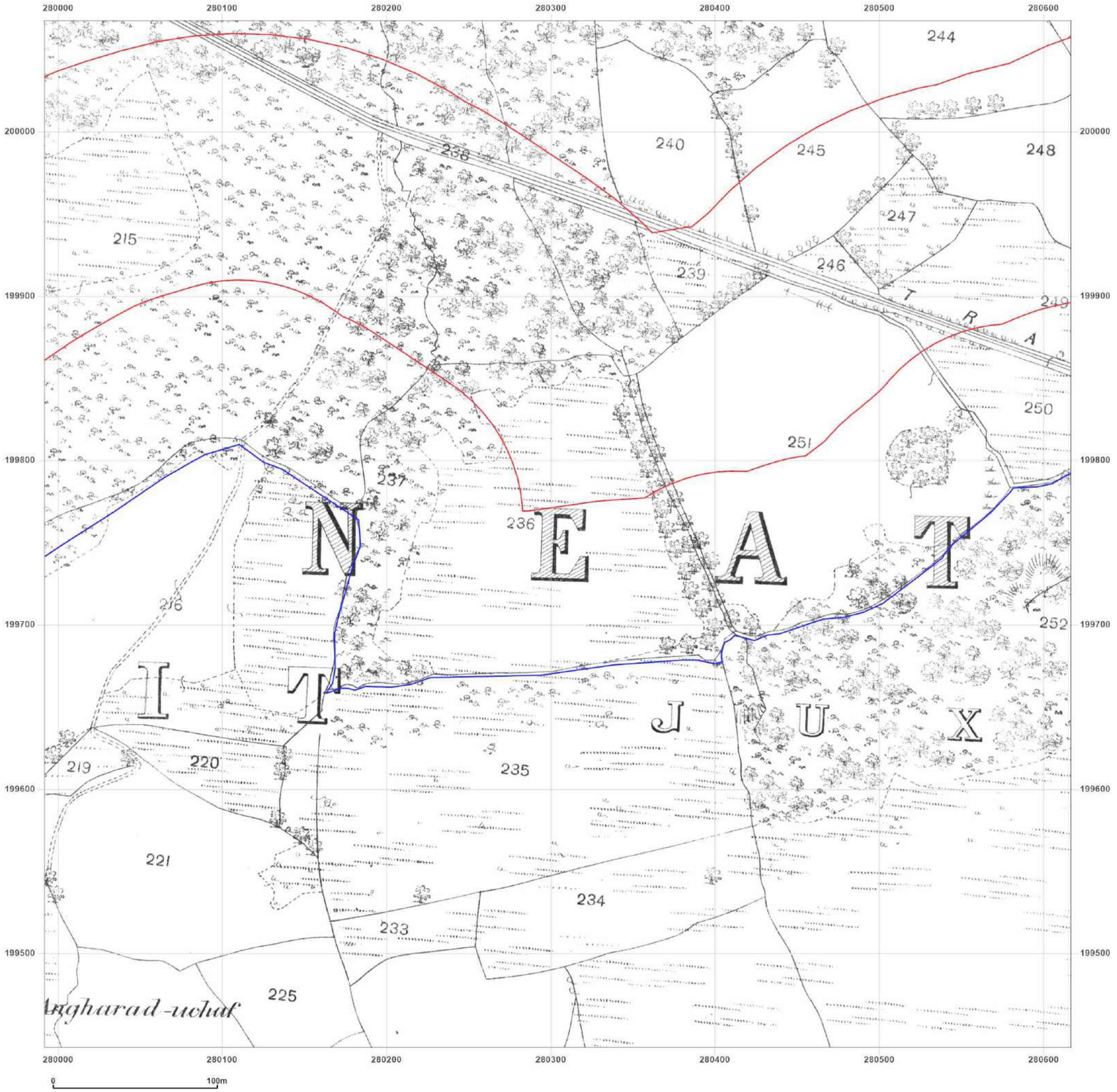

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_2_2
Grid Ref: 280304, 199755

Map Name: County Series

Map date: **1877**

Scale: 1:2,500

Printed at: 1:2,500

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

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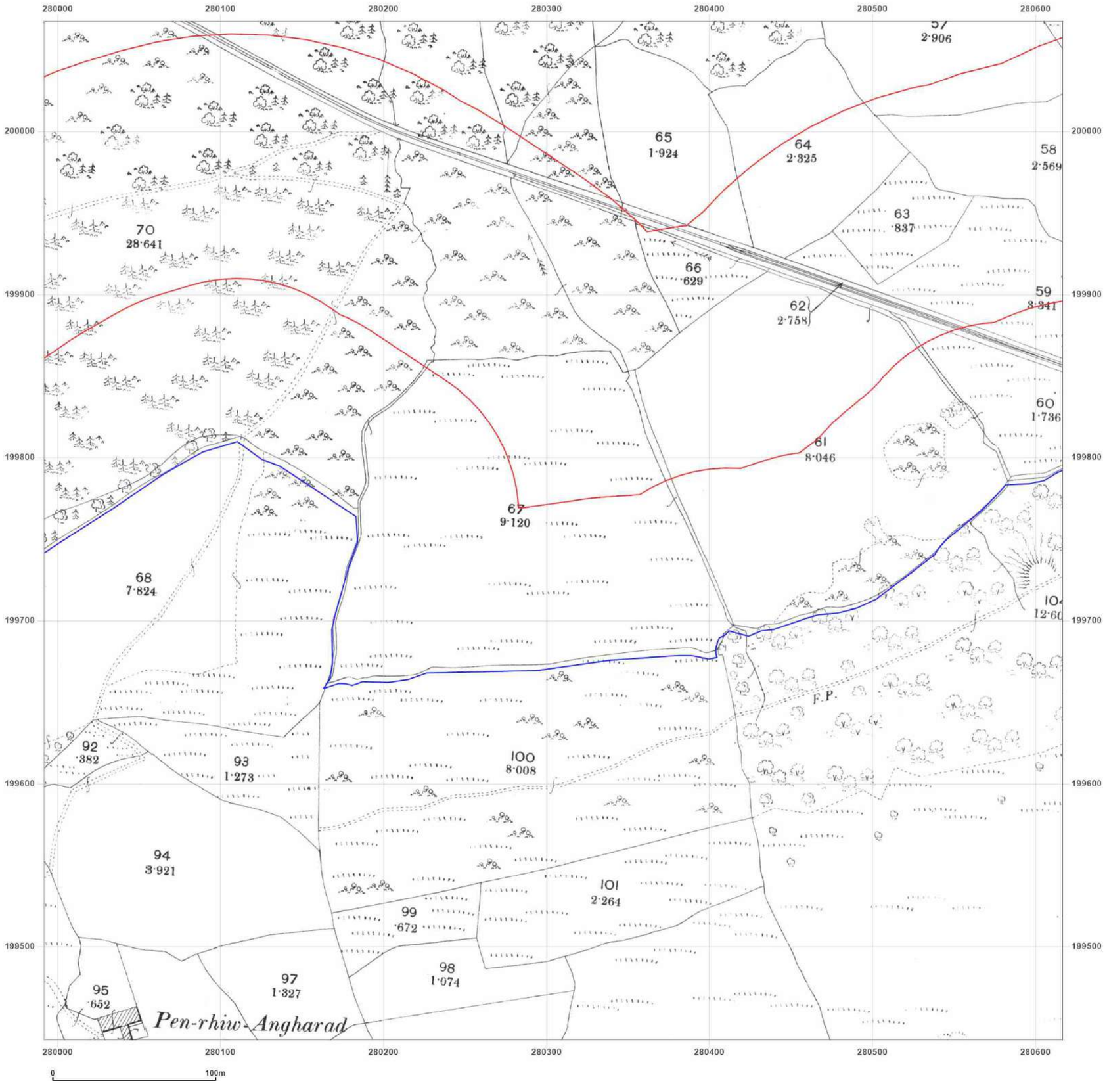

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_2_2
Grid Ref: 280304, 199755

Map Name: County Series
Map date: **1899**
Scale: 1:2,500
Printed at: 1:2,500

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

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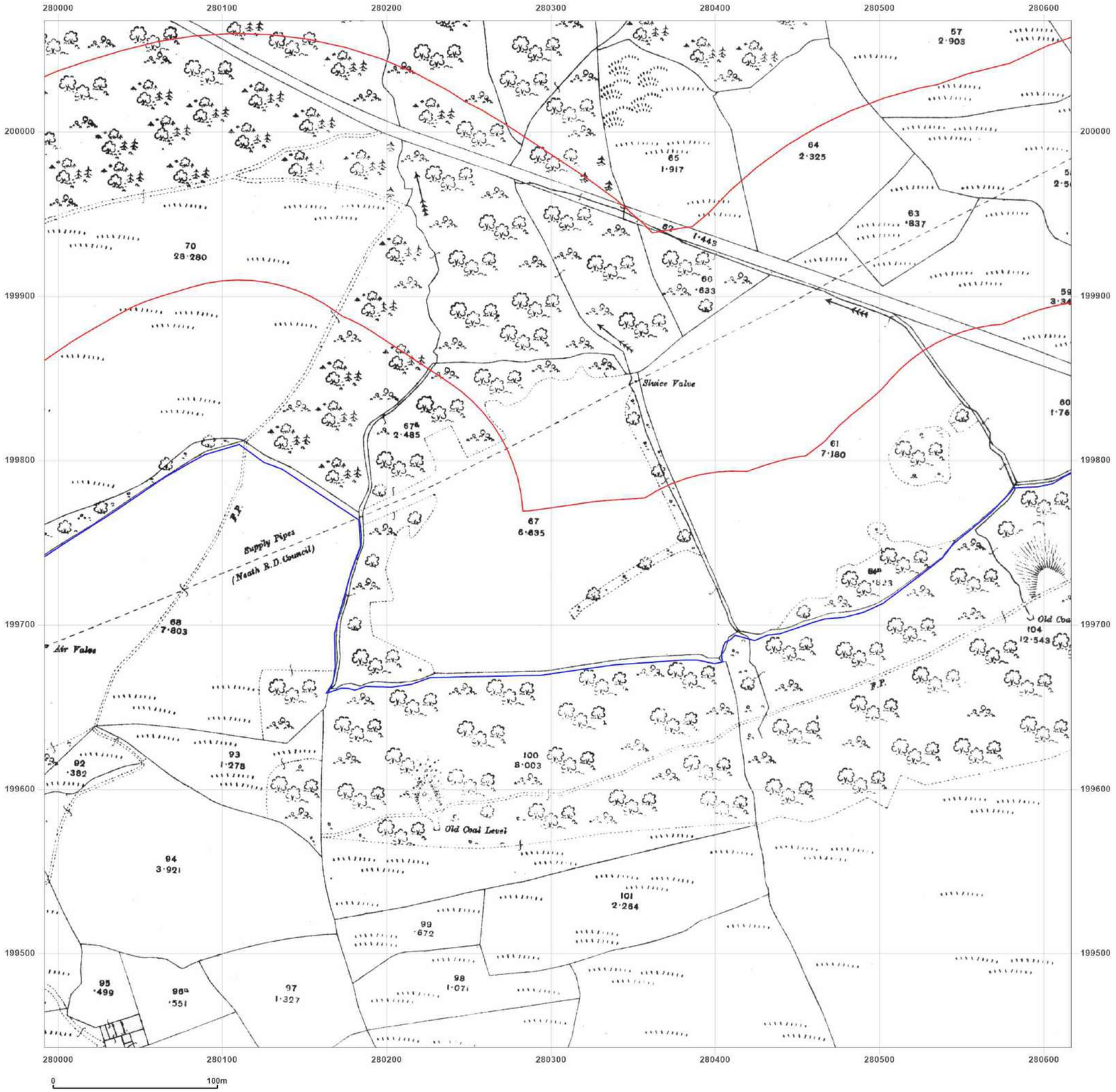

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_2_2
Grid Ref: 280304, 199755

Map Name: County Series

Map date: **1919**

Scale: 1:2,500

Printed at: 1:2,500

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

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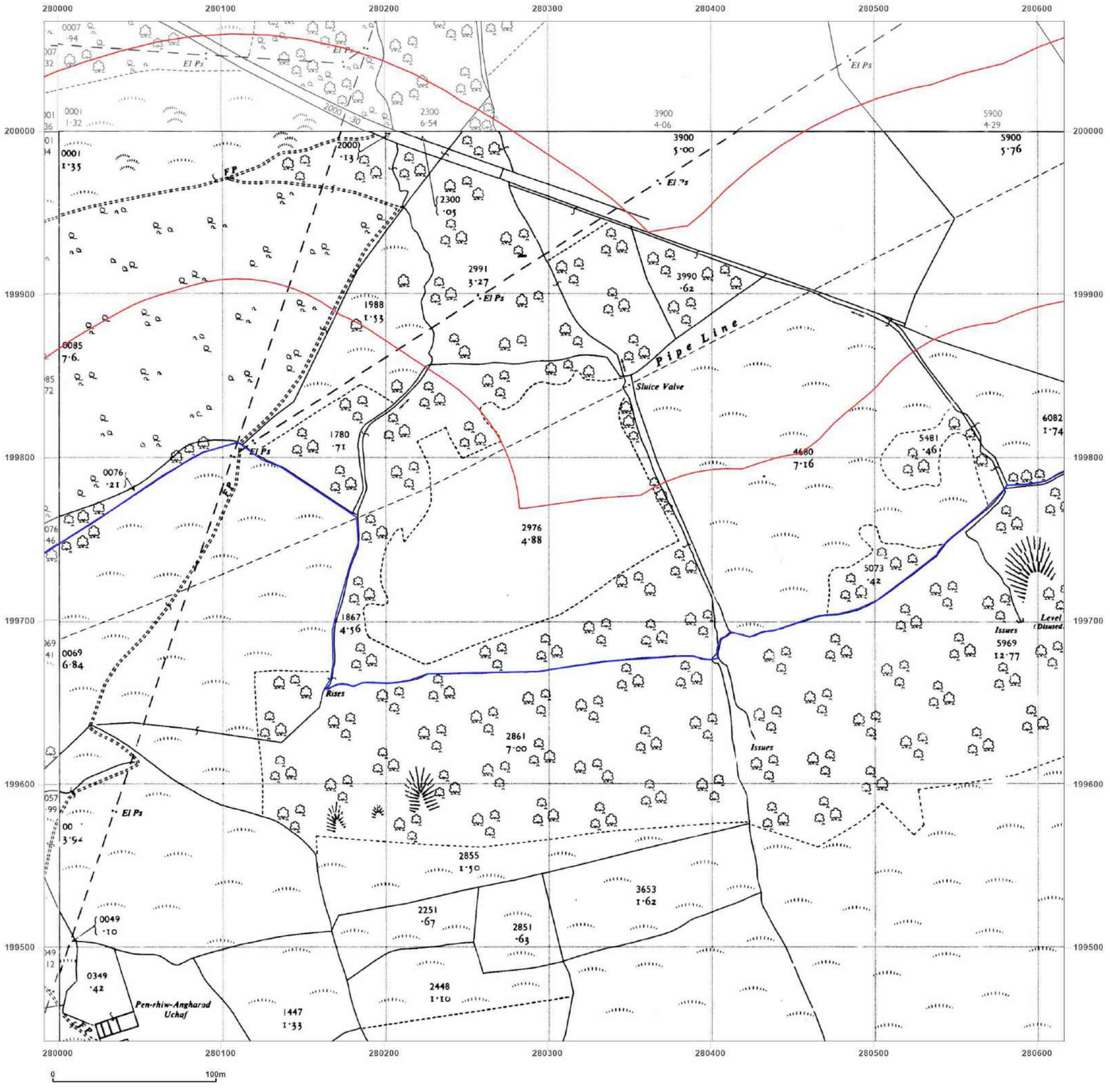

Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_2_2
Grid Ref: 280304, 199755

Map Name: National Grid

Map date: **1962**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1962
Revised 1962
Edition N/A
Copyright 1964
Levelled 1956

Surveyed 1962
Revised 1962
Edition N/A
Copyright 1964
Levelled 1956

Surveyed 1962
Revised 1962
Edition N/A
Copyright 1964
Levelled 1956

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

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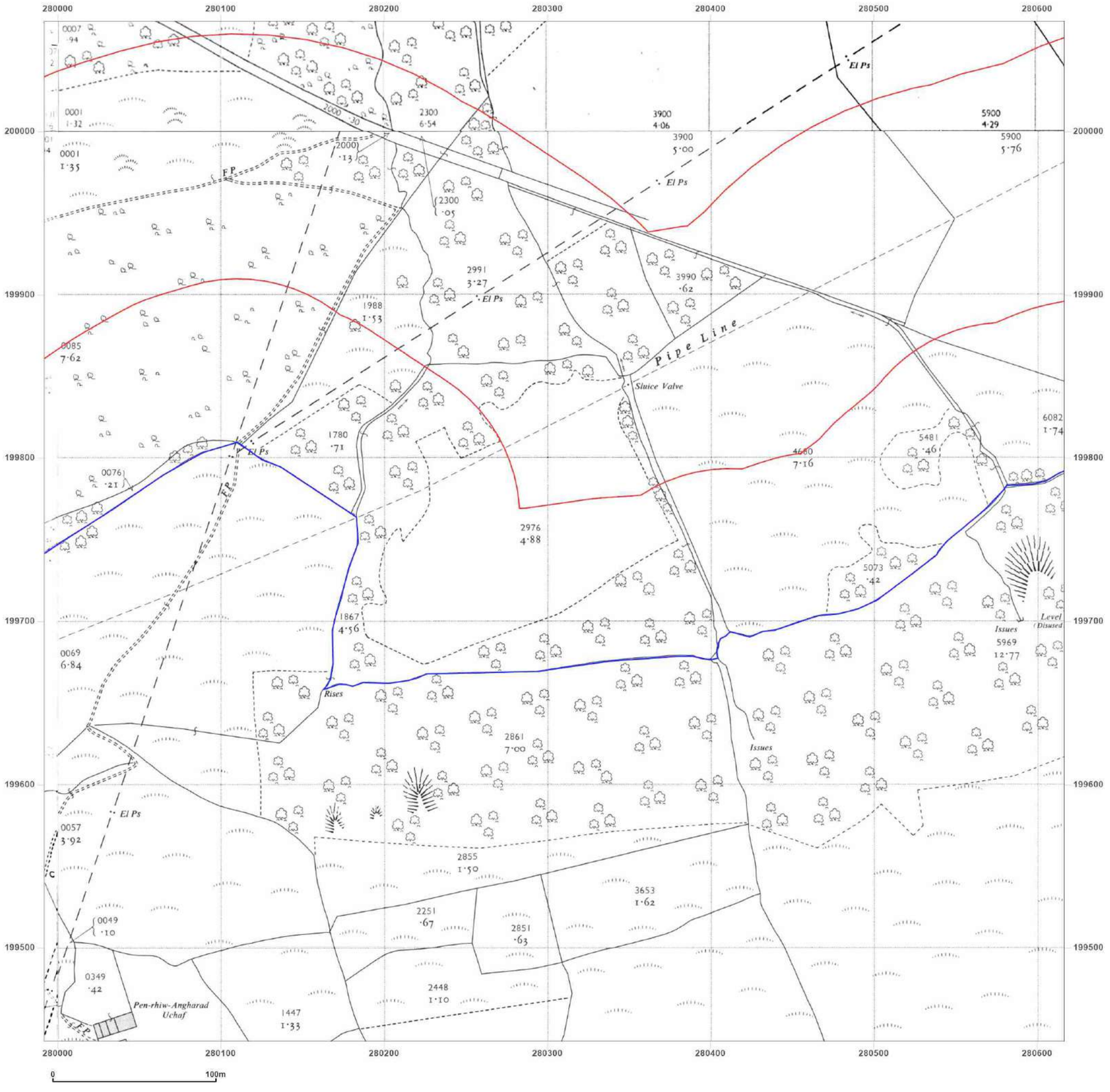

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_2_2
Grid Ref: 280304, 199755

Map Name: National Grid

Map date: **1962-1964**

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 1964

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

Surveyed 1962
Revised 1962
Edition N/A
Copyright 1962
Levelled 1950

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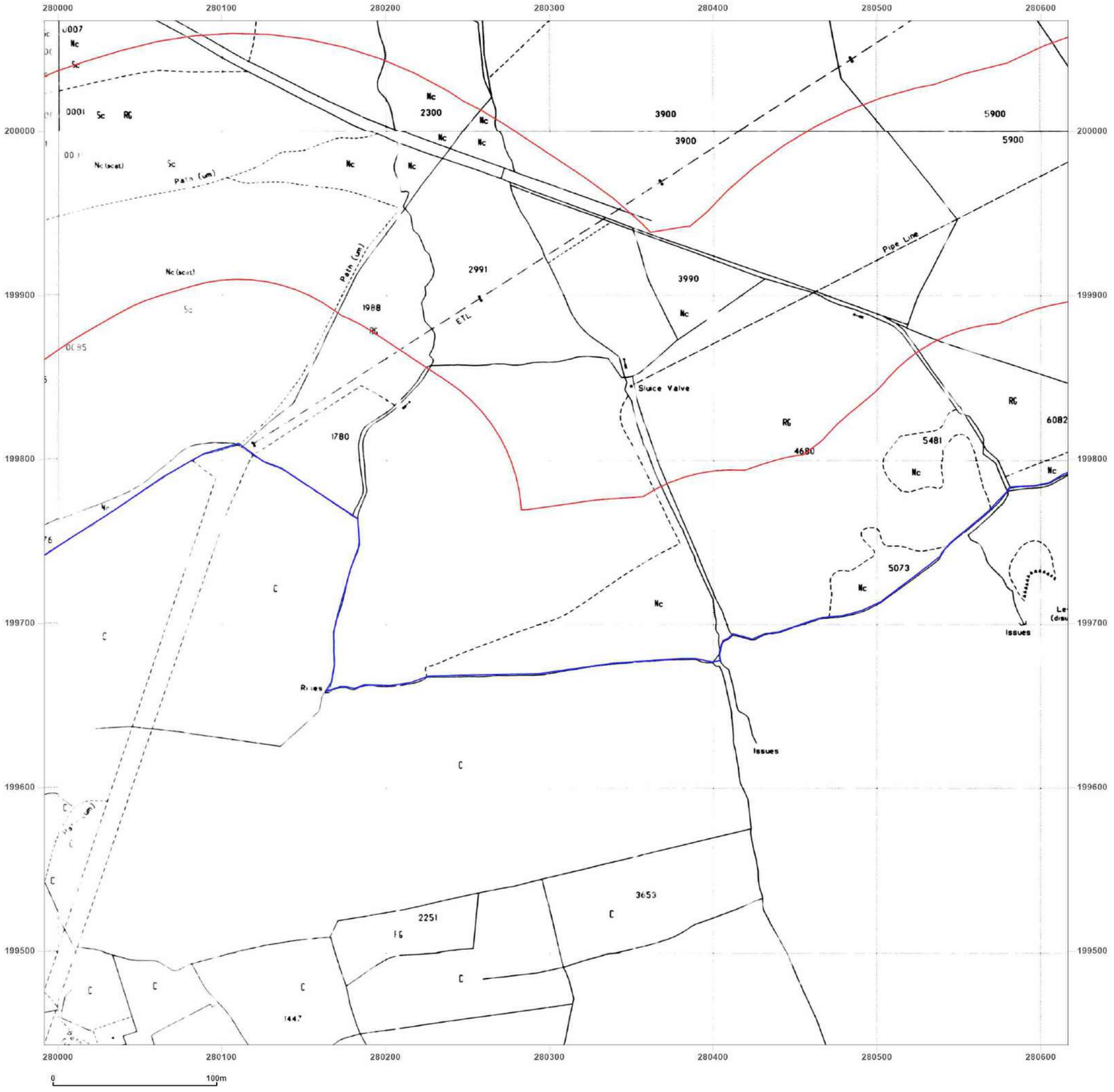

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_2_2
Grid Ref: 280304, 199755

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 N/A
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

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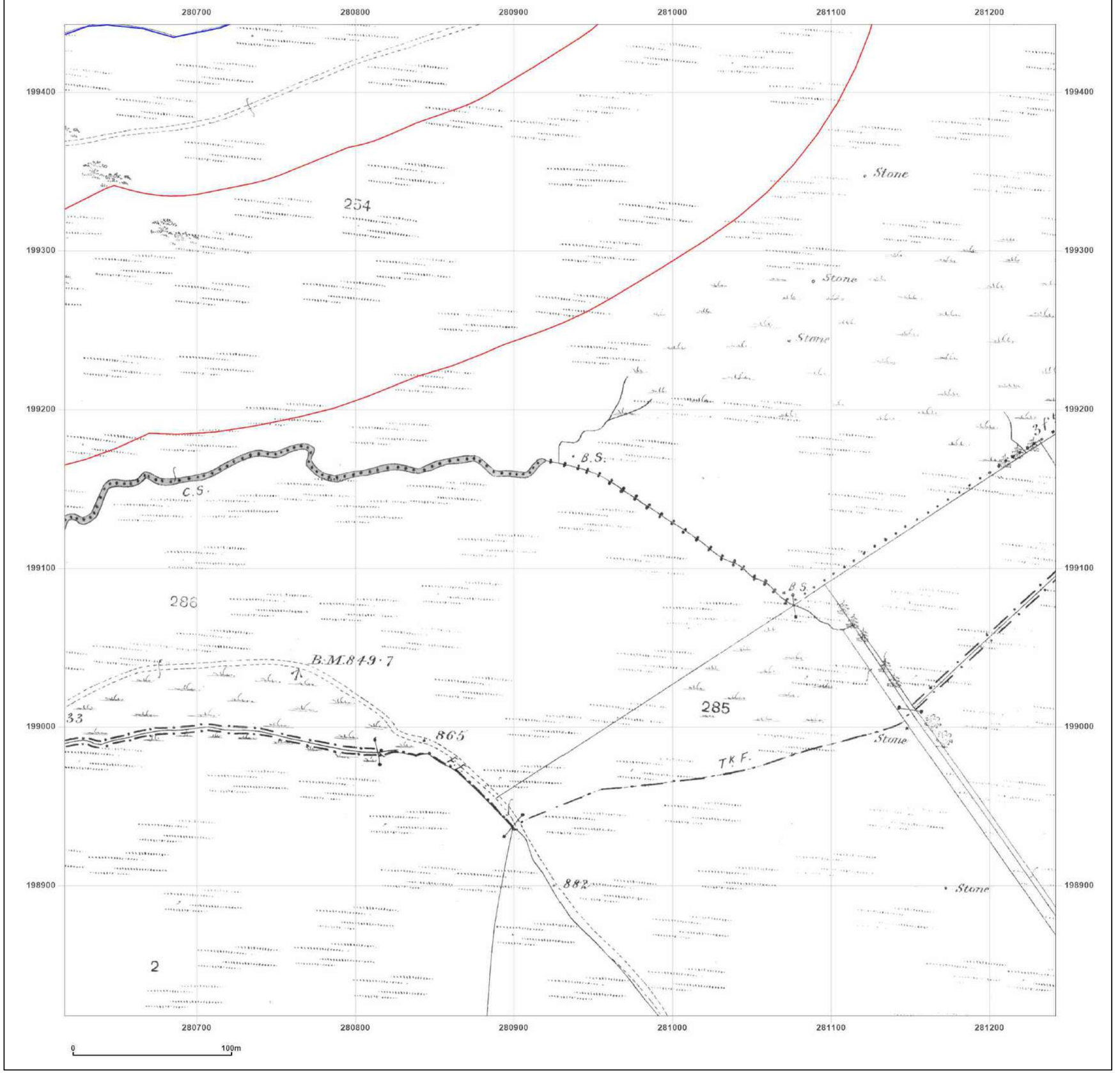

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_3_1
Grid Ref: 280929, 199130

Map Name: County Series
Map date: **1877**
Scale: 1:2,500
Printed at: 1:2,500

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

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Production date: 13 November 2023

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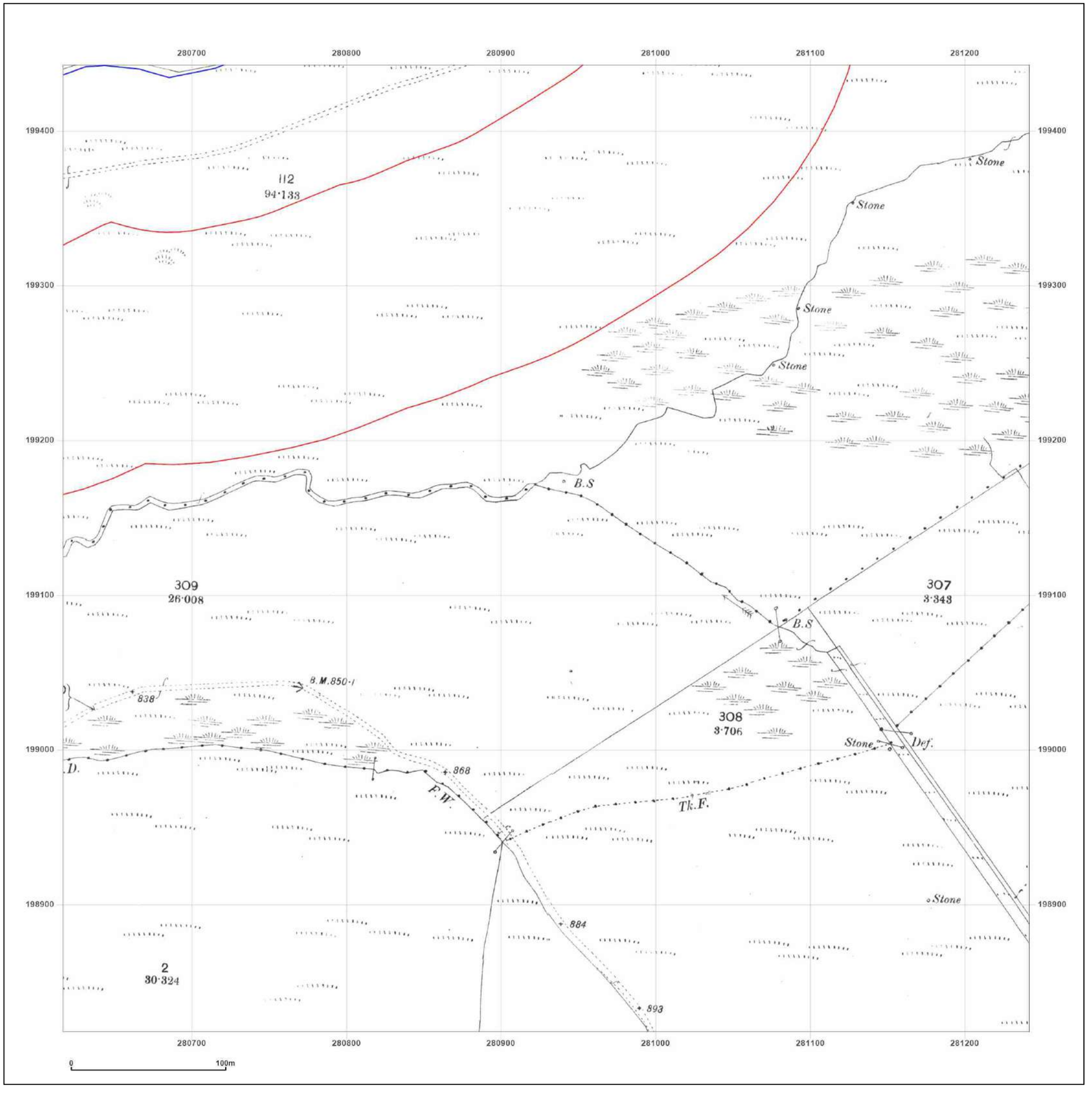

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_3_1
Grid Ref: 280929, 199130

Map Name: County Series
Map date: **1899**
Scale: 1:2,500
Printed at: 1:2,500

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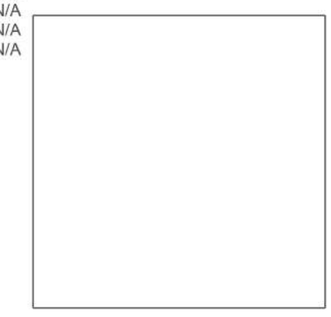
Surveyed 1899
Revised 1899
Edition N/A
Copyright N/A
Levelled N/A



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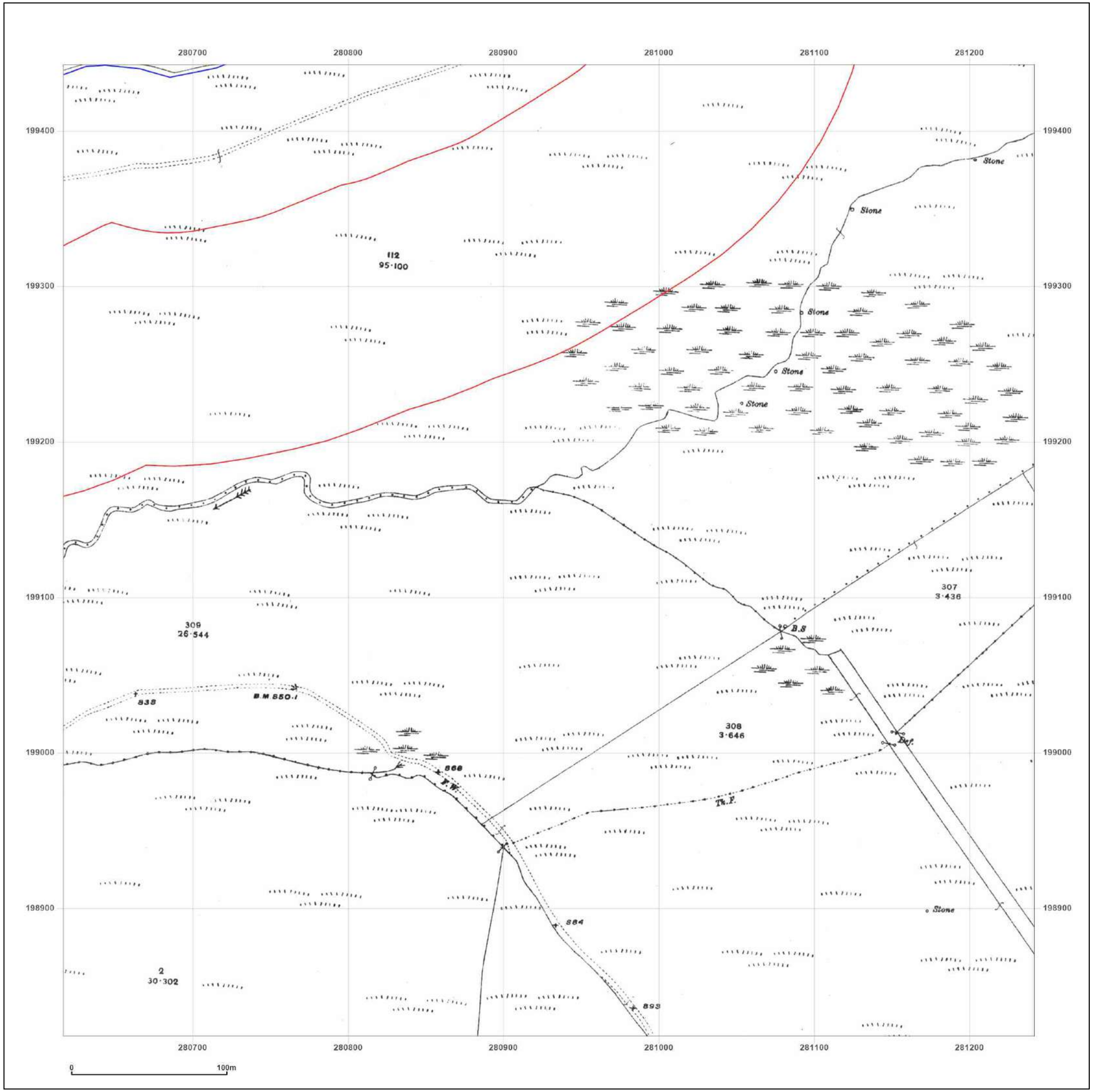

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_3_1
Grid Ref: 280929, 199130

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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Production date: 13 November 2023

Map legend available at:
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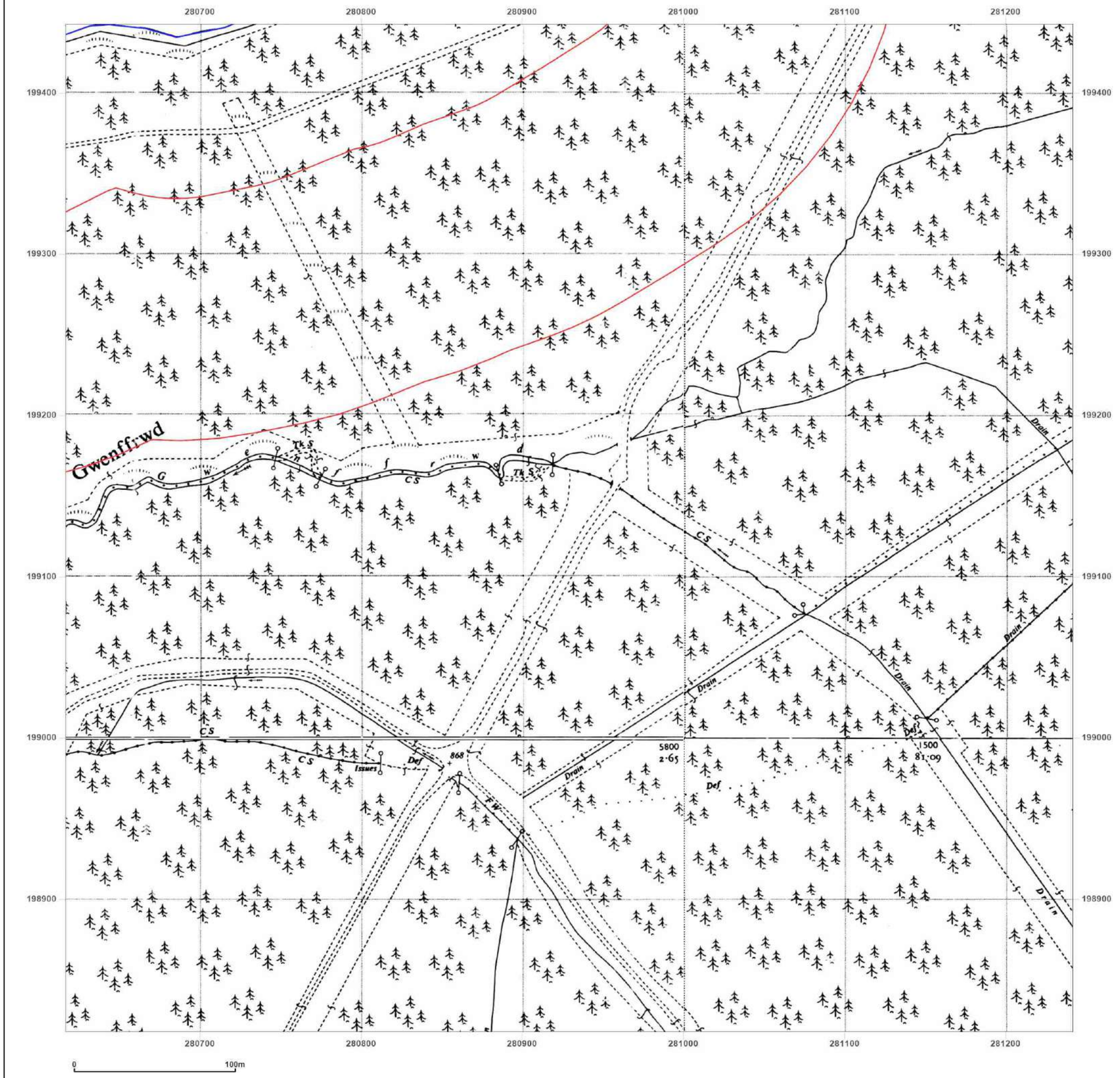

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_3_1
Grid Ref: 280929, 199130

Map Name: National Grid
Map date: **1962**
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
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Revised N/A
Edition N/A
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Levelled N/A

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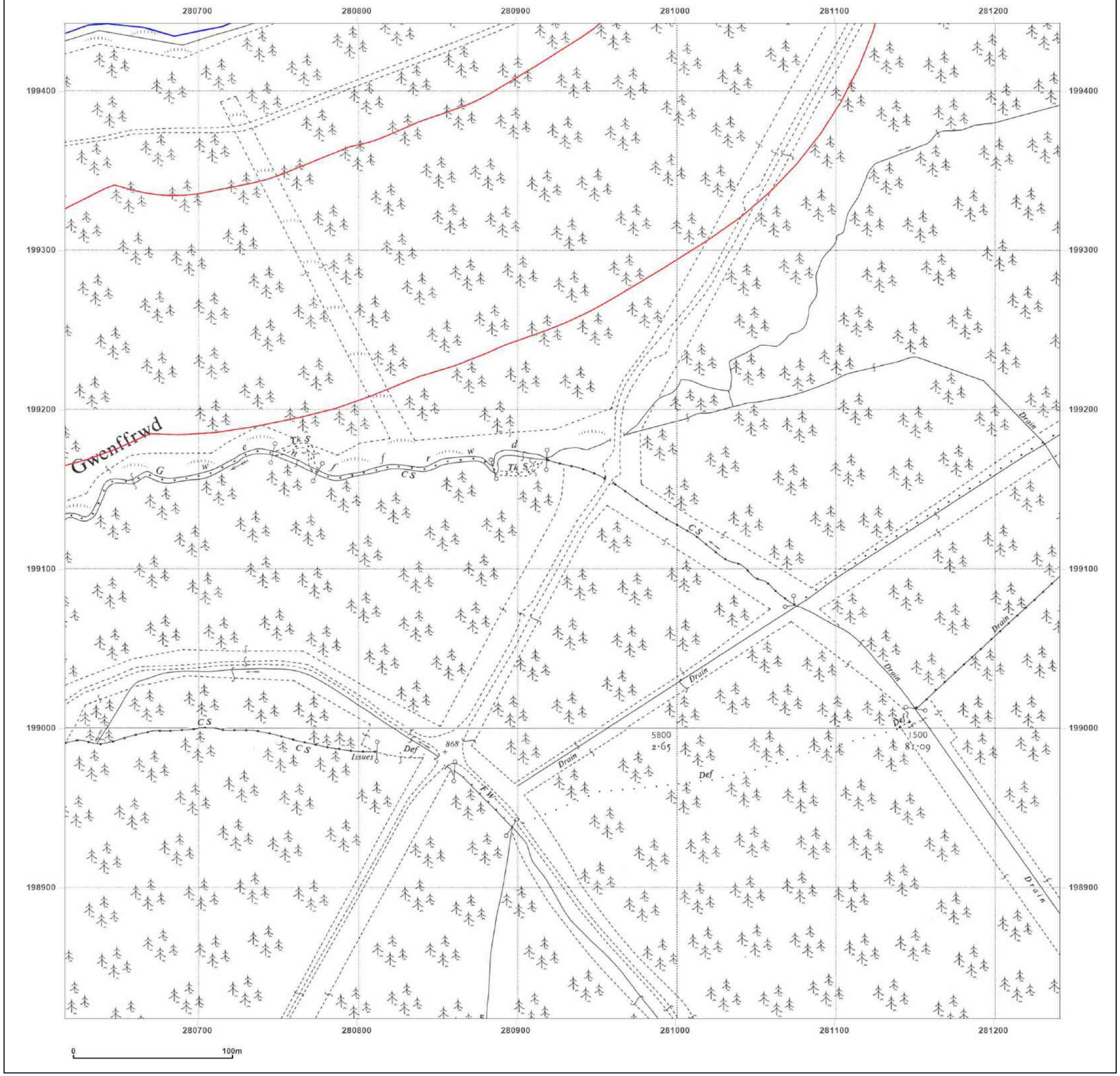

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_3_1
Grid Ref: 280929, 199130

Map Name: National Grid
Map date: **1962**
Scale: 1:2,500
Printed at: 1:2,500

N
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Surveyed 1962
Revised 1962
Edition N/A
Copyright 1962
Levelled 1950

Surveyed 1962
Revised 1962
Edition N/A
Copyright 1962
Levelled 1950

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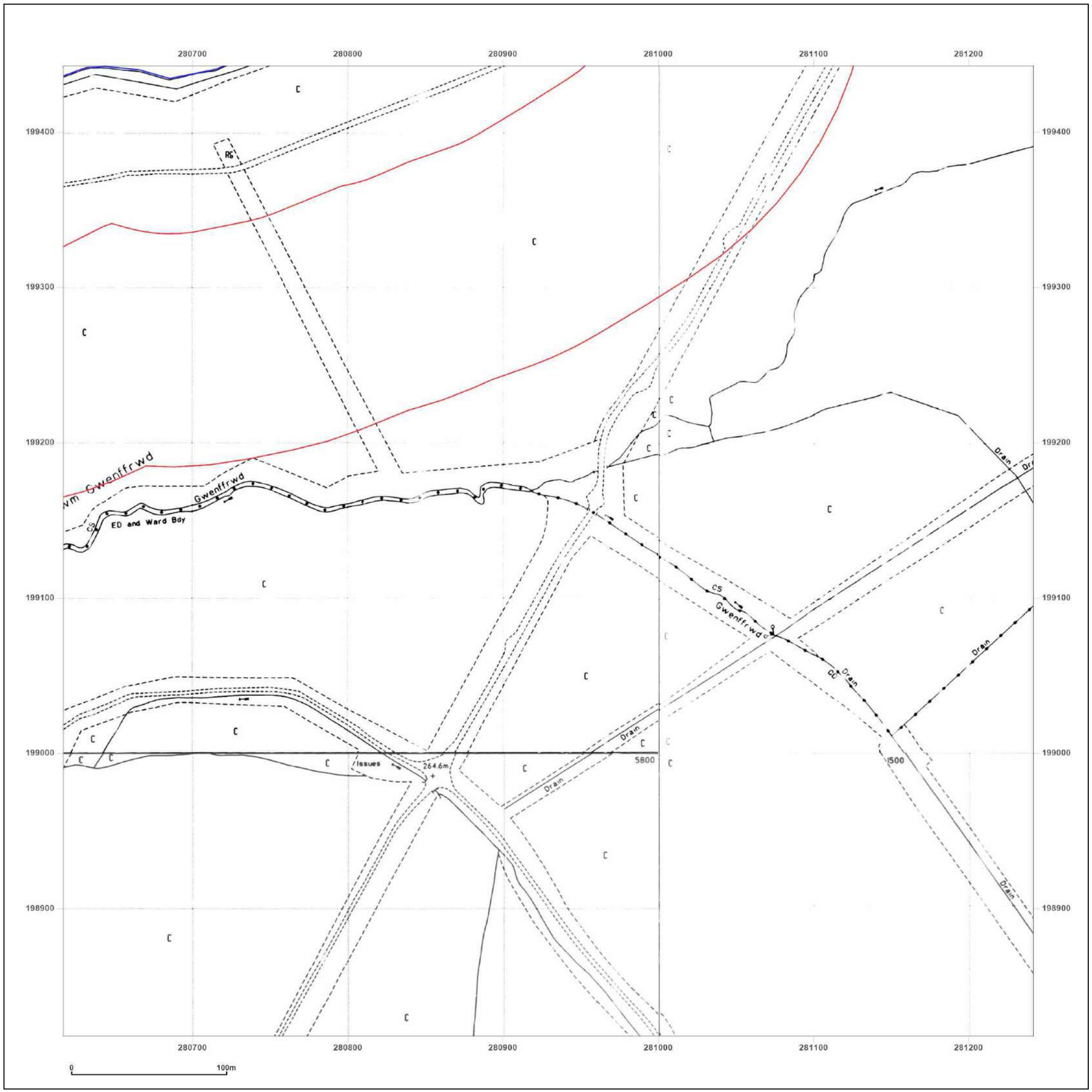

