

Llandyfaelog Substation Phase 1 Ground Condition Assessment

On behalf of **National Grid**
nationalgrid

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1 Introduction

1.1 Preamble

- 1.1.1 Stantec UK Limited (Stantec) has been commissioned by National Grid Electricity Transmission (NGET) (the Client) to undertake a Phase 1 Ground Condition Assessment for a proposed new substation in Carmarthenshire, South Wales.
- 1.1.2 The site is the preferred location for a new substation known as Llandyfaelog Substation (the site).
- 1.1.3 This report has been prepared in a planning context and aims to address the requirements of Planning Policy Wales (Welsh Government, 2024) to support the planning application for the proposed development.
- 1.1.1 This report presents a Phase 1 ground condition assessment comprising a desk study, Tier 1 (preliminary) qualitative contamination risk assessment, and a preliminary ground stability appraisal, together with preliminary assessment of potential mitigation measures and cumulative effects (as appropriate and if required). Revision 02 of this report provides an update to the ground condition assessment based on the revised site redline boundary.
- 1.1.2 Guidance on the use of this report is provided in **Section 7**.

1.2 Project Description

- 1.2.1 The development will comprise a new 400kV Air Insulated Switchgear (AIS) substation, which is used by National Grid to control the power flows and voltages around the transmission system. They are also used to connect sources of electricity generation into the grid.
- 1.2.2 The development will include a limited number of new towers to provide connection to the existing overhead line (OHL) as well as access to the site from the public highway, and connection to utilities such as water, drainage and telecommunications.

1.3 Objectives and Scope of Works

- 1.3.1 Planning Policy Wales (PPW) (Welsh Government, 2024, Edition 12) sets out the land use planning policies of the Welsh Government and it is supplemented by a series of Technical Advice Notes, Welsh Government Circulars and policy clarification letters, which together with the PPW provides the planning policy framework for Wales.
- 1.3.2 PPW (Welsh Government, 2024) "De-risking Development" (paragraphs 6.9.12 to 6.9.15) stipulates that '*development is suitable and that the physical, geotechnical, chemical and other relevant constraints on the land...are taken into account at all stages of the planning process*'.
- 1.3.3 The objective of this assessment is to review published and readily available information to identify the likely ground conditions at the site and of the immediate surrounding land and to assess whether there are significant land contamination risks, and/or ground and slope stability risks associated with the ground conditions that may require management (remediation or mitigation).
- 1.3.4 The scope of work performed by Stantec for the study comprises:
- i. A 'preliminary investigation' comprising a desk study review of readily available information including: geological, hydrogeological and aquifer vulnerability maps; and

historical Ordnance Survey (OS) maps supplemented where possible and available by reference to early maps and other historical records;

- ii. A walkover survey to examine the current condition of the site and surrounding area;
- iii. A qualitative assessment of geological hazards, and ground and slope stability hazards to identify potential risks, if any, arising from artificial cavities; natural cavities; and other potential adverse foundation conditions; and
- iv. A qualitative Tier 1 preliminary contamination risk assessment utilising a Conceptual Site Model to identify 'source-pathway-receptor' linkages to assess the potential risk and hazards, if any, associated with existing contamination in the ground.

1.4 Methodology

Assessment of Ground Conditions – Land Instability

- 1.4.1 PPW (Welsh Government, 2024), 'Physical Ground Conditions and Land Instability' (paragraph 6.9.22 – 6.9.28 presents the need to identify instability and specifically that, '*land stability should be addressed, and appropriate mitigation measures secured*'
- 1.4.2 The guidance requires, as a minimum, a desk-based study and a site inspection visit by an appropriately qualified person.
- 1.4.3 This desk-based study comprises a review of existing readily available published sources of geological, geomorphological, hydrogeological and/or mining information on the site and its surroundings and a historical review of land uses including mapping and aerial imagery, if appropriate.
- 1.4.4 The preliminary stability assessment includes, where relevant, a review of geological hazards for the site such as natural and man-made (mining) cavities, landslide, cambering and block movement, collapsible and compressible soils, running sand, and subsidence and heave due to volumetric change in the ground.