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_3_1
Grid Ref: 280929, 199130

Map Name: National Grid
Map date: **1993**
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 1993
Levelled N/A

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

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

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Revised 1993
Edition N/A
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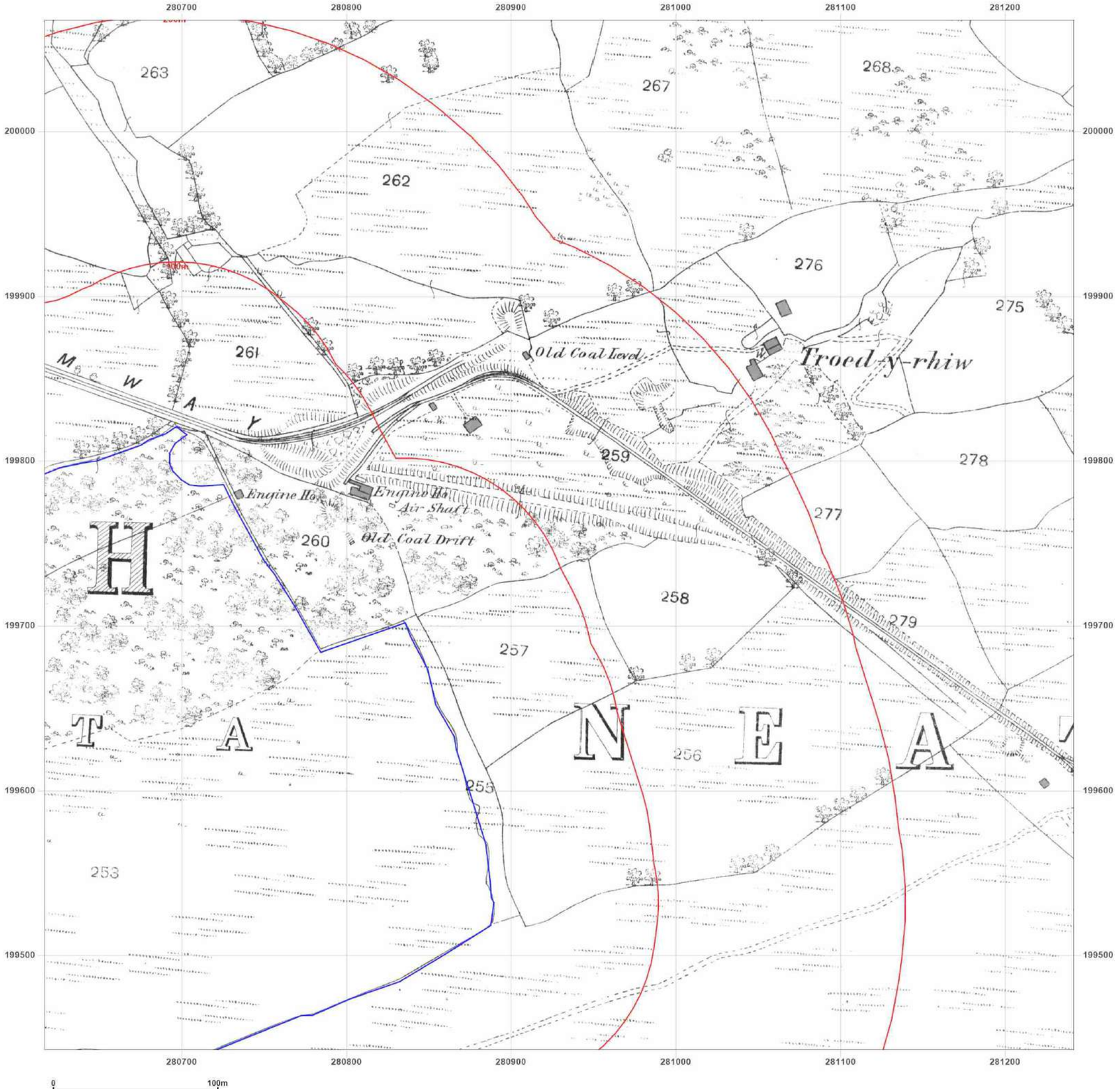

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_3_2
Grid Ref: 280929, 199755

Map Name: County Series
Map date: **1877**
Scale: 1:2,500
Printed at: 1:2,500

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

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Production date: 13 November 2023

Map legend available at:
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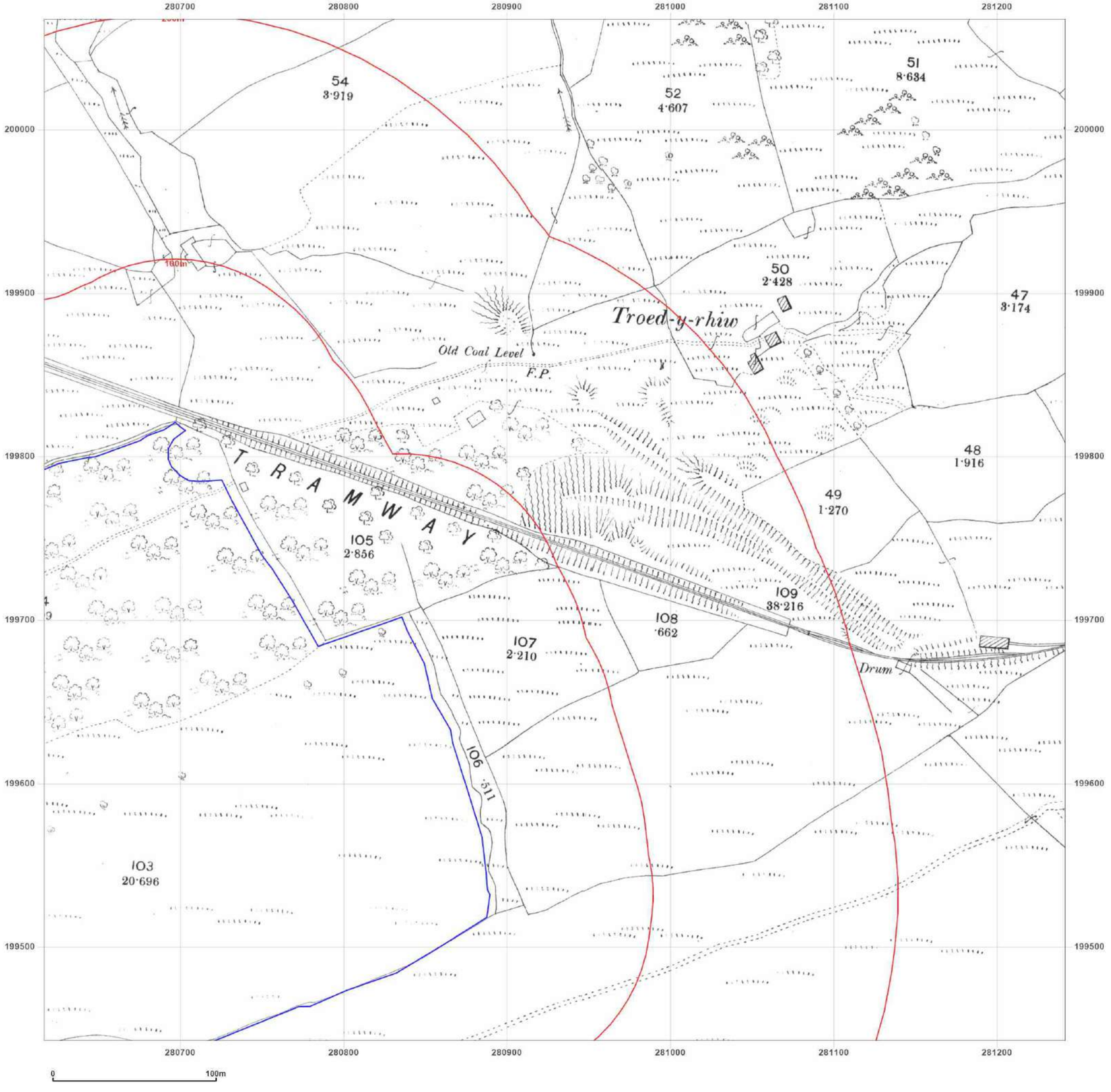

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_3_2
Grid Ref: 280929, 199755

Map Name: County Series
Map date: **1899**
Scale: 1:2,500
Printed at: 1:2,500

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

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Production date: 13 November 2023

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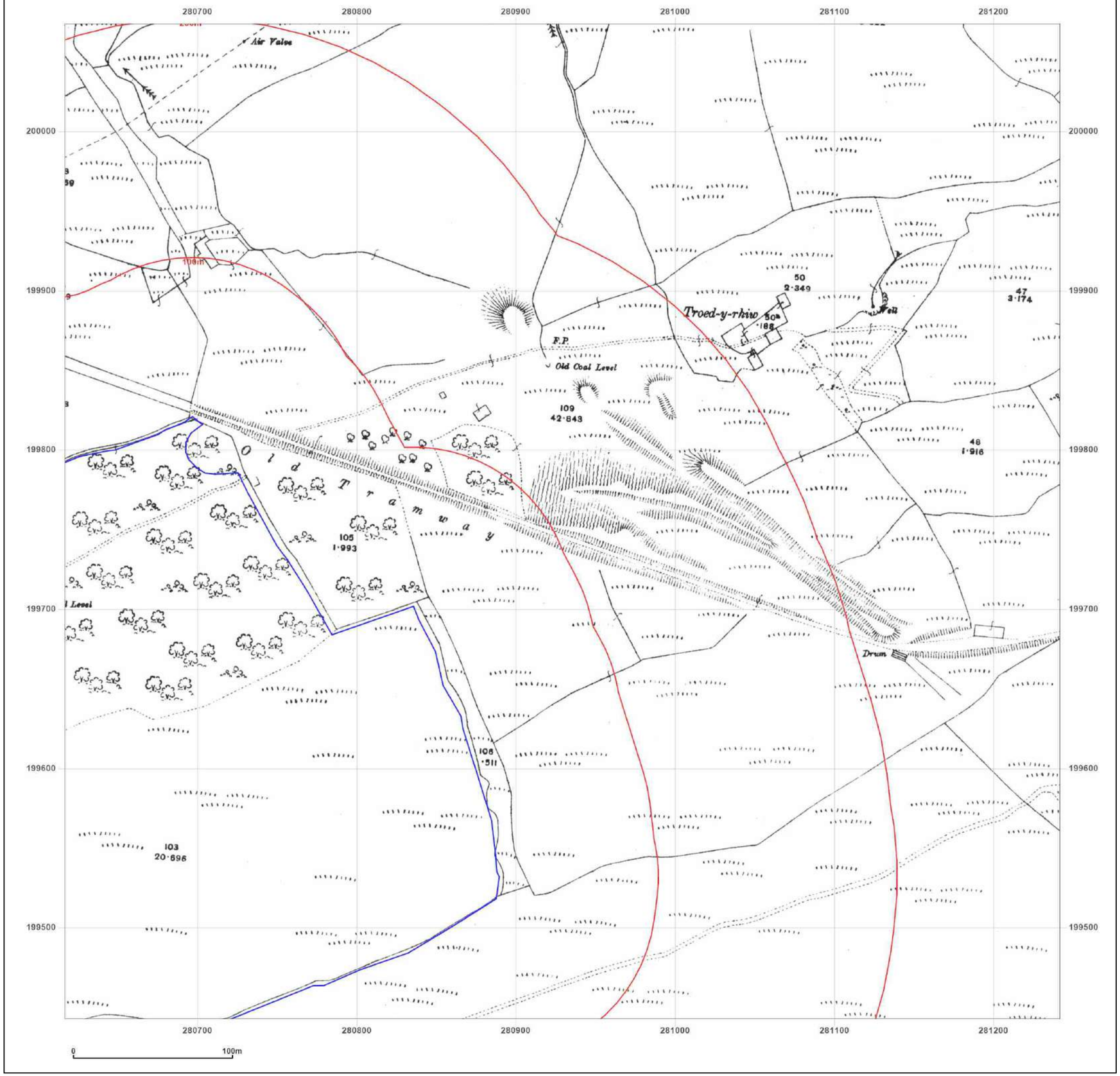

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_3_2
Grid Ref: 280929, 199755

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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Production date: 13 November 2023

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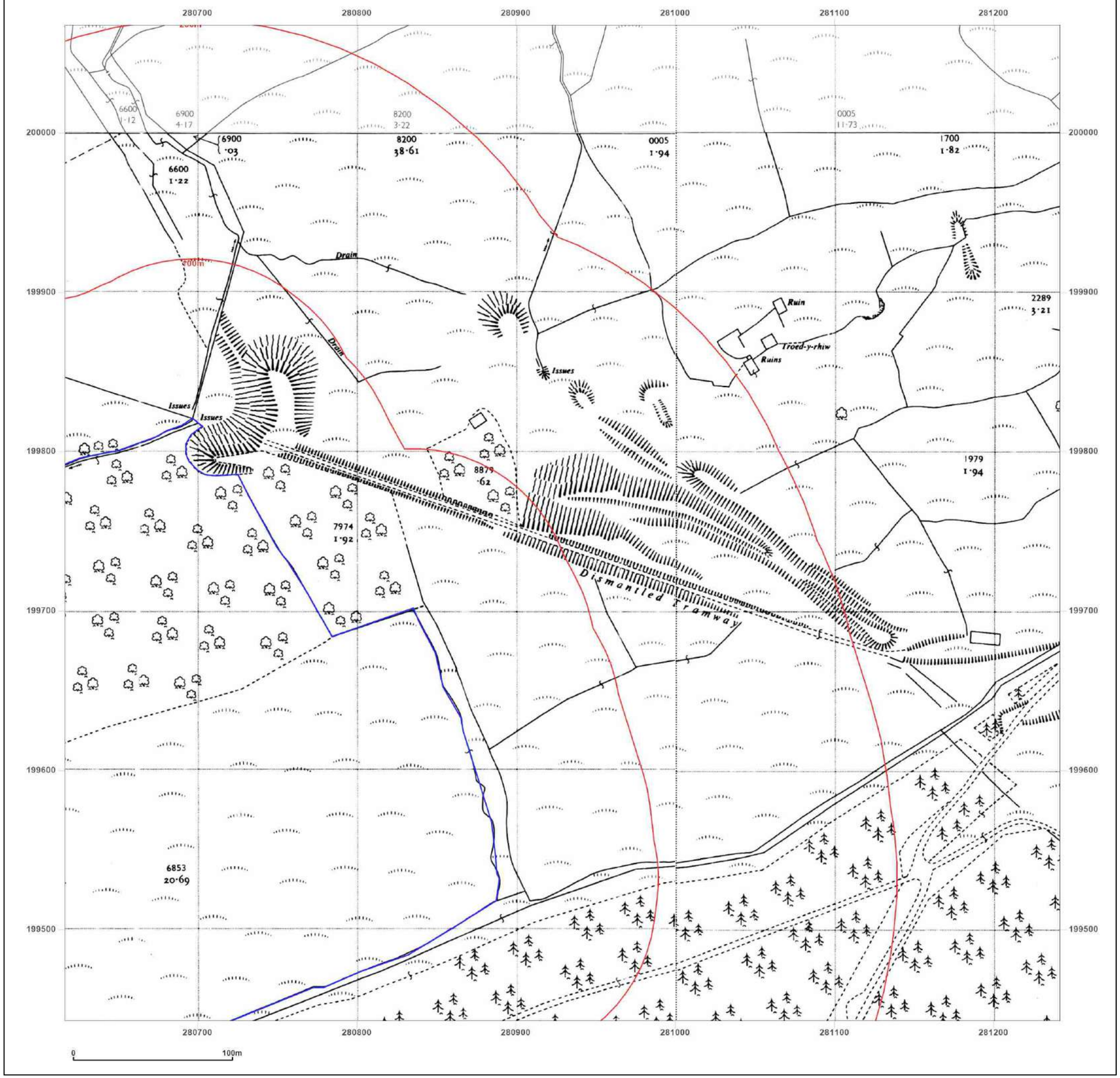

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_3_2
Grid Ref: 280929, 199755

Map Name: National Grid

Map date: **1962**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1962
Revised 1962
Edition N/A
Copyright 1964
Levelled 1956

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

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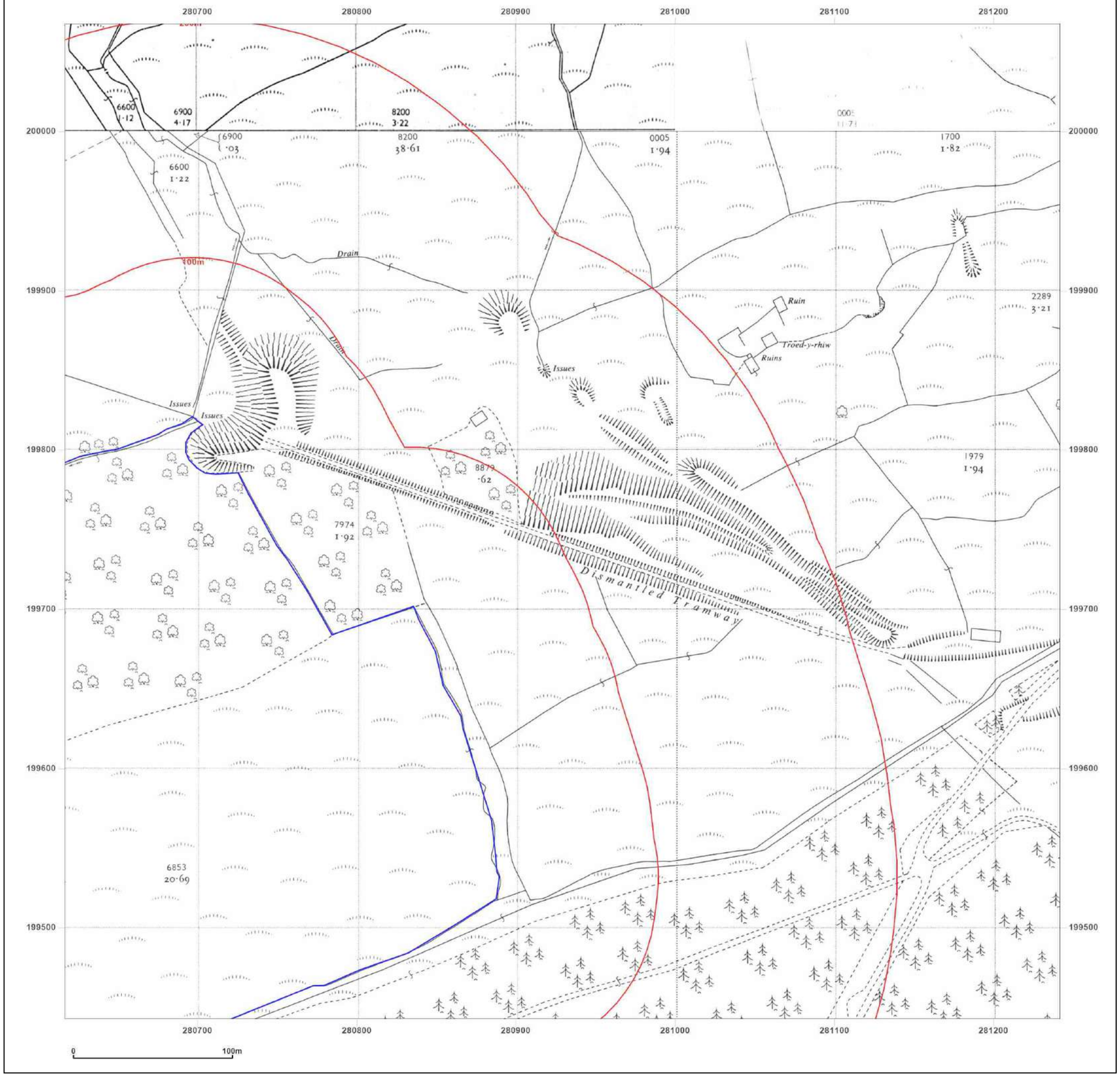

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Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_3_2
Grid Ref: 280929, 199755

Map Name: National Grid
Map date: **1962-1964**
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 1964

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

Surveyed 1962
Revised 1962
Edition N/A
Copyright 1962
Levelled 1950

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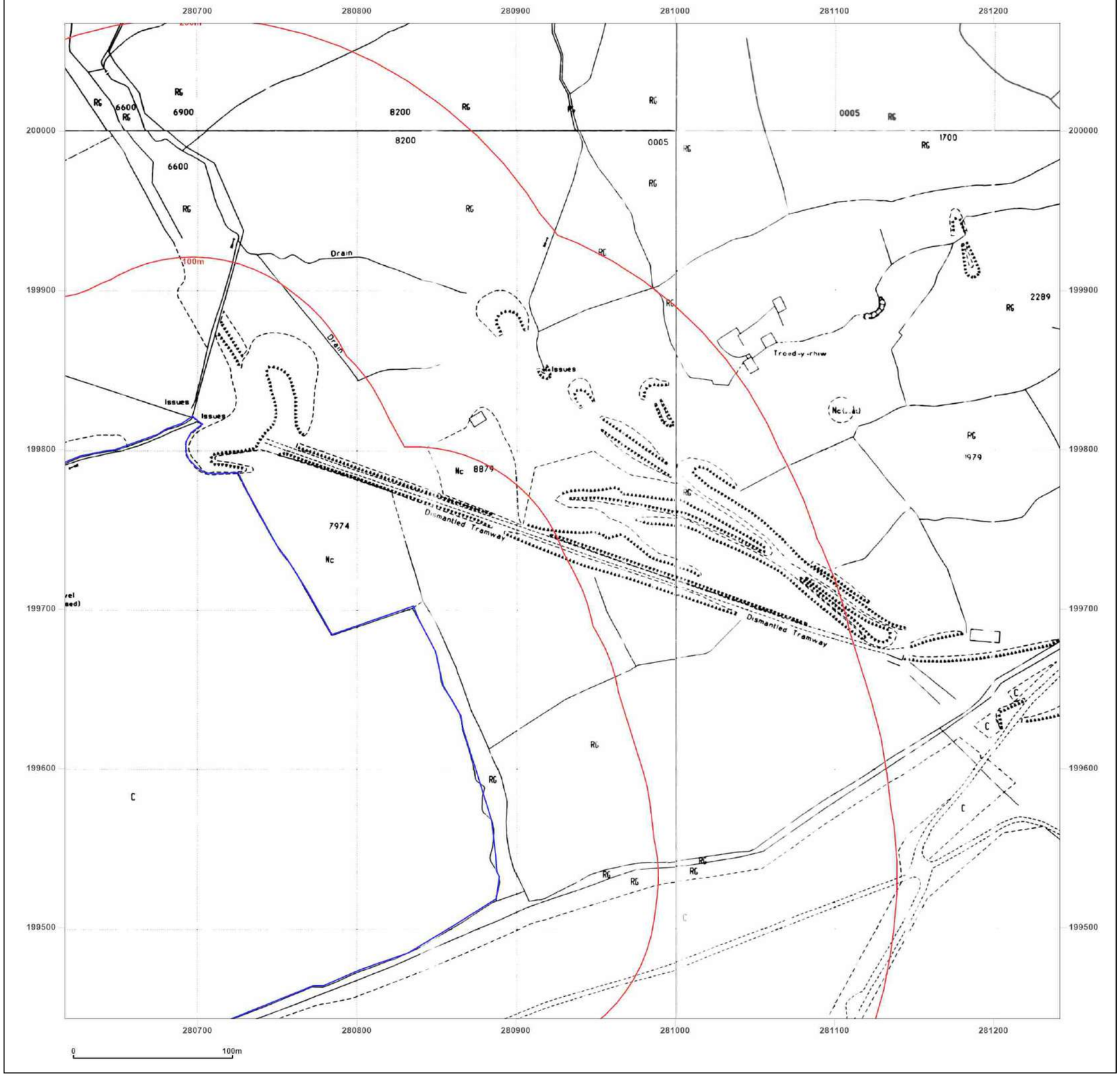

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Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_LS_3_2
Grid Ref: 280929, 199755

Map Name: National Grid
Map date: **1993**
Scale: 1:2,500
Printed at: 1:2,500

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

Surveyed 1993
Revised N/A
Edition N/A
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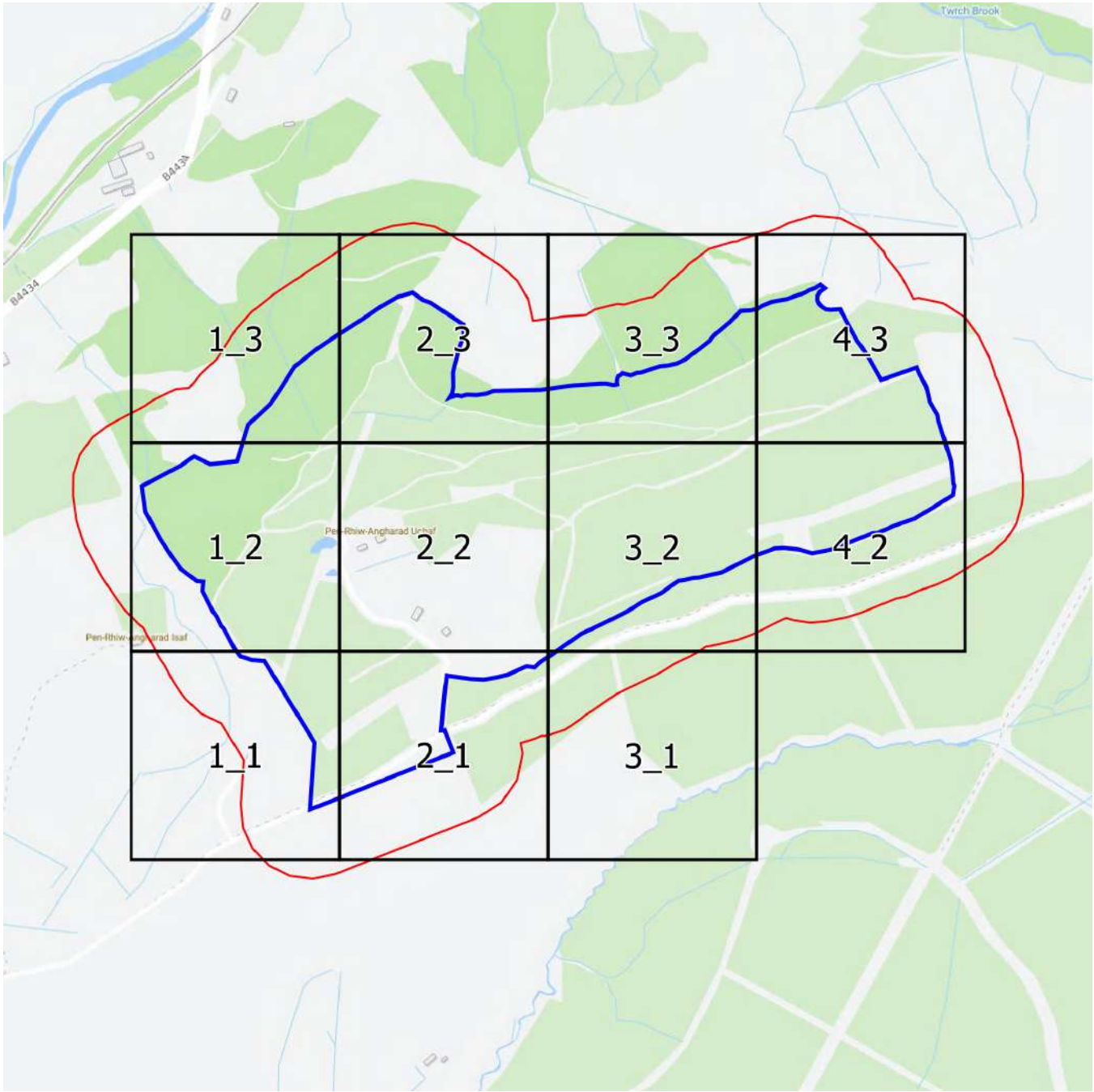
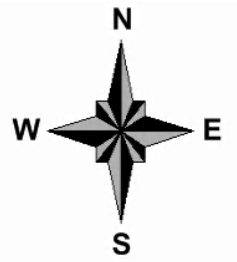
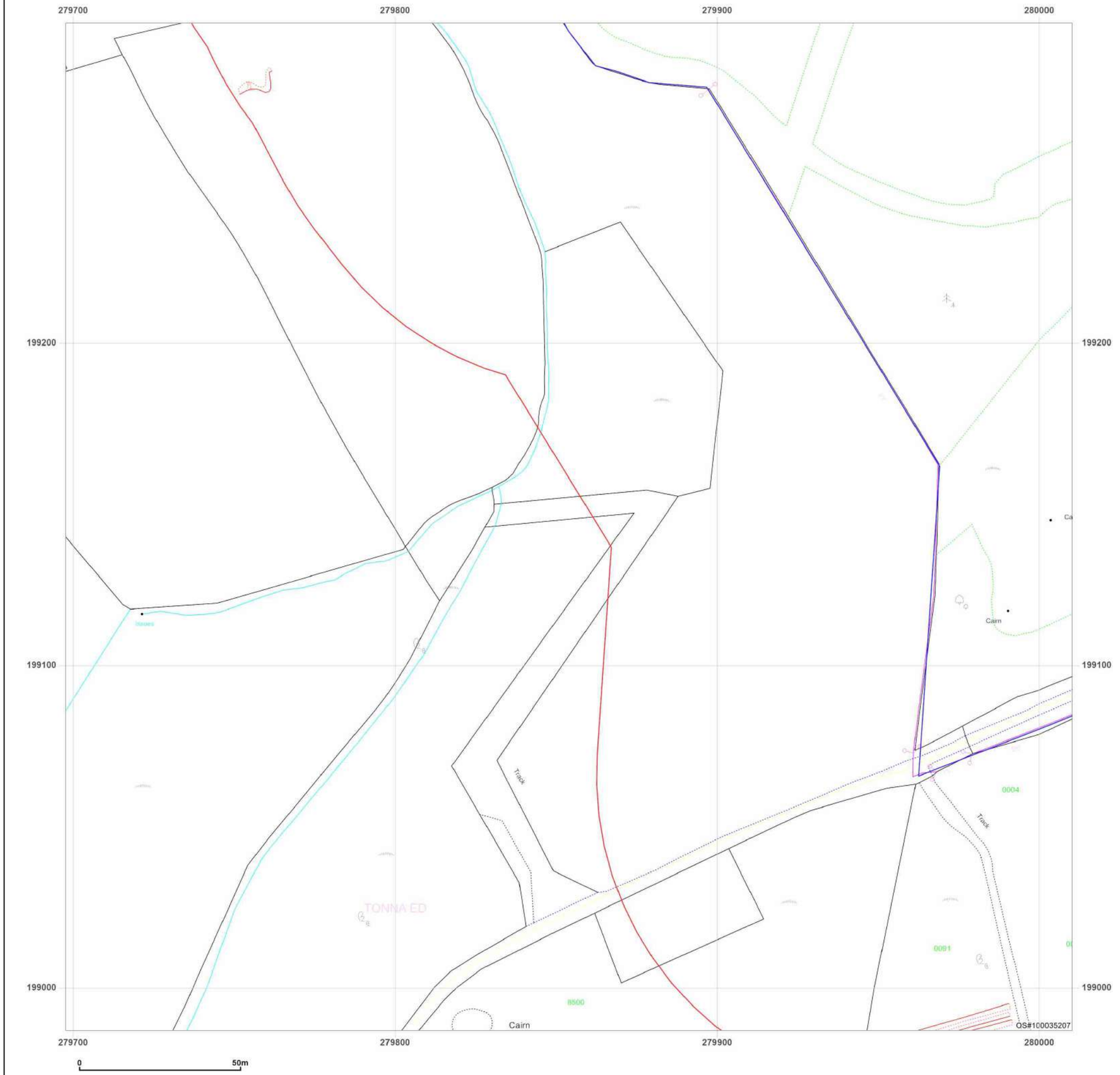


Landline Scale Grid Index





Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_Landline_1_1
Grid Ref: 279854, 199143

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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2003

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Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_Landline_1_2
Grid Ref: 279854, 199443

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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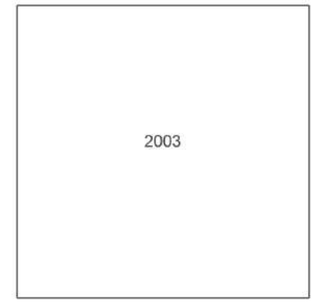

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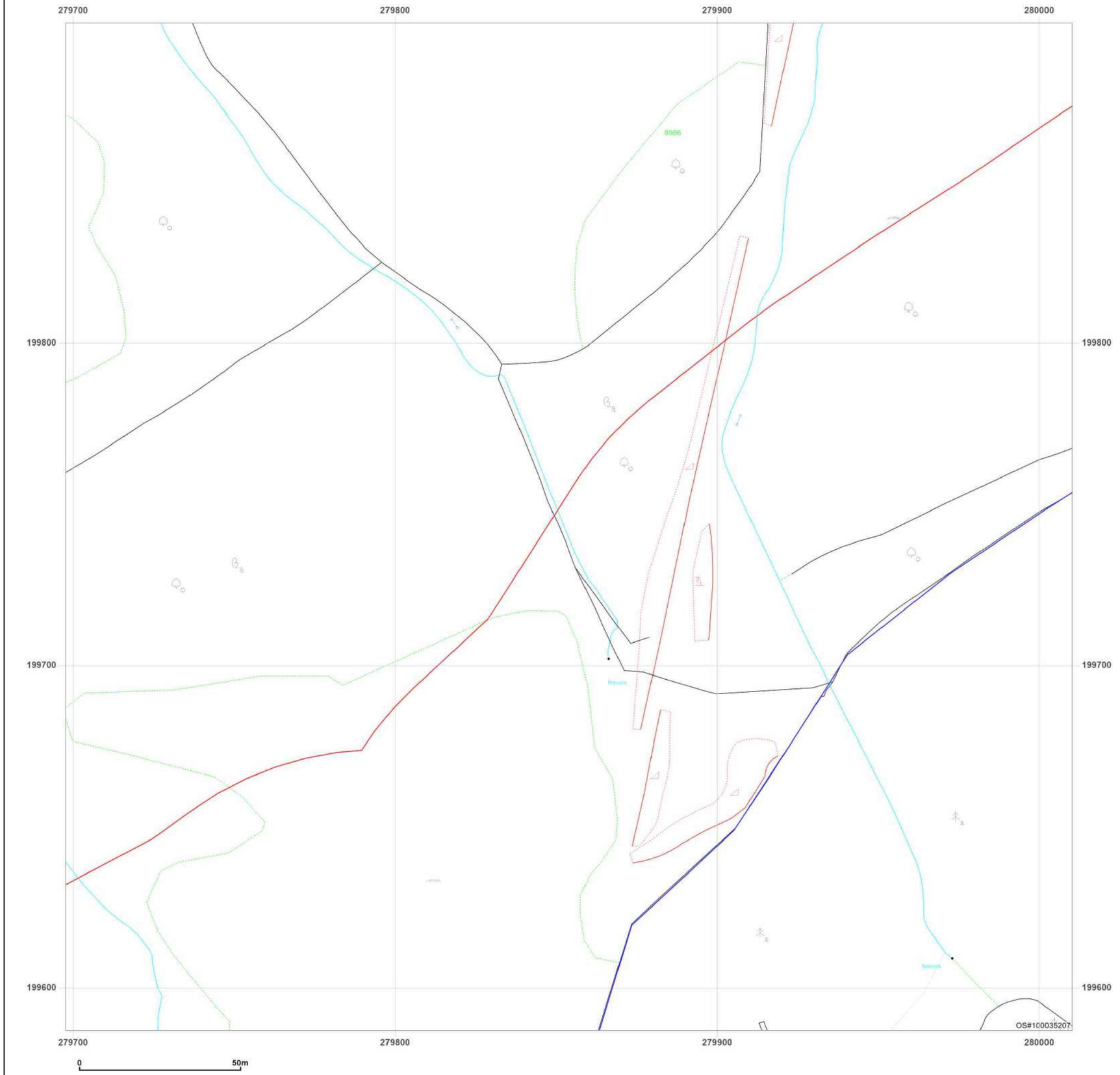

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_Landline_1_3
Grid Ref: 279854, 199743

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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2003

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Production date: 13 November 2023

Map legend available at:
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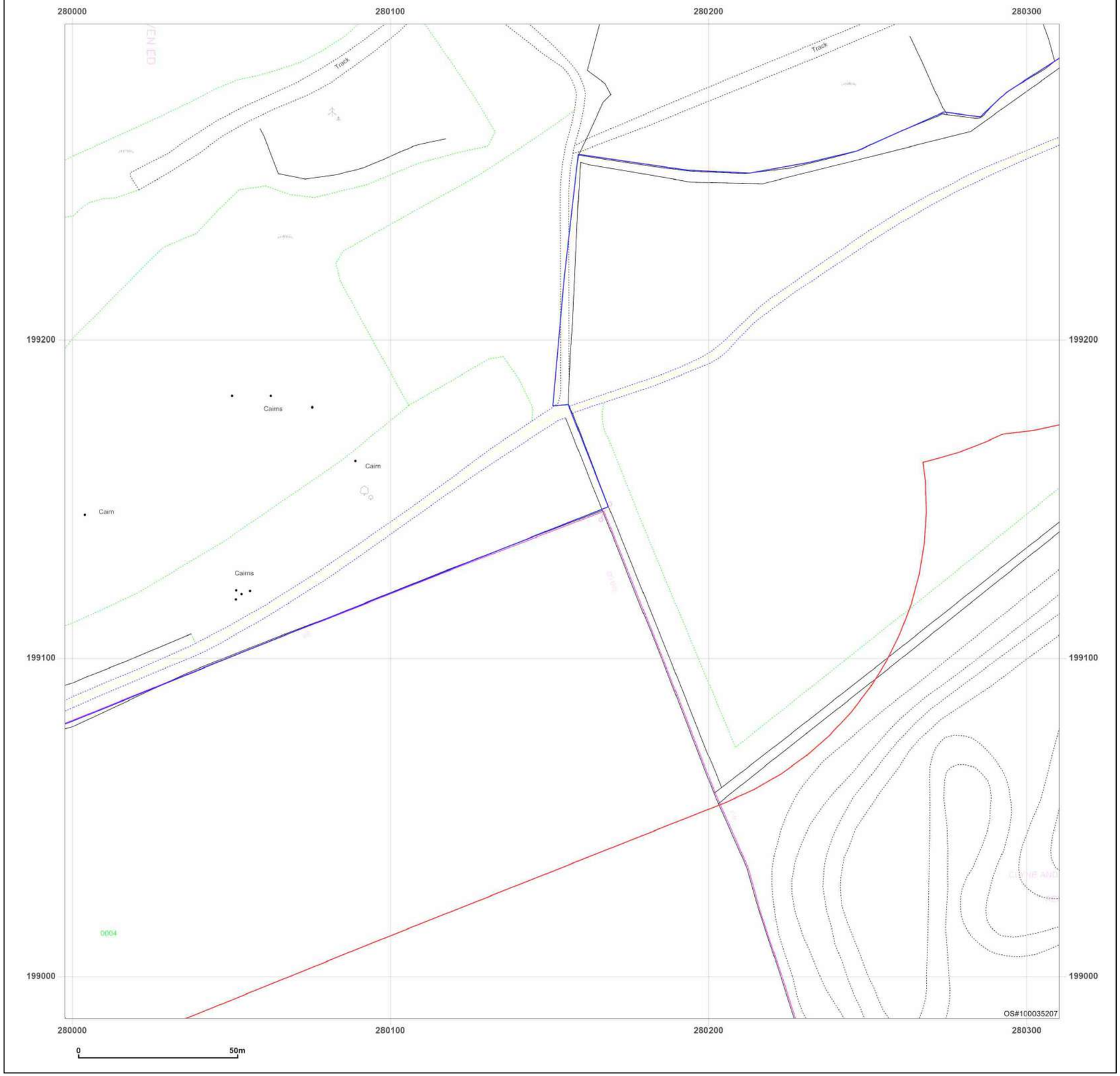

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_Landline_2_1
Grid Ref: 280154, 199143

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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Production date: 13 November 2023

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Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_Landline_2_2
Grid Ref: 280154, 199443

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
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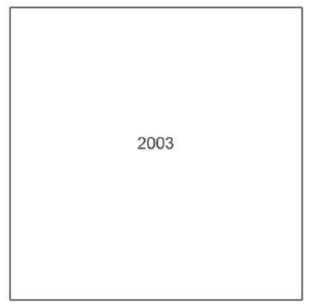

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Production date: 13 November 2023

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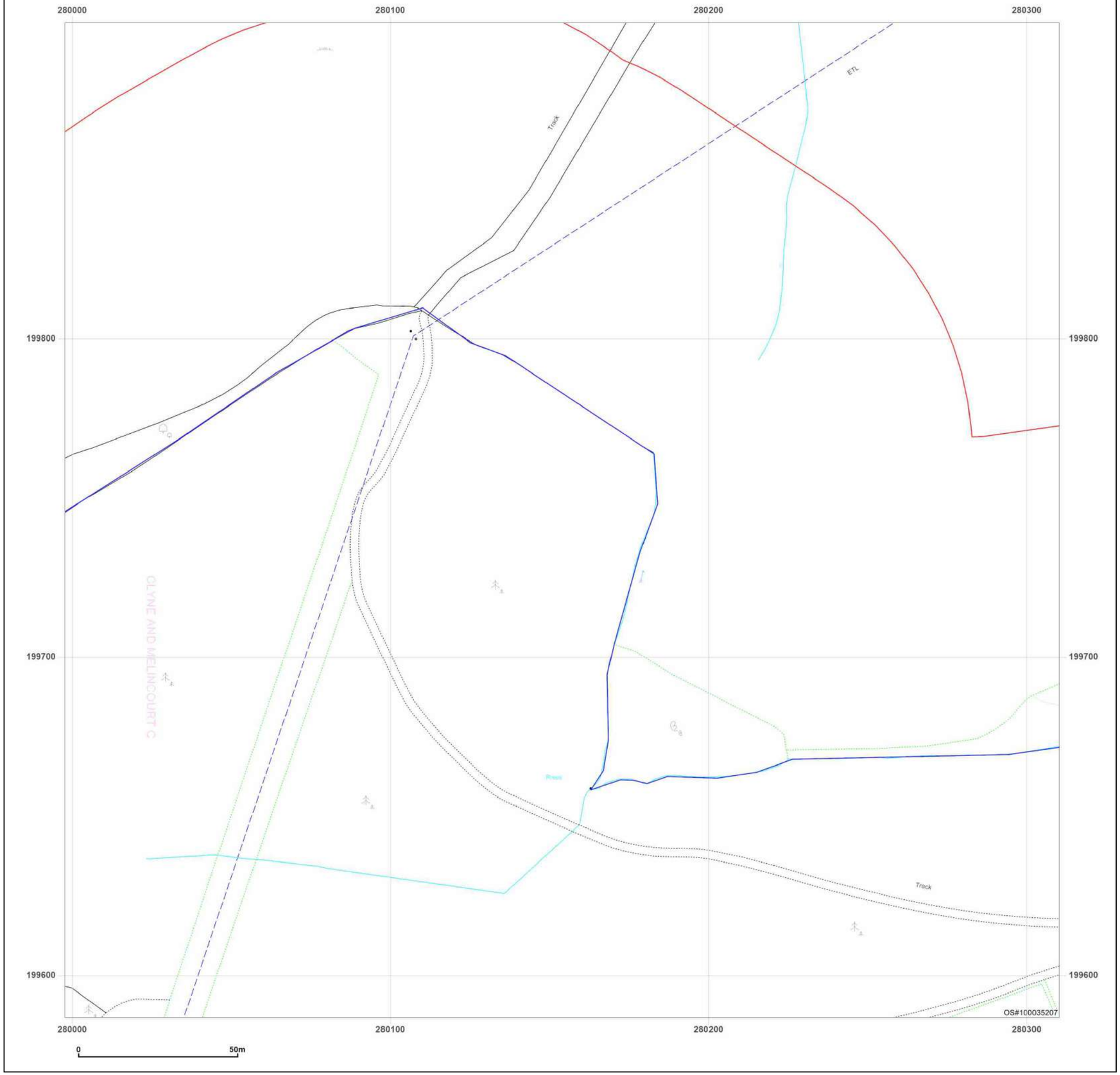

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_Landline_2_3
Grid Ref: 280154, 199743

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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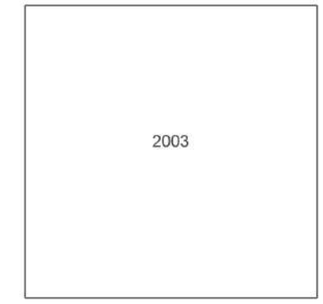

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Production date: 13 November 2023

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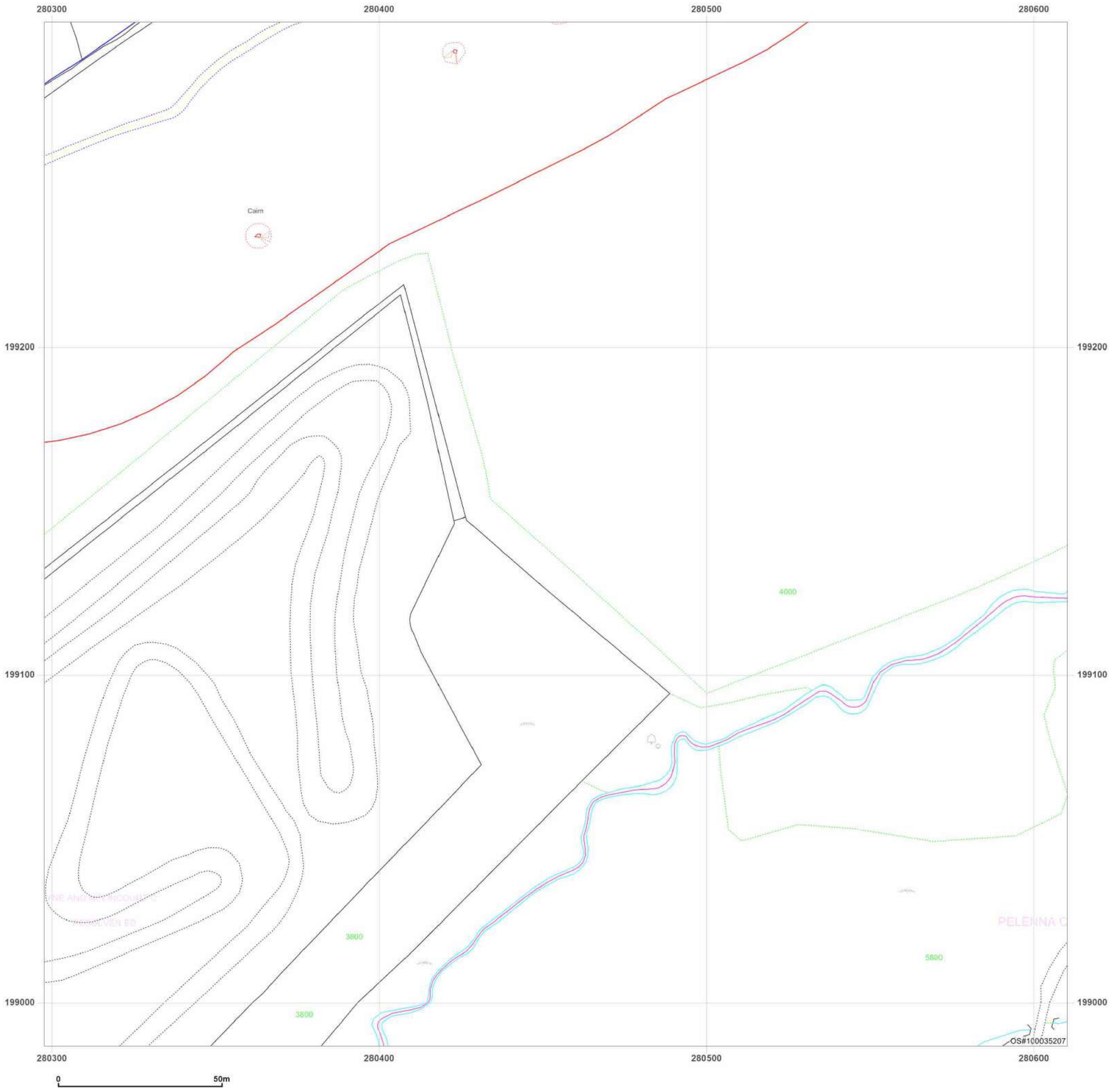

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_Landline_3_1
Grid Ref: 280454, 199143

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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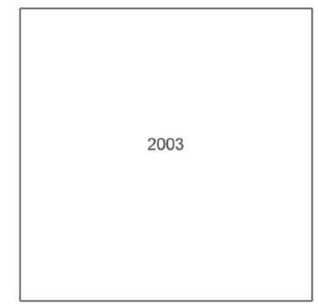

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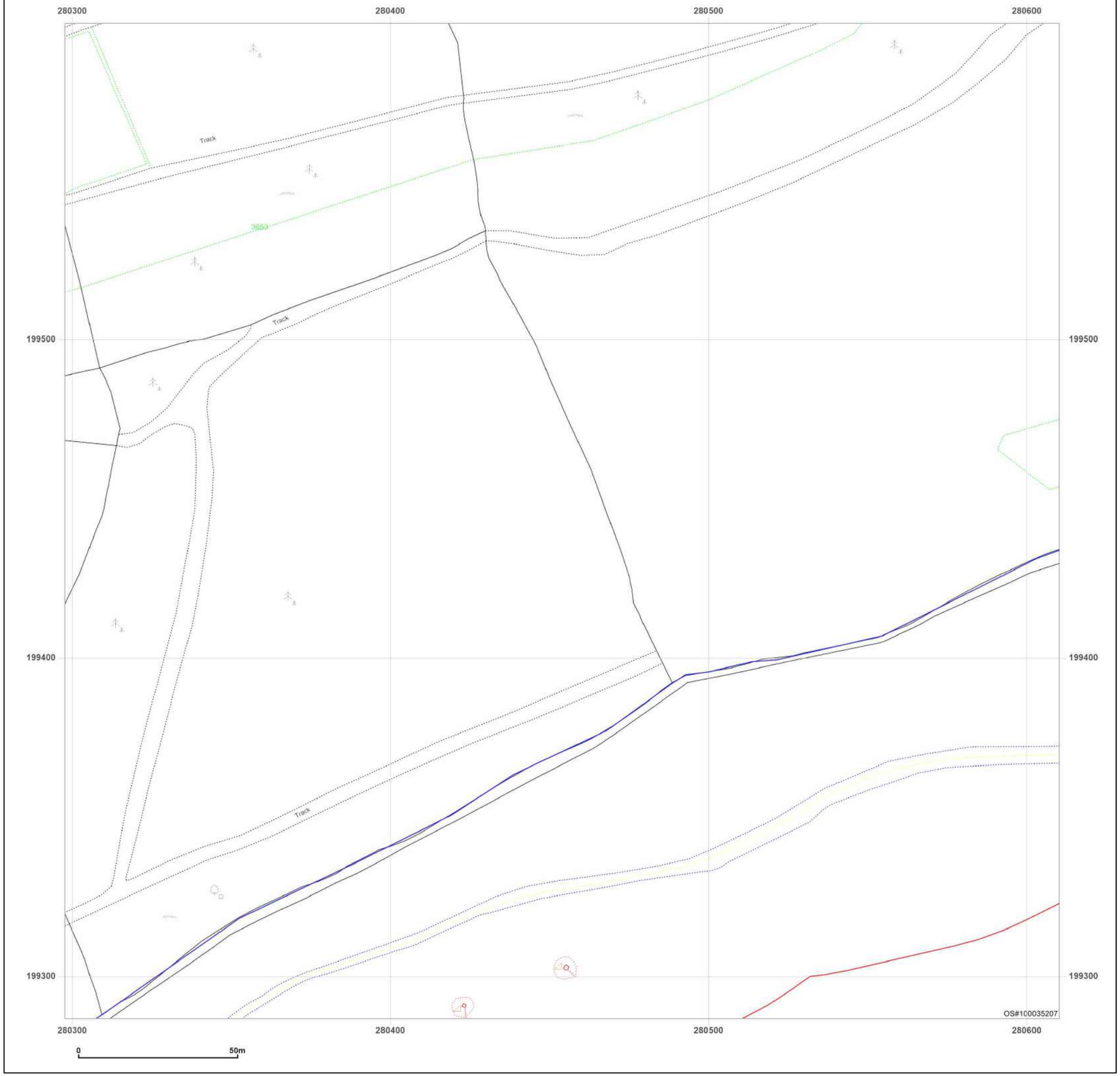

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_Landline_3_2
Grid Ref: 280454, 199443

Map Name: LandLine
Map date: **2003**
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Printed at: 1:1,250

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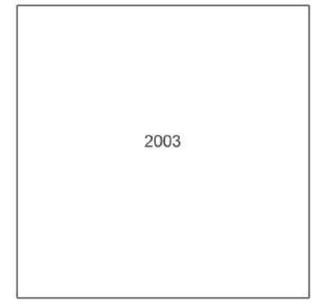

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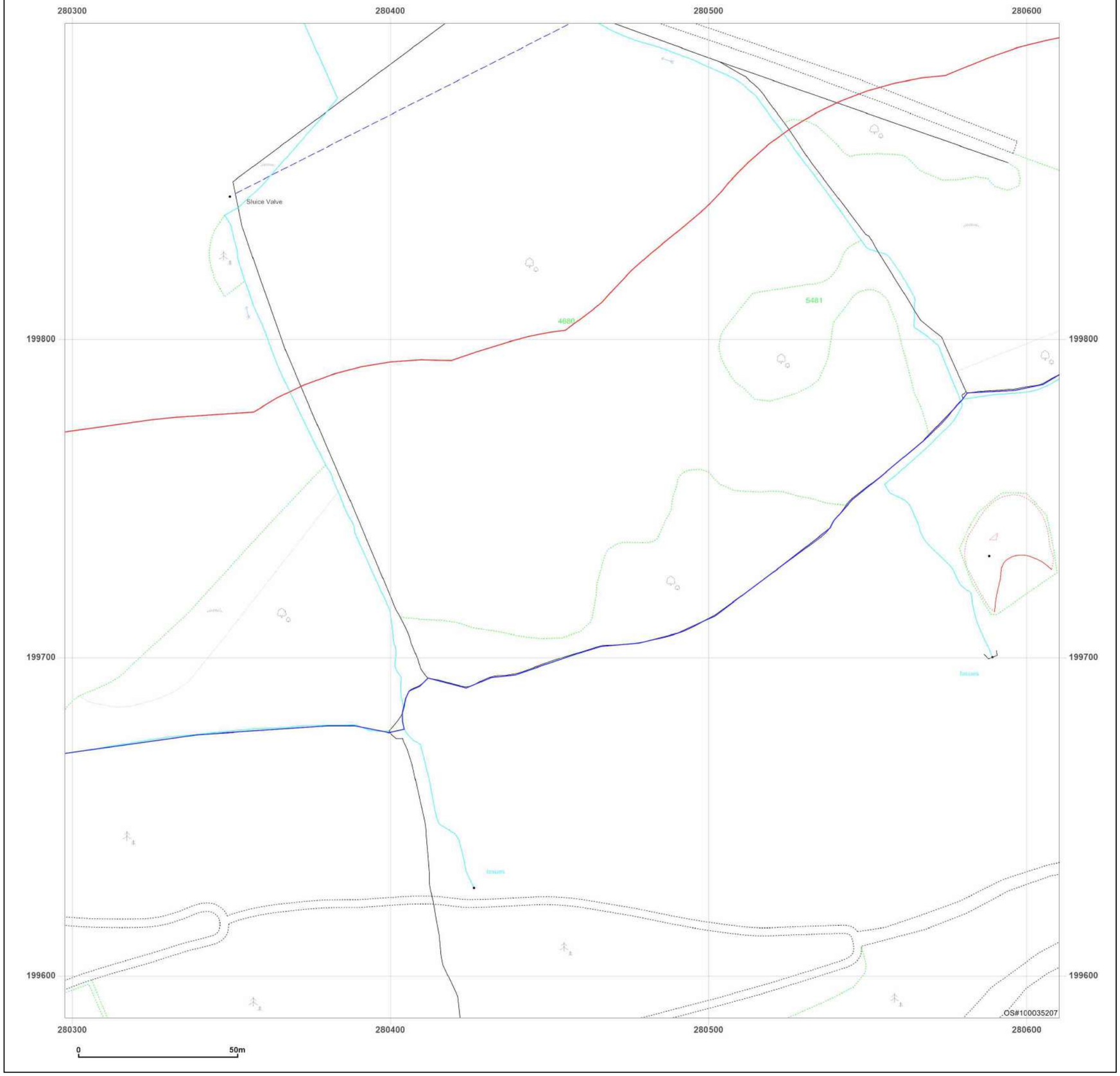

Groundsure INSIGHTS

Site Details:

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Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_Landline_3_3
Grid Ref: 280454, 199743

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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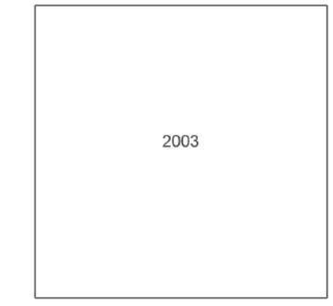

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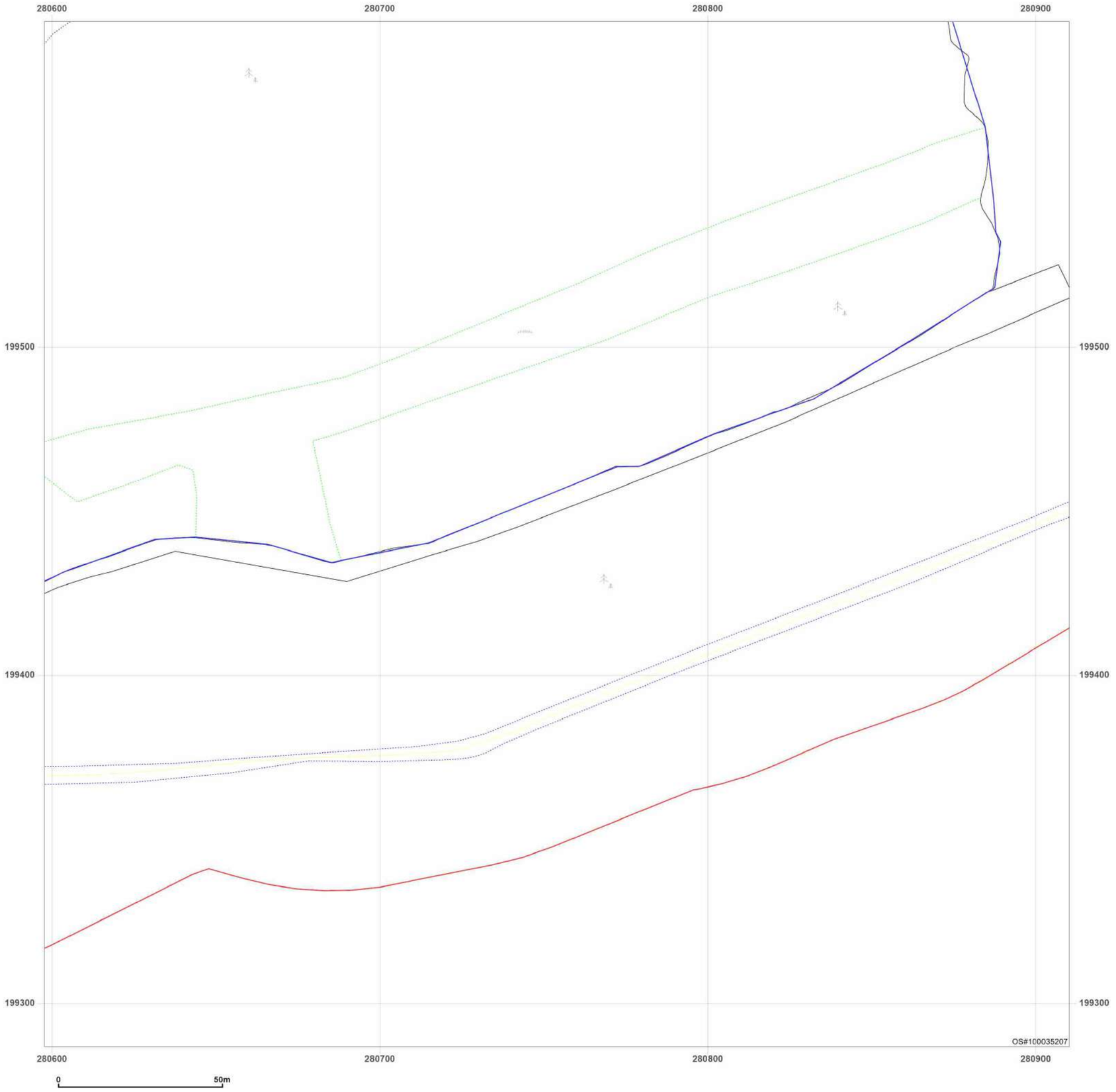

Groundsure INSIGHTS

Site Details:

280265.4930125342,199499.25
649367977

Client Ref: PO30015
Report Ref: GS-8J8-V4I-DZF-J9O_Landline_4_2
Grid Ref: 280754, 199443

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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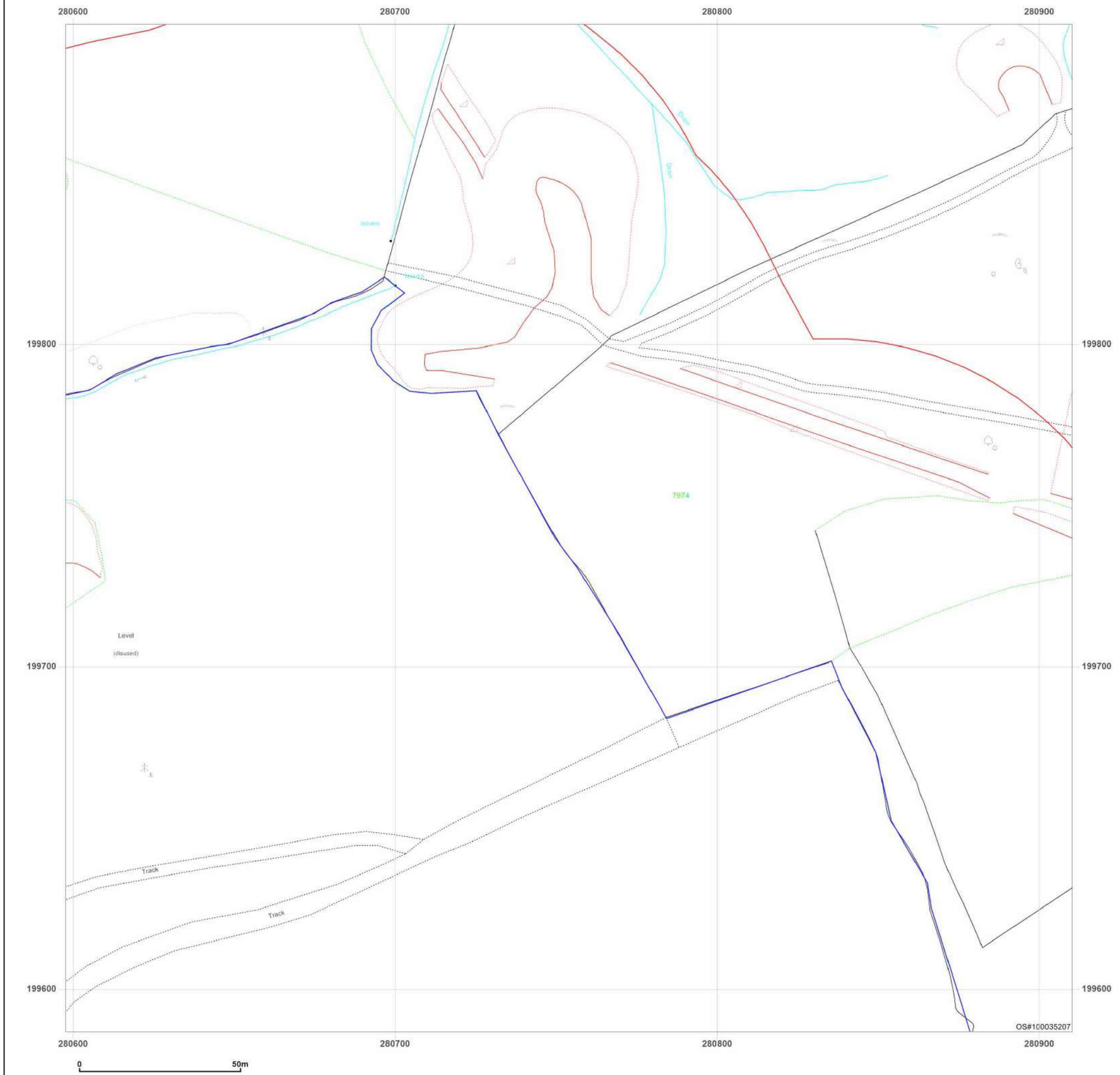

Groundsure INSIGHTS

Site Details:

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Grid Ref: 280754, 199743

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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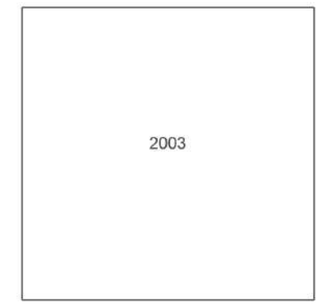

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Appendix D Desk study research information

Groundsure Enviro+Geo Insight

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

280265.4930125342,199499.25649367977,

Order Details

Date: 13/11/2023

Your ref: PO30015

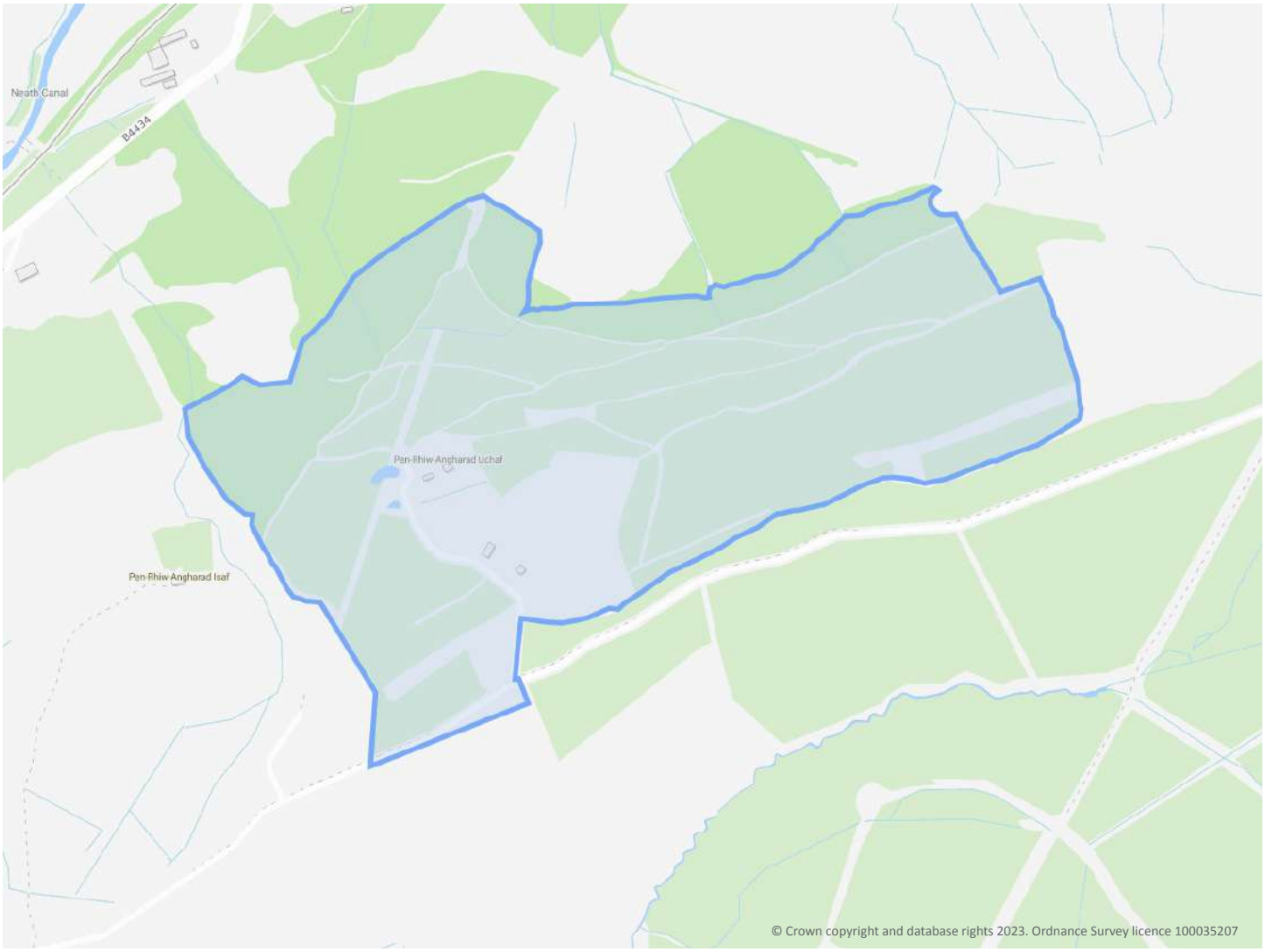
Our Ref: GS-5IU-EWQ-VUE-VXL

Site Details

Location: 280319 199507

Area: 43.8 ha

Authority: Castell-nedd Port Talbot - Neath Port Talbot County Borough ↗



Contact us with any questions at:
info@groundsure.com ↗
01273 257 755

Certified B Corporation

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
14 >	1.1 >	Historical industrial land uses >	34	7	28	49	-
19	1.2	Historical tanks	0	0	0	0	-
19	1.3	Historical energy features	0	0	0	0	-
19	1.4	Historical petrol stations	0	0	0	0	-
20	1.5	Historical garages	0	0	0	0	-
20	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
21 >	2.1 >	Historical industrial land uses >	45	8	39	67	-
27	2.2	Historical tanks	0	0	0	0	-
27	2.3	Historical energy features	0	0	0	0	-
28	2.4	Historical petrol stations	0	0	0	0	-
28	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
29	3.1	Active or recent landfill	0	0	0	0	-
29	3.2	Historical landfill (BGS records)	0	0	0	0	-
30	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
30	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
30	3.5	Historical waste sites	0	0	0	0	-
30	3.6	Licensed waste sites	0	0	0	0	-
30 >	3.7 >	Waste exemptions >	0	0	0	24	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
33 >	4.1 >	Recent industrial land uses >	2	0	1	-	-
34	4.2	Current or recent petrol stations	0	0	0	0	-
34	4.3	Electricity cables	0	0	0	0	-
34 >	4.4 >	Gas pipelines >	1	0	0	0	-
34	4.5	Sites determined as Contaminated Land	0	0	0	0	-

35	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
35	4.7	Regulated explosive sites	0	0	0	0	-
35	4.8	Hazardous substance storage/usage	0	0	0	0	-
35	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
35	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
36	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
36	4.12	Radioactive Substance Authorisations	0	0	0	0	-
36 >	**4.13 >**	**Licensed Discharges to controlled waters >**	1	0	0	0	-
36	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
37	4.15	Pollutant release to public sewer	0	0	0	0	-
37	4.16	List 1 Dangerous Substances	0	0	0	0	-
37	4.17	List 2 Dangerous Substances	0	0	0	0	-
37 >	**4.18 >**	**Pollution Incidents (EA/NRW) >**	0	0	0	1	-
38	4.19	Pollution inventory substances	0	0	0	0	-
38	4.20	Pollution inventory waste transfers	0	0	0	0	-
38	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	**Hydrogeology >**	On site	0-50m	50-250m	250-500m	500-2000m
39 >	**5.1 >**	**Superficial aquifer >**	Identified (within 500m)				
41 >	**5.2 >**	**Bedrock aquifer >**	Identified (within 500m)				
43 >	**5.3 >**	**Groundwater vulnerability >**	Identified (within 50m)				
44	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
44	5.5	Groundwater vulnerability- local information	None (within 0m)				
46 >	**5.6 >**	**Groundwater abstractions >**	0	0	0	0	4
47	5.7	Surface water abstractions	0	0	0	0	0
48	5.8	Potable abstractions	0	0	0	0	0
48	5.9	Source Protection Zones	0	0	0	0	-
48	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	**Hydrology >**	On site	0-50m	50-250m	250-500m	500-2000m
49 >	**6.1 >**	**Water Network (OS MasterMap) >**	14	5	33	-	-

54 >	6.2 >	Surface water features >	1	5	23	-	-
54 >	6.3 >	WFD Surface water body catchments >	2	-	-	-	-
54 >	6.4 >	WFD Surface water bodies >	0	0	0	-	-
55 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-

Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
56	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
56	7.2	Historical Flood Events	0	0	0	-	-
56	7.3	Flood Defences	0	0	0	-	-
57	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
57	7.5	Flood Storage Areas	0	0	0	-	-
58	7.6	Flood Zone 2	None (within 50m)				
58	7.7	Flood Zone 3	None (within 50m)				

Page	Section	Surface water flooding >	
59 >	8.1 >	Surface water flooding >	1 in 30 year, 0.3m - 1.0m (within 50m)

Page	Section	Groundwater flooding >	
61 >	9.1 >	Groundwater flooding >	Negligible (within 50m)

Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
62	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
63	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
63	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
63	10.4	Special Protection Areas (SPA)	0	0	0	0	0
63	10.5	National Nature Reserves (NNR)	0	0	0	0	0
64	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
64 >	10.7 >	Designated Ancient Woodland >	8	1	8	10	111
69	10.8	Biosphere Reserves	0	0	0	0	0
69	10.9	Forest Parks	0	0	0	0	0
70	10.10	Marine Conservation Zones	0	0	0	0	0
70	10.11	Green Belt	0	0	0	0	0
70	10.12	Proposed Ramsar sites	0	0	0	0	0

70	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
70	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
71	10.15	Nitrate Sensitive Areas	0	0	0	0	0
71	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
72	10.17	SSSI Impact Risk Zones	0	-	-	-	-
72	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
73	11.1	World Heritage Sites	0	0	0	-	-
74	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
74	11.3	National Parks	0	0	0	-	-
74	11.4	Listed Buildings	0	0	0	-	-
74	11.5	Conservation Areas	0	0	0	-	-
75 >	**11.6 >**	**Scheduled Ancient Monuments >**	1	0	1	-	-
75	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	**Agricultural designations >**	On site	0-50m	50-250m	250-500m	500-2000m
76 >	**12.1 >**	**Agricultural Land Classification >**	Grade 5 (within 250m)				
78 >	**12.2 >**	**Open Access Land >**	1	0	0	-	-
78	12.3	Tree Felling Licences	0	0	0	-	-
78	12.4	Environmental Stewardship Schemes	0	0	0	-	-
78	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
79	13.1	Priority Habitat Inventory	0	0	0	-	-
79	13.2	Habitat Networks	0	0	0	-	-
79	13.3	Open Mosaic Habitat	0	0	0	-	-
79	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
80 >	**14.1 >**	**10k Availability >**	Identified (within 500m)				
82 >	**14.2 >**	**Artificial and made ground (10k) >**	0	0	1	4	-
84 >	**14.3 >**	**Superficial geology (10k) >**	1	0	1	6	-

85 >	14.4 >	Landslip (10k) >	1	0	0	1	-
86 >	14.5 >	Bedrock geology (10k) >	10	2	11	11	-
88 >	14.6 >	Bedrock faults and other linear features (10k) >	6	4	5	7	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
90 >	15.1 >	50k Availability >	Identified (within 500m)				
91	15.2	Artificial and made ground (50k)	0	0	0	0	-
91	15.3	Artificial ground permeability (50k)	0	0	-	-	-
92 >	15.4 >	Superficial geology (50k) >	1	0	3	4	-
93 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
93 >	15.6 >	Landslip (50k) >	0	0	1	1	-
94	15.7	Landslip permeability (50k)	None (within 50m)				
95 >	15.8 >	Bedrock geology (50k) >	9	0	0	7	-
96 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
97 >	15.10 >	Bedrock faults and other linear features (50k) >	10	4	4	6	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
99	16.1	BGS Boreholes	0	0	0	-	-
Page	Section	Natural ground subsidence >					
100 >	17.1 >	Shrink swell clays >	Very low (within 50m)				
101 >	17.2 >	Running sands >	Very low (within 50m)				
103 >	17.3 >	Compressible deposits >	High (within 50m)				
104 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
105 >	17.5 >	Landslides >	Low (within 50m)				
107 >	17.6 >	Ground dissolution of soluble rocks >	Negligible (within 50m)				
Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
109 >	18.1 >	BritPits >	4	0	2	4	-
112 >	18.2 >	Surface ground workings >	36	6	36	-	-
115 >	18.3 >	Underground workings >	9	0	4	8	57
118	18.4	Underground mining extents	0	0	0	0	-
118	18.5	Historical Mineral Planning Areas	0	0	0	0	-

118	18.6	Non-coal mining	0	0	0	0	0
118	18.7	JPB mining areas	None (within 0m)				
118	18.8	The Coal Authority non-coal mining	0	0	0	0	-
119	18.9	Researched mining	0	0	0	0	-
119	18.10	Mining record office plans	0	0	0	0	-
119	18.11	BGS mine plans	0	0	0	0	-
119 >	**18.12 >**	**Coal mining >**	Identified (within 0m)				
120	18.13	Brine areas	None (within 0m)				
120	18.14	Gypsum areas	None (within 0m)				
120	18.15	Tin mining	None (within 0m)				
120	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
121	19.1	Natural cavities	0	0	0	0	-
121	19.2	Mining cavities	0	0	0	0	0
121	19.3	Reported recent incidents	0	0	0	0	-
121	19.4	Historical incidents	0	0	0	0	-
122	19.5	National karst database	0	0	0	0	-
Page	Section	**Radon >**					
123 >	**20.1 >**	**Radon >**	Between 10% and 30% (within 0m)				
Page	Section	**Soil chemistry >**	On site	0-50m	50-250m	250-500m	500-2000m
125 >	**21.1 >**	**BGS Estimated Background Soil Chemistry >**	37	2	-	-	-
127	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
127	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	**Railway infrastructure and projects >**	On site	0-50m	50-250m	250-500m	500-2000m
128	22.1	Underground railways (London)	0	0	0	-	-
128	22.2	Underground railways (Non-London)	0	0	0	-	-
129	22.3	Railway tunnels	0	0	0	-	-
129 >	**22.4 >**	**Historical railway and tunnel features >**	5	2	1	-	-
129	22.5	Royal Mail tunnels	0	0	0	-	-

130	22.6	Historical railways	0	0	0	-	-
130	22.7	Railways	0	0	0	-	-
130	22.8	Crossrail 1	0	0	0	0	-
130	22.9	Crossrail 2	0	0	0	0	-
130	22.10	HS2	0	0	0	0	-

Recent aerial photograph

Capture Date: 14/04/2020

Site Area: 43.8ha

Recent site history - 2017 aerial photograph

Capture Date: 17/06/2017

Site Area: 43.8ha

Recent site history - 2010 aerial photograph

Capture Date: 23/05/2010

Site Area: 43.8ha

Recent site history - 2009 aerial photograph

Capture Date: 12/10/2009

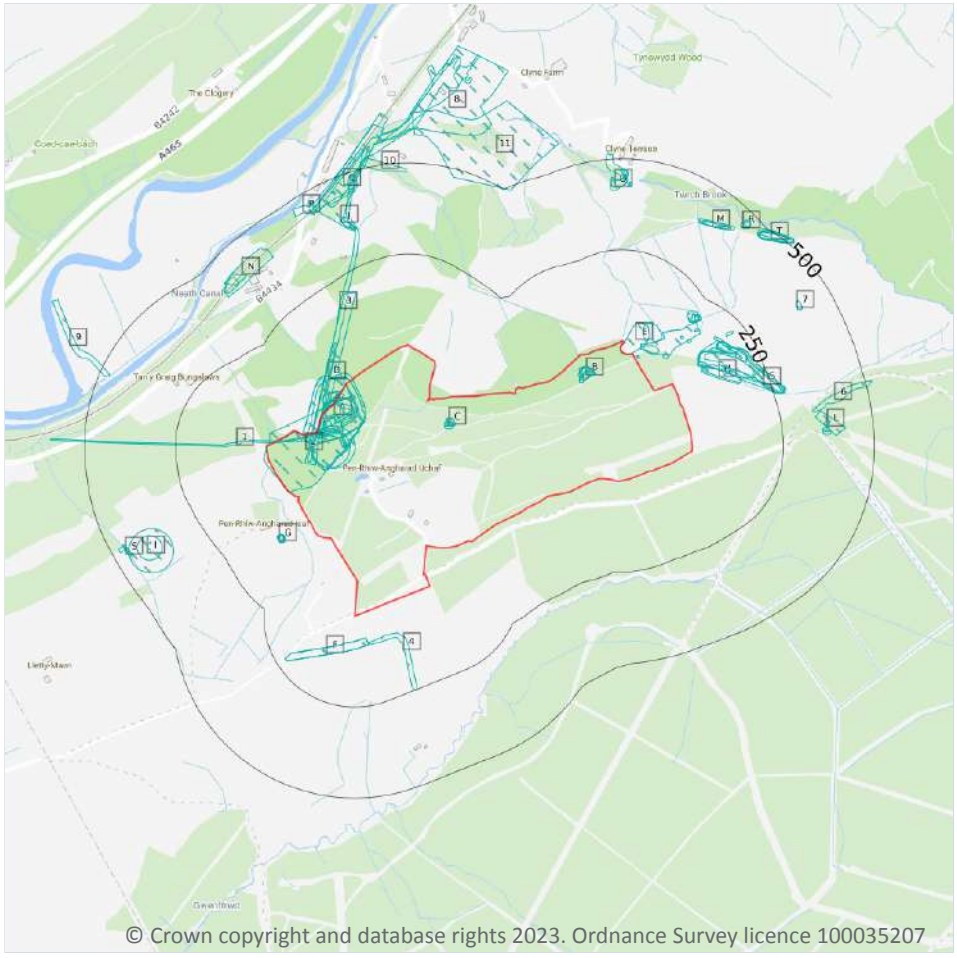
Site Area: 43.8ha

Recent site history - 2000 aerial photograph

Capture Date: 18/06/2000

Site Area: 43.8ha

1 Past land use



Site Outline

Search buffers in metres (m)

Historical industrial land uses

1.1 Historical industrial land uses

Records within 500m	118

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

Features are displayed on the Past land use map on **page 14 >**

ID	Location	Land use	Dates present	Group ID
1	**On site**	**Tunnel**	**1877**	**337373**

ID	Location	Land use	Dates present	Group ID
2	On site	Colliery	1921	379536
3	On site	Tramway Sidings	1921	2367883
A	On site	Unspecified Heaps	1970	322293
A	On site	Unspecified Mine	1962	322706
A	On site	Tram Sidings	1921	322781
A	On site	Gravel Pit	1962	328665
A	On site	Gravel Pit	1962	328666
A	On site	Unspecified Pit	1877	335679
A	On site	Railway Sidings	1921	337557
A	On site	Refuse Heap	1948	338812
A	On site	Unspecified Disused Tip	1982 - 1991	349556
A	On site	Unspecified Level	1921	357420
A	On site	Refuse Heap	1921 - 1948	358981
A	On site	Unspecified Level	1921	359049
A	On site	Unspecified Heap	1877 - 1897	359764
A	On site	Unspecified Level	1921 - 1948	360338
A	On site	Unspecified Level	1962	362211
A	On site	Unspecified Disused Mine	1982 - 1991	362267
A	On site	Colliery	1948	370357
A	On site	Unspecified Disused Mine	1970	371193
A	On site	Colliery	1921	379345
B	On site	Unspecified Heaps	1877	322296
B	On site	Unspecified Heap	1897	327290
B	On site	Old Coal Level	1921	340266
B	On site	Unspecified Disused Level	1964 - 1988	358493
B	On site	Old Coal Level	1921	369973
B	On site	Old Coal Level	1948	379640
C	On site	Old Coal Level	1948	343873

ID	Location	Land use	Dates present	Group ID
C	**On site**	**Unspecified Heap**	**1964 - 1988**	**355716**
C	**On site**	**Old Coal Level**	**1921**	**356964**
C	**On site**	**Old Coal Level**	**1921**	**372030**
D	**On site**	**Tramway Sidings**	**1921**	**376578**
E	**On site**	**Unspecified Heap**	**1964 - 1988**	**377671**
A	2m NW	Unspecified Pit	1982 - 1991	351177
A	2m NW	Unspecified Pit	1970	369687
E	7m NE	Engine House	1877	320397
D	13m W	Unspecified Ground Workings	1948	333711
E	26m NE	Tramway Sidings	1877	324144
E	31m NE	Unspecified Pit	1877	336041
E	49m NE	Refuse Heap	1948	338813
F	66m SW	Unspecified Heaps	1982	357564
F	66m SW	Unspecified Heaps	1970	374563
E	69m NE	Engine House	1877	320396
G	79m SW	Unspecified Heap	1921	359773
G	79m SW	Unspecified Heap	1948 - 1962	364706
4	80m SW	Unspecified Heaps	1964 - 1988	342769
G	80m SW	Unspecified Pit	1877	335678
G	84m SW	Unspecified Heap	1921	355680
H	84m E	Cuttings	1921 - 1948	353081
H	86m E	Unspecified Ground Workings	1964 - 1988	377795
H	89m E	Unspecified Ground Workings	1921	358303
H	89m E	Old Coal Level	1948	348282
H	90m E	Cuttings	1921	343037
H	94m E	Unspecified Ground Workings	1897	340344
H	111m NE	Unspecified Ground Workings	1921	344448
E	121m NE	Old Coal Level	1921	361210

ID	Location	Land use	Dates present	Group ID
E	126m NE	Railway Building	1877	323662
H	156m NE	Unspecified Heap	1921	327291
E	158m NE	Railway Building	1877	323663
H	163m NE	Old Coal Level	1921	375504
E	176m NE	Old Coal Level	1897 - 1921	370412
E	177m NE	Unspecified Heap	1964 - 1988	356324
E	178m NE	Unspecified Heap	1948	353381
E	181m NE	Unspecified Heap	1921	364610
E	185m NE	Unspecified Heap	1877	356539
H	189m E	Unspecified Heap	1921	327292
H	197m NE	Unspecified Ground Workings	1877	333710
5	212m E	Unspecified Ground Workings	1921	370247
6	341m E	Unspecified Pits	1964 - 1988	369358
I	341m W	Unspecified Old Level	1962	331507
J	344m NW	Unspecified Ground Workings	1948	267318
K	344m NW	Tramway Sidings	1897	285091
L	346m E	Tramway Sidings	1877	324141
J	347m NW	Unspecified Heap	1921	260175
L	360m E	Unspecified Pit	1964 - 1988	340299
L	361m E	Unspecified Old Quarry	1897	330437
L	366m E	Railway Buildings	1877	319119
I	368m W	Old Coal Level	1948	349340
M	387m NE	Unspecified Pit	1921	268516
M	391m NE	Unspecified Ground Workings	1948	267320
I	391m W	Old Coal Level	1921	363250
N	391m NW	Cuttings	1877 - 1982	2366123
M	392m NE	Cuttings	1877	269062
7	401m NE	Unspecified Pit	1964 - 1988	374701

ID	Location	Land use	Dates present	Group ID
I	402m W	Old Coal Level	1921	360245
N	403m NW	Cuttings	1991	2368273
N	403m NW	Cuttings	1962	343837
O	415m NE	Old Coal Pit	1921	284381
O	422m NE	Old Coal Pit	1897	276607
O	422m NE	Old Coal Pit	1948	301264
O	424m NE	Unspecified Disused Pit	1965 - 1988	290776
O	427m NE	Old Coal Pit	1921	279457
8	428m NW	Tramway Sidings	1948	296677
P	434m NW	Railway Sidings	1877	277166
Q	435m NW	Railway Sidings	1921	297336
K	440m NW	Railway Sidings	1921	273602
O	442m NE	Unspecified Old Quarry	1921 - 1948	313409
O	450m NE	Unspecified Old Quarry	1921	276238
R	451m NE	Unspecified Old Quarry	1921 - 1948	290762
O	451m NE	Tramway Sidings	1877	256991
S	454m W	Unspecified Pit	1877	335677
S	456m W	Old Coal Level	1897	331340
K	457m NW	Railway Building	1921	256722
P	459m NW	Railway Building	1877	256708
R	460m NE	Unspecified Old Quarry	1921	294313
K	461m NW	Railway Building	1921	256709
S	464m W	Unspecified Disused Level	1982 - 1991	342330
T	468m NE	Unspecified Heap	1921	299131
T	468m NE	Unspecified Heap	1965 - 1988	290187
Q	468m NW	Railway Sidings	1877	290304
T	469m NE	Unspecified Heap	1948	300587
T	471m NE	Unspecified Heap	1921	316489

ID	Location	Land use	Dates present	Group ID
9	473m W	Unspecified Heap	1982	327282
10	475m N	Tramway Sidings	1877	276891
T	475m NE	Unspecified Ground Workings	1897	267319
11	477m N	Old Colliery	1948	255130
K	480m N	Railway Building	1921 - 1948	273221

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	0

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'.

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

1.4 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.