Assessment of Ground Conditions – Contamination

- 1.4.5 Our methodology follows guidance on how to assess and manage the risks from land contamination given in "Land Contamination Risk Management" (LCRM) (EA, 2023).
- 1.4.6 The principal planning objective in respect of contamination is to ensure that any unacceptable risks to human health, buildings and other property and the natural and historical environment from the potentially contaminated condition of the land are identified so that appropriate action can be considered and taken to address those risks.
- 1.4.7 LCRM presents a three-stage process to the management of contaminated land:
 - Stage 1 = risk assessment
 - Stage 2 = options appraisal and
 - Stage 3 = remediation
- 1.4.8 The Stage 1 risk assessment is undertaken in a phased manner comprising three tiers, with the three tiers being:
 - Tier 1 - Preliminary Risk Assessment (PRA) - a qualitative assessment to develop an outline conceptual model (CM).

- Tier 2 - Generic Quantitative Risk Assessment (GQRA) - a quantitative assessment using published criteria based on generic assumptions to screen site-specific ground condition data.
 - Tier 3 - Detailed Quantitative Risk Assessment (DQRA) - a quantitative assessment involving the generation of site-specific assessment criteria (SSAC).
- 1.4.9 The underlying principle is the evaluation of *pollutant linkages* in order to assess whether the presence of a source of contamination could potentially lead to harmful consequences. A pollutant linkage consists of the following three elements:
- A source of contamination or hazard that has the potential to cause harm or pollution.
 - A pathway for the hazard to move along / generate exposure.
 - A receptor which is affected by the hazard.
- 1.4.10 Each tier of risk assessment comprises the following four stages:
- Hazard Identification – identifying potential contaminant sources on and off-site.
 - Hazard Assessment – assessing the potential for unacceptable risks by identifying what pathways and receptors could be present, and what pollutant linkages could result (forming the Conceptual Site Model (CSM)).
 - Risk Estimation – estimating the magnitude and probability of the possible consequences (what degree of harm might result to a defined receptor and how likely).
 - Risk Evaluation – evaluating whether the risk needs to be, and can be, managed.
- 1.4.11 The risk assessment approach is an iterative process noting that all assessments must start with a PRA. Progression to the next tier is not always required if the assessment provides adequate confidence that the level of risk is acceptable.
- 1.4.12 This report presents a Tier 1 Preliminary Risk Assessment (PRA). Further information on the approach adopted by Stantec is presented in **Appendix A**.

1.5 Sources of Information

- 1.5.1 The following sources of information were used in the preparation of this report:
- A walkover survey, by a representative of Stantec UK, on 3rd October 2023 to observe existing conditions both on the site and surrounding the land parcel – photographs from the walkover are presented in **Appendix B**.
 - An ‘Enviro+Geo Insight Report’ and historical maps provided by Groundsure Ltd (2023) which are presented in **Appendices C** and **D**. It is noted that red line boundary used within the Groundsure Report reflects an earlier version of the boundary. The data and historical mapping within the Groundsure Report has been interpreted in relation to the updated red line boundary.
 - Review of the Natural Cavity and Mining (non-coal) Cavity databases managed and enhanced by Stantec.
 - Review of the geology of the site via paper map scan records held by the British Geological Survey (BGS) for the site (BGS, 1967) and their interactive viewer (BGS, 2023).

- Review of the Defra MAGIC (Multi-Agency Geographic Information for the Countryside) web site (Defra, 2023). The MAGIC website provides authoritative geographic information about the natural environment and covers rural, urban, coastal, and marine environments across Great Britain. It is presented in an interactive map which can be explored using various mapping tools.
- A search of the Stantec project database to identify any ground condition reports near the site (within 250m).
- Review of risk map records of Regional Unexploded Bomb Risk held by Zetica UXO (Zetica, 2023).
- A review of historical aerial photography accessed via Google Earth Pro.