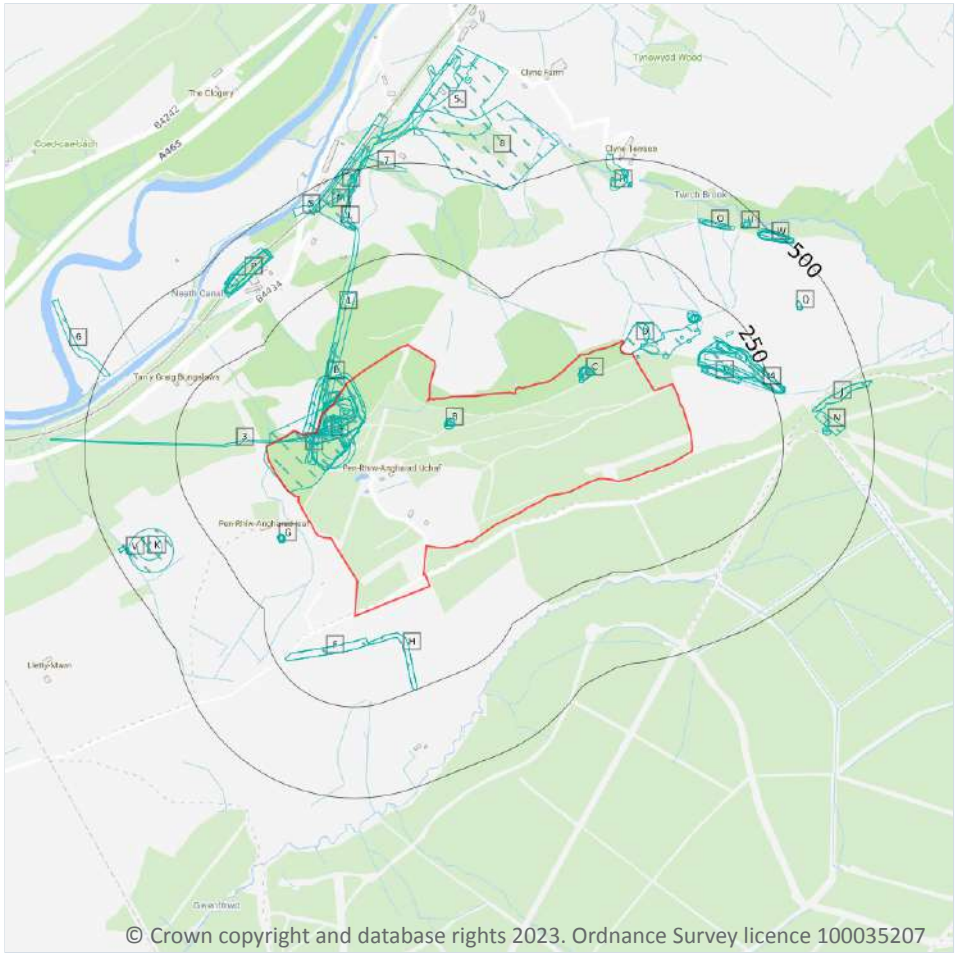
1.6 Historical military land

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



Site Outline

Search buffers in metres (m)

Historical industrial land uses

2.1 Historical industrial land uses

Records within 500m	159

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 21 >**

ID	Location	Land Use	Date	Group ID
1	**On site**	**Tramway Sidings**	**1921**	**2367883**
2	**On site**	**Colliery**	**1921**	**379536**
3	**On site**	**Tunnel**	**1877**	**337373**

ID	Location	Land Use	Date	Group ID
A	On site	Railway Sidings	1921	337557
A	On site	Refuse Heap	1921	358981
A	On site	Unspecified Heap	1877	359764
A	On site	Unspecified Pit	1877	335679
A	On site	Colliery	1948	370357
A	On site	Refuse Heap	1948	358981
A	On site	Refuse Heap	1948	338812
A	On site	Unspecified Heap	1897	359764
A	On site	Unspecified Disused Mine	1991	362267
A	On site	Unspecified Disused Mine	1982	362267
A	On site	Unspecified Disused Mine	1970	371193
A	On site	Unspecified Mine	1962	322706
A	On site	Unspecified Level	1921	360338
A	On site	Unspecified Level	1962	362211
A	On site	Gravel Pit	1962	328666
A	On site	Gravel Pit	1962	328665
A	On site	Unspecified Disused Tip	1991	349556
A	On site	Unspecified Disused Tip	1982	349556
A	On site	Unspecified Heaps	1970	322293
A	On site	Unspecified Level	1921	357420
A	On site	Tram Sidings	1921	322781
A	On site	Colliery	1921	379345
A	On site	Unspecified Level	1921	359049
A	On site	Colliery	1921	379345
A	On site	Unspecified Level	1948	360338
B	On site	Old Coal Level	1921	356964
B	On site	Old Coal Level	1948	343873
B	On site	Unspecified Heap	1988	355716

ID	Location	Land Use	Date	Group ID
B	**On site**	**Unspecified Heap**	**1964**	**355716**
B	**On site**	**Old Coal Level**	**1921**	**372030**
B	**On site**	**Old Coal Level**	**1921**	**372030**
C	**On site**	**Old Coal Level**	**1921**	**340266**
C	**On site**	**Unspecified Heaps**	**1877**	**322296**
C	**On site**	**Old Coal Level**	**1948**	**379640**
C	**On site**	**Unspecified Heap**	**1897**	**327290**
C	**On site**	**Unspecified Disused Level**	**1988**	**358493**
C	**On site**	**Unspecified Disused Level**	**1964**	**358493**
C	**On site**	**Old Coal Level**	**1921**	**369973**
C	**On site**	**Old Coal Level**	**1921**	**369973**
D	**On site**	**Unspecified Heap**	**1988**	**377671**
D	**On site**	**Unspecified Heap**	**1964**	**377671**
E	**On site**	**Tramway Sidings**	**1921**	**376578**
A	2m NW	Unspecified Pit	1991	351177
A	2m NW	Unspecified Pit	1982	351177
A	2m NW	Unspecified Pit	1970	369687
D	7m NE	Engine House	1877	320397
E	13m W	Unspecified Ground Workings	1948	333711
D	26m NE	Tramway Sidings	1877	324144
D	31m NE	Unspecified Pit	1877	336041
D	49m NE	Refuse Heap	1948	338813
F	66m SW	Unspecified Heaps	1982	357564
F	66m SW	Unspecified Heaps	1970	374563
D	69m NE	Engine House	1877	320396
G	79m SW	Unspecified Heap	1921	359773
G	79m SW	Unspecified Heap	1921	359773
G	79m SW	Unspecified Heap	1948	364706

ID	Location	Land Use	Date	Group ID
G	80m SW	Unspecified Pit	1877	335678
H	80m SW	Unspecified Heaps	1988	342769
H	80m SW	Unspecified Heaps	1964	342769
G	81m SW	Unspecified Heap	1962	364706
G	84m SW	Unspecified Heap	1921	355680
I	84m E	Cuttings	1921	353081
I	86m E	Unspecified Ground Workings	1964	377795
I	87m E	Unspecified Ground Workings	1988	377795
I	89m E	Unspecified Ground Workings	1921	358303
I	89m E	Unspecified Ground Workings	1921	358303
I	89m E	Old Coal Level	1948	348282
I	90m E	Cuttings	1948	353081
I	90m E	Cuttings	1921	343037
I	94m E	Unspecified Ground Workings	1897	340344
I	111m NE	Unspecified Ground Workings	1921	344448
D	121m NE	Old Coal Level	1921	361210
D	121m NE	Old Coal Level	1921	361210
D	126m NE	Railway Building	1877	323662
I	156m NE	Unspecified Heap	1921	327291
D	158m NE	Railway Building	1877	323663
I	163m NE	Old Coal Level	1921	375504
I	163m NE	Old Coal Level	1921	375504
D	176m NE	Old Coal Level	1921	370412
D	177m NE	Unspecified Heap	1988	356324
D	177m NE	Unspecified Heap	1964	356324
D	178m NE	Unspecified Heap	1948	353381
D	181m NE	Unspecified Heap	1921	364610
D	181m NE	Unspecified Heap	1921	364610

ID	Location	Land Use	Date	Group ID
D	181m NE	Old Coal Level	1897	370412
D	185m NE	Unspecified Heap	1877	356539
I	189m E	Unspecified Heap	1921	327292
I	197m NE	Unspecified Ground Workings	1877	333710
4	212m E	Unspecified Ground Workings	1921	370247
J	341m E	Unspecified Pits	1988	369358
J	341m E	Unspecified Pits	1964	369358
K	341m W	Unspecified Old Level	1962	331507
L	344m NW	Unspecified Ground Workings	1948	267318
M	344m NW	Tramway Sidings	1897	285091
N	346m E	Tramway Sidings	1877	324141
L	347m NW	Unspecified Heap	1921	260175
N	360m E	Unspecified Pit	1988	340299
N	360m E	Unspecified Pit	1964	340299
N	361m E	Unspecified Old Quarry	1897	330437
N	366m E	Railway Buildings	1877	319119
K	368m W	Old Coal Level	1948	349340
O	387m NE	Unspecified Pit	1921	268516
O	391m NE	Unspecified Ground Workings	1948	267320
K	391m W	Old Coal Level	1921	363250
P	391m NW	Cuttings	1921	2366123
P	392m NW	Cuttings	1948	2366123
O	392m NE	Cuttings	1877	269062
P	393m NW	Cuttings	1877	2366123
P	394m NW	Cuttings	1921	2366123
Q	401m NE	Unspecified Pit	1988	374701
Q	401m NE	Unspecified Pit	1964	374701
K	402m W	Old Coal Level	1921	360245

ID	Location	Land Use	Date	Group ID
K	402m W	Old Coal Level	1921	360245
P	403m NW	Cuttings	1991	2368273
P	403m NW	Cuttings	1982	2366123
P	403m NW	Cuttings	1970	2366123
P	403m NW	Cuttings	1962	343837
P	403m NW	Cuttings	1897	2366123
R	415m NE	Old Coal Pit	1921	284381
R	422m NE	Old Coal Pit	1948	301264
R	422m NE	Old Coal Pit	1897	276607
R	424m NE	Unspecified Disused Pit	1965	290776
R	424m NE	Unspecified Disused Pit	1988	290776
R	427m NE	Old Coal Pit	1921	279457
R	427m NE	Old Coal Pit	1921	279457
5	428m NW	Tramway Sidings	1948	296677
S	434m NW	Railway Sidings	1877	277166
T	435m NW	Railway Sidings	1921	297336
M	440m NW	Railway Sidings	1921	273602
R	442m NE	Unspecified Old Quarry	1921	313409
R	448m NE	Unspecified Old Quarry	1948	313409
R	450m NE	Unspecified Old Quarry	1921	276238
U	451m NE	Unspecified Old Quarry	1921	290762
R	451m NE	Tramway Sidings	1877	256991
V	454m W	Unspecified Pit	1877	335677
V	456m W	Old Coal Level	1897	331340
U	456m NE	Unspecified Old Quarry	1948	290762
M	457m NW	Railway Building	1921	256722
S	459m NW	Railway Building	1877	256708
U	460m NE	Unspecified Old Quarry	1921	294313

ID	Location	Land Use	Date	Group ID
M	461m NW	Railway Building	1921	256709
V	464m W	Unspecified Disused Level	1991	342330
V	464m W	Unspecified Disused Level	1982	342330
W	468m NE	Unspecified Heap	1921	299131
W	468m NE	Unspecified Heap	1965	290187
W	468m NE	Unspecified Heap	1988	290187
T	468m NW	Railway Sidings	1877	290304
W	469m NE	Unspecified Heap	1948	300587
W	471m NE	Unspecified Heap	1921	316489
W	471m NE	Unspecified Heap	1921	316489
6	473m W	Unspecified Heap	1982	327282
7	475m N	Tramway Sidings	1877	276891
W	475m NE	Unspecified Ground Workings	1897	267319
8	477m N	Old Colliery	1948	255130
M	480m N	Railway Building	1948	273221
M	481m N	Railway Building	1921	273221

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	0

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'.

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

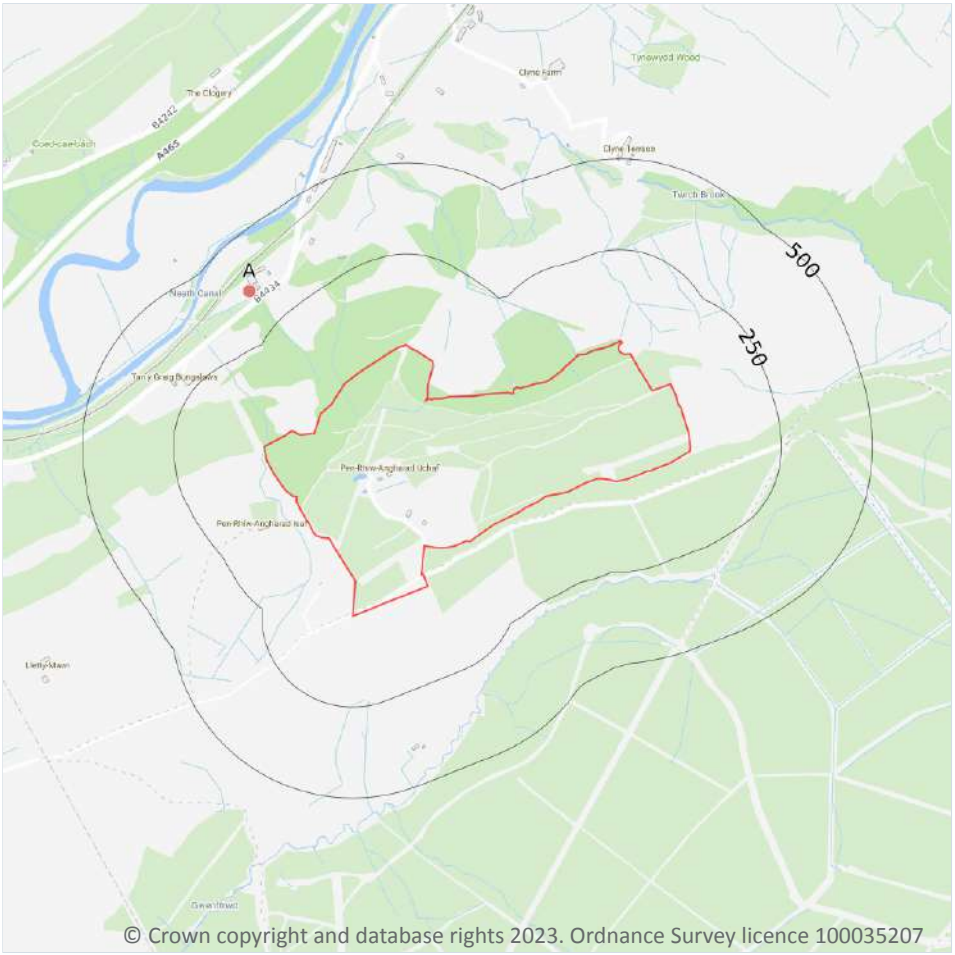
2.5 Historical garages

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



Site Outline

Search buffers in metres (m)

Waste exemptions

3.1 Active or recent landfill

Records within 500m	0

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

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

3.2 Historical landfill (BGS records)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

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

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

3.4 Historical landfill (EA/NRW records)

Records within 500m	0

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

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

3.5 Historical waste sites

Records within 500m	0

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

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

3.6 Licensed waste sites

Records within 500m	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	24

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.

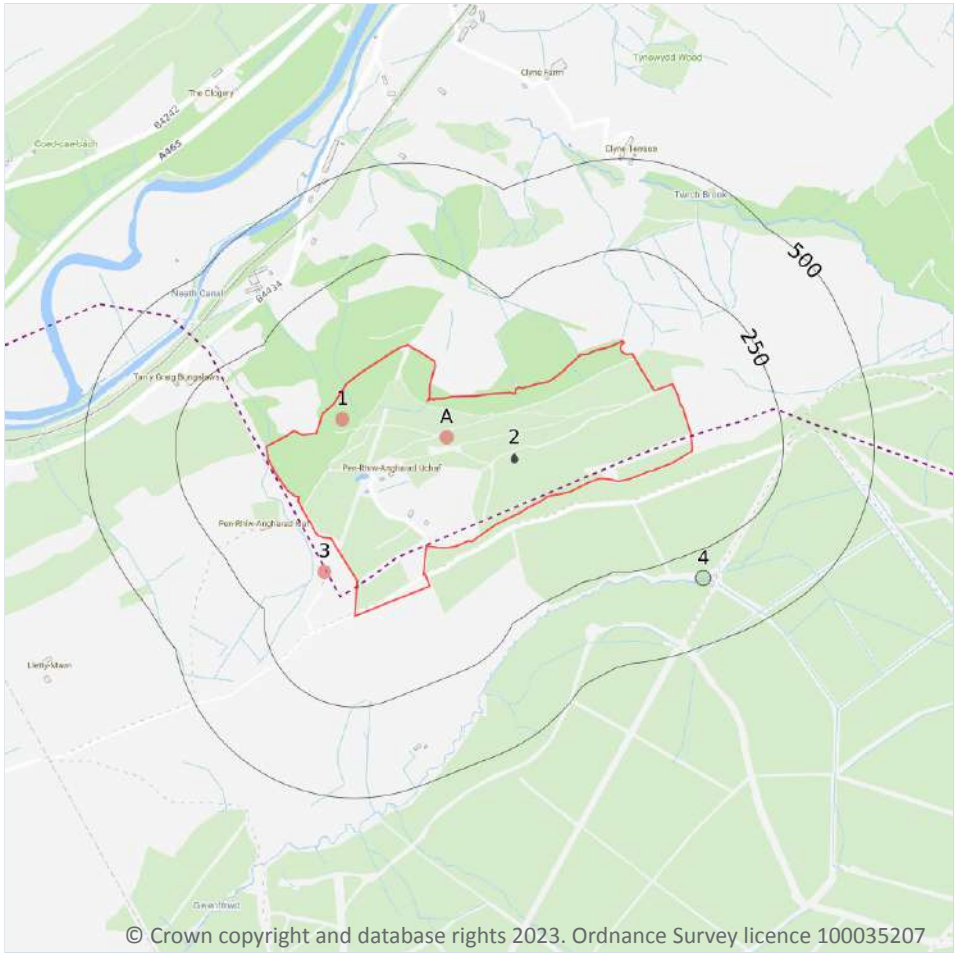
Features are displayed on the Waste and landfill map on **page 29 >**

ID	Location	Site	Reference	Category	Sub-Category	Description
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Disposing of waste exemption	On a farm	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Using waste exemption	On a farm	Incorporation of ash into soil
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Storing waste exemption	Waste Exemption - Agricultural and Non-Agricultural	Storage of waste in a secure place
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Using waste exemption	On a farm	Spreading of plant matter to confer benefit
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Using waste exemption	On a farm	Use of waste for a specified purpose
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Treating waste exemption	On a farm	Recovery of scrap metal
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Treating waste exemption	Not on a farm	Manual treatment of waste
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Treating waste exemption	On a farm	Treatment of waste aerosol cans
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Using waste exemption	On a farm	Burning of waste as a fuel in a small appliance
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Using waste exemption	Waste Exemption - Agricultural and Non-Agricultural	Use of waste in construction
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Using waste exemption	On a farm	Use of baled end-of-life tyres in construction

ID	Location	Site	Reference	Category	Sub-Category	Description
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Treating waste exemption	On a farm	Treatment of sheep dip for disposal
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Treating waste exemption	On a farm	Treatment of non-hazardous pesticide washings by carbon filtration for disposal
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Treating waste exemption	On a farm	Cleaning, washing, spraying or coating relevant waste
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Storing waste exemption	On a farm	Storage of waste in secure containers
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Treating waste exemption	On a farm	Screening and blending of waste
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Treating waste exemption	On a farm	Sorting mixed waste
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Disposing of waste exemption	On a farm	Burning waste in the open
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Treating waste exemption	On a farm	Crushing and emptying waste vehicle oil filters
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Disposing of waste exemption	On a farm	Disposal by incineration
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Treating waste exemption	On a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
A	365m NW	Ynysnedd Farm, New Road, Clyne, Castell-Nedd, SA114ET	NRW-WME014885	Using waste exemption	On a farm	Use of mulch

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

4 Current industrial land use



Site Outline

Search buffers in metres (m)

Recent industrial land uses

Gas pipelines

Licensed Discharges to controlled waters

Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m	3

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 33 >**

ID	Location	Company	Address	Activity	Category
1	**On site**	**Mine (Disused)**	**West Glamorgan, SA11**	**Unspecified Quarries Or Mines**	**Extractive Industries**
A	**On site**	**Workings (Dis)**	**West Glamorgan, SA11**	**Unspecified Quarries Or Mines**	**Extractive Industries**

ID	Location	Company	Address	Activity	Category
3	63m SW	Gas Distribution Station	West Glamorgan, SA11	Gas Features	Infrastructure and Facilities

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	**1**

High pressure underground gas transmission pipelines.

Features are displayed on the Current industrial land use map on **page 33 >**

ID	Location	Pipe Name	Details	
A	**On site**	**DOWLAIS TO DYFFRYN CLYDACH**	**Pipe Number: -** **Pipeline Safety Regulations Number: -** **Ownership: National Grid** **Maximum Operating Pressure (Bar): -**	**Pipeline Diameter (mm): 600** **Wall Thickness (mm): -** **Year of commission: Not specified** **Abandonment Status: Not abandoned**

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	**0**

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

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	0

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

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	0

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

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

4.10 Licensed industrial activities (Part A(1))

Records within 500m	0

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

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

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

Records within 500m	0

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

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	0

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

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

4.13 Licensed Discharges to controlled waters

Records within 500m	1

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 33 >**

ID	Location	Address	Details	
2	**On site**	**ESTATES FARM, FAIRYLAND ROAD, TONNA, NEATH, SA11 3QE**	**Effluent Type: UNSPECIFIED** **Permit Number: BP0005201** **Permit Version: 1** **Receiving Water: TO LAND**	**Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995** **Issue date: 25/11/1985** **Effective Date: 25/11/1985** **Revocation Date: 31/10/1996**

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

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0

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

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

4.15 Pollutant release to public sewer

Records within 500m	0

Discharges of Special Category Effluents to the public sewer.

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

4.16 List 1 Dangerous Substances

Records within 500m	0

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

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

4.17 List 2 Dangerous Substances

Records within 500m	0

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

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

4.18 Pollution Incidents (EA/NRW)

Records within 500m	1

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 33 >**

ID	Location	Details	
4	326m SE	Incident Date: 24/03/2003 Incident Identification: 145553 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 3 (Minor) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

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

4.19 Pollution inventory substances

Records within 500m	0

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

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

4.20 Pollution inventory waste transfers

Records within 500m	0

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

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

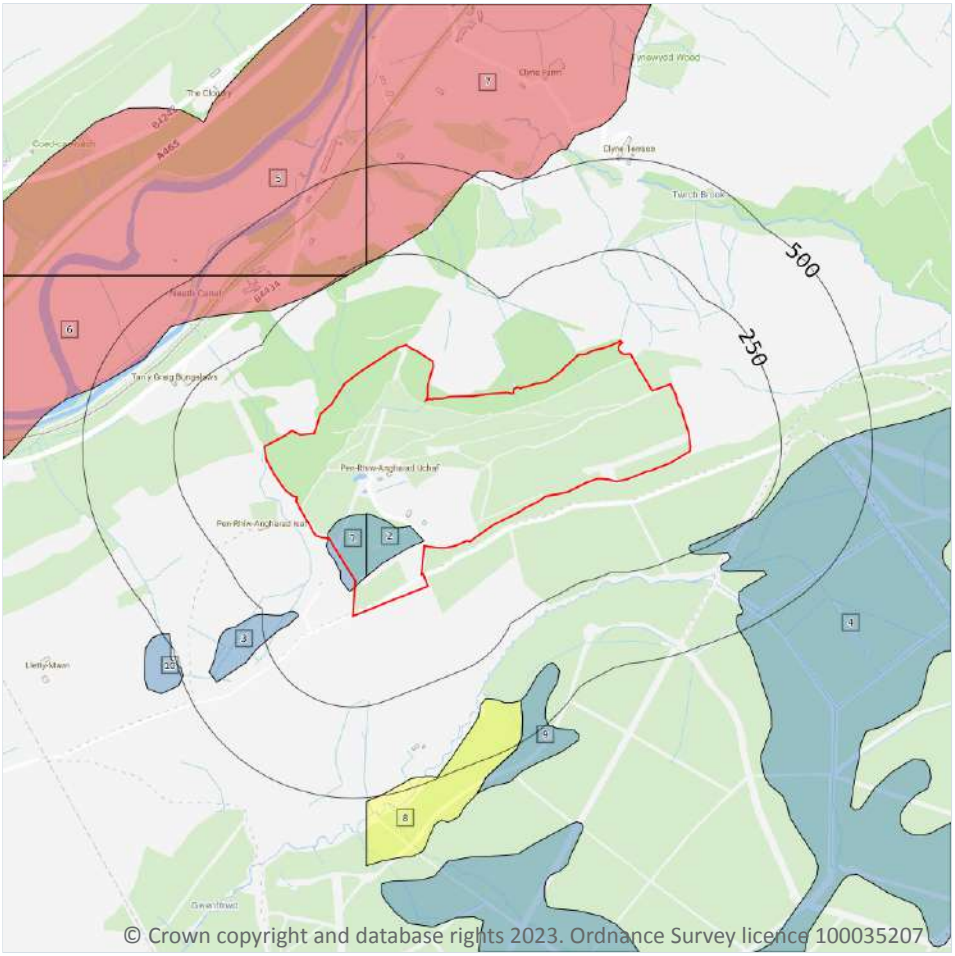
4.21 Pollution inventory radioactive waste

Records within 500m	0

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

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

5 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

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

5.1 Superficial aquifer

Records within 500m	10

Aquifer status of groundwater held within superficial geology.

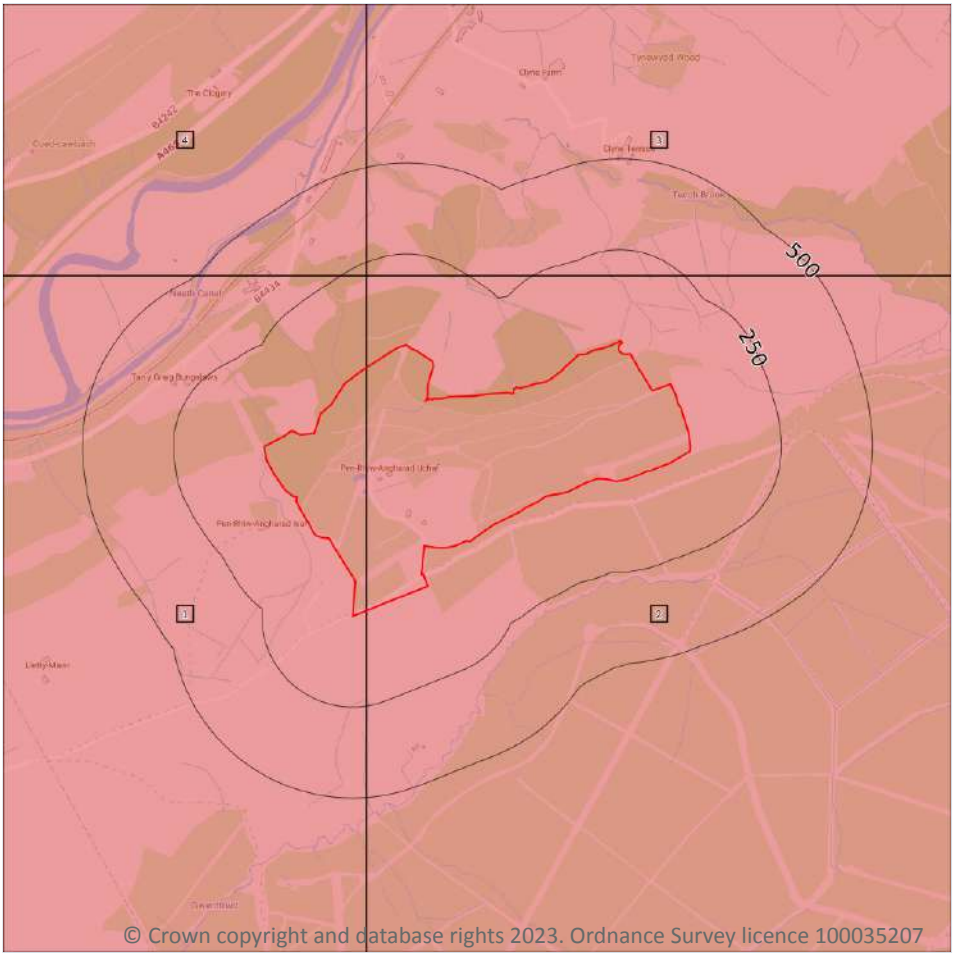
Features are displayed on the Hydrogeology map on **page 39 >**

ID	Location	Designation	Description
1	**On site**	**Unproductive**	**These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow**
2	**On site**	**Unproductive**	**These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow**
3	149m SW	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

ID	Location	Designation	Description
4	229m E	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
5	241m NW	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	242m NW	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
7	244m NW	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
8	348m S	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
9	388m S	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
10	484m SW	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

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

Bedrock aquifer



Site Outline

Search buffers in metres (m)

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

5.2 Bedrock aquifer

Records within 500m	4

Aquifer status of groundwater held within bedrock geology.

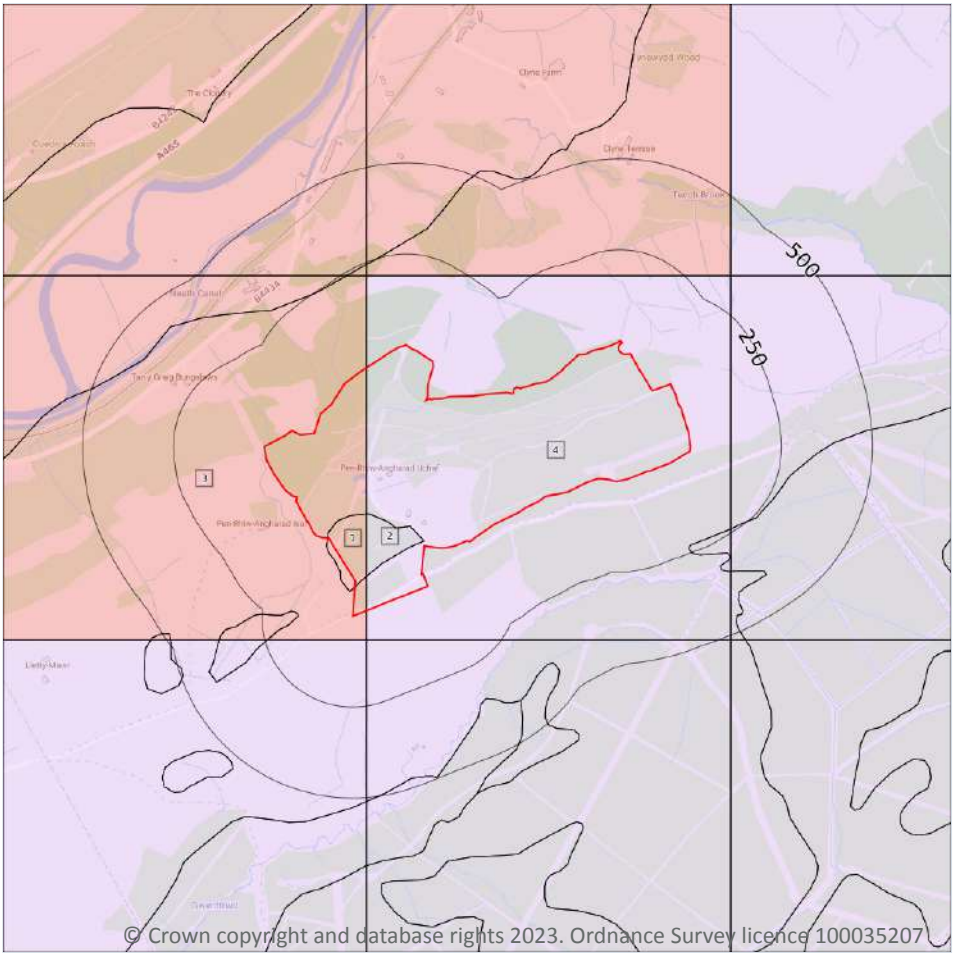
Features are displayed on the Bedrock aquifer map on **page 41 >**

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	179m 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
4	216m NW	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	4

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

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

Features are displayed on the Groundwater vulnerability map on **page 43 >**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Unproductive Superficial Aquifer	Leaching class: High Infiltration value: 40-70% Dilution value: >550mm/year	Vulnerability: Unproductive Aquifer type: Unproductive Thickness: 3-10m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
2	On site	Summary Classification: Secondary bedrock aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Unproductive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: >550mm/year	Vulnerability: Unproductive Aquifer type: Unproductive Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures
3	On site	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: 40-70% Dilution value: >550mm/year	Vulnerability: - Aquifer type: - Thickness: 3-10m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
4	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: No Data	Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures

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

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0

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

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

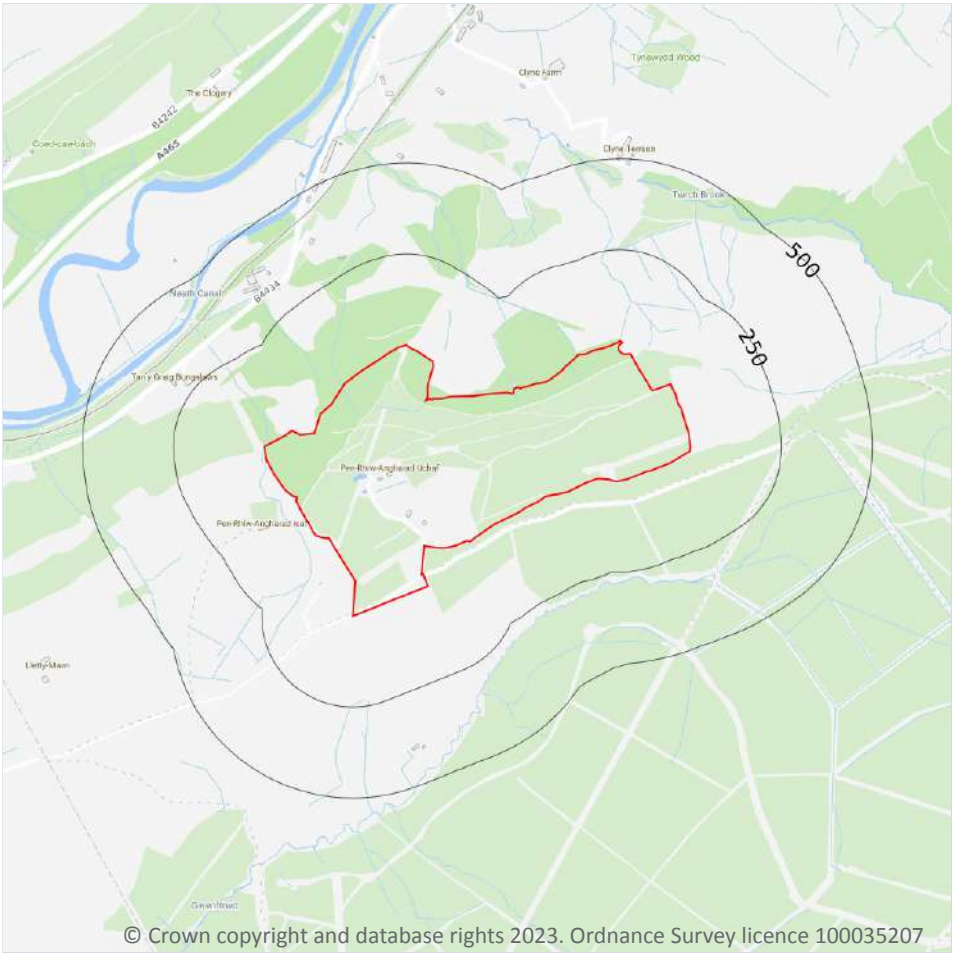
5.5 Groundwater vulnerability- local information

Records on site	0

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

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

Abstractions and Source Protection Zones



Site Outline

Search buffers in metres (m)

- Source Protection Zone 1 — Inner catchment
- Source Protection Zone 2 — Outer catchment
- Source Protection Zone 3 — Total catchment
- Source Protection Zone 4 — Zone of Special Interest
- Source Protection Zone 1c — Inner catchment - confined aquifer
- Source Protection Zone 2c — Outer catchment - confined aquifer
- Source Protection Zone 3c — Total catchment - confined aquifer
- Drinking water abstraction licences
- 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	4

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 46 >**

ID	Location	Details	
-	1722m S	Status: Active Licence No: WA/058/0061/0058 Details: Pollution Remediation - Very Low Direct Source: Brithdir Member Aquifer Point: - Data Type: Point Name: - Easting: 279964 Northing: 197343	Annual Volume (m^3): 0 Max Daily Volume (m^3): - Original Application No: - Original Start Date: 02/06/2021 Expiry Date: 31/03/2029 Issue No: - Version Start Date: - Version End Date: -
-	1836m S	Status: Active Licence No: WA/058/0061/0058 Details: Pollution Remediation - Very Low Direct Source: Brithdir Member Aquifer Point: - Data Type: Point Name: - Easting: 280027 Northing: 197230	Annual Volume (m^3): 0 Max Daily Volume (m^3): - Original Application No: - Original Start Date: 02/06/2021 Expiry Date: 31/03/2029 Issue No: - Version Start Date: - Version End Date: -
-	1939m N	Status: Active Licence No: WA/058/0072/001 Details: Pollution Remediation - Very Low Direct Source: Groundwater - Coal Measures Point: - Data Type: Point Name: - Easting: 280856 Northing: 201754	Annual Volume (m^3): 0 Max Daily Volume (m^3): - Original Application No: - Original Start Date: 19/04/2017 Expiry Date: 31/03/2029 Issue No: - Version Start Date: - Version End Date: -
-	1939m N	Status: Historical Licence No: WA/058/0072/001 Details: Pollution Remediation Direct Source: EAW Groundwater Point: MINE ADIT AT YNYSARWED Data Type: Point Name: The Coal Authority Easting: 280856 Northing: 201754	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 04/11/2009 Expiry Date: 31/03/2017 Issue No: 1 Version Start Date: 04/11/2009 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m	**0**

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

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

5.8 Potable abstractions

Records within 2000m	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.

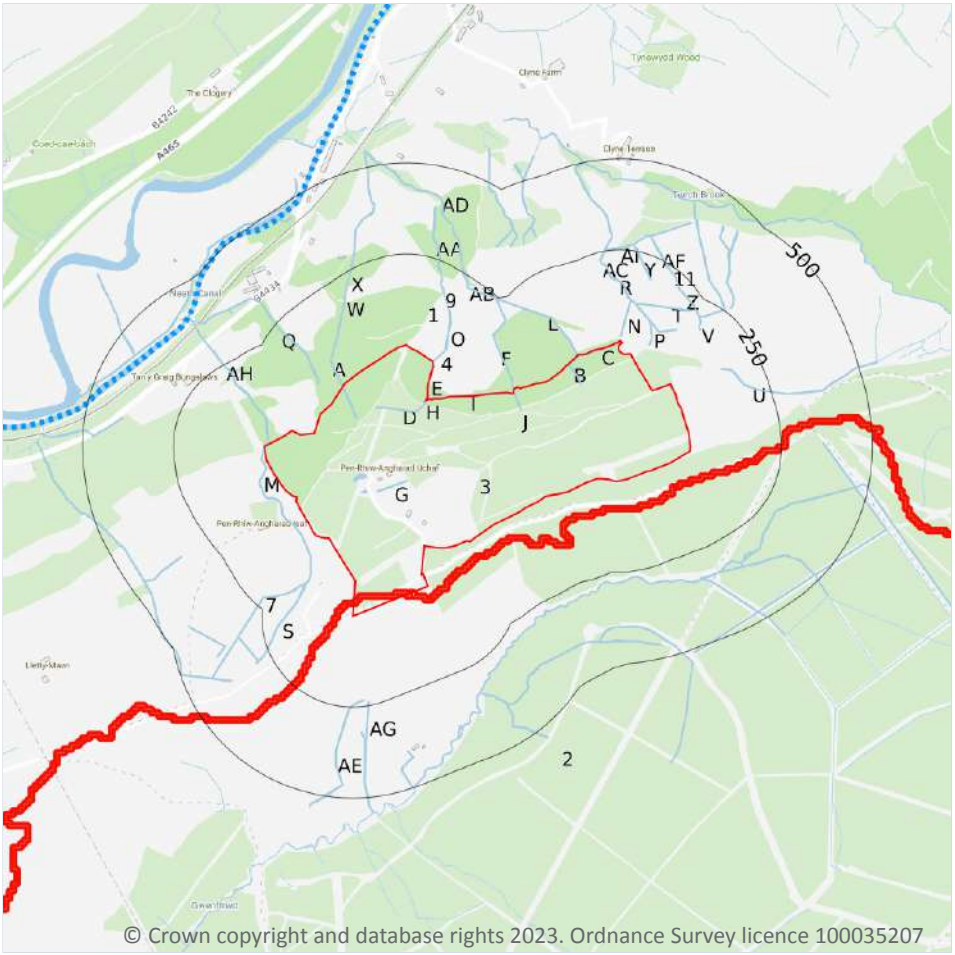
5.10 Source Protection Zones (confined aquifer)

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



Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	52

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 49 >**

ID	Location	Type of water feature	Ground level	Permanence	Name
A	**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
B	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	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)	-
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.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
H	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
J	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
J	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
L	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
4	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	**-**
M	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
N	11m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
O	44m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
P	56m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Q	61m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
N	96m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
P	96m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
N	110m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
N	110m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
R	114m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
7	119m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
S	119m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
N	123m NE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
T	125m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
9	142m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
U	143m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
V	168m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
V	178m NE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
W	183m NW	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
V	185m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
X	187m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Y	187m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
V	201m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Z	201m NE	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
AA	213m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AB	220m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
AB	220m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AC	221m NE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
AC	225m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AD	228m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AE	233m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
11	236m NE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
AF	237m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AG	238m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AH	240m W	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
AI	249m NE	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	29

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 49 >**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	2

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 49 >**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	**On site**	**River WB catchment**	**Neath - conf with Nedd Fechan and Mellte to TL**	**GB110058032430**	**Neath**	**Tawe to Cadoxton**
2	**On site**	**River WB catchment**	**Pelenna - headwaters to confluence with Afan**	**GB110058026140**	**Afan**	**Tawe to Cadoxton**

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

6.4 WFD Surface water bodies

Records identified	2

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 49 >**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	549m W	River	Neath - conf with Nedd Fechan and Mellte to TL	GB110058032430	Good	Good	Good	2016
-	1007m SW	River	Pelenna - headwaters to confluence with Afan	GB110058026140	Poor	Good	Poor	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 49 >**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
3	**On site**	**Swansea Carboniferous Coal Measures**	**GB41002G201000**	**Poor**	**Poor**	**Good**	**2017**

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

7 River and coastal flooding

7.1 Risk of flooding from rivers and the sea

Records within 50m	0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

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

7.2 Historical Flood Events

Records within 250m	0

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

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

7.3 Flood Defences

Records within 250m	0

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

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

7.4 Areas Benefiting from Flood Defences

Records within 250m	0

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

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

7.5 Flood Storage Areas

Records within 250m	0

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

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

River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m	0

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

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

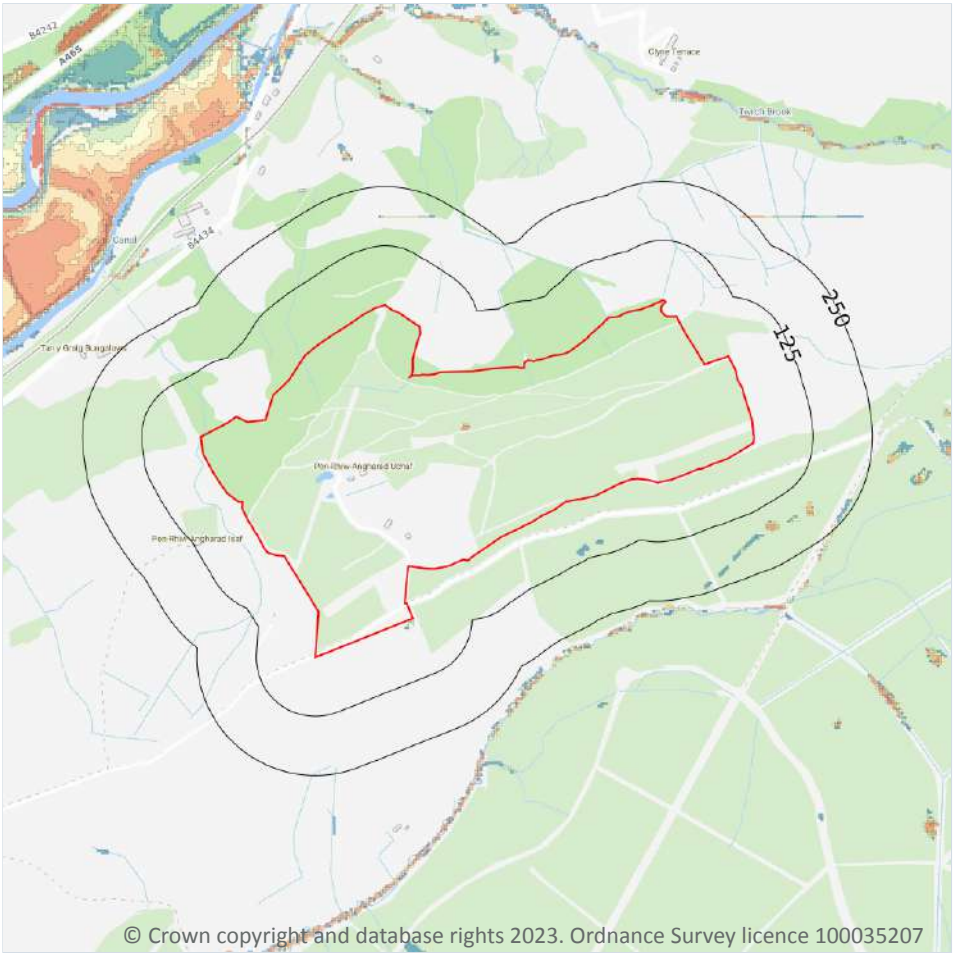
7.7 Flood Zone 3

Records within 50m	0

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

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

8 Surface water flooding



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, 0.3m - 1.0m**
Highest risk within 50m	**1 in 30 year, 0.3m - 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 59 >**

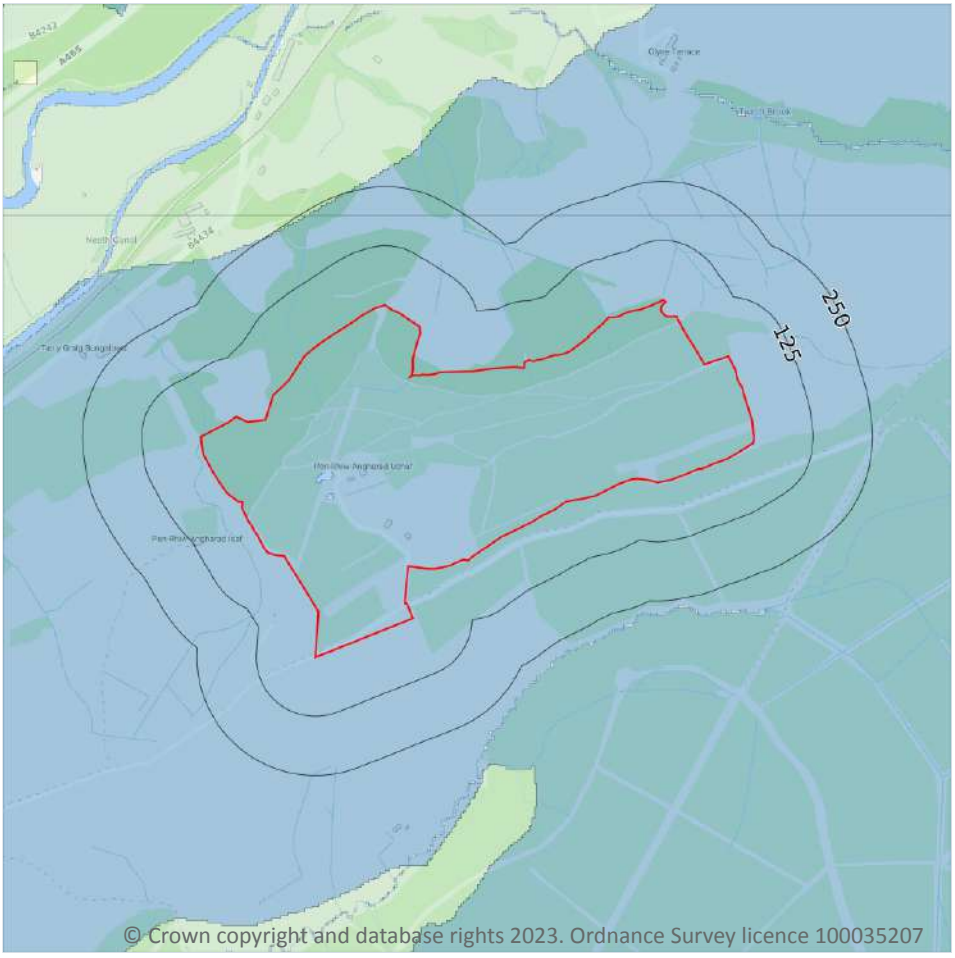
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

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	Between 0.3m and 1.0m
1 in 250 year	Between 0.3m and 1.0m
1 in 100 year	Between 0.3m and 1.0m
1 in 30 year	Between 0.3m and 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

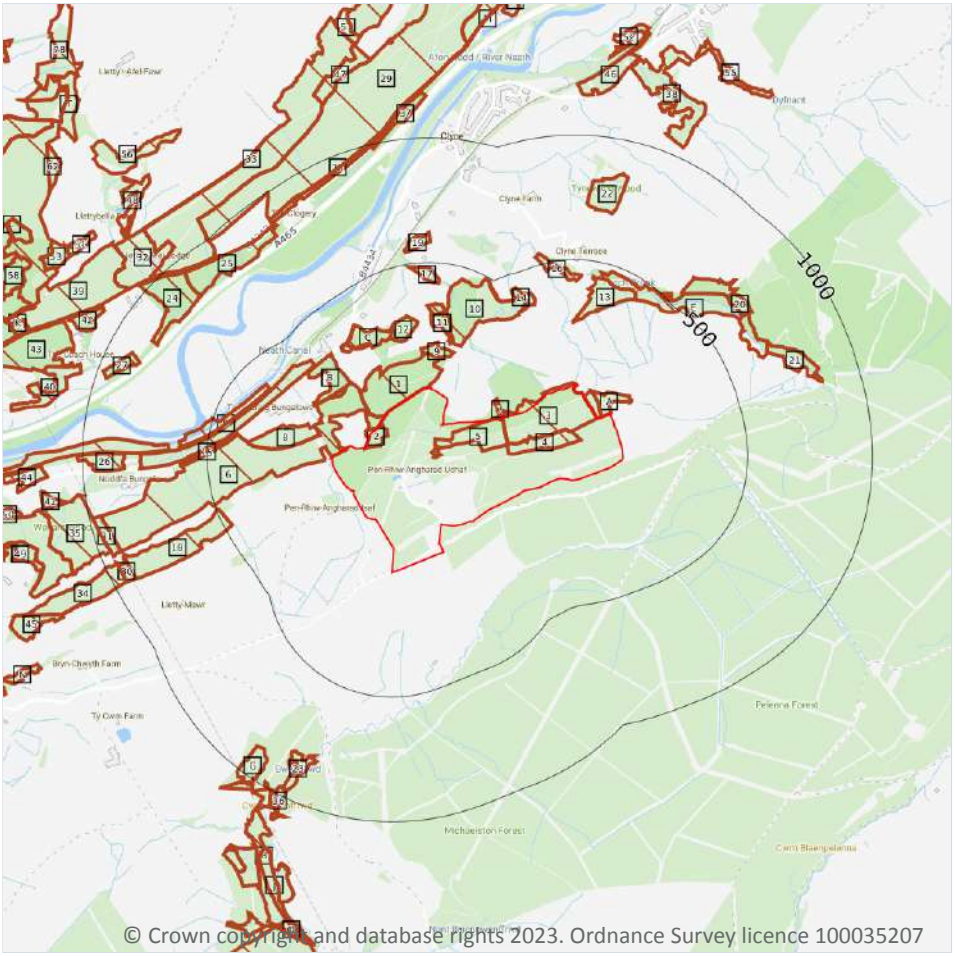
Highest risk on site	**Negligible**
Highest risk within 50m	**Negligible**

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 61 >**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



Site Outline

Search buffers in metres (m)

Designated Ancient Woodland

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	0

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.

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	138

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 62 >**

ID	Location	Name	Woodland Type
1	**On site**	**Unknown**	**Ancient Semi Natural Woodland**
2	**On site**	**Unknown**	**Plantation on Ancient Woodland Site**
3	**On site**	**Unknown**	**Plantation on Ancient Woodland Site**
4	**On site**	**Unknown**	**Plantation on Ancient Woodland Site**
5	**On site**	**Unknown**	**Plantation on Ancient Woodland Site**
6	**On site**	**Unknown**	**Restored Ancient Woodland Site**
A	**On site**	**Unknown**	**Ancient Semi Natural Woodland**
A	**On site**	**Unknown**	**Ancient Semi Natural Woodland**
7	4m NE	Unknown	Plantation on Ancient Woodland Site
8	99m W	Unknown	Restored Ancient Woodland Site
9	126m N	Unknown	Ancient Semi Natural Woodland
B	189m NW	Unknown	Plantation on Ancient Woodland Site
B	189m NW	Unknown	Plantation on Ancient Woodland Site
10	194m N	Unknown	Ancient Semi Natural Woodland
11	208m N	Unknown	Restored Ancient Woodland Site
12	208m NW	Unknown	Ancient Semi Natural Woodland

ID	Location	Name	Woodland Type
C	209m NW	Unknown	Ancient Semi Natural Woodland
13	250m NE	Unknown	Ancient Semi Natural Woodland
C	262m NW	Unknown	Ancient Semi Natural Woodland
D	324m W	Unknown	Restored Ancient Woodland Site
14	345m N	Unknown	Ancient Semi Natural Woodland
D	369m W	Unknown	Ancient Semi Natural Woodland
15	388m W	Unknown	Restored Ancient Woodland Site
16	415m NE	Unknown	Ancient Semi Natural Woodland
E	417m NE	Unknown	Ancient Semi Natural Woodland
17	419m N	Unknown	Ancient Semi Natural Woodland
18	469m W	Unknown	Restored Ancient Woodland Site
19	549m N	Unknown	Ancient Semi Natural Woodland
E	559m NE	Unknown	Ancient Semi Natural Woodland
F	653m W	Unknown	Restored Ancient Woodland Site
20	655m NE	Unknown	Plantation on Ancient Woodland Site
21	676m E	Unknown	Plantation on Ancient Woodland Site
22	701m NE	Unknown	Ancient Semi Natural Woodland
23	796m SW	Unknown	Plantation on Ancient Woodland Site
24	815m NW	Unknown	Plantation on Ancient Woodland Site
25	816m NW	Unknown	Restored Ancient Woodland Site
26	831m W	Unknown	Restored Ancient Woodland Site
27	858m W	Unknown	Restored Ancient Woodland Site
G	872m SW	Unknown	Plantation on Ancient Woodland Site
28	886m NW	Unknown	Plantation on Ancient Woodland Site
29	903m NW	Unknown	Plantation on Ancient Woodland Site
30	910m W	Unknown	Ancient Semi Natural Woodland
31	916m W	Unknown	Ancient Semi Natural Woodland
32	925m NW	Unknown	Restored Ancient Woodland Site

ID	Location	Name	Woodland Type
33	928m NW	Unknown	Restored Ancient Woodland Site
34	949m W	Unknown	Ancient Semi Natural Woodland
35	956m W	Unknown	Ancient Semi Natural Woodland
36	956m SW	Unknown	Plantation on Ancient Woodland Site
H	980m SW	Unknown	Plantation on Ancient Woodland Site
37	981m N	Unknown	Restored Ancient Woodland Site
G	1017m SW	Unknown	Plantation on Ancient Woodland Site
38	1044m NE	Unknown	Restored Ancient Woodland Site
39	1055m NW	Unknown	Plantation on Ancient Woodland Site
40	1060m W	Unknown	Ancient Semi Natural Woodland
41	1074m W	Unknown	Plantation on Ancient Woodland Site
42	1080m W	Unknown	Ancient Semi Natural Woodland
43	1099m W	Unknown	Restored Ancient Woodland Site
I	1122m W	Unknown	Restored Ancient Woodland Site
44	1143m W	Unknown	Restored Ancient Woodland Site
45	1147m W	Unknown	Restored Ancient Woodland Site
46	1161m N	Unknown	Ancient Semi Natural Woodland
47	1210m N	Unknown	Ancient Woodland Site of Unknown Category
J	1212m SW	Unknown	Plantation on Ancient Woodland Site
48	1220m NW	Unknown	Ancient Semi Natural Woodland
H	1228m SW	Unknown	Plantation on Ancient Woodland Site
49	1229m W	Unknown	Restored Ancient Woodland Site
50	1235m W	Unknown	Restored Ancient Woodland Site
J	1249m SW	Unknown	Ancient Semi Natural Woodland
H	1278m SW	Unknown	Plantation on Ancient Woodland Site
51	1292m NW	Unknown	Ancient Semi Natural Woodland
K	1314m W	Unknown	Restored Ancient Woodland Site
52	1320m N	Unknown	Ancient Semi Natural Woodland

ID	Location	Name	Woodland Type
53	1323m NW	Unknown	Restored Ancient Woodland Site
L	1326m NW	Unknown	Plantation on Ancient Woodland Site
K	1344m W	Unknown	Restored Ancient Woodland Site
54	1353m W	Unknown	Plantation on Ancient Woodland Site
55	1353m NE	Unknown	Ancient Semi Natural Woodland
M	1385m N	Unknown	Restored Ancient Woodland Site
M	1387m N	Unknown	Restored Ancient Woodland Site
56	1388m NW	Unknown	Ancient Semi Natural Woodland
-	1397m W	Unknown	Plantation on Ancient Woodland Site
57	1404m N	Unknown	Ancient Semi Natural Woodland
58	1417m W	Unknown	Ancient Semi Natural Woodland
N	1422m SW	Unknown	Ancient Semi Natural Woodland
59	1432m N	Unknown	Ancient Semi Natural Woodland
-	1450m W	Unknown	Ancient Woodland Site of Unknown Category
-	1453m W	Unknown	Restored Ancient Woodland Site
O	1455m S	Unknown	Plantation on Ancient Woodland Site
O	1481m SW	Unknown	Plantation on Ancient Woodland Site
L	1482m NW	Unknown	Ancient Semi Natural Woodland
60	1497m SW	Unknown	Plantation on Ancient Woodland Site
O	1497m SW	Unknown	Plantation on Ancient Woodland Site
P	1501m N	Unknown	Ancient Semi Natural Woodland
-	1518m W	Unknown	Restored Ancient Woodland Site
61	1529m W	Unknown	Plantation on Ancient Woodland Site
62	1545m NW	Unknown	Plantation on Ancient Woodland Site
-	1549m W	Unknown	Restored Ancient Woodland Site
-	1565m S	Unknown	Plantation on Ancient Woodland Site
N	1566m SW	Unknown	Restored Ancient Woodland Site
-	1568m W	Unknown	Ancient Semi Natural Woodland

ID	Location	Name	Woodland Type
-	1577m N	Unknown	Plantation on Ancient Woodland Site
-	1585m W	Unknown	Restored Ancient Woodland Site
-	1590m W	Unknown	Ancient Semi Natural Woodland
-	1590m W	Unknown	Restored Ancient Woodland Site
-	1610m SW	Unknown	Plantation on Ancient Woodland Site
-	1612m W	Unknown	Plantation on Ancient Woodland Site
-	1624m NE	Unknown	Ancient Semi Natural Woodland
T	1634m NW	Unknown	Restored Ancient Woodland Site
-	1664m N	Unknown	Ancient Semi Natural Woodland
-	1666m N	Unknown	Ancient Semi Natural Woodland
-	1670m S	Unknown	Plantation on Ancient Woodland Site
-	1672m W	Unknown	Restored Ancient Woodland Site
70	1683m NW	Unknown	Ancient Semi Natural Woodland
-	1687m NW	Unknown	Ancient Semi Natural Woodland
-	1692m W	Unknown	Ancient Semi Natural Woodland
-	1705m W	Unknown	Restored Ancient Woodland Site
-	1726m SW	Unknown	Restored Ancient Woodland Site
T	1727m NW	Unknown	Restored Ancient Woodland Site
-	1735m W	Unknown	Restored Ancient Woodland Site
-	1742m W	Unknown	Restored Ancient Woodland Site
-	1752m N	Unknown	Plantation on Ancient Woodland Site
-	1761m W	Unknown	Plantation on Ancient Woodland Site
-	1768m W	Unknown	Ancient Semi Natural Woodland
T	1781m NW	Unknown	Ancient Semi Natural Woodland
-	1787m W	Unknown	Restored Ancient Woodland Site
-	1790m S	Unknown	Plantation on Ancient Woodland Site
-	1798m N	Unknown	Plantation on Ancient Woodland Site
-	1800m NW	Unknown	Ancient Semi Natural Woodland

ID	Location	Name	Woodland Type
78	1834m NW	Unknown	Restored Ancient Woodland Site
-	1843m W	Unknown	Plantation on Ancient Woodland Site
-	1872m W	Unknown	Restored Ancient Woodland Site
-	1876m W	Unknown	Plantation on Ancient Woodland Site
-	1876m NW	Unknown	Plantation on Ancient Woodland Site
-	1893m N	Unknown	Plantation on Ancient Woodland Site
-	1935m S	Unknown	Plantation on Ancient Woodland Site
-	1963m NW	Unknown	Ancient Semi Natural Woodland
W	1991m NW	Unknown	Restored Ancient Woodland Site
W	1993m NW	Unknown	Restored Ancient Woodland Site

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

10.8 Biosphere Reserves

Records within 2000m	0

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

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

10.9 Forest Parks

Records within 2000m	0

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

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

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

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

10.11 Green Belt

Records within 2000m	0

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

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

10.12 Proposed Ramsar sites

Records within 2000m	0

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

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

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

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

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

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

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

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

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

Records within 2000m	0

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

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

SSSI Impact Zones and Units

10.17 SSSI Impact Risk Zones

Records on site	0

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

This data is sourced from Natural England.

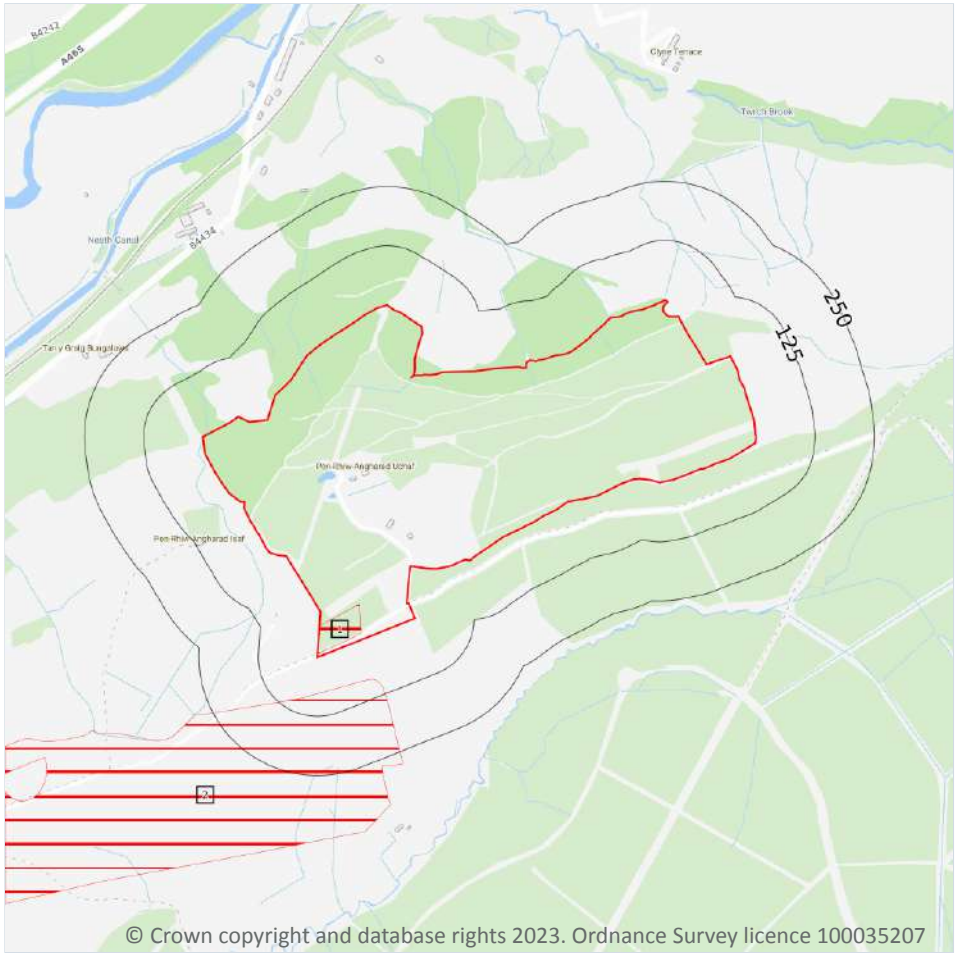
10.18 SSSI Units

Records within 2000m	0

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

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

11 Visual and cultural designations



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	0

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

This data is sourced from 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	2

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 73 >**

ID	Location	Ancient monument name	Reference number
1	**On site**	**Pen-Rhiw-Angharad Round Cairns**	**2265**
2	74m SW	Blaen-Cwmbach Camp	2886

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

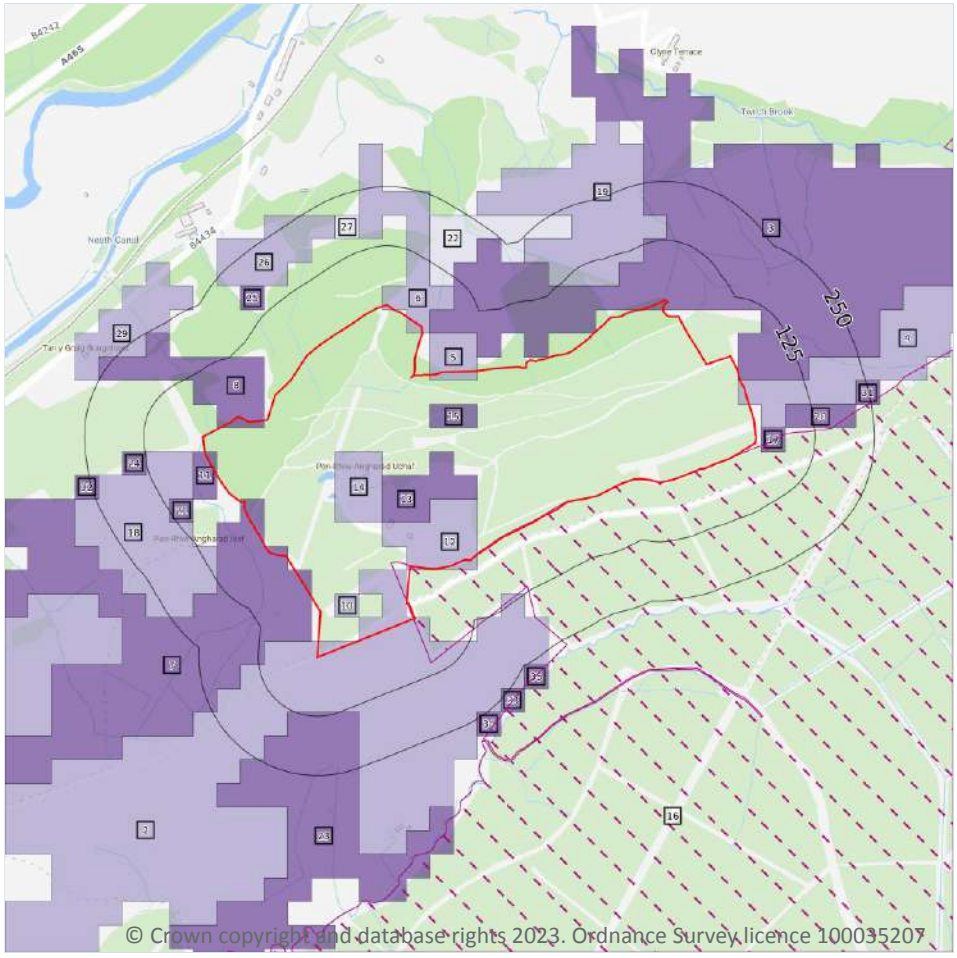
11.7 Registered Parks and Gardens

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	30

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 76 >**

ID	Location	Classification	Description
2	**On site**	**Grade 4**	**Poor quality agricultural land**
3	**On site**	**Grade 5**	**Very poor quality agricultural land**
4	**On site**	**Grade 4**	**Poor quality agricultural land**

ID	Location	Classification	Description
5	**On site**	**Grade 4**	**Poor quality agricultural land**
6	**On site**	**Grade 4**	**Poor quality agricultural land**
7	**On site**	**Grade 5**	**Very poor quality agricultural land**
8	**On site**	**Grade 5**	**Very poor quality agricultural land**
10	**On site**	**Grade 4**	**Poor quality agricultural land**
11	**On site**	**Grade 5**	**Very poor quality agricultural land**
12	**On site**	**Grade 4**	**Poor quality agricultural land**
13	**On site**	**Grade 5**	**Very poor quality agricultural land**
14	**On site**	**Grade 4**	**Poor quality agricultural land**
15	**On site**	**Grade 5**	**Very poor quality agricultural land**
17	11m E	Grade 5	Very poor quality agricultural land
18	25m W	Grade 4	Poor quality agricultural land
19	60m NE	Grade 4	Poor quality agricultural land
20	63m E	Grade 5	Very poor quality agricultural land
21	69m W	Grade 5	Very poor quality agricultural land
22	81m N	Grade 3b	Moderate quality agricultural land
23	116m SW	Grade 5	Very poor quality agricultural land
24	124m W	Grade 5	Very poor quality agricultural land
25	132m NW	Grade 5	Very poor quality agricultural land
26	141m NW	Grade 4	Poor quality agricultural land
27	152m NW	Grade 3b	Moderate quality agricultural land
29	208m W	Grade 4	Poor quality agricultural land
31	218m E	Grade 5	Very poor quality agricultural land
32	230m W	Grade 5	Very poor quality agricultural land
33	234m S	Grade 5	Very poor quality agricultural land
34	238m S	Grade 5	Very poor quality agricultural land
35	248m S	Grade 5	Very 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 76 >**

ID	Location	Name	Classification	Other relevant legislation
16	**On site**	-	**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.

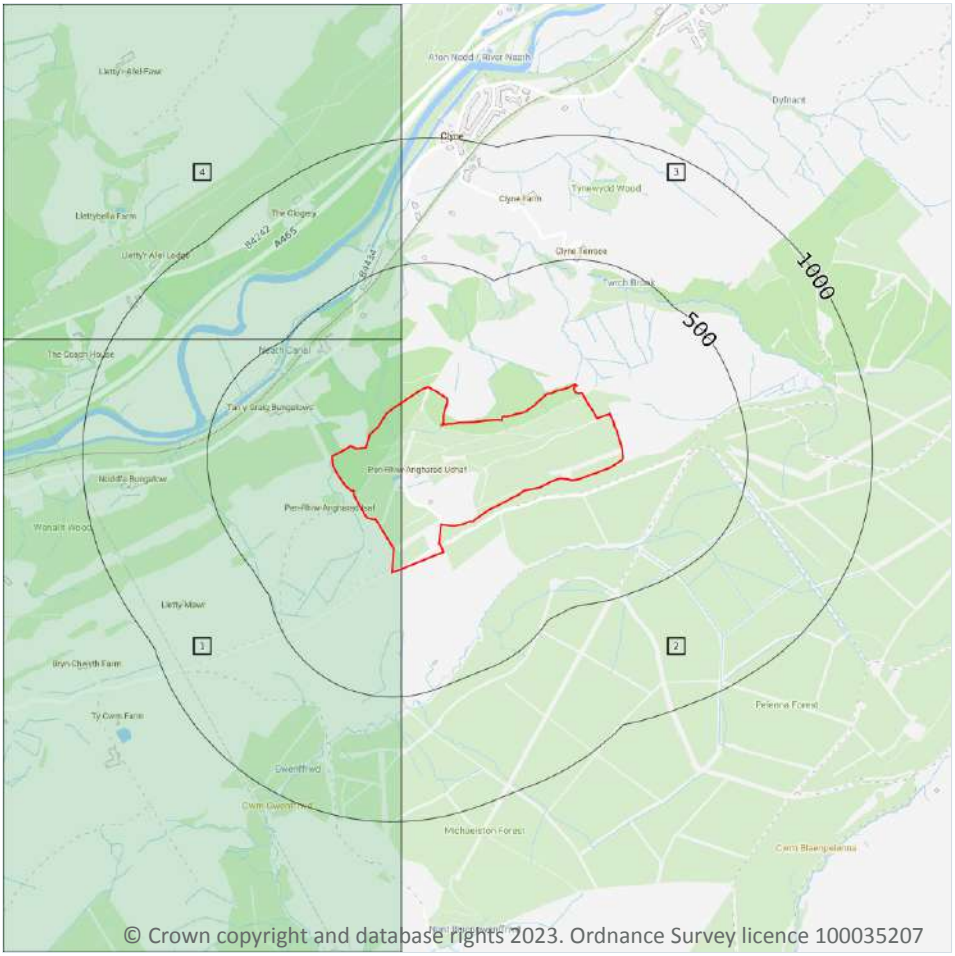
13.4 Limestone Pavement Orders

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



Site Outline

Search buffers in metres (m)

Full coverage

Partial coverage

No coverage

14.1 10k Availability

Records within 500m	4

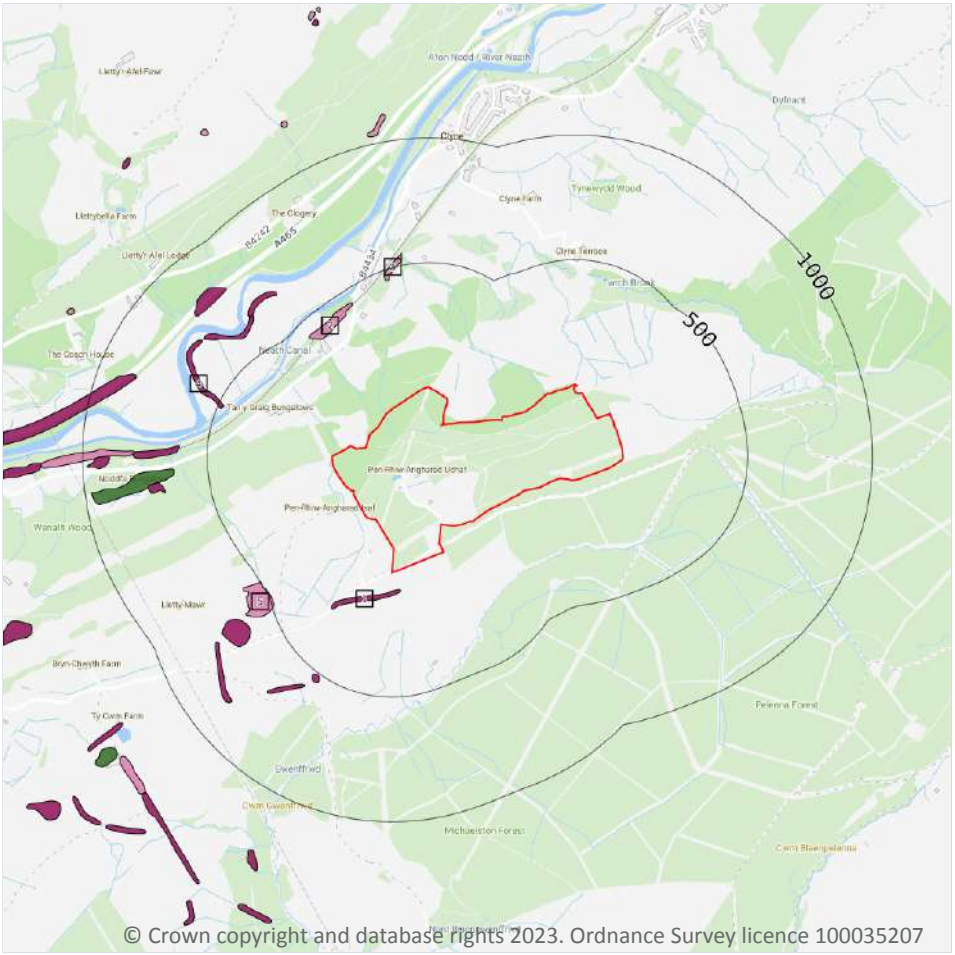
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 80 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**Full**	**SS79NE**
2	**On site**	**No coverage**	**No coverage**	**No coverage**	**No coverage**	**NoCov**
3	179m NE	No coverage	No coverage	No coverage	No coverage	NoCov
4	216m NW	Full	Full	Full	Full	SN70SE

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Artificial and made ground



Site Outline

Search buffers in metres (m)

- Reclaimed ground
- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

14.2 Artificial and made ground (10k)

Records within 500m	5

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

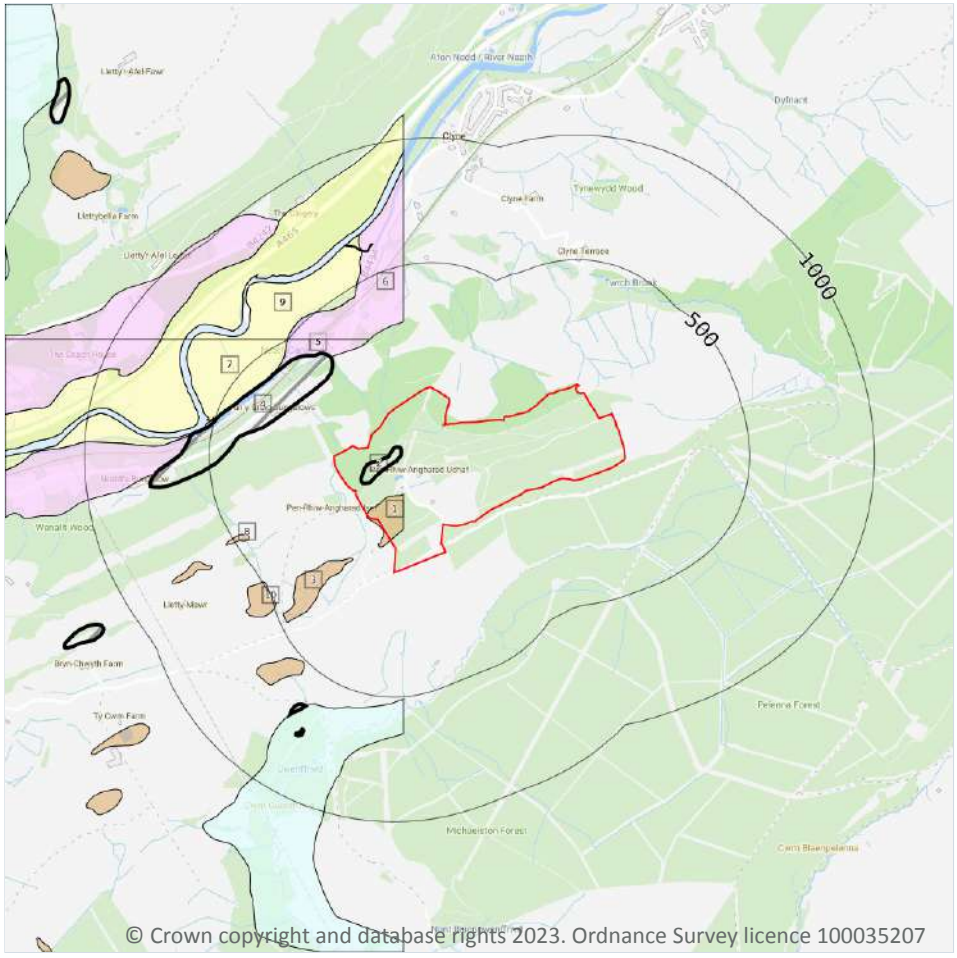
Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 82 >**

ID	Location	LEX Code	Description	Rock description
1	71m SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	393m NW	WGR-VOID	Worked Ground (Undivided)	Void
3	458m NW	WGR-VOID	Worked Ground (Undivided)	Void
4	479m W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

ID	Location	LEX Code	Description	Rock description
5	490m SW	WGR-VOID	Worked Ground (Undivided)	Void

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

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

14.3 Superficial geology (10k)

Records within 500m **8**

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 84 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**PEAT-P**	**Peat - Peat**	**Peat**
3	168m SW	PEAT-P	Peat - Peat	Peat
5	282m NW	GFDUD-XSV	Glaciofluvial Deposits, Devensian - Sand And Gravel	Sand And Gravel
6	282m NW	GFDUD-XSV	Glaciofluvial Deposits, Devensian - Sand And Gravel	Sand And Gravel

ID	Location	LEX Code	Description	Rock description
7	406m NW	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
8	440m W	PEAT-P	Peat - Peat	Peat
9	462m NW	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
10	489m SW	PEAT-P	Peat - Peat	Peat

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m	**2**

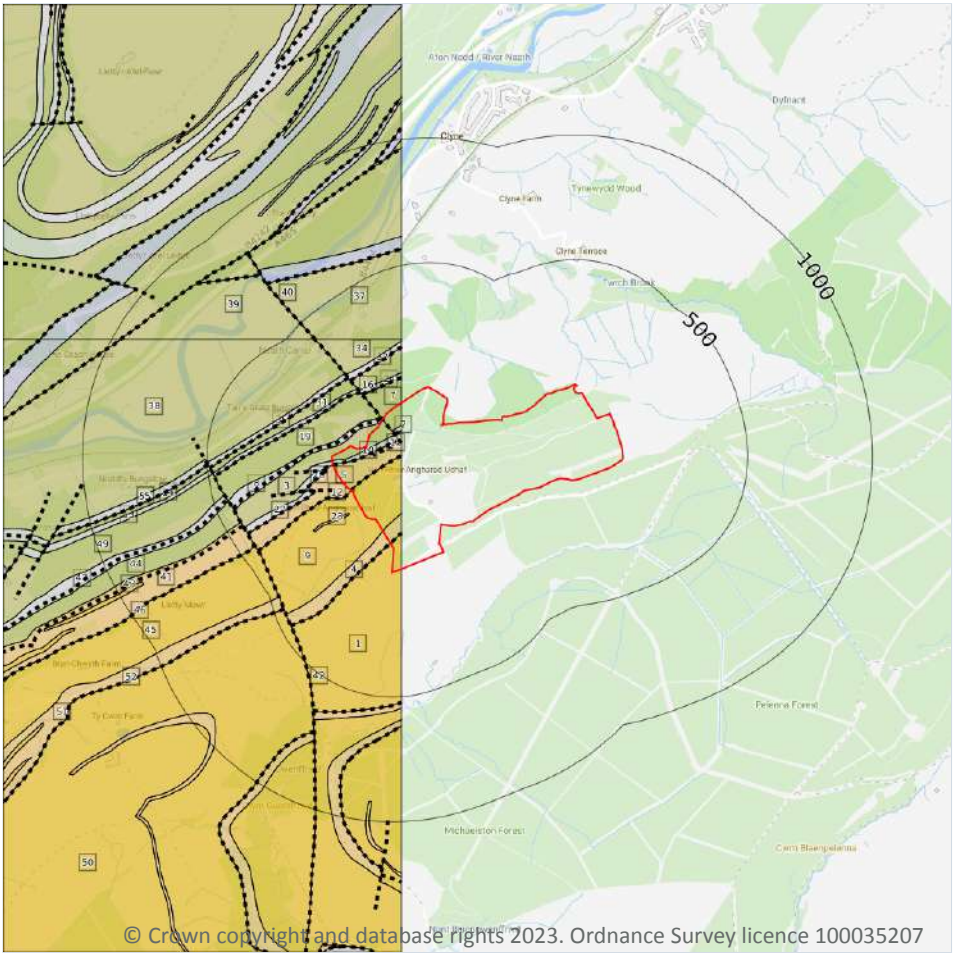
Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 84 >**

ID	Location	LEX Code	Description	Rock description
2	**On site**	**SLIP-UKNOWN**	**Landslide Deposits**	**Unknown/unclassified Entry**
4	261m W	SLIP-UKNOWN	Landslide Deposits	Unknown/unclassified Entry

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (10k)

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

14.5 Bedrock geology (10k)

Records within 500m	34

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 86 >**

ID	Location	LEX Code	Description	Rock age
1	On site	H-SDST	Hughes Member - Sandstone	Westphalian D Sub-age
2	On site	BD-MDSS	Brithdir Member - Mudstone, Siltstone And Sandstone	Westphalian D Sub-age
3	On site	BD-SDST	Brithdir Member - Sandstone	Westphalian D Sub-age
4	On site	H-MDSS	Hughes Member - Mudstone, Siltstone And Sandstone	Westphalian D Sub-age

ID	Location	LEX Code	Description	Rock age
5	**On site**	**H-MDSS**	**Hughes Member - Mudstone, Siltstone And Sandstone**	**Westphalian D Sub-age**
6	**On site**	**BD-SDST**	**Brithdir Member - Sandstone**	**Westphalian D Sub-age**
7	**On site**	**BD-SDST**	**Brithdir Member - Sandstone**	**Westphalian D Sub-age**
8	**On site**	**BD-MDSS**	**Brithdir Member - Mudstone, Siltstone And Sandstone**	**Westphalian D Sub-age**
9	**On site**	**H-SDST**	**Hughes Member - Sandstone**	**Westphalian D Sub-age**
10	**On site**	**BD-MDSS**	**Brithdir Member - Mudstone, Siltstone And Sandstone**	**Westphalian D Sub-age**
19	16m NW	BD-SDST	Brithdir Member - Sandstone	Westphalian D Sub-age
20	39m W	BD-MDSS	Brithdir Member - Mudstone, Siltstone And Sandstone	Westphalian D Sub-age
23	53m W	H-MDSS	Hughes Member - Mudstone, Siltstone And Sandstone	Westphalian D Sub-age
24	85m NW	BD-MDSS	Brithdir Member - Mudstone, Siltstone And Sandstone	Westphalian D Sub-age
26	102m NW	BD-SDST	Brithdir Member - Sandstone	Westphalian D Sub-age
27	112m W	BD-MDSS	Brithdir Member - Mudstone, Siltstone And Sandstone	Westphalian D Sub-age
29	134m NW	BD-MDSS	Brithdir Member - Mudstone, Siltstone And Sandstone	Westphalian D Sub-age
31	154m NW	BD-SDST	Brithdir Member - Sandstone	Westphalian D Sub-age
32	185m NW	BD-MDSS	Brithdir Member - Mudstone, Siltstone And Sandstone	Westphalian D Sub-age
34	206m NW	BD-SDST	Brithdir Member - Sandstone	Westphalian D Sub-age
35	211m NW	BD-MDSS	Brithdir Member - Mudstone, Siltstone And Sandstone	Westphalian D Sub-age
37	216m NW	BD-SDST	Brithdir Member - Sandstone	Westphalian D Sub-age
38	233m NW	BD-SDST	Brithdir Member - Sandstone	Westphalian D Sub-age
39	412m NW	BD-SDST	Brithdir Member - Sandstone	Westphalian D Sub-age
41	432m W	H-MDSS	Hughes Member - Mudstone, Siltstone And Sandstone	Westphalian D Sub-age
44	433m W	BD-SDST	Brithdir Member - Sandstone	Westphalian D Sub-age
45	435m W	H-SDST	Hughes Member - Sandstone	Westphalian D Sub-age
47	443m W	BD-MDSS	Brithdir Member - Mudstone, Siltstone And Sandstone	Westphalian D Sub-age
49	451m W	BD-SDST	Brithdir Member - Sandstone	Westphalian D Sub-age
50	457m SW	H-SDST	Hughes Member - Sandstone	Westphalian D Sub-age
51	458m SW	H-MDSS	Hughes Member - Mudstone, Siltstone And Sandstone	Westphalian D Sub-age
53	482m W	BD-MDSS	Brithdir Member - Mudstone, Siltstone And Sandstone	Westphalian D Sub-age

ID	Location	LEX Code	Description	Rock age
54	489m W	BD-SDST	Brithdir Member - Sandstone	Westphalian D Sub-age
55	498m W	BD-MDSS	Brithdir Member - Mudstone, Siltstone And Sandstone	Westphalian D Sub-age

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m	**22**

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

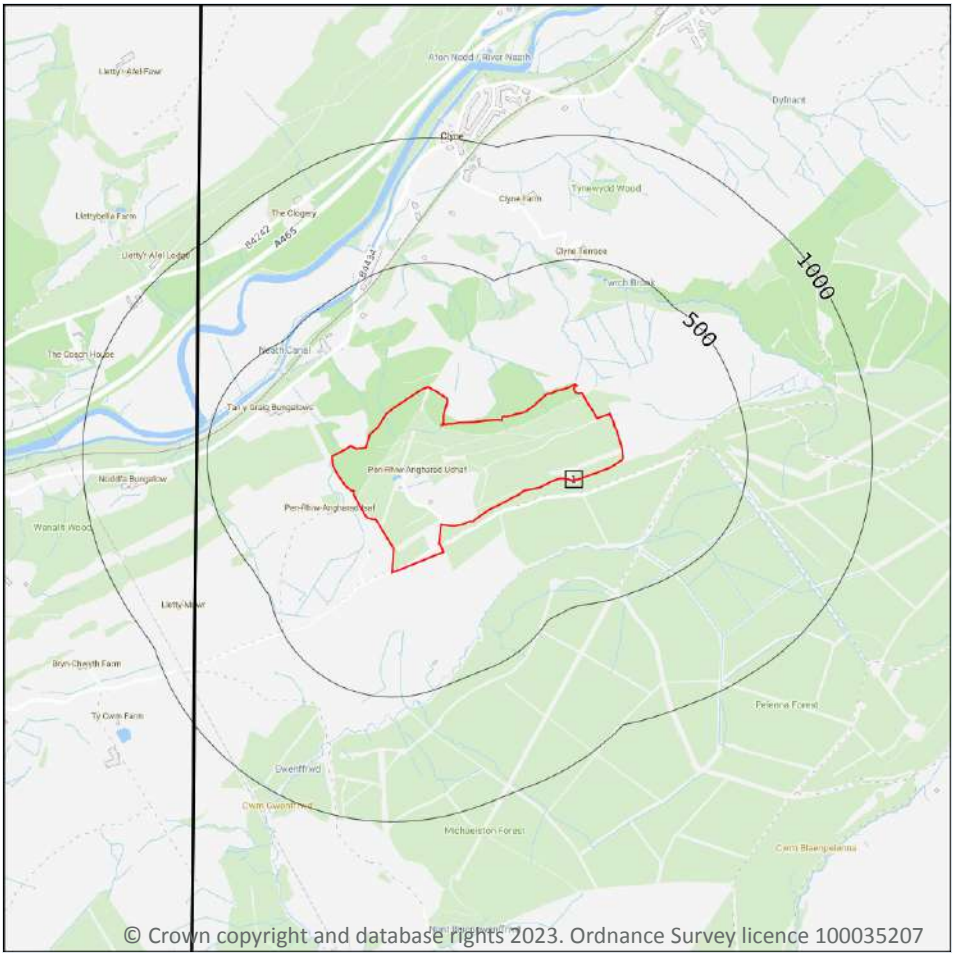
Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 86 >**

ID	Location	Category	Description
11	**On site**	**ROCK**	**Coal seam, inferred ()**
12	**On site**	**ROCK**	**Coal seam, inferred (THICK DOWNWASH GARLANT)**
13	**On site**	**ROCK**	**Coal seam, inferred (WENALLT)**
14	**On site**	**ROCK**	**Coal seam, inferred ()**
15	**On site**	**ROCK**	**Coal seam, inferred (WtR)**
16	**On site**	**FAULT**	**Normal fault, inferred**
17	6m NW	ROCK	Coal seam, inferred ()
18	14m W	FAULT	Normal fault, inferred
21	39m W	ROCK	Coal seam, inferred (WENALLT)
22	48m W	FAULT	Normal fault, inferred
25	85m NW	ROCK	Coal seam, inferred (THIN COAL (BELIEVED)
28	112m W	ROCK	Coal seam, inferred (WENALLT)
30	134m NW	ROCK	Coal seam, inferred (THIN COAL (PRESUMED BdR))
33	185m NW	ROCK	Coal seam, inferred (GRAIG)
36	211m NW	ROCK	Coal seam, inferred (GRAIG)
40	412m NW	FAULT	Normal fault, inferred
42	432m W	FAULT	Normal fault, inferred
43	433m W	ROCK	Coal seam, inferred (WENALLT)

ID	Location	Category	Description
46	435m W	ROCK	Coal seam, inferred (GARLANT FEATURE MASKED BY HILLWASH)
48	445m W	ROCK	Coal seam, inferred (GLYNGWILYM)
52	458m SW	ROCK	Coal seam, inferred (MOUNTAIN WET SHELF)
56	498m W	ROCK	Coal seam, inferred (THIN COAL)

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 90 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**Full**	**Full**	**Full**	**EW248_pontypridd_v4**

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Artificial and made ground

15.2 Artificial and made ground (50k)

Records within 500m	0

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.

This data is sourced from the British Geological Survey.

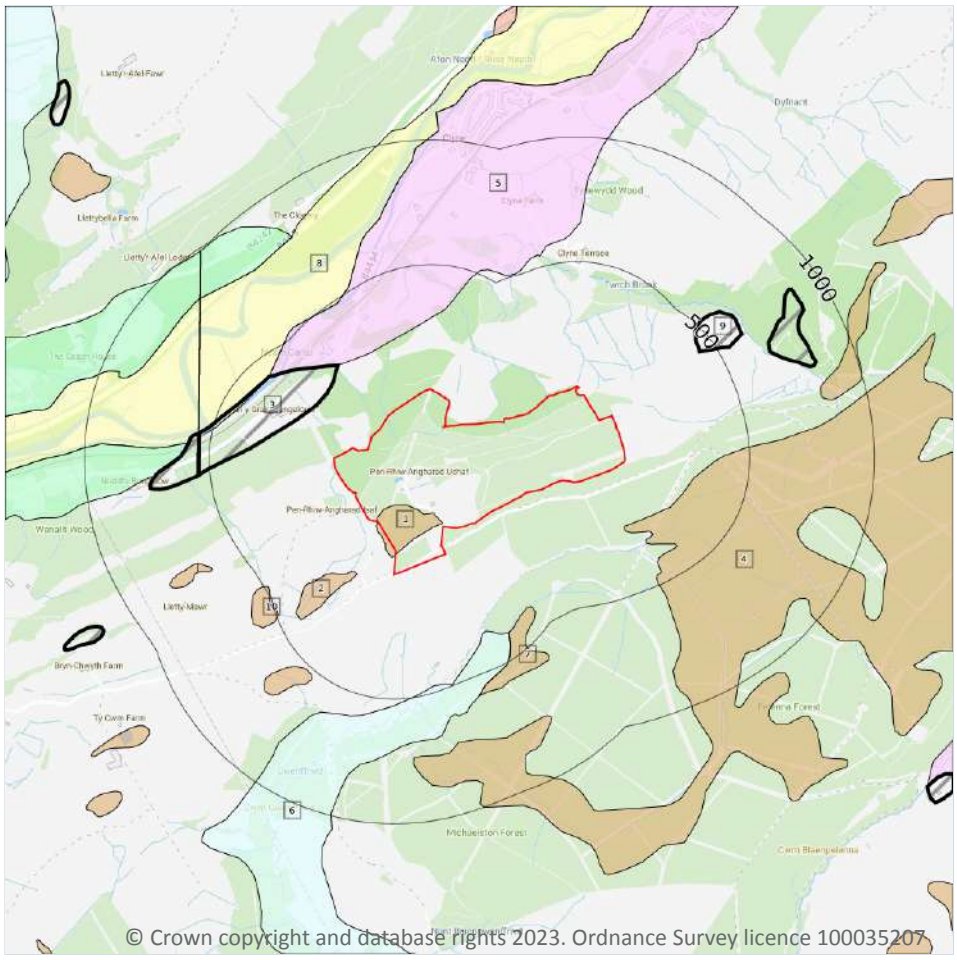
15.3 Artificial ground permeability (50k)

Records within 50m	0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

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

15.4 Superficial geology (50k)

Records within 500m **8**

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 92 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**PEAT-P**	**PEAT**	**PEAT**
2	149m SW	PEAT-P	PEAT	PEAT
4	229m E	PEAT-P	PEAT	PEAT
5	241m NW	GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL

ID	Location	LEX Code	Description	Rock description
6	348m S	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
7	388m S	PEAT-P	PEAT	PEAT
8	414m W	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
10	484m SW	PEAT-P	PEAT	PEAT

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**	**Low**	**Very Low**
On site	**Mixed**	**Low**	**Very Low**

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m **2**

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

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 92 >**

ID	Location	LEX Code	Description	Rock description
3	214m W	SLIP-UKNOWN	LANDSLIDE DEPOSITS	UNKNOWN/UNCLASSIFIED ENTRY
9	437m NE	SLIP-UKNOWN	LANDSLIDE DEPOSITS	UNKNOWN/UNCLASSIFIED ENTRY

This data is sourced from the British Geological Survey.