2 Land Use Information

2.1 Introduction

- 2.1.1 This section presents a summary of current and historical land uses on and immediately adjacent to the site. Land use is used to inform the hazard identification element of the risk assessment.
- 2.1.2 The historical land use information is based on historical Ordnance Survey (OS) maps, and plans provided by Groundsure (2023) presented in **Appendix D**, supplemented by a review of Google Earth historical aerial photographs. Current land use information is based on a walkover survey undertaken by a representative of Stantec UK on 3rd October 2023. This has been supplemented by a review of Google Earth Aerial imagery (reviewed Aug 2023).

2.2 Site Location and General Description

- 2.2.1 The site is located approximately 6km south of Carmarthen, South Wales. The site is located within a predominantly agricultural setting, approximately 900m north of the village of Llandyfaelog and 700m northeast of the village of Upland Arms. The area of the proposed works is centred on E:241868 N:213542. A Site Location Plan is presented as **Figure 1**.
- 2.2.2 The site comprises an irregular shaped plot of greenfield land which comprises a number of agricultural field parcels. The site is bounded predominantly by open fields on all sides. An unnamed road cuts through the northern most field and two overhead power lines run approximately north-south through the western part of the site.
- 2.2.3 The site gently slopes downwards to the southwest, with existing ground levels at approximately 135m above Ordnance Datum (AOD) in the northeast, reducing to approximately 120m AOD in the southwest.

2.3 Historical Land Use

- 2.3.1 The earliest available historical OS mapping within the Groundsure report (2023) is dated 1887-1888 and shows the site comprises open fields in a similar layout as the current day. The road to the north of the site is in the same alignment as the current day. An Old Quarry lies immediately adjacent to the south of the site (within 10 m), skirted by the new red line boundary.
- 2.3.2 The site remains largely unchanged until the mapping dated 1972 where the pylons and overhead electricity cables are first shown through the western part of the site and are a similar alignment to the current day alignment.
- 2.3.3 The area surrounding the site comprises mostly open fields and farms since the earliest available mapping within the Groundsure report (2023) and remains largely unchanged at the present time.

2.4 Current Land Use

- 2.4.1 The current land use information is based on a site walkover undertaken on the 3rd October 2023. Selected photographs taken during the walkover are presented in **Appendix B**.
- 2.4.2 The current land use across the entirety of the site is agricultural, comprising a mixture of arable and pastoral, with the surrounding land use also agricultural. The site comprises agricultural fields, all separated by hedgerows, with some field edges also including drainage ditches that at the time of the visit were filled with water. Electricity pylons were observed along the western part of the site.

2.5 Industrial Setting

- 2.5.1 Information on the industrial setting of the site presented in the Groundsure report (2023) and included within **Appendix C** indicates there are no landfill sites or licensed waste management facilities within 250m of the site. A waste exemption is noted immediately adjacent to the site's western boundary (within 10 m). The waste exemption is for Cwmafael Llandyfaelog Farm, and it covers a number of waste exemptions such as burning waste, deposit of waste from dredging inland waters and use of waste in construction. A review of the land ownership within the red line boundary indicates that Cwmafael Llandyfaelog Farm own part of the site, therefore there is the potential for these activities to have been undertaken on the site. No evidence of these activities were indicated during the site walkover.
- 2.5.2 A licenced discharge to controlled waters is noted approximately 350m north of the site which has an issue date of 1983. The receiving water is indicated to be 'underground strata', however, the effluent type is not recorded. A pollution incident is also noted approximately 200m northwest of the site. The incident involved the release of slurry and dilute slurry in October 2015. The impact to the land was classed as being minor. A second, older pollution incident is noted immediately adjacent to the west of the site at Llwyncelyn (within 10 m). Slurry and dilute slurry were released in the incident occurring in November 2002. The impact to the water was classed as being minor, with no impact to the land.