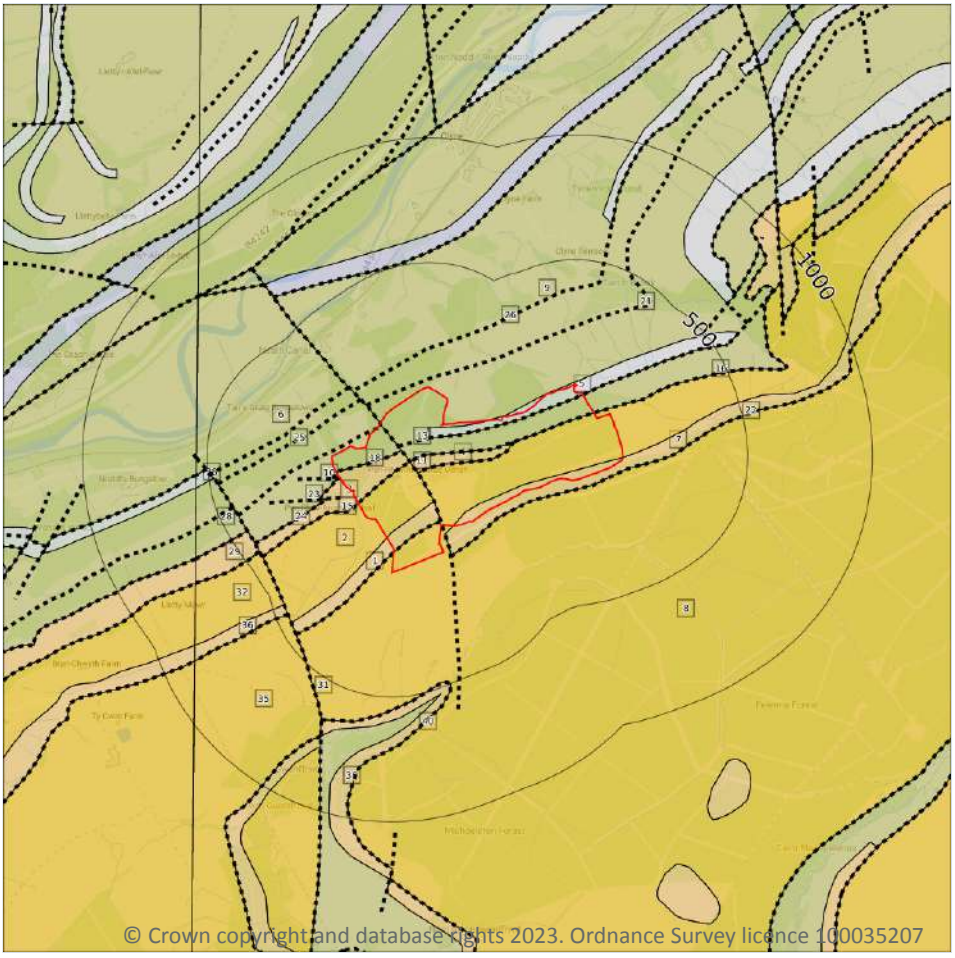
15.7 Landslip permeability (50k)

Records within 50m	0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

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

15.8 Bedrock geology (50k)

Records within 500m **16**

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 95 >**

ID	Location	LEX Code	Description	Rock age
1	On site	H-MDSS	HUGHES MEMBER - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
2	On site	H-SDST	HUGHES MEMBER - SANDSTONE	WESTPHALIAN
3	On site	H-MDSS	HUGHES MEMBER - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN

ID	Location	LEX Code	Description	Rock age
4	**On site**	**H-MDSS**	**HUGHES MEMBER - MUDSTONE, SILTSTONE AND SANDSTONE**	**WESTPHALIAN**
5	**On site**	**BD-MDSS**	**BRITHDIR MEMBER - MUDSTONE, SILTSTONE AND SANDSTONE**	**WESTPHALIAN**
6	**On site**	**BD-SDST**	**BRITHDIR MEMBER - SANDSTONE**	**WESTPHALIAN**
7	**On site**	**H-MDSS**	**HUGHES MEMBER - MUDSTONE, SILTSTONE AND SANDSTONE**	**WESTPHALIAN**
8	**On site**	**H-SDST**	**HUGHES MEMBER - SANDSTONE**	**WESTPHALIAN**
9	**On site**	**BD-SDST**	**BRITHDIR MEMBER - SANDSTONE**	**WESTPHALIAN**
28	427m W	BD-SDST	BRITHDIR MEMBER - SANDSTONE	WESTPHALIAN
29	427m W	H-MDSS	HUGHES MEMBER - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
32	434m SW	H-SDST	HUGHES MEMBER - SANDSTONE	WESTPHALIAN
35	451m SW	H-SDST	HUGHES MEMBER - SANDSTONE	WESTPHALIAN
36	451m SW	H-MDSS	HUGHES MEMBER - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
38	482m W	BD-MDSS	BRITHDIR MEMBER - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
39	483m S	H-MDSS	HUGHES MEMBER - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m **11**

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Fracture**	**High**	**Moderate**
On site	**Fracture**	**High**	**Moderate**
On site	**Fracture**	**High**	**Moderate**
On site	**Fracture**	**High**	**Moderate**

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**
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	**24**

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 95 >**

ID	Location	Category	Description
10	**On site**	**FAULT**	**Fault, observed, displacement unknown**
11	**On site**	**FAULT**	**Fault, inferred, displacement unknown**
12	**On site**	**ROCK**	**Coal seam, inferred**
13	**On site**	**ROCK**	**Coal seam, inferred**
14	**On site**	**ROCK**	**Coal seam, inferred**
15	**On site**	**ROCK**	**Coal seam, inferred**
16	**On site**	**ROCK**	**Coal seam, inferred**
17	**On site**	**ROCK**	**Coal seam, inferred**
18	**On site**	**ROCK**	**Coal seam, inferred**
19	**On site**	**ROCK**	**Coal seam, inferred**
20	5m W	ROCK	Coal seam, inferred
21	28m NW	ROCK	Coal seam, inferred
22	34m E	ROCK	Coal seam, inferred

ID	Location	Category	Description
23	49m W	FAULT	Fault, observed, displacement unknown
24	85m W	ROCK	Coal seam, inferred
25	118m NW	ROCK	Coal seam, inferred
26	133m NW	ROCK	Coal seam, inferred
27	184m NW	ROCK	Coal seam, inferred
30	427m W	ROCK	Coal seam, inferred
31	427m W	FAULT	Fault, inferred, displacement unknown
33	434m SW	ROCK	Coal seam, inferred
34	435m W	ROCK	Coal seam, inferred
37	451m SW	ROCK	Coal seam, inferred
40	483m S	ROCK	Coal seam, inferred

This data is sourced from the British Geological Survey.

16 Boreholes

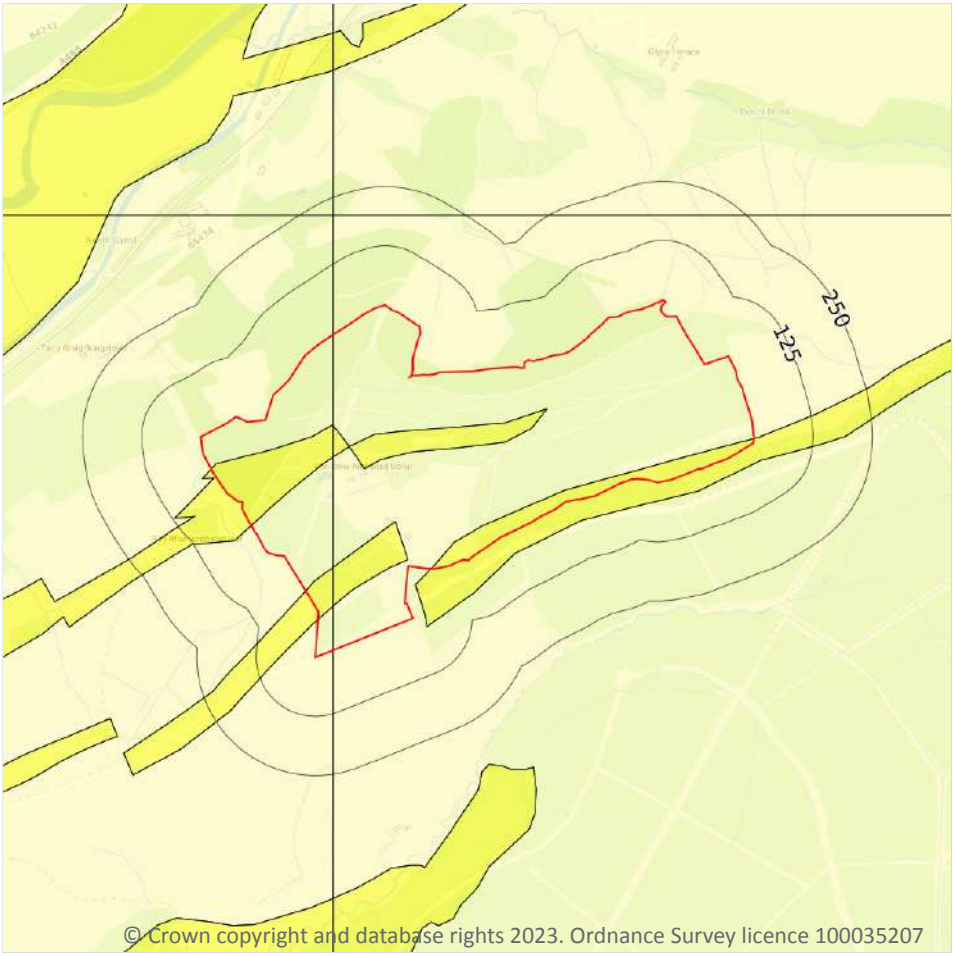
16.1 BGS Boreholes

Records within 250m	0

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.

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.1 Shrink swell clays

Records within 50m	2

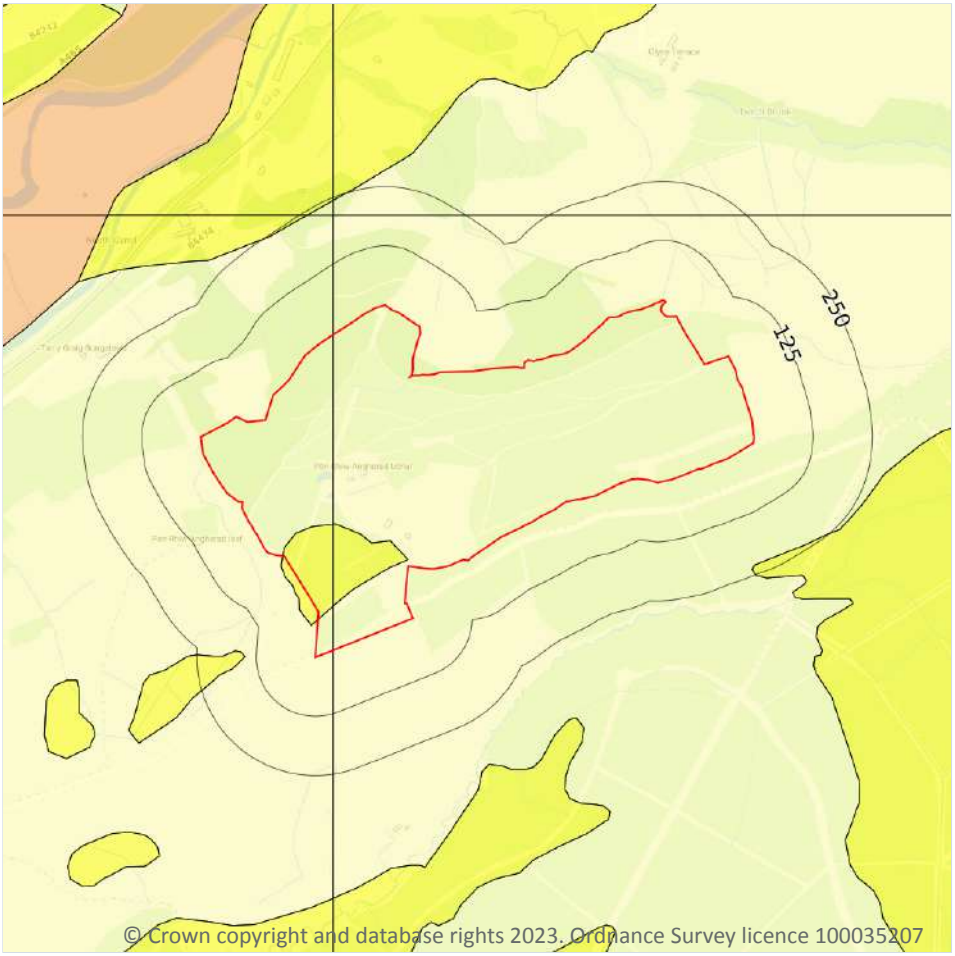
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 100 >**

Location	Hazard rating	Details
On site	**Negligible**	**Ground conditions predominantly non-plastic.**
On site	**Very low**	**Ground conditions predominantly low plasticity.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.2 Running sands

Records within 50m	2

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

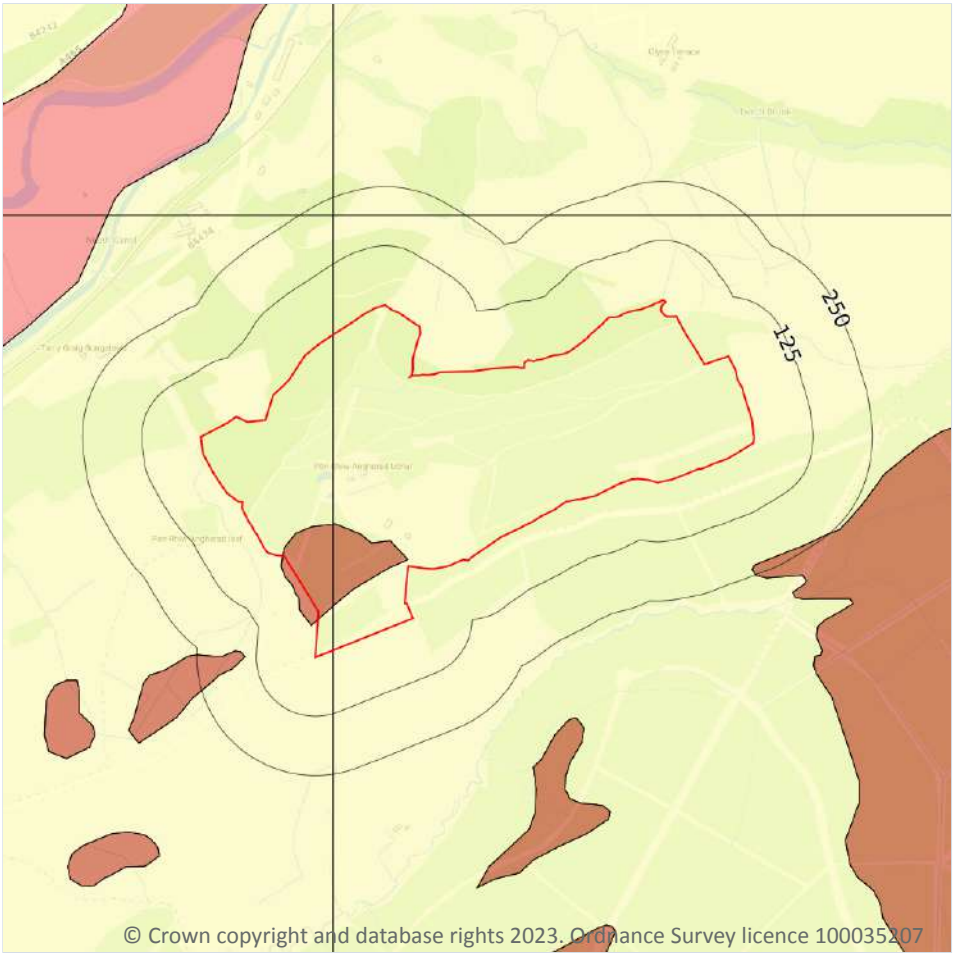
Features are displayed on the Natural ground subsidence - Running sands map on **page 101 >**

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

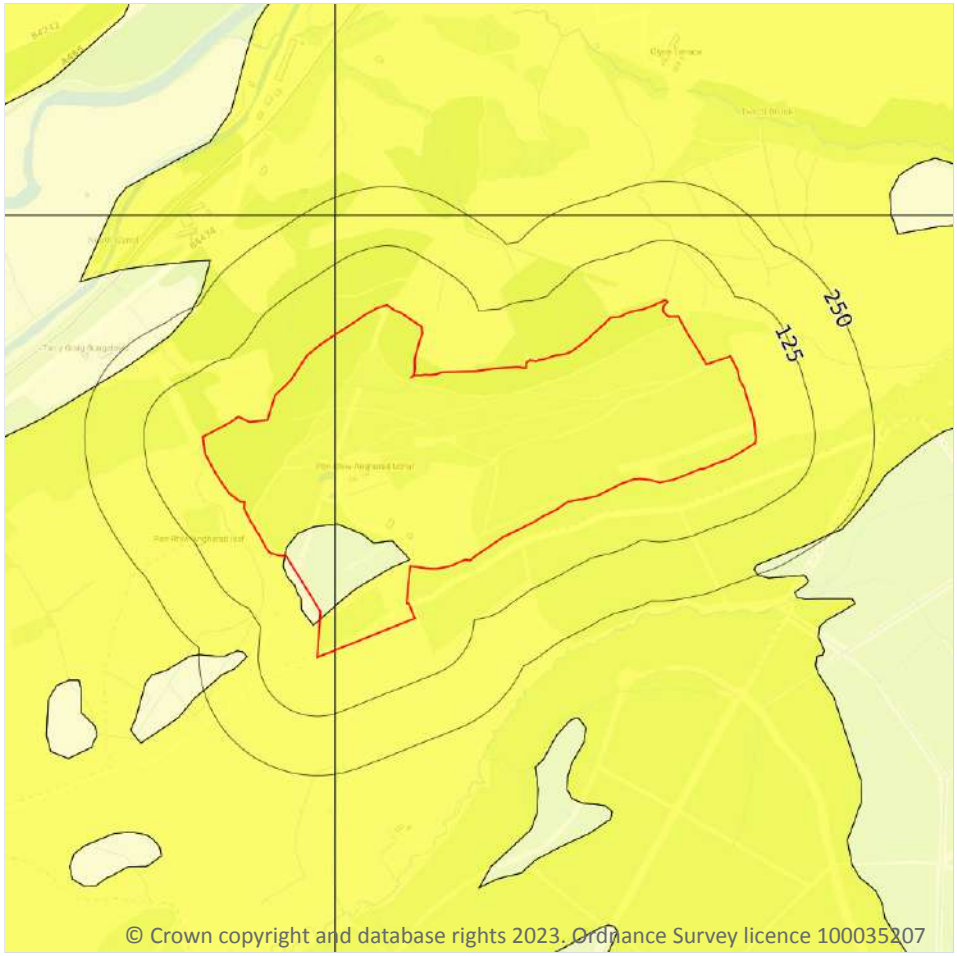
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 103 >**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**
On site	**High**	**Highly compressible strata present. Significant constraint on land use depending on thickness.**

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	2

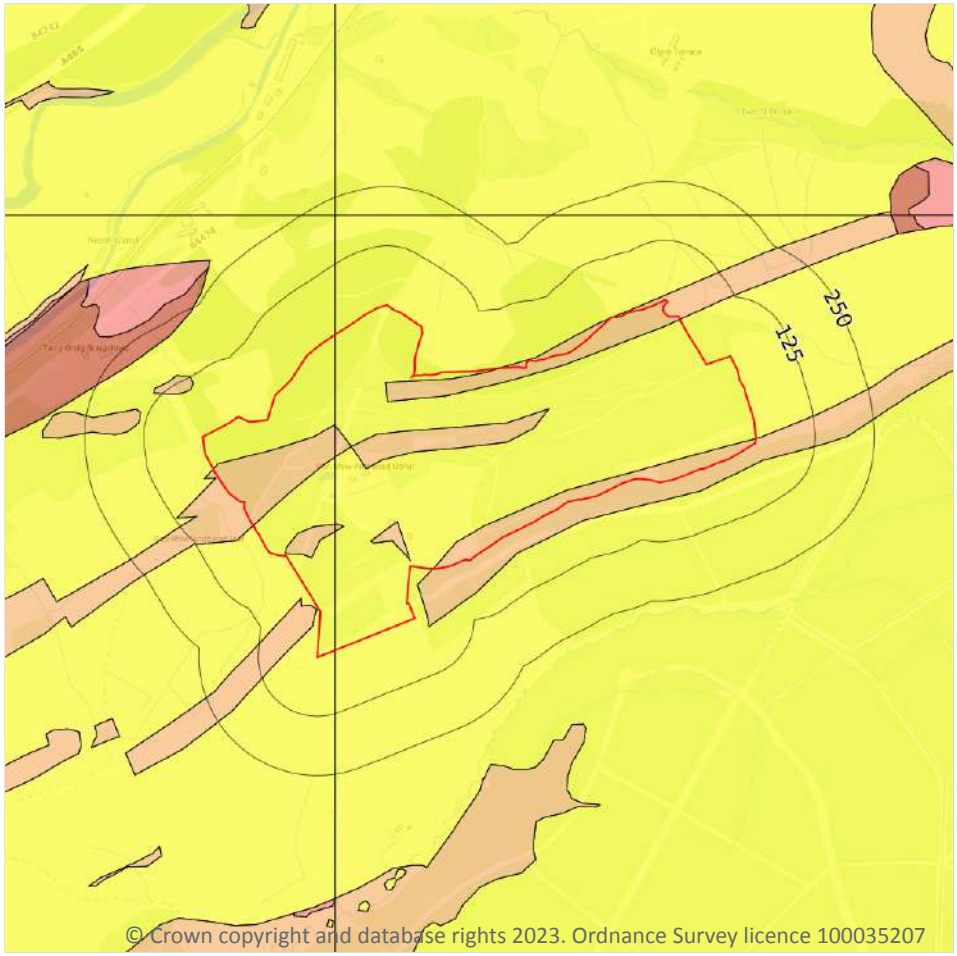
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 104 >**

Location	Hazard rating	Details
On site	**Negligible**	**Deposits with potential to collapse when loaded and saturated are believed not to be present.**
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	3

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.

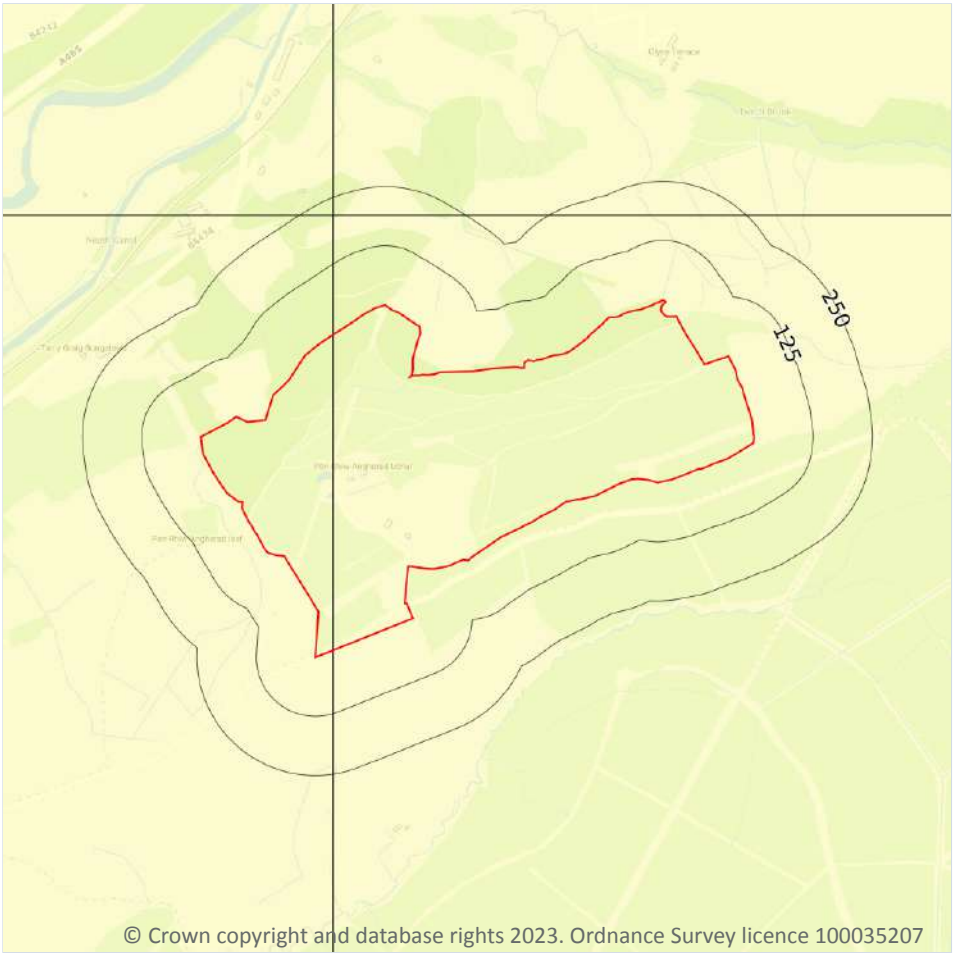
Features are displayed on the Natural ground subsidence - Landslides map on **page 105 >**

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.**
4m SW	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.6 Ground dissolution of soluble rocks

Records within 50m	1

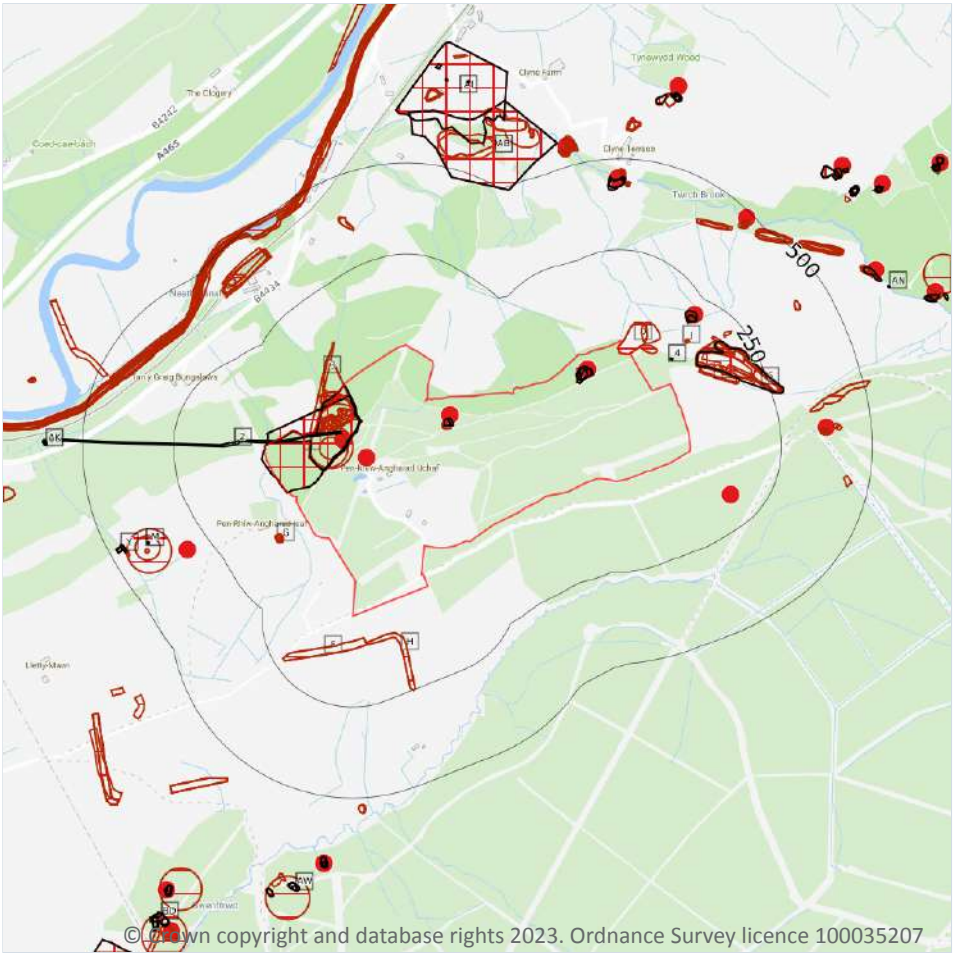
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 107 >**

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 and ground workings



Site Outline

Search buffers in metres (m)

BritPits

Surface ground workings

Underground workings

Underground mining extents

Historical mineral planning areas

TCA non-coal mining

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 BritPits

Records within 500m	10

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 and ground workings map on **page 109 >**

ID	Location	Details	Description
1	**On site**	**Name: Angharad Uchaf** **Address: NEATH, West Glamorgan** **Commodity: Sandstone** **Status: Ceased**	**Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site** **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: Cefn Mawr Colliery** **Address: Clyne, NEATH, West Glamorgan** **Commodity: Coal, Deep** **Status: Ceased**	**Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)** **Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority**
B	**On site**	**Name: Cefn-mawr Colliery** **Address: Resolven, NEATH, West Glamorgan** **Commodity: Coal, Deep** **Status: Ceased**	**Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)** **Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority**
C	**On site**	**Name: Cefn-mawr Colliery** **Address: Resolven, NEATH, West Glamorgan** **Commodity: Coal, Deep** **Status: Ceased**	**Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)** **Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority**
5	163m E	Name: Pen Rhiw Angharad Uchaf Address: Tonna, NEATH, West Glamorgan Commodity: Sandstone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site 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	203m NE	Name: Troed-y-rhiw Address: Resolven, NEATH, West Glamorgan Commodity: Coal, Deep Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
7	313m W	Name: Pen-rhiw-Angharad Isaf Address: Resolven, NEATH, West Glamorgan Commodity: Coal, Deep Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
O	376m E	Name: Troed-y-rhiw Address: Resolven, NEATH, West Glamorgan Commodity: Sandstone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site 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
V	448m NE	Name: Clyne Cottages Address: Resolven, NEATH, West Glamorgan Commodity: Coal, Deep Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
X	484m NE	Name: Ystrad-Owen Address: Resolven, NEATH, West Glamorgan Commodity: Sandstone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site 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.

18.2 Surface ground workings

Records within 250m	78

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 and ground workings map on **page 109 >**

ID	Location	Land Use	Year of mapping	Mapping scale
A	On site	Gravel Pit	1962	1:10560
A	On site	Gravel Pit	1962	1:10560
A	On site	Unspecified Heaps	1970	1:10000
A	On site	Colliery	1948	1:10560
A	On site	Refuse Heap	1948	1:10560
A	On site	Refuse Heap	1948	1:10560
A	On site	Unspecified Heap	1897	1:10560
A	On site	Unspecified Level	1921	1:10560
A	On site	Colliery	1921	1:10560
A	On site	Unspecified Level	1921	1:10560
A	On site	Colliery	1921	1:10560
A	On site	Refuse Heap	1921	1:10560
A	On site	Unspecified Heap	1877	1:10560
A	On site	Unspecified Pit	1877	1:10560
A	On site	Unspecified Level	1948	1:10560
A	On site	Unspecified Level	1921	1:10560
A	On site	Unspecified Level	1962	1:10560
A	On site	Unspecified Disused Tip	1991	1:10000
A	On site	Unspecified Disused Tip	1982	1:10000
B	On site	Old Coal Level	1948	1:10560
B	On site	Unspecified Heap	1988	1:10000
B	On site	Unspecified Heap	1964	1:10560
B	On site	Old Coal Level	1921	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
B	**On site**	**Old Coal Level**	**1921**	**1:10560**
B	**On site**	**Old Coal Level**	**1921**	**1:10560**
C	**On site**	**Old Coal Level**	**1948**	**1:10560**
C	**On site**	**Unspecified Disused Level**	**1988**	**1:10000**
C	**On site**	**Unspecified Disused Level**	**1964**	**1:10560**
C	**On site**	**Unspecified Heap**	**1897**	**1:10560**
C	**On site**	**Old Coal Level**	**1921**	**1:10560**
C	**On site**	**Old Coal Level**	**1921**	**1:10560**
C	**On site**	**Old Coal Level**	**1921**	**1:10560**
C	**On site**	**Unspecified Heaps**	**1877**	**1:10560**
D	**On site**	**Unspecified Heap**	**1988**	**1:10000**
D	**On site**	**Unspecified Heap**	**1964**	**1:10560**
E	**On site**	**Colliery**	**1921**	**1:10560**
A	2m NW	Unspecified Pit	1970	1:10000
A	2m NW	Unspecified Pit	1991	1:10000
A	2m NW	Unspecified Pit	1982	1:10000
3	13m W	Unspecified Ground Workings	1948	1:10560
D	31m NE	Unspecified Pit	1877	1:10560
D	49m NE	Refuse Heap	1948	1:10560
F	66m SW	Unspecified Heaps	1970	1:10000
F	66m SW	Unspecified Heaps	1982	1:10000
G	79m SW	Unspecified Heap	1921	1:10560
G	79m SW	Unspecified Heap	1921	1:10560
G	79m SW	Unspecified Heap	1948	1:10560
G	80m SW	Unspecified Pit	1877	1:10560
H	80m SW	Unspecified Heaps	1988	1:10000
H	80m SW	Unspecified Heaps	1964	1:10560
G	81m SW	Unspecified Heap	1962	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
G	84m SW	Unspecified Heap	1921	1:10560
I	84m E	Cuttings	1921	1:10560
I	86m E	Unspecified Ground Workings	1964	1:10560
I	87m E	Unspecified Ground Workings	1988	1:10000
I	89m E	Unspecified Ground Workings	1921	1:10560
I	89m E	Unspecified Ground Workings	1921	1:10560
I	89m E	Old Coal Level	1948	1:10560
I	90m E	Cuttings	1948	1:10560
I	90m E	Cuttings	1921	1:10560
I	94m E	Unspecified Ground Workings	1897	1:10560
I	111m NE	Unspecified Ground Workings	1921	1:10560
J	121m NE	Old Coal Level	1921	1:10560
J	121m NE	Old Coal Level	1921	1:10560
I	156m NE	Unspecified Heap	1921	1:10560
I	163m NE	Old Coal Level	1921	1:10560
I	163m NE	Old Coal Level	1921	1:10560
K	176m NE	Old Coal Level	1921	1:10560
K	177m NE	Unspecified Heap	1988	1:10000
K	177m NE	Unspecified Heap	1964	1:10560
K	178m NE	Unspecified Heap	1948	1:10560
K	181m NE	Unspecified Heap	1921	1:10560
K	181m NE	Unspecified Heap	1921	1:10560
K	181m NE	Old Coal Level	1897	1:10560
K	185m NE	Unspecified Heap	1877	1:10560
I	189m E	Unspecified Heap	1921	1:10560
I	197m NE	Unspecified Ground Workings	1877	1:10560
6	212m E	Unspecified Ground Workings	1921	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m	78

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 and ground workings map on **page 109 >**

ID	Location	Land Use	Year of mapping	Mapping scale
2	**On site**	**Tunnel**	**1877**	**1:10560**
A	**On site**	**Colliery**	**1948**	**1:10560**
B	**On site**	**Old Coal Level**	**1948**	**1:10560**
B	**On site**	**Old Coal Level**	**1921**	**1:10560**
C	**On site**	**Old Coal Level**	**1948**	**1:10560**
C	**On site**	**Old Coal Level**	**1921**	**1:10560**
C	**On site**	**Unspecified Disused Level**	**1988**	**1:10000**
C	**On site**	**Unspecified Disused Level**	**1964**	**1:10560**
E	**On site**	**Colliery**	**1921**	**1:10560**
4	68m NE	Air Shaft	1877	1:10560
I	89m E	Old Coal Level	1948	1:10560
K	176m NE	Old Coal Level	1921	1:10560
K	181m NE	Old Coal Level	1897	1:10560
M	391m W	Old Coal Level	1921	1:10560
V	415m NE	Old Coal Pit	1921	1:10560
V	422m NE	Old Coal Pit	1948	1:10560
V	422m NE	Old Coal Pit	1897	1:10560
Y	456m W	Old Coal Level	1897	1:10560
Y	464m W	Unspecified Disused Level	1991	1:10000
Y	464m W	Unspecified Disused Level	1982	1:10000
AB	477m N	Old Colliery	1948	1:10560
AI	582m N	Colliery	1877	1:10560
AK	598m W	Unspecified Disused Shaft	1991	1:10000

ID	Location	Land Use	Year of mapping	Mapping scale
AK	598m W	Unspecified Disused Shaft	1982	1:10000
AK	598m W	Unspecified Old Shaft	1962	1:10560
AK	599m W	Unspecified Old Shaft	1935	1:10560
AK	599m W	Unspecified Old Shaft	1948	1:10560
AK	600m W	Unspecified Disused Shaft	1970	1:10000
AM	615m NE	Old Coal Level	1948	1:10560
AN	653m E	Old Coal Level	1921	1:10560
AP	659m NE	Old Coal Level	1948	1:10560
AQ	665m S	Unspecified Old Levels	1948	1:10560
AQ	665m S	Unspecified Old Levels	1962	1:10560
AP	675m NE	Unspecified Disused Level	1965	1:10560
AP	675m NE	Unspecified Disused Level	1988	1:10000
AQ	679m S	Unspecified Disused Level	1991	1:10000
AQ	679m S	Unspecified Disused Level	1982	1:10000
AP	680m NE	Coal Level	1877	1:10560
AP	685m NE	Old Coal Level	1921	1:10560
AU	705m NE	Unspecified Disused Levels	1965	1:10560
AU	705m NE	Unspecified Disused Levels	1988	1:10000
AS	717m NE	Old Coal Levels	1948	1:10560
AS	721m NE	Old Coal Levels	1921	1:10560
AS	721m NE	Unspecified Disused Levels	1965	1:10560
AS	721m NE	Unspecified Disused Levels	1988	1:10000
AU	729m NE	Coal Level	1948	1:10560
AV	732m E	Unspecified Old Level	1921	1:10560
AI	733m N	Unspecified Shaft	1877	1:10560
AV	738m E	Unspecified Old Level	1948	1:10560
AI	739m N	Air Shaft	1877	1:10560
AW	750m S	Unspecified Old Levels	1948	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
AU	751m NE	Coal Level	1921	1:10560
AW	751m S	Unspecified Old Levels	1962	1:10560
AW	758m S	Unspecified Disused Levels	1982	1:10000
AI	764m N	Unspecified Shaft	1877	1:10560
AY	772m NE	Old Coal Levels	1921	1:10560
AY	774m NE	Unspecified Disused Level	1965	1:10560
AY	774m NE	Unspecified Disused Level	1988	1:10000
AY	778m NE	Old Coal Levels	1948	1:10560
AW	783m SW	Unspecified Old Levels	1948	1:10560
AV	784m E	Old Coal Pit	1948	1:10560
-	841m E	Unspecified Disused Shaft	1988	1:10000
-	841m E	Unspecified Disused Shaft	1964	1:10560
-	844m E	Old Coal Pit	1897	1:10560
AZ	893m SW	Unspecified Old Level	1948	1:10560
AZ	895m SW	Unspecified Old Level	1962	1:10560
AZ	907m SW	Unspecified Disused Level	1982	1:10000
BC	931m NE	Old Coal Level	1921	1:10560
BC	934m NE	Old Coal Level	1948	1:10560
BC	951m NE	Unspecified Disused Level	1965	1:10560
BC	951m NE	Unspecified Disused Level	1988	1:10000
BD	970m SW	Unspecified Old Levels	1948	1:10560
BD	970m SW	Unspecified Old Levels	1962	1:10560
BD	972m SW	Unspecified Disused Levels	1982	1:10000
-	979m W	Unspecified Old Level	1962	1:10560
-	981m W	Unspecified Old Level	1935	1:10560
-	981m W	Coal Level	1914	1:10560
-	985m W	Coal Level	1921	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground mining extents

Records within 500m	0

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from 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	0

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).

This data is sourced from the British Geological Survey.

18.7 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.

18.8 The Coal Authority non-coal mining

Records within 500m	0

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the

Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m	0

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m	0

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m	0

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.12 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.

18.13 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.

18.14 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 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 Ground cavities and sinkholes

19.1 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.

19.2 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.

19.3 Reported recent incidents

Records within 500m	0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

This data is sourced from Groundsure.

19.4 Historical incidents

Records within 500m	0

This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

Not all 'holes' noted on Ordnance Survey mapping will necessarily be present within this dataset.

This data is sourced from Groundsure.

19.5 National karst database

Records within 500m	0

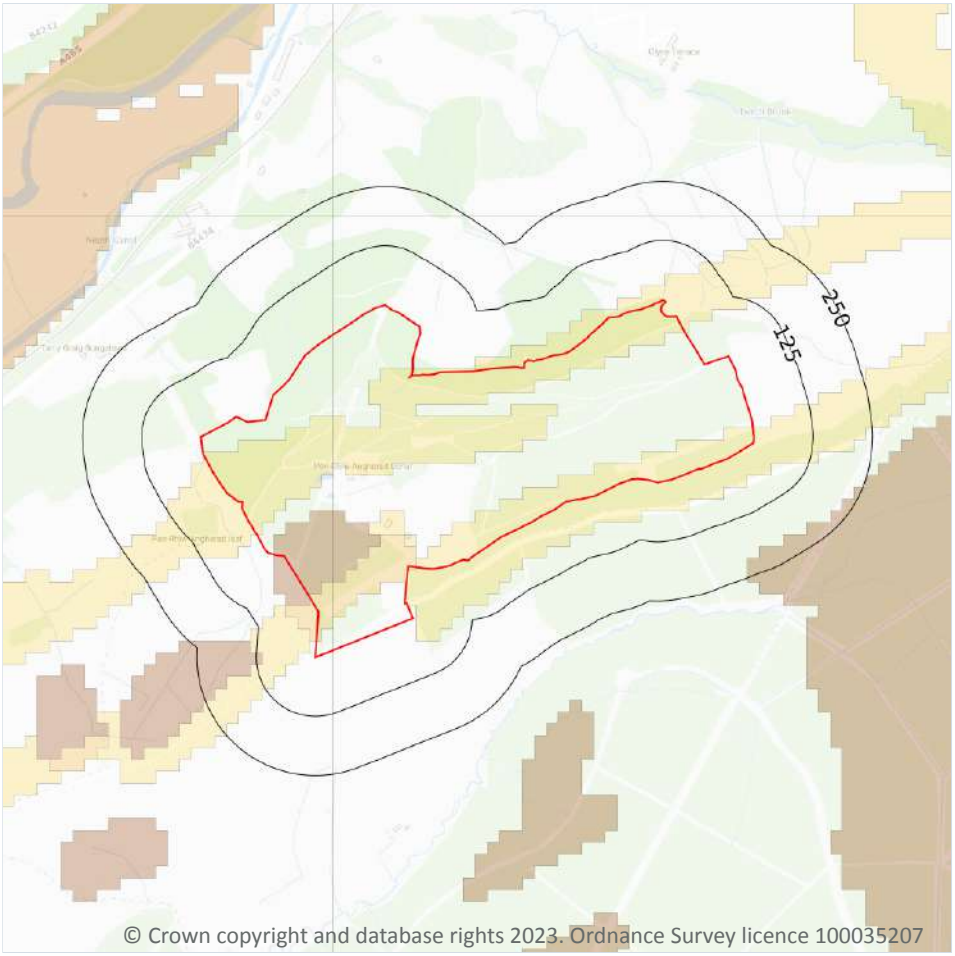
This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 800 caves, 1300 stream sinks, 5600 springs, 10,000 sinkholes.

The database is not yet complete, and not all records have been verified. The absence of data does not mean that karst features are not present at a site. A reliability rating is included with each record.

This data is sourced from the British Geological Survey.

20 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%

20.1 Radon

Records on site	4

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on **page 123 >**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Between 1% and 3%**	**None**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Between 10% and 30%**	**Full**
On site	**Between 3% and 5%**	**Basic**
On site	**Less than 1%**	**None**

This data is sourced from the British Geological Survey and UK Health Security Agency.

21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m **39**

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	**25 - 35 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**30 - 45 mg/kg**
On site	**25 - 35 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**30 - 45 mg/kg**
On site	**25 - 35 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**30 - 45 mg/kg**
On site	**25 - 35 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**30 - 45 mg/kg**
On site	**25 - 35 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**30 - 45 mg/kg**
On site	**25 - 35 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**30 - 45 mg/kg**
On site	**25 - 35 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**30 - 45 mg/kg**
On site	**25 - 35 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**30 - 45 mg/kg**
On site	**25 - 35 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**30 - 45 mg/kg**
On site	**25 - 35 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**30 - 45 mg/kg**
On site	**25 - 35 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**30 - 45 mg/kg**
On site	**25 - 35 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**30 - 45 mg/kg**

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	25 - 35 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	25 - 35 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	35 - 45 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	35 - 45 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	35 - 45 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	45 - 60 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	45 - 60 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	45 - 60 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	45 - 60 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	45 - 60 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	45 - 60 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	45 - 60 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	45 - 60 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	60 - 120 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	60 - 120 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	60 - 120 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	60 - 120 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	60 - 120 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**60 - 120 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**60 - 120 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**60 - 120 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**60 - 120 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**60 - 120 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**60 - 120 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**60 - 120 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
13m SW	25 - 35 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
34m E	60 - 120 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

This data is sourced from the British Geological Survey.

21.2 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.

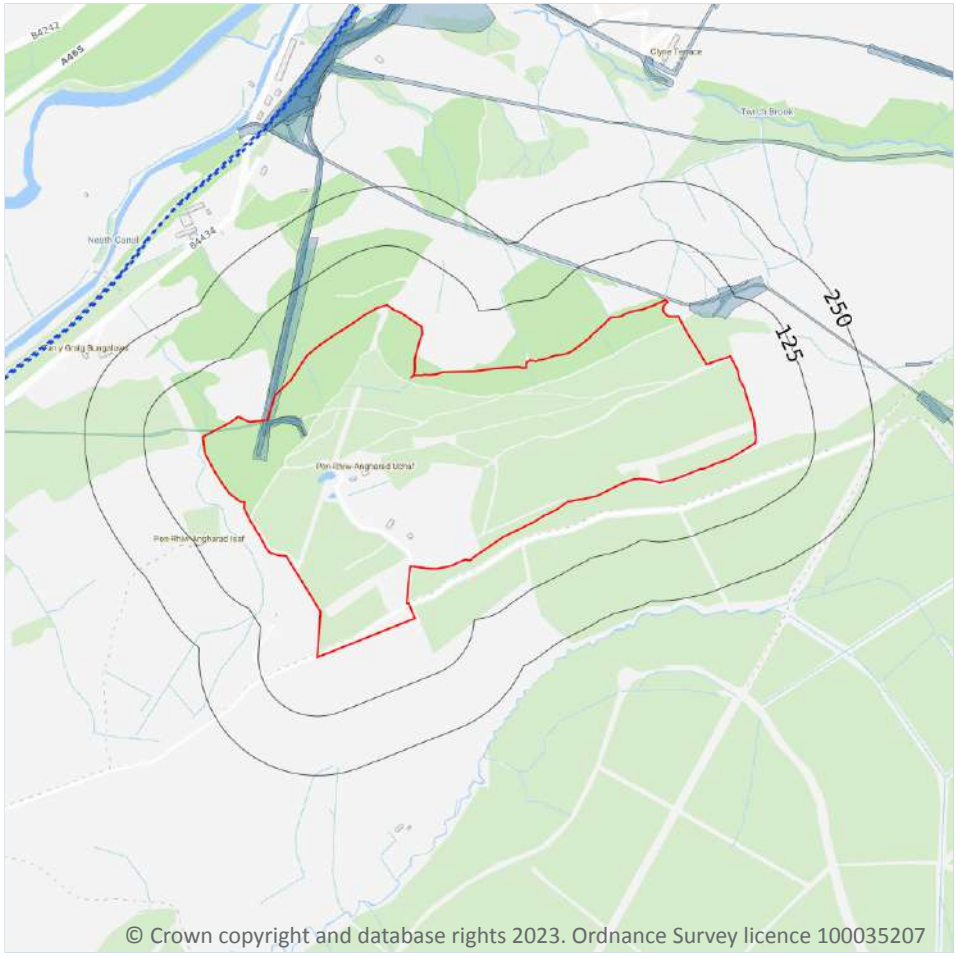
21.3 BGS Measured Urban Soil Chemistry

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.

22 Railway infrastructure and projects



Site Outline

Search buffers in metres (m)

- Crossrail 1 Stations
- Crossrail 1 Route
- 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

22.1 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.

22.2 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.

22.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 Historical railway and tunnel features

Records within 250m	8

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 128 >**

Location	Land Use	Year of mapping	Mapping scale
On site	**Tunnel**	**1877**	**10560**
On site	**Tramway Sidings**	**1919**	**2500**
On site	**Railway Sidings**	**1921**	**10560**
On site	**Tram Sidings**	**1921**	**10560**
On site	**Tramway Sidings**	**1921**	**10560**
2m NE	Tramway Sidings	1877	2500
26m NE	Tramway Sidings	1877	10560
64m NE	Railway Sidings	1877	2500

This data is sourced from Ordnance Survey/Groundsure.