3 Environmental Setting

3.1 Introduction

- 3.1.1 Information on the environmental setting of the site is presented in this section and the data is used to inform the preliminary Stability Assessment in **Sections 4** and Preliminary Risk Assessment presented in **Section 5**.

3.2 Published Geology

- 3.2.1 The published geology is based on the 1:50,000 scale geological map of the area; Sheet 229, Carmarthen published by the British Geological Survey (1967). The description of the superficial and solid geology, based on the BGS records, is presented in the sections below.
- 3.2.2 Superficial deposits are generally indicated to be absent across the majority of the site. However, a small outcrop of the Devensian Till is indicated to be present on the far western and southern edges of the site. The Till is described as a diamicton (described as a heterogenous mixture including a variety of clast sizes).
- 3.2.3 The bedrock geology beneath the majority of the site is indicated to be the Milford Haven Group which is indicated to comprise '*hard, red calcareous marls with sporadic red and green sandstones*'. Along the southern boundary of the site the Senni Formation is indicated to be present which is indicated to comprise '*very fine to medium grained, micaceous sandstones...with siltstone and mudstone interbeds*'. Under the most southern point of the site the Brownstones Formation is indicated to be present which is indicated to comprise '*red, brown and purple fluvial sandstones with red mudstone interbeds*'.
- 3.2.4 A review of the BGS borehole records indicate there are no historical borehole records within 750m of the site.

3.3 Controlled Waters – Groundwater

Aquifer Designation

- 3.3.1 The Groundsure report (2023) indicates that the superficial Devensian Till is classified by the Environment Agency (EA) as a Secondary Undifferentiated aquifer. The bedrock geology of the Milford Haven Group, the Senni Formation, and the Brownstones Formation are classified by the EA as a Secondary A Aquifer.
- 3.3.2 Secondary A Aquifers are described by the Environment Agency (EA) as "*permeable layers that can support local water supplies, and may form an important source of base flow to rivers*". The Secondary Undifferentiated Aquifer classification is applied by the EA "*where it is not possible to apply either a Secondary A or B definition because of the variable characteristics of the rock type. These have only a minor value*".

Groundwater Source Protection Zones

- 3.3.3 The Groundsure report (2023) indicates that the site is not located within a groundwater Source Protection Zone (SPZ) and is not located within a Drinking Water Safeguarding Area.

Groundwater Bodies

- 3.3.4 The Groundsure Report (2023) indicates that groundwater beneath the site is part of the Tywi, Taf and Gwendraeths groundwater body (ref: GB41002G2200500). This groundwater body

received an overall Water Framework Directive (WFD) status of “Poor” in 2019. This status can be further broken down into “Poor” for chemical quality with a “Good” quantitative status.

Groundwater Vulnerability

- 3.3.5 The Groundsure report (2023) indicates that the groundwater beneath the site is generally classified by the EA as ‘Medium’ and ‘High’ vulnerability
- 3.3.6 The EA define High vulnerability as “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”, and areas of Low vulnerability as “Areas that provide the greatest protection to groundwater from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability”. Medium vulnerability is described as intermediate between Low and High vulnerability (EA, 2017).

3.4 Controlled Waters – Surface Water

- 3.4.1 There are no surface water features located on the site or within the surrounding area, with the exception of a small open ditch drain located towards the centre of the western boundary. There are no records of surface water abstractions within 250m of the site boundary.
- 3.4.2 The site is located within the Gwendraeth Fach – headwaters to tidal limit surface water body (GB110060029400) which received an overall Water Framework Directive (WFD) status of “Good” in 2019. This status can be further broken down into “Good” for both chemical quality and quantitative status.

3.5 Ecological Systems

- 3.5.1 The Groundsure report (2023) indicates there are no ecological designations within 250m of the site.

3.6 Property – Buildings

- 3.6.1 The Groundsure report (2023) indicates there are no listed buildings within 250m of the site.