22.5 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.

22.6 Historical railways

Records within 250m	0

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

This data is sourced from OpenStreetMap.

22.7 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.

22.8 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.

22.9 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.

22.10 HS2

Records within 500m	0

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

This data is sourced from HS2 ltd.

Data providers

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

Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: https://www.groundsure.com/terms-and-conditions-april-2023/ ↗.

BGS archive records

Name and Number of Shaft or Borehole: CLYNE PIT

6-in Map Registration No. SN 80 SW 2

National Grid Reference 8072.0025

Page

Geological Classification	Description of Strata	Thickness Ft	Thickness In	Depth Ft	Depth In
	Brought Forward				
	3rd Ed. Memoir (248) (Woodland & Evans) p. 311				

(91·44m) Clyne Pit

Ht. above O.D. c. 300 ft. 6-in SN 80 S.W.; Glam. 16 N.E.

Site 820 yd E. 43° S. of Hermon Chapel, Clyne. National Grid Ref. 80720025.

	Thickness ft in	Depth ft in	
Wailing	15 0	15 0 (4·57m)	
COAL MEASURES			
Rock with thin beds of clift	113 9	128 9 (39·24m)	
?BRITHDIR			
Coal .. 10 in	10	129 7	(39·39)
Fireclay, rock and clift ..	9 11	138 6	(42·21)
Coal .. 1 in	1	138 7	(42·24)
Fireclay, clift and rock ..	12 0	150 7	(45·90)
White rock	24 5	175 0	(53·34)
Clift	2 1	177 1	(53·97m)
Coal .. 9 in	9	177 10	(54·20m)
Clift and fireclay	6 1	183 11	(56·06m)
Coal .. 9 in	9	184 8	(56·29m)
Shale, fireclay and clift mixed with rock ..	22 1	206 9	(63·02m)
Rock, with thin beds of clift and discontinuous streaks of coal ..	418 5	625 2	(190·55m)
NO. 1 RHONDDA			
Coal .. 18 in			
Clod .. 15 in			
Coal .. 9 in	3 6	628 8	(191·62m)

DEPTH MARKERS

1063 We. 22438/0384 10m 7/45 (51) F.&S.

RECORD OF SHAFT OR BORE FOR MINERALS

(For Survey use only)
1-inch Map Registered No. 248/8

1" : 248

Name and Number of Shaft or Bore: Clyne Colliery

For Messrs.

Town or Village

County ____ Six-inch quarter sheet

6-inch Map Registered No. SN 80 SW/2

Exact site: Trial shaft near Clyne Cottage. N.G.R. 8072.0026

Attach a tracing from a map, or a sketch-map, if possible.

Purpose for which made

Level at which shaft / bore commenced relative to O.D. ____ State if shaft / bore is up, dow

inclined; in latter cases give angle of inclination and direction

Made by

Information from ____ Date of Sinking about 1875

Specimens

Additional Notes in Space Overleaf

(For Survey use only) GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	THICKNESS		METRES	
	Walling	15		(9.57m)	15
	Hard rock	45		(18.29m)	60
	Sandstone rock	4	9	(19.71m)	?
	Rock and cliff	3		(20.62m)	?
	Strong rock	7	4	(22.86m)	
	Sandstone rock	4		(24.08m)	9
	Strong rock	14		(28.35m)	93
	Fireclay	2	6	(29.11m)	95
	Rock	1		(29.41m)	96 6
	Cliff	5		(30.94m)	101
	Hard rock	2		(31.55m)	103 6
	Cliff	1	2	(32.00m)	105
	Hard rock	5		(33.52m)	110
	Cliff	1	6	(33.99m)	111 6
	Hard rock	3		(34.98m)	114 6
	Cliff		3	(34.98m)	114 9
	Sandstone rock	11	3	(38.48m)	126 3
	Hard rock	2	3	(39.24m)	129
	COAL RIDER		10	(39.52m)	129 7
	Strong fireclay	2		(40.11m)	131 7
	Hard rock	4		(41.33m)	135 7
	Cliff	2	4	(42.04m)	? 11
	Soft cliff		7	(42.21m)	138 6
	COAL RIDER		1	(42.24m)	138 7
	Fireclay	2		(42.85m)	140 7
	Coal mixed with rock	10		(45.90m)	150 7
	Hard rock	5		(47.42m)	155 7
	Coal		4	(47.52m)	155

Continued Overleaf

GEOLOGICAL SURVEY AND MUSEUM, SOUTH KENSINGTON, LONDON, S.W.7.	Date received	Correspondence File No.	1" N.S. Map No.	1" O.S. Map No.	Site marked (use symbol) on 1" Map	on 6" Map

WL.30370/0370 10,000 9/59 A.& E.W.Ltd. Gp.685

SN 80 SW/2

and Number of Shaft or Bore given by Geological Survey:

Clyne Colliery: Trial Shaft (2)

6" Quarter Sheet

248/8

GEOLOGICAL CLASSIFICATION	DESCRIPTION	THICKNESS			DEPTH METRES	DEPTH	
					(47·92m)	155	
	White rock		4		(48·74m)	159	
	Hard rock		1	6	(49·70m)	161	5
	White rock		10	6	(52·40m)	171	11
	Clift			1	(52·43m)	172	
	White rock		3		(53·34m)	175	
	Clift		2	1	(53·97m)	177	1
	COAL RIDER			9	(54·20m)	178	
	Clift		6		(56·03m)	184	10
	Fireclay			1	(56·06m)	184	11
	COAL RIDER			9	(56·29m)	185	8
	Black shale			4½	(56·39m)	185	
	Fireclay		1		(56·69m)	186	
	Rock		1	9	(56·92m)	186	7
	Clift mixed with rock		20		(63·02m)	206	
	Strong rock		4	9	(64·47m)	211	6
	Rock		9		(67·21m)	220	6
	Rock with mine		3		(68·12m)	223	6
	Rock with black beds		9	4	(70·97m)	232	10
	Rock with white spar		3	1	(71·91m)	235	11
	Rock with black beds		2	1	(72·54m)	238	
	Clift		3		(73·46m)	241	
	Strong rock with white spar		45		(87·17m)	286	
	Strong conglomerate rock		6		(89·00m)	292	
	Strong rock with black beds		42		(101·80m)	334	
	Hard conglomerate rock		6		(103·63m)	340	
	Rock mixed with clift		43		(116·74m)	383	
	Hard conglomerate rock		5		(118·26m)	388	
	Hard blue rock without joints		13		(122·27m)	401	
	Black rock with thin beds		17		(127·44m)		
	Very hard blue rock		2		(128·02m)		
	COAL RIDER (on one side of pit).			4	(126·12m)		
	Strong rock with white spar		60		(146·44m)		
	Thin beds of rock with RASHES		6		(148·26m)	487	
	Hard rock with thin beds		16		(153·11m)	502	
	COAL RIDER (on one side of pit)			6	(153·26m)	502	
	Hard conglomerate rock		2	6	(154·03m)	505	4
	Hard conglomerate with white spar		12		(157·68m)	517	
	Black rock with strong beds		12		(161·34m)	529	
	Hard blue rock with small partings		30		(170·46m)	559	
	Rock with white spar		18		(175·97m)	577	
	Conglomerate rock		4	6	(177·34m)	581	10
	Black rock with thin beds		4	6	(178·71m)	586	4
	Hard light coloured rock		7	6	(181·00m)	594	
	Mixed rock, ironstone, shale & COAL partings		4	6	(182·37m)	598	4
	COAL RIDER			1	(182·40m)	598	5
	Rock mixed with ironstone		21		(188·80m)	619	5
	Rock with COAL		5	9	(190·58m)	625	2
Probably No 1 & not No 2 Probably mean a fault	COAL	PEN Y GRAIG		1	6	(191·01m)	626	8
	Clod			1	3	(191·39m)	627	11
	Britain COAL				7	(191·62m)	628	8

Trial Shaft near Clyne Cottage SN80SW2 108/80

SECTION OF Clyne Colliery at Vale of Neath 8072 0025 1"248

COUNTY Glamorgan

Communicated by Mr Thomas Lloyd Date of sinking about 1875

One-inch Map (N.S.) 248 Six-inch Map Glam 16

HEIGHT ABOVE O.D. DIP OF STRATA small

SN 80 SW

Inserted in Abstract in Memoir p 248

	Thickness. Yards.	feet.	ins.	Depth from Surface. Yards.	feet.	ins.
Walling	5	0	0		15	
Hard rock	15	0	0		60	
Sandstone rock	1	1	8		64	8
Rock and clift	1	0	0		67	8
Stony rock	2	1	4		75	
Sandstone rock	1	1	0		79	
Stony rock	4	2	0		93	
Friendly		2	6		95	6
Rock		1	0		96	6
Cliff	1	2	0		101	6
Hard rock		2	0		103	6
Cliff		1	6		105	
Hard rock	1	2	0		110	
Cliff		1	6		111	6
Hard rock	1	0	0		114	6
Cliff			3		114	9
Sandstone rock	3	2	6		126	3
Hard rock		2	6		128	9
Rider of coal			10	43	129 0	7 7
Stony friendly		2	0		131	7
White rock	1	1	0		135	7
Cliff		2	4		137	11
Soft clift			7		138	6
Rider of coal			1	46	138 0	7 7
Good friendly		2	0		140	7
Cliff mixed with rock	3	1	0		150	7
White rock	1	2	0		158	7
Cliff			4		158	11
White rock	1	1	0		159	11
Hard rock		1	6	53	164 2	5 5

W. & L. (x)—22456—1000-11-99

SN80SW/2 2

SECTION OF Clyne Colliery at

COUNTY

Communicated by Date of sinking

One-inch Map (N.S.) Six-inch Map

HEIGHT ABOVE O.D. DIP OF STRATA

	Thickness.			Depth from Surface.		
	Yards.	feet.	ins.	Yards.	feet.	ins.
					161	5
Brought forward				53	2	5
White rock	3	1	6		171	11
Cliff			1		172	
White rock	1	0	0		175	
Cliff		2	1		177	1
					177	10
Rider of coal			9	59	0	10
Cliff	2	0	0		183	10
Fireclay			1		183	11
					184	8
Rider of coal			9	61	1	8
Black shale			4		185	
Fireclay		1	0		186	
Rock			9		186	9
Cliff mixed with rock	6	2	0		206	9
Stony rock	1	1	9		211	6
Rock	3	0	0		220	6
Rock with mine	1	0	0		223	6
Rock with black bds	3	0	4		232	10
Rock with thin ofsr	1	0	1		235	11
Rock with black bds		2	1	79	1	0
					238	
Cliff	1	0	0		241	
Stony rock with thin ofsr	15	0	0		256	
Stony conglomerate rock	12	0	0		292	
Stony rock with black bds	14	0	0		334	
Hard conglomerate rock	2	0	0		340	
Rock mixed with cliff	14	1	0		383	
Hard conglomerate rock	1	2	0		388	
Hard blue rock without joints	4	1	0		401	
Black rock with thin bds	5	2	0		418	
Very hard blue rock		2	0		420	
					420	4
Rider of coal one side of pit			4	140	0	4

W B & L (x)—22456—1000-11-99

SN80 SW/2 (3)

SECTION OF Clyne Colliery at

COUNTY

Communicated by Date of sinking

One-inch Map (N.S.) Six-inch Map

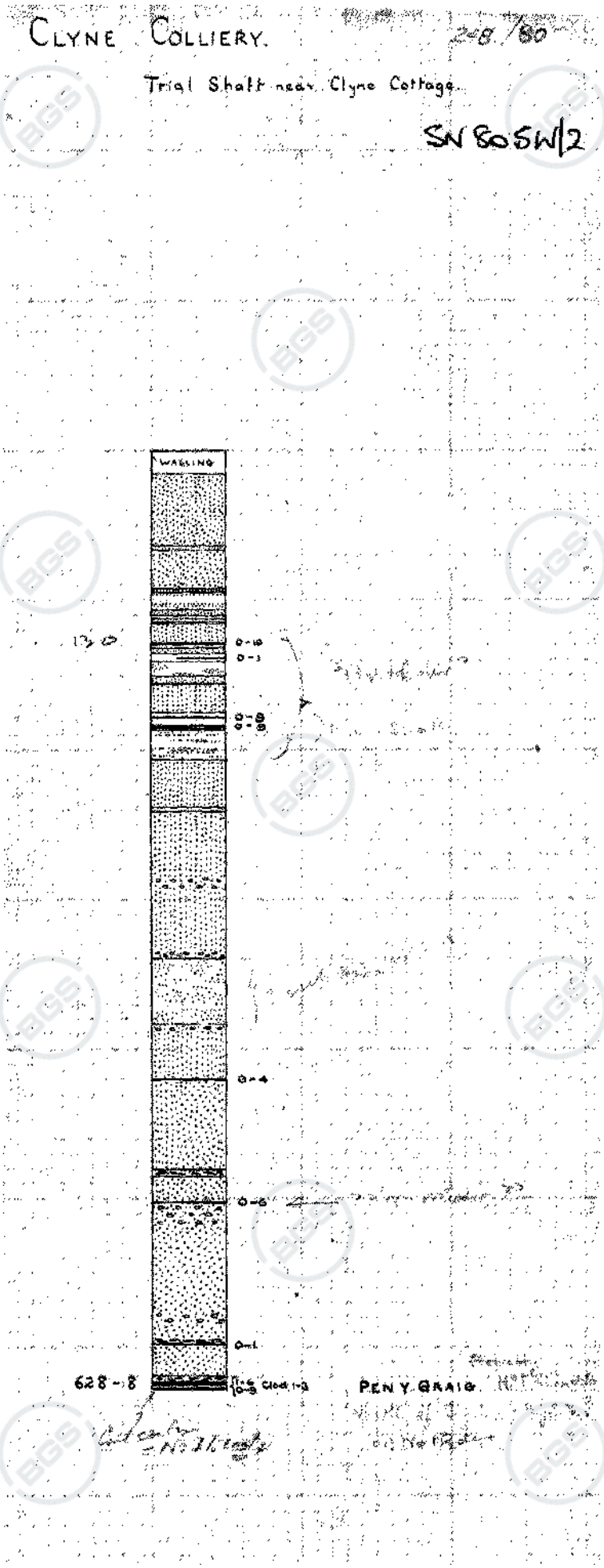
HEIGHT ABOVE O.D. DIP OF STRATA

	Thickness. Yards.	feet.	ins.	Depth from Surface. Yards.	feet.	ins.
					620	4
Brought forward				140	0	4
Strong rock with white spar	20	0	0		480	4
Thin bds of rock with coal reeders ~~conglomerate~~	2	0	0		486	4
Hard rock with thin bds	5	1	0		502	4
Rider of coal one side of pit			6		502	10
Hard conglomerate rock		2	6		505	4
do with white spar	4	0	0		517	4
Black rock with strong bds	4	0	0		529	4
Hard blue rock with small partings	10	0	0		559	4
Rock with white spar	6	0	0		577	4
Conglomerate rock	1	1	6		581	10
Black rock with thin bds	1	1	6		586	4
Hard light-coloured rock	2	1	6		593	10
					598	4
Mixed rock ironstone fossils and coal partings	1	1	6	199	1	4
Small rider of coal			1		598	5
Rock mixed with ironstone	7	0	0		619	5
Rock with coal	1	2	9		625	2
Coal		1	6		626	8
Clod } Penygraig Vein		1	3		627	11
					628	8
Bottom Coal			9	209	1	8

Remarks by Mr Lloyd.

This is probably Rhondda No 1 not No 2. Pennant rock predominates. Measurements evidently taken roughly. 36 ft thickness given only in yards and feet omitted inches, caused giving of yards. A fault being seen it is noted that small riders should also one side of pit. White spar often mentioned generally indicates a fault. Black bds must mean rock & sandstone interspersed thickly with coal-plants.

W B & L (x)—22456—1000-11-09



Zetica UXO risk map

UNEXPLODED BOMB RISK MAP

SITE LOCATION

Map Centre: 280084,199469

LEGEND

- **High:** Areas indicated as having a bombing density of 50 bombs per 1000acre or higher.
- **Moderate:** Areas indicated as having a bombing density of 15 to 49 bombs per 1000acre.
- **Low:** Areas indicated as having 15 bombs per 1000acre or less.

miltary	**industry**	**UXO find**
transport	**dock**	**Luftwaffe targets**
utilities	**Bombing decoy**	**other**

How to use your Unexploded Bomb (UXB) risk map?

The map indicates the potential for Unexploded Bombs (UXB) to be present as a result of World War Two (WWII) bombing.

You can incorporate the map into your preliminary risk assessment* for potential Unexploded Ordnance (UXO) for a site. Using this map, you can make an informed decision as to whether more in-depth detailed risk assessment* is necessary.

What do I do if my site is in a moderate or high risk area?

Generally, we recommend that a detailed UXO desk study and risk assessment is undertaken for sites in a moderate or high UXB risk area.

Similarly, if your site is near to a designated Luftwaffe target or bombing decoy then additional detailed research is recommended.

More often than not, this further detailed research will conclude that the potential for a significant UXO hazard to be present on your site is actually low.

Never plan site work or undertake a risk assessment using these maps alone. More detail is required, particularly where there may be a source of UXO from other military operations which are not reflected on these maps.

If my site is in a low risk area, do I need to do anything?

If both the map and other research confirms that there is a low potential for UXO to be present on your site then, subject to your own comfort and risk tolerance, works can proceed with no special precautions.

A low risk really means that there is no greater probability of encountering UXO than anywhere else in the UK.

If you are unsure whether other sources of UXO may be present, you can ask for one of our **pre-desk study assessments (PDSA)**

If I have any questions, who do I contact?

tel: **+44 (0) 1993 886682**

email: **uxo@zetica.com**

web: **www.zeticauxo.com**

The information in this UXB risk map is derived from a number of sources and should be used in conjunction with the accompanying notes on our website: **(https://zeticauxo.com/downloads-and-resources/risk-maps/)**

It is important to note that this map is not a UXO risk assessment and should not be reported as such when reproduced.

*Preliminary and detailed UXO risk assessments are advocated as good practice by industry guidance such as CIRIA C681 'Unexploded Ordnance (UXO), a guide for the construction industry'.

BGS Radon report

GeoReports

British Geological Survey

DANIEL KAYE
HYDROCK
WHARTON PLACE
13 WHARTON STREET
CARDIFF
CF10 1GS

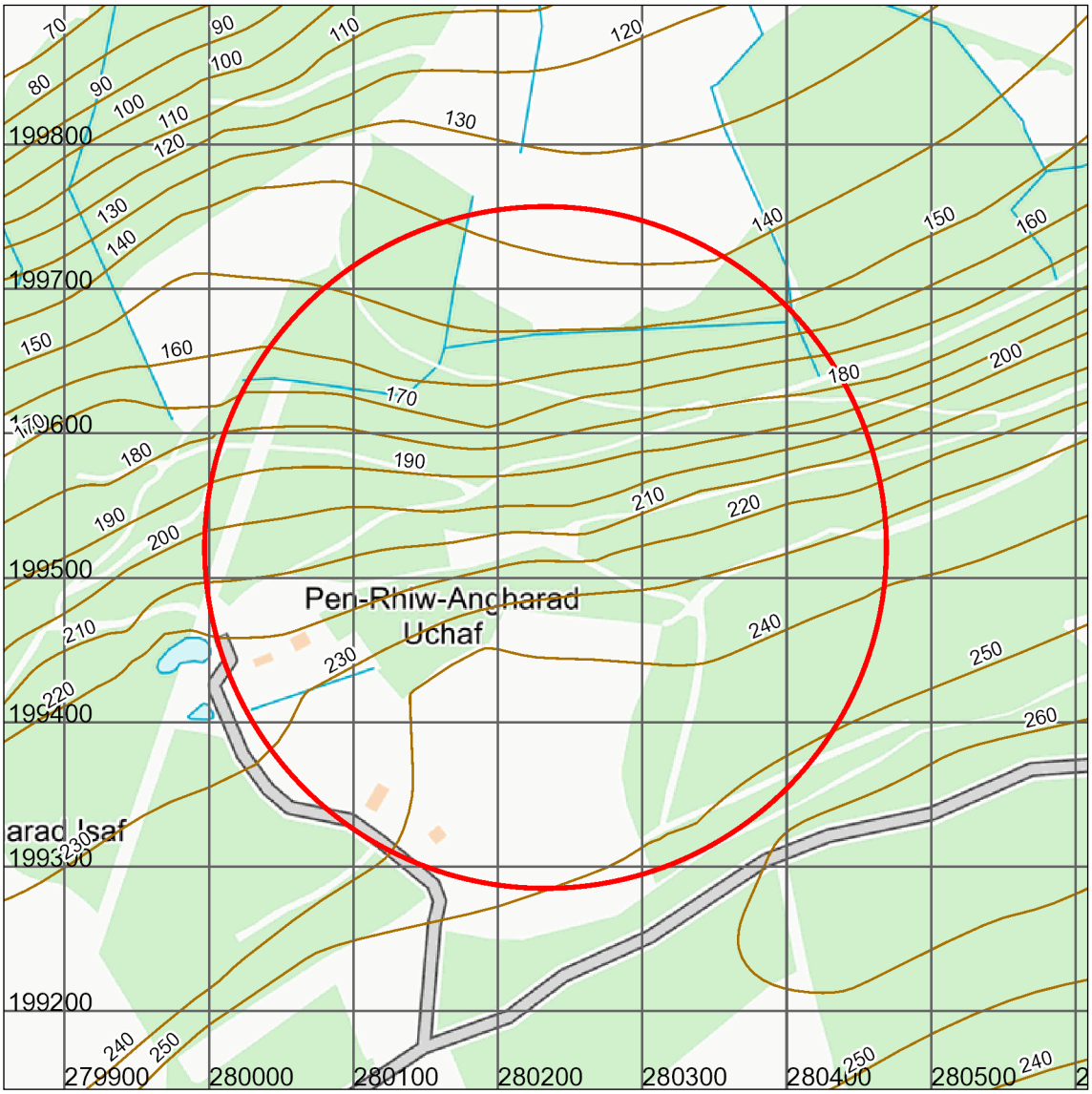
Radon Report

Advisory report on the requirement for radon protective measures in new buildings, conversions and extensions to existing buildings. The report also indicates whether a site is located within a radon Affected Area

Report Id: ***BGS_335835/50064***

Client reference: 16044

Search location



Search location indicated in red

Area centred at: 280233,199521

Radius of site area: 236 metres

Radon Report: UK

When extensions are made to existing buildings in high radon areas, or new buildings are constructed in these areas, the Building Regulations for England, Wales, Scotland and Northern Ireland require that protective measures are taken against radon entering the building.

This report provides information on whether radon protective measures are required. Depending on the probability of buildings having high radon levels, the Regulations may require either:

1. No protective measures
2. Basic protective measures
3. Full protective measures

This is an advisory report on the requirement for radon protective measures in new buildings, conversions and extensions. The report also indicates whether a site is located within a radon Affected Area

Requirement for radon protective measures

The determination below follows advice in *BR211 Radon: Guidance on protective measures for new buildings (2023 edition), which also provides guidance on what to do if the* result *indicates that protective measures are required.*

Is the property in an area where radon protective measures are required for new buildings or extensions to existing ones as described in publication BR211 (2023 edition) Radon: Guidance on protective measures for new buildings?

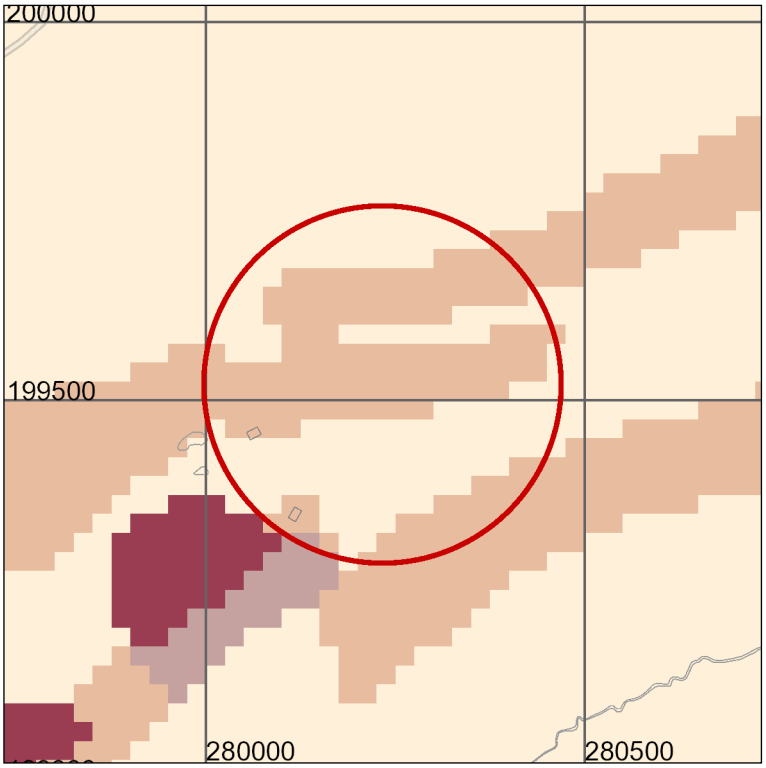
FULL RADON PROTECTIVE MEASURES ARE REQUIRED FOR THE REPORT AREA.

More details of the protective measures required are available in *BR211 Radon: Guidance on protective measures for new buildings (2023 Edition)*.

Whether or not the radon level in a building is above or below the radon Action Level can only be established by having the building tested. The UKHSA provides a radon testing service which can be accessed at www.ukradon.org or by telephone (01235 822622).

If you require further information or guidance, you should contact your local authority building control officer or approved inspector.

Radon Affected Area



	% Homes estimated to be at or above the action level
	0-1%
	1-3%
	3-5%
	5-10%
	10-30%
	30-100%

Scale: 1:10 000 (1cm = 100 m)
Search area indicated in red

Is the property in a radon Affected Area as defined by the UK Health Security Agency (UKHSA) and if so what percentage of homes are estimated to be at or above the Action Level? **YES**

Additional Information

THE PROPERTY IS IN A RADON AFFECTED AREA WHERE 10 TO 30% OF HOMES ARE ESTIMATED TO BE AT OR ABOVE THE ACTION LEVEL.

The UKHSA recommends a radon 'Action Level' of 200 Becquerels per cubic metre of air (Bq m^{-3}) for the annual average of the radon gas concentration in a home. Where 1% or more of homes are estimated to be at or above the Action Level the area should be regarded as a radon Affected Area.

This report informs you whether the property is in a radon Affected Area and the percentage of homes that are estimated to be at or above the radon Action Level at this location. Being in an Affected Area does not necessarily mean there is a high radon level within the property; the only way to determine the radon level is to carry out a radon measurement.

The UKHSA advises that radon gas should be measured in all properties within radon Affected Areas and that homes with radon levels at or above the Action Level (200 Bq m^{-3}) should be remediated. Householders with levels between the Target Level (100 Bq m^{-3}) and Action Level should seriously consider reducing their radon level, especially if they are at greater risk, such as if they are current or ex smokers. Whether or not a home is in fact above or below the Action Level or Target Level can only be established by having the building tested. The UKHSA provides a validated radon testing service which can be accessed at www.ukradon.org.

The information in this report provides an answer to one of the standard legal enquiries on house purchase in England and Wales, known as Law Society CON29 Enquiries of the Local Authority (2016); 3.14 Radon Gas: Do records indicate that the property is in a “Radon Affected Area” as identified by the UKHSA. The data can also be used to advise house buyers and sellers in Scotland and Northern Ireland.

If you are buying a new build property in a Radon Affected Area, you should ask the builder whether radon protective measures were incorporated in the construction of the property.

If you are buying a currently occupied property in a radon Affected Area, you should ask the present owner whether radon levels have been measured in the property. If they have, ask whether the results were at or above the radon Action Level and if so, whether remedial measures were installed, radon levels were re-tested, and if the results of re-testing confirmed the effectiveness of the measures.

Further information on radon is available from the UKHSA at www.ukradon.org.

What is radon?

Radon is a naturally occurring radioactive gas, which is produced by the radioactive decay of radium which, in turn, is derived from the radioactive decay of uranium. Uranium is found in small quantities in all soils and rocks, although the amount varies from place to place. Radon released from rocks and soils is quickly diluted in the atmosphere. Concentrations in the open air are normally very low and do not present a hazard. Radon that enters enclosed spaces such as some buildings (particularly basements), caves, mines, and tunnels may reach high concentrations in some circumstances. The construction method and degree of ventilation will influence radon levels in individual buildings. A person's exposure to radon will also vary according to how particular buildings and spaces are used.

Inhalation of the radioactive decay products of radon gas increases the chance of developing lung cancer. If individuals are exposed to high concentrations for significant periods of time, there may be cause for concern. In order to limit the risk to individuals, the Government has adopted an Action Level for radon in homes of 200 becquerels per cubic metre (Bq m^{-3}). The Government advises householders that, where the radon level is at or above the Action Level, measures should be taken to reduce the concentration.

Radon in workplaces

The Ionising Radiation Regulations 2017 require employers to take action when radon is present above a defined level in the workplace. Advice may be obtained from your local Health and Safety Executive Area Office or the Environmental Health Department of your local authority. The BRE publishes a guide (BR293)**: Radon in the workplace.** BRE publications may be obtained from the BRE Bookshop, Tel: 01923 664262, email: bookshop@bre.co.uk website: www.brebookshop.com

Contact Details

Keyworth Office
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BGS SuDS report

GeoReports

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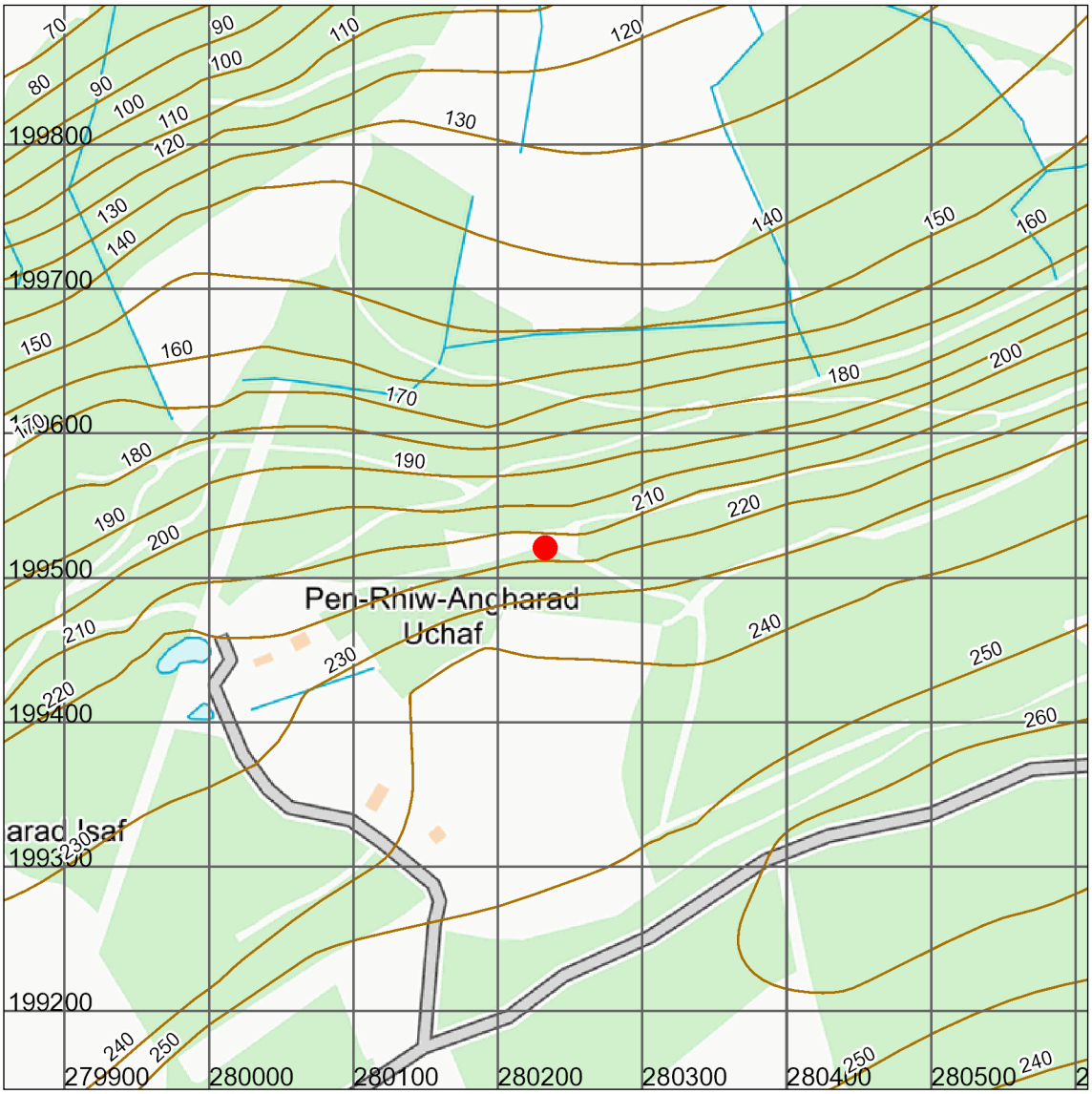
Infiltration SuDS GeoReport:

This report provides information on the suitability of the subsurface for the installation of infiltration sustainable drainage systems (SuDS). It provides information on the properties of the subsurface with respect to significant constraints, drainage, ground stability and groundwater quality protection.

Report Id: ***BGS_335835/50063***

Client reference: 16044

Search location



Search location indicated in red

Point centred at: 280233,199521

Assessment for an infiltration sustainable drainage system

Introduction

Sustainable drainage systems (SuDS) are drainage solutions that manage the volume and quality of surface water close to where it falls as rain. They aim to reduce flow rates to rivers, increase local water storage capacity and reduce the transport of pollutants to the water environment. There are four main types of SuDS, which are often designed to be used in sequence. They comprise:

- **source control:** systems that control the rate of runoff
- **pre-treatment:** systems that remove sediments and pollutants
- **retention:** systems that delay the discharge of water by providing surface storage
- **infiltration:** systems that mimic natural recharge to the ground.

This report focuses on infiltration SuDS. It provides subsurface information on the properties of the ground with respect to drainage, ground stability and groundwater quality protection. It is intended principally for those involved in the preliminary assessment of the suitability of the ground for infiltration SuDS, and those involved in assessing proposals from others for sustainable drainage, but it may also be useful to help house-holders judge whether or not further professional advice should be sought. If in doubt, users should consult a suitably-qualified professional about the results in this report before making any decisions based upon it.

This GeoReport is structured in two parts:

- **Part 1. Summary data**.

  Comprises three maps that summarise the data contained within Part 2.

- **Part 2. Detailed data**.

  Comprises a further 24 maps in four thematic sections:

  - **Very significant constraints.** Maps highlight areas where infiltration may result in adverse impacts due to factors including: ground instability (soluble rocks, non-coal shallow mining and landslide hazards); persistent shallow groundwater, or the presence of made ground, which may represent a ground stability or contamination hazard.
  - **Drainage potential**. Maps indicate the drainage potential of the ground, by considering subsurface permeability, depth to groundwater and the presence of floodplain deposits.
  - **Ground stability**. Maps indicate the presence of hazards that have the potential to cause ground instability resulting in damage to some buildings and structures, if water is infiltrated to the ground.
  - **Groundwater protection**. Maps provide key indicators to help determine whether the groundwater may be susceptible to deterioration in quality as a result of infiltration.

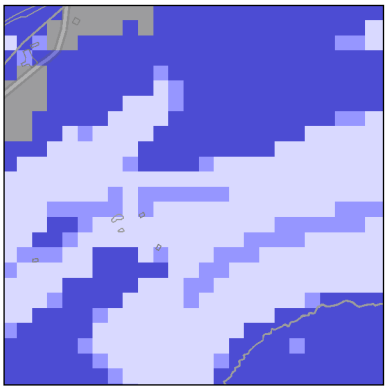
This report considers the suitability of the subsurface for the installation of infiltration SuDS, such as soakaways, infiltration basins or permeable pavements. It provides subsurface data to indicate whether, and which type of infiltration system may be appropriate. It does not state that infiltration SuDS are, or are not, appropriate as this is highly dependent on the design of the individual system. This report therefore describes the subsurface conditions at the site, allowing the reader to determine the suitability of the site for infiltration SuDS.

The map and text data in this report is similar to that provided in the '*Infiltration SuDS Map: Detailed'* national map product. For further information about the data, consult the '*User Guide for the Infiltration SuDS Map: Detailed'*, available from http://nora.nerc.ac.uk/16618/.

PART 1: SUMMARY DATA

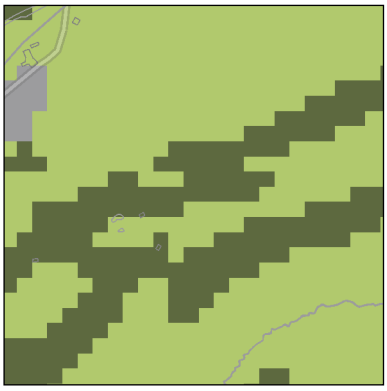
This section provides a summary of the data.

In terms of the drainage potential, is the ground suitable for infiltration SuDS?



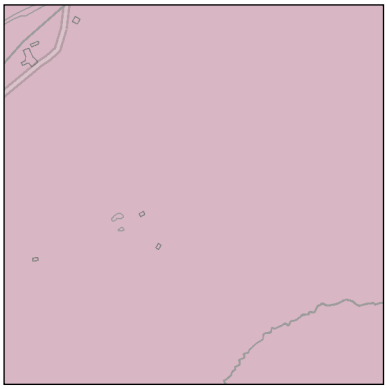
- Highly compatible for infiltration SuDS. The subsurface is likely to be suitable for free-draining infiltration SuDS.
- Probably compatible for infiltration SuDS. The subsurface is probably suitable although the design may be influenced by the ground conditions.
- Opportunities for bespoke infiltration SuDS. The subsurface is potentially suitable although the design will be influenced by the ground conditions.
- Very significant constraints are indicated. There is a very significant potential for one or more hazards associated with infiltration.

Is ground instability likely to be a problem?



- Increased infiltration is very unlikely to result in ground instability.
- Ground instability problems may be present or anticipated, but increased infiltration is unlikely to result in ground instability.
- Ground instability problems are probably present. Increased infiltration may result in ground instability.
- There is a very significant potential for one or more geohazards associated with infiltration.

Is the groundwater susceptible to deterioration in quality?



- The groundwater is not expected to be especially vulnerable to contamination.
- The groundwater may be vulnerable to contamination.
- The groundwater is likely to be vulnerable to contaminants.
- Made ground is present at the surface. Infiltration may increase the possibility of remobilising pollutants.

PART 2: DETAILED DATA

This section provides further information about the properties of the ground and will help assess the suitability of the ground for infiltration SuDS.

Section 1. Very significant constraints

Where maps are overlain by grey polygons, geological or hydrogeological hazards may exist that could be made worse by infiltration. The following hazards are considered:

- soluble rocks
- landslides
- shallow mining (not including coal)
- shallow groundwater
- made ground

For more information read 'Explanation of terms' at the end of this report.

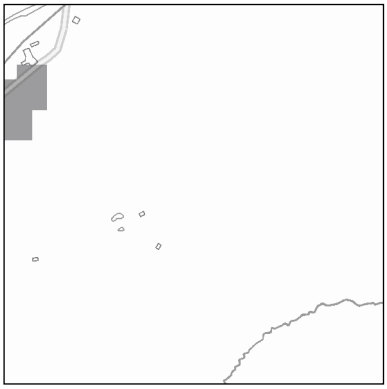
Soluble rock hazard

■ Very significant soluble rock hazard.

Soluble rocks are present with a very significant possibility of localised subsidence that could be initiated or made worse by infiltration. The site investigation should consider whether the potential for or the consequences of subsidence as a result of infiltration are significant.

☐ Very significant soluble rock hazards are not present; however this hazard may still need to be considered. See Part 3.

Landslide hazard



■ Very significant landslide hazard.

Slope instability problems are almost certainly present and may be active. An increase in moisture content as a result of infiltration may cause the slope to fail. The site investigation should consider whether the potential for or the consequences of landslide as a result of infiltration are significant.

☐ Very significant landslide hazards are not present; however this hazard may still need to be considered. See Part 3.

Shallow mining hazard (not including coal)

- [x] Very significant mining hazard.

  Shallow mining is likely to be present with a very significant possibility of localised subsidence that could be initiated or made worse by increased infiltration. Also, infiltration may increase the possibility of remobilising pollutants. The site investigation should consider whether the potential for or consequences of subsidence and/or remobilisation of pollutants as a result of infiltration are significant.

- [ ] Very significant mining hazards are not present; however this hazard may still need to be considered. See Part 3.

Persistent shallow groundwater

- [x] Very high likelihood of persistent or seasonally shallow groundwater.

  Persistent or seasonally shallow groundwater is likely to be present. Infiltration may increase the likelihood of soakaway inundation, or groundwater emergence at the surface. The site investigation should consider whether the potential for or the consequences of groundwater level rise as a result of infiltration are significant.

- [ ] See Part 2 for the likely depth to water table.

Made ground

- [x] Made ground present.

  Made ground is present at the surface. Infiltration may affect ground stability or increase the possibility of remobilising pollutants. The site investigation should consider whether the potential for or consequences of ground instability and/or pollutant leaching as a result of infiltration are significant.

- [ ] None recorded

Section 2. Drainage potential

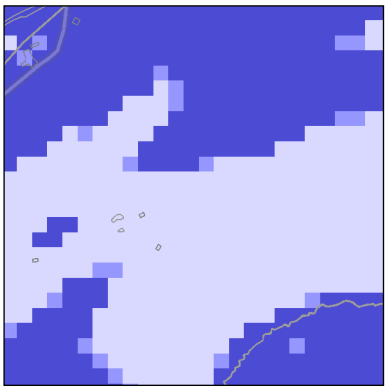
The following pages contain maps that will help you assess the drainage potential of the ground by considering the:

- depth to water table
- permeability of the superficial deposits
- thickness of the superficial deposits
- permeability of the bedrock
- presence of floodplains

Superficial deposits are not present everywhere and therefore some areas of the *superficial deposit permeability* map may not be coloured. Where this is the case, the *bedrock permeability* map shows the likely permeability of the ground. Superficial deposits in some places are very thin and hence in these places you may wish to consider both the permeability of the superficial deposits and the permeability of the bedrock. The *superficial thickness* map will tell you whether the superficial deposits are thin (< 3 m thick) or thick (>3 m). Where they are over 3 m thick, the permeability of the bedrock may not be relevant.

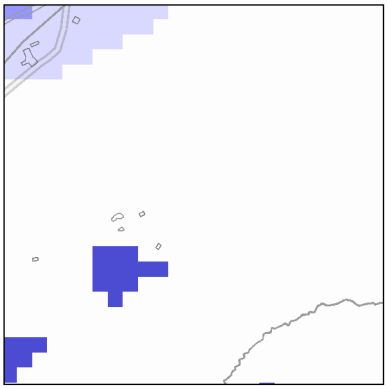
For more information read ‘Explanation of terms’ at the end of this report.

Depth to groundwater table



	Groundwater is likely to be **more than 5 m** below the ground surface throughout the year.
	Groundwater is likely to be between **3 and 5 m** below the ground surface for at least part of the year.
	Groundwater is likely to be **less than 3 m** below the ground surface for at least part of the year.

Superficial deposit permeability



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Superficial deposits are likely to be **free-draining**.

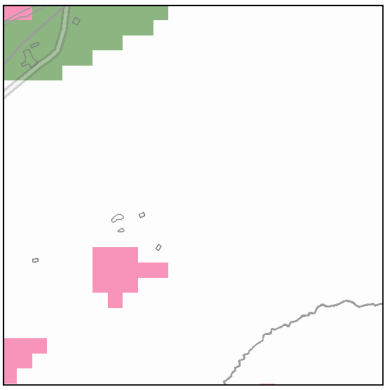
The superficial deposit permeability is **spatially variable**, but likely to permit moderate infiltration.

Superficial deposits are likely to be **poorly draining**.

These maps show the permeability range that is summarised above.

- Very Low
- Low
- Moderate
- High
- Very High

Minimum



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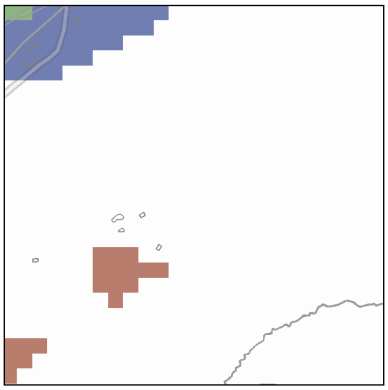
Maximum



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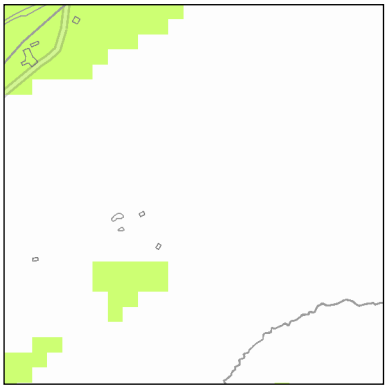
Superficial deposit thickness



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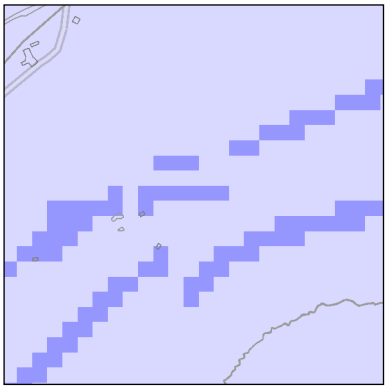
The thickness of superficial deposits is **< 3 m** and hence the permeability of the ground may be dependent on both the superficial deposits (where present) and underlying bedrock (see below).

The thickness of superficial deposits is **> 3 m** and hence the permeability of the superficial deposits is likely to determine the permeability of the ground.

Bedrock permeability



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Bedrock deposits are likely to be **free-draining**.

The bedrock permeability is **spatially variable**, but likely to permit moderate infiltration.

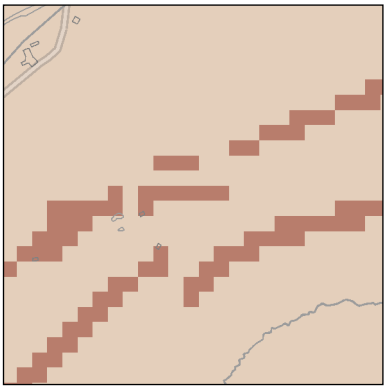
Bedrock deposits are likely to be **poorly draining**.

These maps show the permeability range that is summarised above.