3.7 Radon

- 3.7.1 The Groundsure report (2023) indicates that the majority of the site is within an area where less than 1% of properties have a radon level above the action level. However, where the Devensian Till outcrops in the west of the area, between 1% and 3% of properties are above the action level and where the Senni Formation, Brownstones Formation, and Devensian Till outcrop in the south of the area between 5% and 10% of properties are above the action level. Therefore, as the slightly higher radon potential geological strata are present at the site, radon protection measures may be required for any buildings/enclosed spaces within the development and within that strata, and further information could be obtained from the British Geological Survey (Radon GeoReport) if appropriate.

3.8 Unexploded Ordnance

- 3.8.1 The Zetica Unexploded Bomb risk map (2023) indicates the site is within a ‘low’ risk area.

4 Ground Stability Assessment

4.1 Introduction

- 4.1.1 In accordance with the requirements of Planning Policy Wales (Welsh Government, 2024), the potential for the proposed development to contribute to, or to be adversely affected by, land instability has been assessed.
- 4.1.2 The potential for land instability at the site has been considered, in relation to:
- Naturally Occurring Geological Hazards.
 - Natural and Mining Cavities.
 - Slope Stability.
 - Potentially Adverse Foundation Conditions.
- 4.1.3 Consideration is given below to the risk of these potential geotechnical constraints arising from existing ground conditions at the site, as identified in this data review. The geological constraints to the development are those relating to the natural ground conditions and any geological hazards on the site, and the constraints relating to the previous and current use of the site.

4.2 Natural and Mining (non-coal) Cavities

- 4.2.1 The Stantec Natural Cavities Database and the report provided by Groundsure report (2023) indicates that there are no natural cavities within 1km of the site.
- 4.2.2 The Stantec Mining (non-coal) Cavities Database and Groundsure Report (2023) indicates that there are no mining or cavities records within 500m of the site centre. However, the Groundsure report (2023) indicates a pit (Crygan-fach) is located adjacent to the southern boundary of the site (within 10 m), which previously extracted sandstone from the Senni Formation. A further two pits, Crygan-isaf and Gelli-gidnes, lie approximately 400m southwest and 450m northwest of the site boundary, respectively (BGS, 2023). The former is listed as an Old Quarry and the latter as Quarries in historical mapping from 1887. The most likely targets of these pit operations would have been sandstone or metals within the Senni Formation (for Crygan-isaf) and the Milford Haven Group (for Gelli-gidnes). The mining operations for all three pits have since ceased.
- 4.2.3 Overall, based on the ground conditions and the geomorphology of the site, the potential for natural solution features to be present beneath the site is considered to be **Very Low**.
- 4.2.4 The potential for mining cavities to present at the site is considered to be **Low** based on the ground conditions and the known mining records in the area.

4.3 Coal Mining

- 4.3.1 The Coal Authority's interactive map viewer (2023) indicates that the site is not located within a Coal Mining Reporting Area. The interactive map indicates that there are no recorded mine entries, fissures or break lines, areas of historical recorded shallow mining, coal outcrops, coal mine abandonment plans, Surface Coal Resource Area or Development High Risk Areas within 1km of the site.
- 4.3.2 Therefore, the potential for coal mining cavities to be present at the site is considered to be Very Low based on the ground conditions and the Coal Authority interactive map viewer.

4.4 Naturally Occurring Geological Hazards

- 4.4.1 An assessment of potential geological hazards that may give rise to adverse foundation or construction conditions as supplied by the British Geological Society from their National Geoscience Information Service are presented in the Groundsure report (2023) reproduced in **Appendix C**. The assessment is generated automatically based on digital geological maps and the scope and the accuracy is limited by the methods used to create the dataset and is therefore only indicative for the search area.
- 4.4.2 The information contained in the Groundsure report has been reviewed and, where considered necessary, reassessed by Stantec considering the specific information available for the site with the potential hazards being rated as very low, low, moderate, high, or very high in general accordance with the criteria given by the BGS property hazard rating system. The Stantec assessment of the potential for geological hazards to be present on the site is summarised below.

Table 4-1 Summary of Geological Hazards On-site

Hazard	Hazard Potential On-site	Stantec Comment
Collapsible Ground Stability	Very Low	Agree: The ground conditions are such that collapsible ground hazards are not anticipated at the site
Compressible Ground Stability	Negligible	Agree: The ground conditions are such that layers of very soft compressible material are not expected to be present
Dissolution	Negligible	Agree: The ground conditions are such that soluble rocks or ground prone to dissolution are not anticipated within the site
Landslide Ground Stability	Very Low to Low (locally Moderate)	Agree: Slope instability/landslide problems are not anticipated. Most southerly point of the site intersects a moderately rated area.
Running Sand	Negligible to Very Low	Agree: The ground conditions are not considered to be susceptible to running sand conditions
Shrinking or Swelling Clay	Negligible to Very Low	Agree: High volume change potential soils are not anticipated

4.5 Potential Adverse Slope Stability Conditions

- 4.5.1 The site gently slopes to the southwest, with existing ground levels at approximately 130m AOD in the northeast, reducing to approximately 120m AOD in the west and south. In the most southerly point of the site, the topography reduces from 120m AOD to 78m AOD, coinciding with the moderately rated area for landslide risk.
- 4.5.2 The potential for adverse slope stability conditions is generally considered to be **Low**.

4.6 Conclusions

- 4.6.1 Overall, the geotechnical constraints to the development of the site associated with the ground conditions, potential geological hazards and the historical and present land uses is considered to be generally **Low to Very Low**.

- 4.6.2 A ground investigation will be required in due course to determine the extent and nature of the ground and groundwater conditions on-site, in order to confirm the preliminary stability assessment and inform the geotechnical design of the proposed development.

5 Land Contamination Tier 1 Preliminary Risk Assessment

5.1 Introduction

- 5.1.1 The methodology developed and adopted by Stantec for the assessment of ground conditions is presented in **Appendix A**. In accordance with guidance presented in LCRM (EA, 2023) a staged approach to risk assessment has been adopted and this report presents a land contamination Tier 1 preliminary risk assessment (qualitative).
- 5.1.2 The underlying principle to ground condition assessment is the identification of pollutant linkages to evaluate whether the presence of a source of contamination could potentially lead to harmful consequences.

5.2 Conceptual Site Model

- 5.2.1 The Tier 1 Preliminary Risk Assessment includes the development of a Conceptual Site Model (CSM). The CSM describes the types and locations of potential contamination sources, the identification of potential receptors and the identification of potential transport/migration pathways.
- 5.2.2 For a pollutant linkage to be identified a connection between all three elements (source-pathway-receptor) is required.

Land Contamination Hazard Classification

- 5.2.3 Based on the historical and current land use of the site and immediate surrounding area (see **Section 3.4**) comprising open agricultural fields and farm land, the contamination potential from on-site and off-site sources is considered to be **Very Low** (Classification Score 1 out of 5 in Table 1, **Appendix A**) across the eastern part of the site, and Low (Classification Score 2 out of 5 in Table 1, **Appendix A**) across the western part of the site due to the potential of the waste exemption activities discussed in **Section 2.5**.

Potential Receptors

- 5.2.4 The receptors considered as part of this land contamination assessment are summarised in **Table 5.1** and based on the information reviewed either eliminated from further consideration or allocated a sensitivity score in accordance with the Stantec Methodology. The sensitivity score informs the consequence element of the risk estimation process, definitions of which can be found in Table 2 of **Appendix A**.