Key

- Very Low
- Low
- Moderate
- High
- Very High

Minimum



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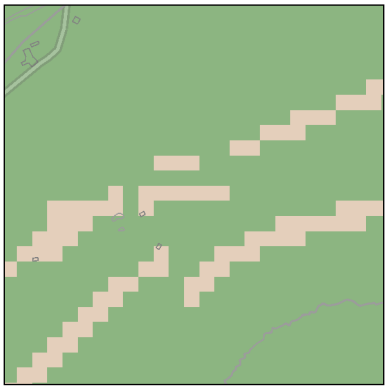
Maximum



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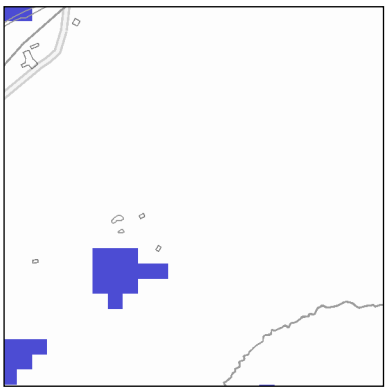
Geological indicators of flooding



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Superficial floodplain deposits or low-lying coastal areas have been identified. Groundwater levels may rise in response to high river or tide levels, potentially causing inundation of subsurface infiltration SuDS.

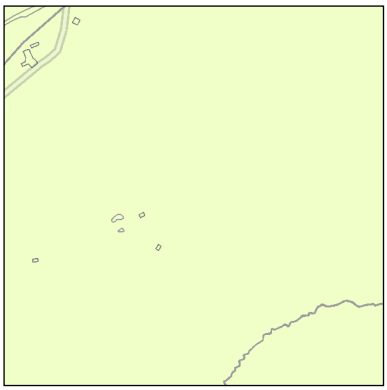
Section 3. Ground stability

The following pages contain maps that will help you assess whether infiltration may impact the stability of the ground. They consider hazards associated with:

- soluble rocks
- landslides
- shallow mining
- running sands
- swelling clays
- compressible ground, and
- collapsible ground

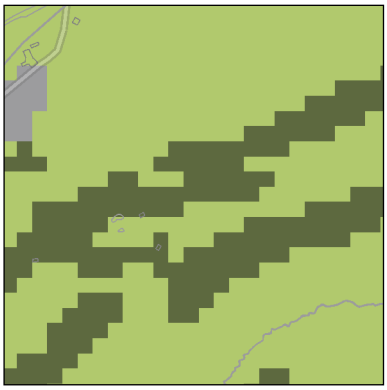
In the following maps, geohazards that are identified in green are unlikely to prevent infiltration SuDS from being installed, but they should be considered during design. For more information read ‘Explanation of terms’ at the end of this report.

Soluble rocks



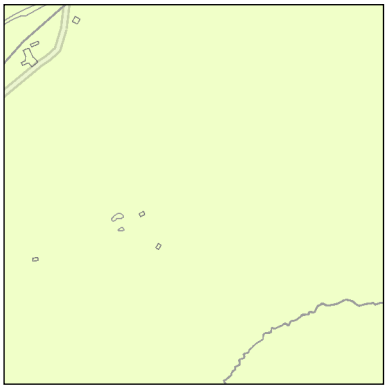
	Increased infiltration is unlikely to result in subsidence.
	Increased infiltration is unlikely to cause localised subsidence, but potential impacts should be considered.
	Increased infiltration may result in localised subsidence. The potential for or the consequences of subsidence associated with soluble rocks should be considered.
	Very significant possibility of localised subsidence that could be initiated or made worse by infiltration.

Landslides



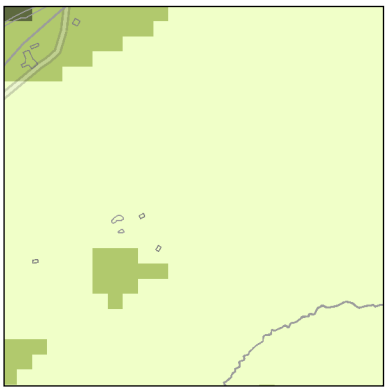
- Increased infiltration is unlikely to lead to slope instability.
- Slope instability problems may be present or anticipated, but increased infiltration is unlikely to cause instability
- Slope instability problems are probably present or have occurred in the past, and increased infiltration may result in slope instability.
- Slope instability problems are almost certainly present and may be active. An increase in moisture content as a result of infiltration may cause the slope to fail.

Shallow mining



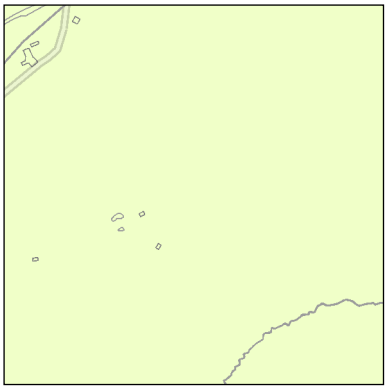
- Increased infiltration is unlikely to lead to subsidence.
- Shallow mining is possibly present. Increased infiltration is unlikely to cause a geohazard, but potential impacts should be considered.
- Shallow mining could be present with a significant possibility that localised subsidence could be initiated or made worse by increased infiltration.
- Shallow mining is likely to be present, with a very significant possibility that localised subsidence may be initiated or made worse by increased infiltration.

Running sand



- Increased infiltration is unlikely to cause ground collapse associated with running sands.
- Running sand is possibly present. Increased infiltration is unlikely to cause a geohazard, but potential impacts should be considered.
- Significant possibility for running sand problems. Increased infiltration may result in a geohazard.

Swelling clays



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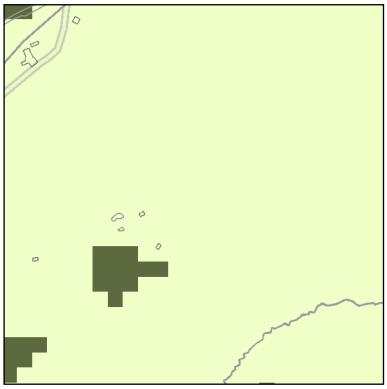
- Increased infiltration is unlikely to cause shrink-swell ground movement.
- Ground is susceptible to shrink-swell ground movement. Increased infiltration is unlikely to cause a geohazard, but potential impacts should be considered.
- Ground is susceptible to shrink-swell ground movement. Increased infiltration may result in a geohazard.

Compressible ground



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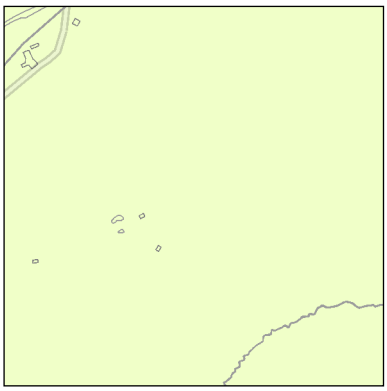
- Increased infiltration is unlikely to lead to ground compression.
- Compressibility and uneven settlement hazards are probably present. Increased infiltration may result in a geohazard.

Collapsible ground



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- Increased infiltration is unlikely to result in subsidence.
- Deposits with potential to collapse when loaded and saturated are possibly present in places. Increased infiltration is unlikely to cause a geohazard, but potential impacts should be considered.
- Deposits with potential to collapse when loaded and saturated are probably present in places. Increased infiltration may result in a geohazard.

Section 4. Groundwater quality protection

The following pages contain maps showing some of the information required to ensure the protection of groundwater quality. Data presented includes:

- groundwater source protection zones (Environment Agency data)
- predominant flow mechanism
- made ground

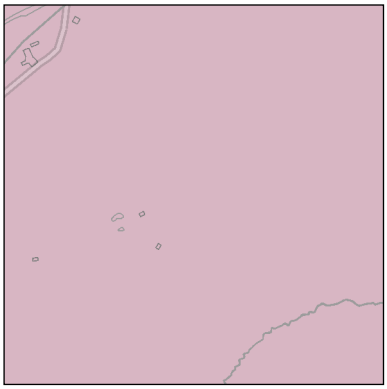
For more information read ‘Explanation of terms’ at the end of this report.

Groundwater source protection zones

Derived in part from Source Protection Zone data provided under licence from the Environment Agency © Environment Agency 2023.

Groundwater is not within a source protection zone.
Source protection zone IV
Source protection zone III
Source protection zone II
Source protection zone I

Predominant flow mechanism



Water is likely to percolate through the unsaturated zone to the groundwater through either the pore space in granular media or through porespace and fractures; these processes have some potential for contaminant removal and breakdown.
Water is likely to percolate through the unsaturated zone to the groundwater through fractures, a process which has little potential for contaminant removal and breakdown.

Made ground

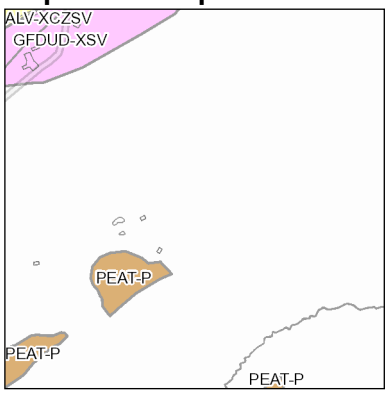
Made ground is present at the surface. Infiltration may increase the possibility of remobilising pollutants.

Section 5. Geological Maps

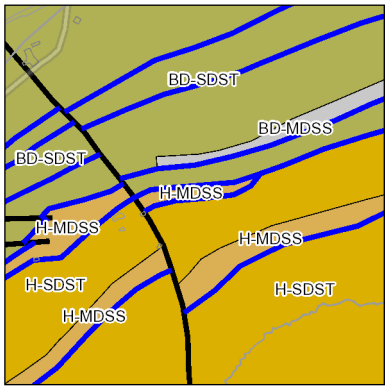
The following maps show the artificial, superficial and bedrock geology within the area of interest.

Artificial deposits

Superficial deposits



Bedrock



Fault

Coal, ironstone or mineral vein

Note: Faults and Coals, ironstone & mineral veins are shown for illustration and to aid interpretation of the map. Not all such features are shown and their absence on the map face does not necessarily mean that none are present

Key to Artificial deposits:
No deposits recorded by BGS in the search area

Key to Superficial deposits:

Map colour	Computer Code	Rock name	Rock type
	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
	GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL
	PEAT-P	PEAT	PEAT

Key to Bedrock geology:

Map colour	Computer Code	Rock name	Rock type
	BD-MDSS	BRITHDIR MEMBER	MUDSTONE, SILTSTONE AND SANDSTONE
	BD-SDST	BRITHDIR MEMBER	SANDSTONE
	H-MDSS	HUGHES MEMBER	MUDSTONE, SILTSTONE AND SANDSTONE
	H-SDST	HUGHES MEMBER	SANDSTONE

Limitations of this report:

- This report is concerned with the potential for infiltration-to-the-ground to be used as a SuDS technique at the site described. It only considers the subsurface beneath the search area and does NOT consider potential surface or subsurface impacts outside of that area.
- This report is NOT an alternative for an on-site investigation or soakaway test, which might reach a different conclusion.
- This report must NOT be used to justify disposal of foul waste or grey water.
- This report is based on and limited to an interpretation of the records held by the British Geological Survey (BGS) at the time the search is performed. The datasets used (with the exception of that showing depth to water table) are based on 1:50 000 digital geological maps and not site-specific data.
- Other more specific and detailed ground instability information for the site may be held by BGS, and an assessment of this could result in a modified assessment.
- To interpret the maps correctly, the report must be viewed and printed in colour.
- The search does NOT consider the suitability of sites with regard to:
    - previous land use,
    - potential for, or presence of contaminated land
    - presence of perched water tables
    - shallow mining hazards relating to coal mining. Searches of coal mining should be carried out via The Coal Authority Mine Reports Service: www.coalminingreports.co.uk.
    - made ground, where not recorded
    - proximity to landfill sites (searches for landfill sites or contaminated land should be carried out through consultation with local authorities/Environment Agency)
    - zones around private water supply boreholes that are susceptible to groundwater contamination.
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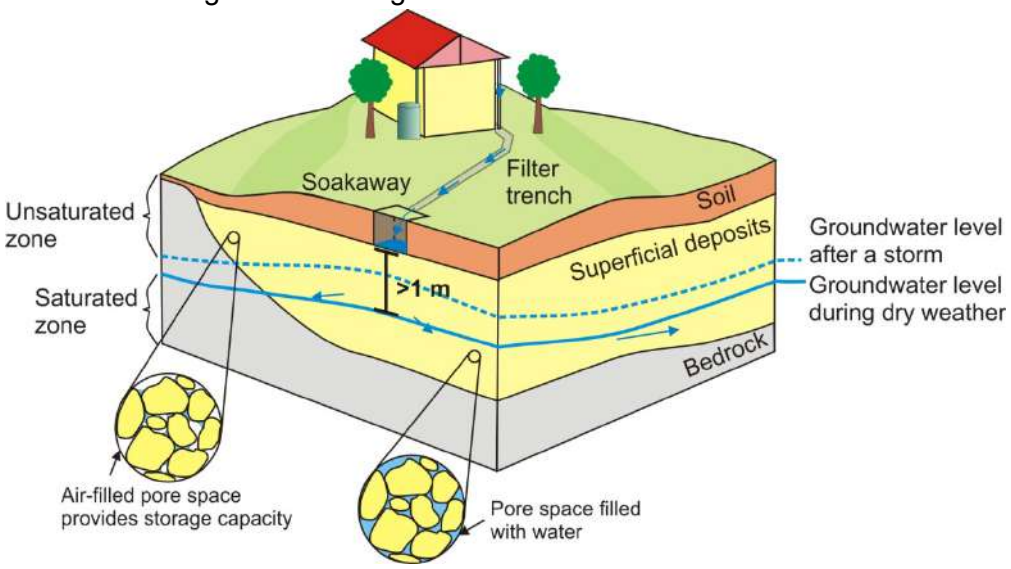
Explanation of terms

Depth to groundwater

In the shallow subsurface, the ground is commonly unsaturated with respect to water. Air fills the spaces within the soil and the underlying superficial deposits and bedrock. At some depth below the ground surface, there is a level below which these spaces are full of water. This level is known as the groundwater level, and the water below it is termed the groundwater. When water is infiltrated, the groundwater level may rise temporarily. To ensure that there is space in the unsaturated zone to accommodate this, there should be a minimum thickness of 1 m between the base of the infiltration system and the water table. An estimate of the *depth to groundwater* is therefore useful in determining whether the ground is suitable for infiltration.



Groundwater flooding

Groundwater flooding occurs when a rise in groundwater level results in very shallow groundwater or the emergence of groundwater at the surface. If infiltration systems are installed in areas that are susceptible to groundwater flooding, it is possible that the system could become inundated. The susceptibility map seeks to identify areas where the geological conditions and water tables indicate that groundwater level rise could occur under certain circumstances. A high susceptibility to groundwater flooding classification does not mean that groundwater flooding has ever occurred in the past, or will do so in the future as the susceptibility maps do not contain information on how often flooding may occur. The susceptibility maps are designed for planning; identifying areas where groundwater flooding might be an issue that needs to be taken into account.

Geological indicators of flooding

In floodplain deposits, groundwater level can be influenced by the water level in the adjacent river. Groundwater level may increase during periods of fluvial flood and therefore this should be taken into account when designing infiltration systems on such deposits. The *geological indicators of flooding* dataset shows where there is geological evidence (floodplain deposits) that flooding has occurred in the past.

For further information on flood-risk, the likely frequency of its recurrence in relation to any proposed development of the site, and the status of any flood prevention measures in place, you are advised to contact the local office of the Environment Agency (England and Wales) at www.environment-agency.gov.uk/ or the Scottish Environment Protection Agency (Scotland) at www.sepa.org.uk.

Artificial ground

Artificial ground comprises deposits and excavations that have been created or modified by human activity. It includes ground that is worked (quarries and road cuttings), infilled (back-filled quarries), landscaped (surface re-shaping), disturbed (near surface mineral workings) or classified as made ground (embankments and spoil heaps). The composition and properties of artificial ground are often unknown. In particular, the permeability and chemical composition of the artificial ground should be determined to ensure that the ground will drain and that any contaminants present will not be remobilised.

Superficial permeability

Superficial deposits are those geological deposits that were formed during the most recent period of geological time (as old as 2.6 million years before present). They generally comprise relatively thin deposits of gravel, sand, silt and clay and are present beneath the pedological soil in patches or larger spreads over much of Britain. The ease with which water can percolate through these deposits is controlled by their permeability and varies widely depending on their composition. Those deposits comprising clays and silts are less permeable and thus infiltration is likely to be slow, such that water may pool on the surface. In comparison, deposits comprising sands and gravels are more permeable allowing water to percolate freely.

Bedrock permeability

Bedrock forms the main mass of rock forming the Earth. It is present everywhere, commonly beneath superficial deposits. Where the superficial deposits are thin or absent, the ease with which water will percolate into the ground depends on the permeability of the bedrock.

Natural ground instability

Natural ground instability refers to the propensity for upward, lateral or downward movement of the ground that can be caused by a number of natural geological hazards (e.g. ground dissolution/compressible ground). Some movements associated with particular hazards may be gradual and of millimetre or centimetre scale, whilst others may be sudden and of metre or tens of metres scale. Significant natural ground instability has the potential to cause damage to buildings and structures, especially when the drainage characteristics of a site are altered. It should be noted, however, that many buildings, particularly more modern ones, are built to such a standard that they can remain unaffected in areas of significant ground movement.

Shrink-swell

A shrinking and swelling clay changes volume significantly according to how much water it contains. All clay deposits change volume as their water content varies, typically swelling in winter and shrinking in summer, but some do so to a greater extent than others. Contributory circumstances could include drought, leaking service pipes, tree roots drying-out the ground or changes to local drainage patterns, such as the creation of soakaways. Shrinkage may remove support from the foundations of buildings and structures, whereas clay expansion may lead to uplift (heave) or lateral stress on part or all of a structure; any such movements may cause cracking and distortion.

Landslides (slope stability)

A landslide is a relatively rapid outward and downward movement of a mass of ground on a slope, due to the force of gravity. A slope is under stress from gravity but will not move if its strength is greater than this stress. If the balance is altered so that the stress exceeds the strength, then movement will occur. The stability of a slope can be reduced by removing ground at the base of the slope, by placing material on the slope, especially at the top, or by increasing the water content of the materials forming the slope. Increase in subsurface water content beneath a soakaway could increase susceptibility to landslide hazards. The assessment of landslide hazard refers to the stability of the present land surface. It does not encompass a consideration of the stability of excavations.

Soluble rocks (dissolution)

Some rocks are soluble in water and can be progressively removed by the flow of water through the ground. This process tends to create cavities, potentially leading to the collapse of overlying materials and possibly subsidence at the surface. The release of water into the subsurface from infiltration systems may increase the dissolution of rock or destabilise material above or within a cavity. Dissolution cavities may create a pathway for rapid transport of contaminated water to an aquifer or water course.

Compressible ground

Many ground materials contain water-filled pores (the spaces between solid particles). Ground is compressible if a building (or other load) can cause the water in the pore space to be squeezed out, causing the ground to decrease in thickness. If ground is extremely compressible the building may sink. If the ground is not uniformly compressible, different parts of the building may sink by different amounts, possibly causing tilting, cracking or distortion. The compressibility of the ground may alter as a result of changes in subsurface water content caused by the release of water from soakaways.

Collapsible deposits

Collapsible ground comprises certain fine-grained materials with large pore spaces (the spaces between solid particles). It can collapse when it becomes saturated by water and/or a building (or other structure) places too great a load on it. If the material below a building collapses it may cause the building to sink. If the collapsible ground is variable in thickness or distribution, different parts of the building may sink by different amounts, possibly causing tilting, cracking or distortion. The subsurface underlying a soakaway will experience an increase in water content that may affect the stability of the ground. This hazard is most likely to be encountered only in parts of southern England.

Running sand

Running sand conditions occur when loosely-packed sand, saturated with water, flows into an excavation, borehole or other type of void. The pressure of the water filling the spaces between the sand grains reduces the contact between the grains and they are carried along by the flow. This can lead to subsidence of the surrounding ground. Running sand is potentially hazardous during the drainage system installation. During installation, excavation of the ground may create a space into which sand can flow, potentially causing subsidence of surrounding ground.

Shallow mining hazards (non coal)

Current or past underground mining for coal or for other commodities can give rise to cavities at shallow or intermediate depths, which may cause fracturing, general settlement, or the formation of crown-holes in the ground above. Spoil from mineral workings may also present a pollution hazard. The release of water into the subsurface from soakaways may destabilise material above or within a cavity. Cavities arising as a consequence of mining may also create a pathway for rapid transport of contaminated water to an aquifer or watercourse. The mining hazards map is derived from the geological map and considers the potential for subsidence associated with mining on the basis of geology type. Therefore if mining is known to occur within a certain rock, the map will highlight the potential for a hazard within the area covered by that geology.

For more information regarding underground and opencast **coal mining**, the location of mine entries (shafts and adits) and matters relating to subsidence or other ground movement induced by **coal mining** please contact the Coal Authority, Mining Reports, 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG; telephone 0845 762 6848 or at www.coal.gov.uk**.** For more information regarding other types of mining (i.e. non-coal), please contact the British Geological Survey.

Groundwater source protection zones

In England and Wales, the Environment Agency has defined areas around wells, boreholes and springs that are used for the abstraction of public drinking water as source protection zones. In conjunction with Groundwater Protection Policy the zones are used to restrict activities that may impact groundwater quality, thereby preventing pollution of underlying aquifers, such that drinking water quality is upheld. The Environment Agency can provide advice on the location and implications of source protection zones in your area (www.environment-agency.gov.uk/)

Contact Details

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Environmental Science Centre
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British Geological Survey
Maclean Building
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- The data, information and related records supplied in this Report by BGS can only be indicative and should not be taken as a substitute for specialist interpretations, professional advice and/or detailed site investigations. You must seek professional advice before making technical interpretations on the basis of the materials provided.
- Geological observations and interpretations are made according to the prevailing understanding of the subject at the time. The quality of such observations and interpretations may be affected by the availability of new data, by subsequent advances in knowledge, improved methods of interpretation, and better access to sampling locations.
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- Detail, which is clearly defined and accurately depicted on large-scale maps, may be lost when small-scale maps are derived from them.
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- The most appropriate techniques for copying original records are used, but there may be some loss of detail and dimensional distortion when such records are copied.
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- Note that for some sites, the latest available records may be historical in nature, and while every effort is made to place the analysis in a modern geological context, it is possible in some cases that the detailed geology at a site may differ from that described.

Report issued by
BGS Enquiry Service

Consultants Coal Mining Report

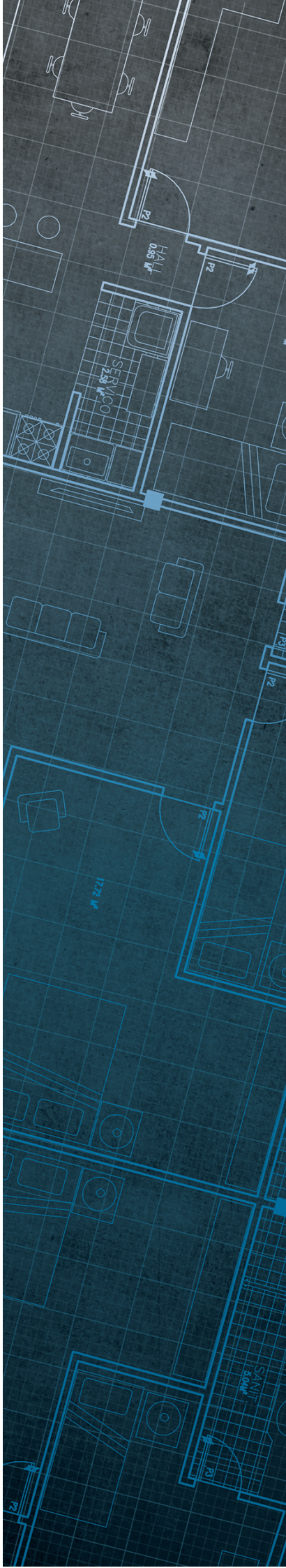
The Coal Authority

Consultants

Coal Mining Report

280265.4930125342,199499.25649
367977,
Neath Port Talbot

Date of enquiry:	**13 November 2023**
Date enquiry received:	**13 November 2023**
Issue date:	**13 November 2023**
Our reference:	**51003388903001**
Your reference:	**GS-162-KWQ-1TQ-ONK**



Consultants

Coal Mining Report

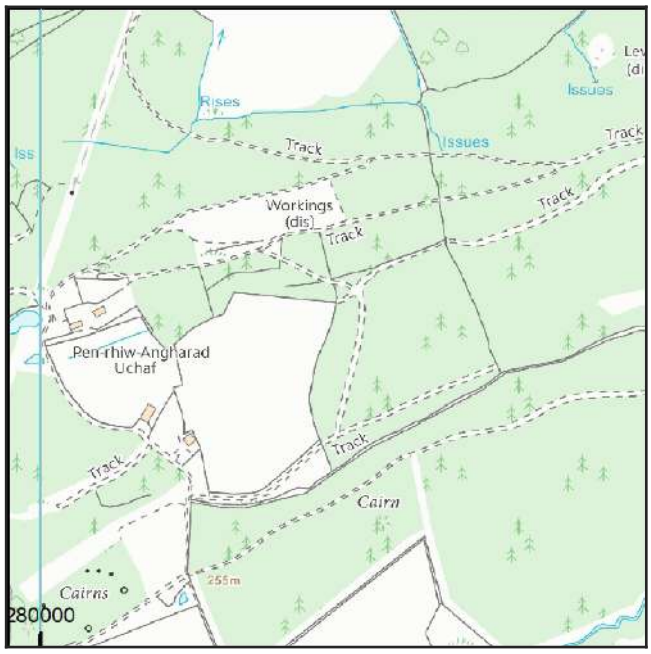
This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

GROUNDSURE LIMITED

Enquiry address

280265.4930125342,199499.25649367977,
Neath Port Talbot



Approximate position of property

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/thecoalauthority

Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	HUGHES	Coal	4F34	53	Beneath Property	0.7	South-East	180	1920
unnamed	HUGHES	Coal	4EZA	75	Beneath Property	7.1	South	180	1900
unnamed	HUGHES	Coal	4F33	81	Beneath Property	7.8	South-East	180	1914
unnamed	NO.1 RHONDDA	Coal	4I4E	264	North	1.5	South-East	110	1925
unnamed	NO.1 RHONDDA	Coal	4I4F	264	North	2.2	South-East	110	1925
unnamed	NO.1 RHONDDA	Coal	4F31	283	Beneath Property	4.5	South-East	110	1930

Probable unrecorded shallow workings

Yes.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

Entry type	Reference	Grid reference	Treatment description	Mineral	Conveyancing details
Adit	279199-004	279924 199550		Coal	
Adit	279199-010	279906 199556		Coal	
Adit	279199-011	279859 199481	this adit has been excavated out and backfilled with 60 tonnes of imported stone. The area then being reprofiled to the hillside	Coal	
Adit	279199-012	279807 199414		Coal	
Adit	279199-013	279860 199685		Coal	
Adit	279199-014	279888 199684		Coal	
Adit	279199-015	279852 199552		Coal	
Adit	279199-016	279721 199600		Coal	
Adit	280199-004	280585 199712	The adit mouth has been secured by the construction of a stone faced blockwork wall incorporating a 21m x 300mm diameter plastic pipe for water drainage.	Coal	
Adit	280199-006	280223 199584		Coal	
Adit	280199-007	280288 199605		Coal	
Adit	280199-008	280446 199652		Coal	
Adit	280199-009	280797 199764	An investigation on the 9th December 2010, made under E.2649 reported an open adit in natural rock on a hillside. The open adit was secured with a timber fence and signs and made into secure site SS540. Treatment works completed 7th January 2011.	Coal	
Adit	280199-010	280773 199782		Coal	
Shaft	280199-014	280825 199771		Coal	
Adit	280199-015	280166 199588		Coal	
Adit	280199-016	280744 199797		Coal	

Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

R10966	SW2234	10228
8454	6446	PO0
SWR4022	SWA674	

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
DARREN DDU	Coal	Yes	Within	N/A	47
DARREN DDU	Coal	Yes	Within	N/A	59
DARREN DDU	Coal	Yes	Within	N/A	90
DARREN DDU	Coal	Yes	Within	N/A	98
GLYNGWILLYN	Coal	Yes	Within	N/A	63
GLYNGWILLYN	Coal	Yes	Within	N/A	64
GLYNGWILLYN	Coal	Yes	Within	N/A	66
HUGHES	Coal	Yes	39.3	South-West	48
HUGHES	Coal	Yes	Within	N/A	70
HUGHES	Coal	Yes	Within	N/A	74
HUGHES	Coal	Yes	Within	N/A	78
UNNAMED	Coal	Yes	Within	N/A	41
UNNAMED	Coal	No	Within	N/A	57
UNNAMED	Coal	Yes	Within	N/A	60
UNNAMED	Coal	No	Within	N/A	63
UNNAMED	Coal	Yes	Within	N/A	68
UNNAMED	Coal	No	Within	N/A	73
UNNAMED	Coal	No	Within	N/A	75

Geological faults, fissures and breaklines

Please refer to the 'Summary of findings' map (on separate sheet) for details of any geological faults, fissures or breaklines either within or intersecting the enquiry boundary.

Faults under or close to the property recorded.

Opencast mines

None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

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

Site investigations

None recorded within 50 metres of the enquiry boundary.

Remediated sites

Distance to site remediation (m)	Direction
Within	N/A
Within	N/A
Within	N/A
Within	N/A

See Section 4 for further information.

Coal mining subsidence

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

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

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

Mine gas

None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

Section 3 – Licensing and future mining activity

Future underground mining
None recorded.

Coal mining licensing

Status	Licence type	Distance (m)	Direction
Future	Underground	Within	N/A

See Section 4 for further information.

Court orders
None recorded.

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

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

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

Payments to owners of former copyhold land
The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Section 4 – Further information

The following potential risks have been identified and as part of your risk assessment should be investigated further.

Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority.

MINE GAS: Please note, if there are no recorded instances of mine gas within 500m of the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

Remediated sites

The site is within an area of previous interest. It is close to where the Coal Authority has investigated and where necessary remediated mine entries and/or shallow coal mine workings following specific reported hazards.

The site requires further investigation and may influence your risk assessment. We recommend that you order the Coal Authority **Surface Hazards Incident Report**, which will include more information about the hazard.

Coal mining licensing

The report has highlighted that the site is close to a Coal Authority license area for coal mining operations. Please contact us if you require further information.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

Section 5 – Data definitions

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

Past underground coal mining

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

Probable unrecorded shallow workings

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

Spine roadways at shallow depth

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

Mine entries

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

Abandoned mine plan catalogue numbers

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

Outcrops

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

Geological faults, fissures and breaklines

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

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

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

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

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

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

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

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

Mine gas
Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission. Please note, if there are no recorded instances of mine gas reported, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded.

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

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

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

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

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

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

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

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

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

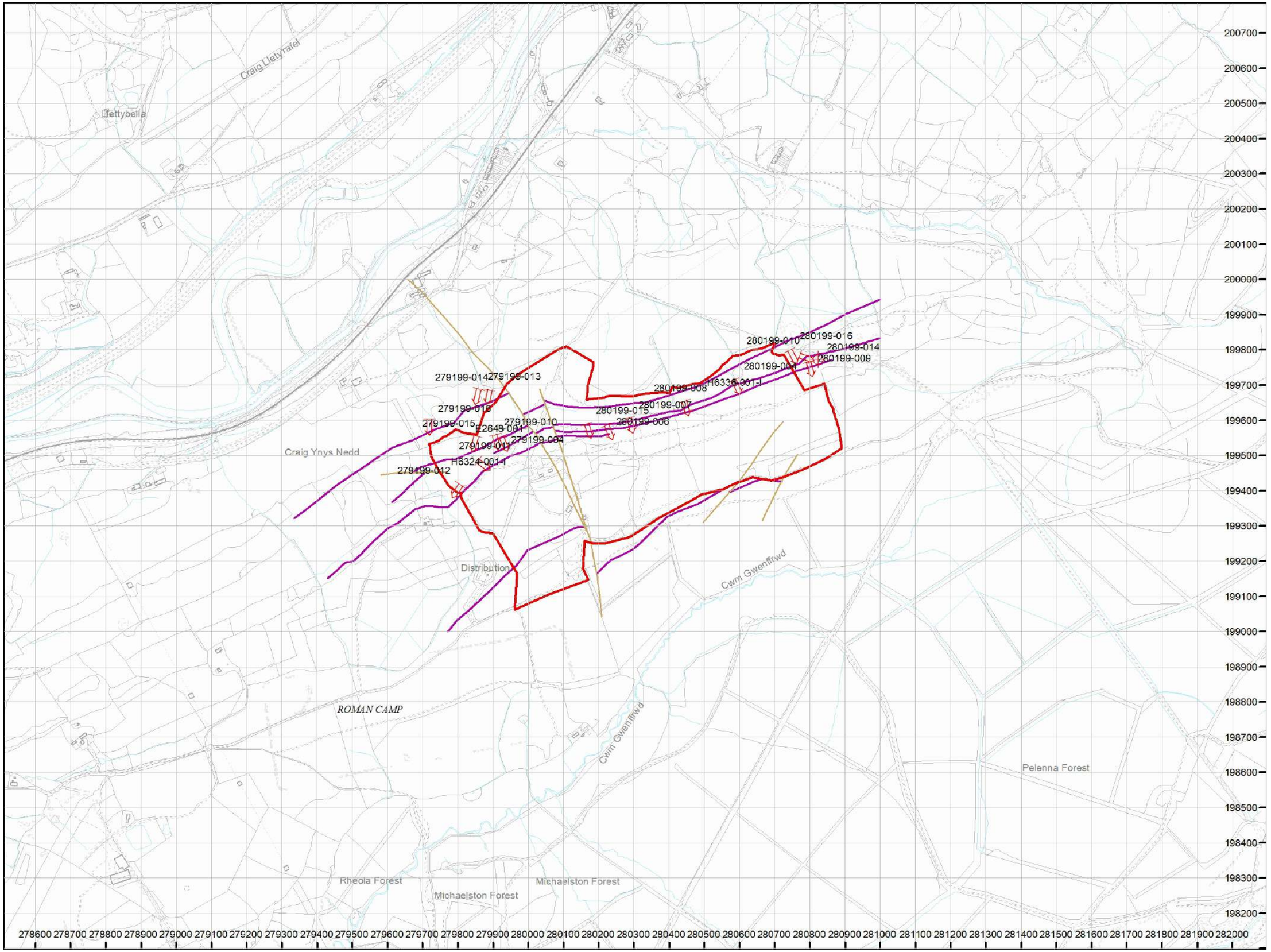
The Coal Authority

Summary of findings

The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

- Approximate position of the enquiry boundary shown
- Disused mine shaft
- Disused adit
- Outcrop (Proven)
- Geological faults
- Remediated sites



How to contact us
0345 762 6848 (UK)
+44 (0)1623 637 000 (International)
www.groundstability.com

Appendix E Preliminary geotechnical risk register

Geotechnical hazard identification – desk study stage

Potential geotechnical hazards have been assessed in accordance with the general requirements of ICE/DETR Document 'Managing Geotechnical Risk' and the HE documents HD 41/15 and CD 622. The following pages set out the identified geotechnical risks and hazards which are associated with the proposed development and establish the approach which is to be taken to manage the risks including the geotechnical input and analysis.

Table E.1 is a preliminary assessment of possible geotechnical hazards at the site at Desk Study stage. This information is used to assist with ground investigation design.

Table E.1: Possible geotechnical hazards

Hazard	Comment	Hazard status based on desk study	
		Could be present and / or affect site (i.e. Plausible)	Unlikely to be present and/or affect site
Uncontrolled Made Ground (variable strength and compressibility).	Made Ground is expected in areas of historical coal mining and quarrying activities, land surrounding the farm house, and land around the farm building and material storage area.	✔	-
Soft / loose compressible ground (low strength and high settlement potential).	Risk of shear failure and excessive foundation settlement due to possible presence of Made Ground and Peat.	✔	-
Variable lateral and vertical changes in ground conditions.	Made Ground, Peat and weathered bedrock likely to be heterogeneously spread across the site.	✔	-
High sulphates present in the soils.	The site is located in the South Wales Coalfield which typically has high sulphate bearing soils. Coal tipped material may cause elevated sulfates in Made Ground	✔	-
Obstructions.	Possible objects may remain in the Made Ground following historical developments.	✔	-
Existing below ground structures to remain (tunnels).	A historical tunnel was noted in the northwest of the site and tunnels are expected to protrude into the site from adit locations.	✔	-

Shallow groundwater.	A spring was noted in the northwest of the site and groundwater is expected to be close to the surface, especially in the north.	✔	-
Changing groundwater conditions.	Heterogeneous spread of faults and fractures alongside side worked coal seams are likely to induce a variable groundwater level.	✔	-
Risk from erosion.	The site is not adjacent to a river or sea and erosion is not considered likely.	-	✔
Loose Made Ground, leading to difficulty with excavation and collapse of side walls.	Possibility for Made Ground to be loose and large objects to be present.	✔	-
Slope stability issues – general slopes.	Slope toes in the northeast of the site showed signs of failure in the form of rotational failure in the weathered superficial bedrock material. Furthermore, in competent bedrock slopes there was evidence of unravelling and scree at the base.	✔	-
Mining.	The site is underlain by several coal seams which have been worked. A colliery and several adits were historically present on site.	✔	-
Relict slip surfaces	Potential for relict slip surfaces to be present within the steep areas of the site within the weathered superficial bedrock material.	✔	-

Appendix F Plausible source-pathway-receptor contaminant linkages

Summary of potential contaminant linkages

Table F.2 lists the plausible contaminant linkages which have been identified. These are considered as potentially unacceptable risks in line with guidelines published in LCRM (2023) and additional risk assessment is required.

Source – Pathway – Receptor Linkages have been assessed in general accordance with guidance in CIRIA Report C552 (Rudland *et al* 2001) but modified to add a 'no linkage' category and to remove low/moderate risk (See Table F.1).

It should be noted that whilst the risk assessment process undertaken in this report may identify potential risks to site demolition and redevelopment workers, consideration of occupational health and safety issues is beyond the scope of this report and need to be considered separately in the Construction Phase Health and Safety Plan.

Table F.1: Consequence versus probability assessment.

		Consequence			
Probability		Severe	Medium	Mild	Minor
	High Likelihood	Very high risk	High risk	Moderate risk	Low risk
	Likely	High risk	Moderate risk	Low risk	Very low risk
	Low Likelihood	Moderate risk	Low risk	Low risk	Very low risk
	Unlikely	Low risk	Very low risk	Very low risk	Extremely low risk
	No Linkage	No risk			

Table F.2: Exposure model – final source-pathway-receptor contaminant linkages

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments
Made Ground, associated with the Cefn-mawr Colliery activities, possibly including elevated concentrations of metals, metalloids, asbestos fibres, Asbestos Containing Materials, PAHs, petroleum hydrocarbons, lubricants and solvents (S01).	Ingestion, skin contact, inhalation of dust and outdoor air by people (P01).	People (neighbours, site end users) (R01).	Likely	Medium	Moderate	The ground conditions in this area were generally densely vegetated and there is a low likelihood that the soils have been disturbed.
	Root uptake by plants (P03).	Flora and fauna (R03).	Likely	Mild	Low	It is possible that root uptake could be occurring in this area. However, during the walkover the vegetation did not appear stressed and was growing well.
	Migration of contaminant via leachate migration through the unsaturated zone towards the Hughes and Brithdir Members bedrock (P04).	Groundwater: Secondary A aquifer status of the Hughes and Brithdir Members (R04).	Likely	Medium	Moderate	It is expected that the bedrock beneath the site will be faulted and fractured and this will help to facilitate downward infiltration of leachate into the groundwater below.
	Migration of contaminant via leachate migration through the saturated zone towards the River Neath (P05).	Surface water: on-site and off-site drainage ditch networks and River Neath 585m northwest (R05).	Low likelihood	Medium	Low	The steep topography of the site indicates that groundwater will flow northward toward the River Neath. Any leachate reaching the groundwater could be carried by this flow and reach the river. The steep topography also may facilitate surface water overland land flow which may carry contaminants off-site towards the drainage networks to the north.
	Surface water via overland flow (P06).					

Made Ground at the entrances of coal mine adits and used for backfilling, potentially containing metals and metalloids, asbestos fibres, asbestos containing materials, PAHs and petroleum hydrocarbons (S02).	Ingestion, skin contact, inhalation of dust and outdoor air by people (P01).	People (neighbours, site end users) (R01).	Likely	Medium	Moderate	The ground conditions along the northern boundary of the site in the area of the mine adits were generally densely vegetated, however the footpath was sparsely vegetated. Nevertheless, there is a low likelihood that this material could be disturbed.
	Root uptake by plants (P03).	Flora and fauna (R03).	Likely	Mild	Low	It is possible that root uptake could be occurring in this area. However, during the walkover the vegetation did not appear stressed and was growing well.
	Migration of contaminant via leachate migration through the unsaturated zone towards the Hughes and Brithdir Members bedrock (P04).	Groundwater: Secondary A aquifer status of the Hughes and Brithdir Members (R04).	Likely	Medium	Moderate	It is expected that the bedrock beneath the site will be faulted and fractured and this will help to facilitate downward infiltration of leachate into the groundwater below.
	Migration of contaminant via leachate migration through the saturated zone towards the River Neath (P05).	Surface water: on-site and off-site drainage ditch networks and River Neath 585m northwest (R05).	Low likelihood	Medium	Low	The steep topography of the site indicates that groundwater will flow northward toward the River Neath. Any leachate reaching the groundwater could be carried by this flow and reach the river. The steep topography also may facilitate surface water overland land flow which may carry contaminants off-site towards the drainage networks to the north.
	Surface water via overland flow (P06).					

Burnt fly tipped waste near the former quarry in the centre of the site including paint cans, plastics and metals, possibly a source of metals, metalloids, PAHs and petroleum hydrocarbons (S03).	Ingestion, skin contact, inhalation of dust and outdoor air by people (P01).	People (neighbours, site end users) (R01).	Likely	Medium	Moderate	The ground conditions in this area were generally open and the burnt materials were exposed at the surface. It is likely that people could come in contact with possible deleterious materials.
	Root uptake by plants (P03).	Flora and fauna (R03).	Likely	Mild	Low	It is possible that root uptake could be occurring in this area. However, during the walkover the vegetation did not appear stressed and was growing well.
	Migration of contaminant via leachate migration through the unsaturated zone towards the Hughes and Brithdir Members bedrock (P04).	Groundwater: Secondary A aquifer status of the Hughes and Brithdir Members (R04).	Likely	Medium	Moderate	It is expected that the bedrock beneath the site will be faulted and fractured and this will help to facilitate downward infiltration of leachate into the groundwater below.
	Migration of contaminant via leachate migration through the saturated zone towards the River Neath (P05).	Surface water: on-site and off-site drainage ditch networks and River Neath 585m northwest (R05)	Low likelihood	Medium	Low	The steep topography of the site indicates that groundwater will flow northward toward the River Neath. Any leachate reaching the groundwater could be carried by this flow and reach the river. The steep topography also may facilitate surface water overland land flow which may carry contaminants off-site towards the drainage networks to the north.
	Surface water via overland flow (P06).					
Ground gases (methane and carbon dioxide) from organic materials in	Ground gas and VOC ingress via permeable soils and/or construction gaps (P02).	People (neighbours, site end users) (R01).	Low likelihood	Severe	Moderate	The presence of organic rich Peat and worked seams beneath the site may be a large source of methane and carbon dioxide. VOCs may be present within the Made Ground across the site. As the bedrock is likely

Made Ground / Peat / superficial weathered bedrock and worked coal seams (S04).		Development end use (buildings and utilities) (R02).				to be faulted and fractured, this will enable gas to migrate via these spaces.
Farm building in the centre of the site which has an asbestos tile roof and contains an Above Ground Storage Tank, and the storage area in the southwest, possibly a source of petroleum hydrocarbons, PAHs, VOCs, asbestos fibres and Asbestos Containing Materials (S05).	Ingestion, skin contact, inhalation of dust and outdoor air by people (P01).	People (neighbours, site end users) (R01).	Likely	Medium	Moderate	The roof of the farm building appeared to be in good condition and the Above Ground Storage Tank appeared to be used for refuelling vehicles. It showed no signs of leaking and the seals were in good condition. Meanwhile, in the southwest of the site a storage area containing aggregate, pipework and two metal storage containers was present. It is unknown what is stored inside the storage containers.
	Root uptake by plants (P03).	Flora and fauna (R03).	Likely	Mild	Low	It is possible that root uptake could be occurring in this area. However, during the walkover the vegetation did not appear stressed and was growing well.
	Migration of contaminant via leachate migration through the unsaturated zone towards the Hughes and Brithdir Members bedrock (P04).	Groundwater: Secondary A aquifer status of the Hughes and Brithdir Members (R04).	Likely	Medium	Moderate	The ground in the farm building was a solid concrete slab which showed no signs of cracking. This will help to prevent any leaks from the tank reaching the ground below. Nevertheless, it is expected that the bedrock beneath the site will be faulted and fractured and this will help to facilitate downward infiltration of leachate into the groundwater below. Where leachate can reach bare soil, this is likely to apply.
	Migration of contaminant via leachate migration through the saturated zone towards the River Neath (P05).	Surface water: on-site and off-site drainage ditch networks and River Neath 585m northwest (R05)	Low likelihood	Medium	Low	The steep topography of the site indicates that groundwater will flow northward toward the River Neath. Any leachate reaching the groundwater could be carried by this flow and reach the river. The steep topography also may facilitate surface water

	Surface water via overland flow (P06).					overland land flow which may carry contaminants off-site towards the drainage networks to the north.
Workshop near the house in the centre of the site, possibly a source of elevated concentrations of metals, metalloids, asbestos fibres, Asbestos Containing Materials, PAHs, petroleum hydrocarbons, lubricants and solvents (S06).	Ingestion, skin contact, inhalation of dust and outdoor air by people (P01).	People (neighbours, site end users) (R01).	Likely	Medium	Moderate	The garage / workshop appeared to be in a fair condition, however access inside was not possible so it remains uncertain what products are stored in here, and how these are stored.
	Root uptake by plants (P03).	Flora and fauna (R03).	Likely	Mild	Low	It is possible that root uptake could be occurring in this area. However, during the walkover the vegetation did not appear stressed and was growing well.
	Migration of contaminant via leachate migration through the unsaturated zone towards the Hughes and Brithdir Members bedrock (P04).	Groundwater: Secondary A aquifer status of the Hughes and Brithdir Members (R04).	Likely	Medium	Moderate	The ground inside the workshop could not be inspected but it is likely to be a concrete slab. If this is not cracked and in a good condition then this will limit this pathway. Nevertheless, in areas where contaminants can reach bare soil, it is expected that the bedrock beneath the site will be faulted and fractured and this will help to facilitate downward infiltration of leachate into the groundwater below.
Naturally elevated concentrations of arsenic within the natural soils across the site (S07).	Ingestion (P01).	People (neighbours, site end users) (R01).	Likely	Mild	Low	The third-party environmental report indicates that naturally occurring elevated concentrations of arsenic could be present with the soils on site. Due to the large spatial area of the site, it is likely that contact with these soils would happen.
	Root uptake by plants (P03).	Flora and fauna (R03).	Likely	Mild	Low	It is possible that root uptake could be occurring across the site. However, during the walkover the vegetation across the site did not appear stressed and was growing well.

Radon (S08).	Ground gas and VOC ingress via permeable soils and/or construction gaps (P02).	People (neighbours, site end users) (R01). Development end use (buildings and utilities) (R02).	Likely	Severe	High	Parts of the site are in moderate to high radon areas which will able to easily migrate via fractures in the bedrock.