Table 5-1 Potential Receptors and Sensitivity Score

Receptor Type	Comment	Sensitivity Score
Human Health – Current	Agricultural land – Farm workers	4 High
Human Health – Future	Future human health comprises maintenance workers only who are assessed together with construction workers below	N/A
Human Health – Construction and maintenance workers	Construction workers and future maintenance workers	4 High

Receptor Type	Comment	Sensitivity Score
Human Health – Neighbours	The site boundary borders four farm/residential properties while the surrounding area comprises open fields.	5 Very High
Groundwater	The underlying strata comprises a Secondary A aquifer and a Secondary (Undifferentiated) aquifer.	2 Low
Surface Water	Surface water receptors have not been identified on the site.	Eliminated
Property - Buildings	No buildings are present on-site	Eliminated
Ecological Systems	No ecologically designated sites have been identified.	Eliminated

Potential Exposure Pathways

5.2.5 Table 3 in the Stantec methodology (**Appendix A**) describes possible exposure pathways for each receptor type. Each of these possible pathways is then identified as viable or not when assessing the probability of the source and contamination causing a consequence to a defined receptor.

5.3 Risk Estimation

5.3.1 When there is a pollutant linkage (and therefore some measure of risk) it is necessary to determine whether the risk is significant and therefore whether further action is required. Risk estimation involves predicting the likely consequence (what degree of harm might result) and the probability that the consequences will arise (how likely the outcome is).

5.3.2 Based on the information available, the estimated risks have been designated with further comments in the sections below. The outcomes of the risk assessment are presented in **Appendix E** giving an assessment of consequence and probability.

5.3.3 A summary of the risk estimation for the site based on identified potential hazards and without mitigation measures is presented in **Table 5.2**.

Table 5-2 Worst-Case Risk Estimation

Receptor	Risk Estimation
Human Health – Current	Very Low
Human Health – Construction and Maintenance workers	Very Low
Human Health – Neighbours	Low
Groundwater	Very Low

5.4 Risk Evaluation

5.4.1 Possible pollutant linkages are determined using professional judgement. If a linkage is considered possible, it is considered that this represents a potentially 'unacceptable risk' and therefore requires further consideration. This may be through remediation or mitigation or through further tiers of assessment.

- 5.4.2 Possible pollutant linkages to receptors have been identified and estimated risks have been assessed as being **Very Low** for all receptors. A very low risk is defined as '*there is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe*'.

5.5 Data Gaps and Uncertainty

- 5.5.1 The available ground condition data is preliminary in nature, based solely on desk-based studies. However, it is considered that there is a reasonable level of confidence that the information presented in this report provides a good understanding of the likely ground conditions and enables identification of potential risks.

6 Conclusions and Recommendations

6.1 Conclusions

Geoenvironmental

- 6.1.1 The site and the surrounding land predominantly comprises agricultural fields and small farms, and as such the site is considered to have a **Very Low** potential for significant contamination. The Tier 1 PRA using the Stantec methodology concludes that the worst case estimated risk in relation to potential contaminant linkages is classified as **Very Low**.

Geotechnical

- 6.1.2 The published geology indicates the site is underlain by the Milford Haven Group across the majority of the site with Senni Formation Sandstone and Brownstones Formation Sandstone outcropping at the south of the site. An absence of superficial deposits is indicated across the majority of the site, however a small outcrop of the Devensian Till is indicated to be present on the far western edge of the site and in the far south.
- 6.1.3 The geotechnical constraints to the development of the site associated with the ground conditions, potential geological hazards and the historical and present land uses is generally considered to be **Very Low to Low**. The most southerly point of the site intersects an area of **Moderate** landslide hazard.
- 6.1.4 A ground investigation will be required in due course to determine the extent and nature of strata present, confirm the anticipated ground conditions and provide geotechnical parameters for design.

6.2 Recommendations

- 6.2.1 The ground condition data used in this report is qualitative, and as such there is a degree of uncertainty regarding the actual ground conditions present at the site. Therefore, it is recommended that a Phase 2 intrusive investigation is undertaken to establish the nature of the ground conditions as part of the detailed design stage to confirm the anticipated ground conditions and support the design of the proposed scheme. A geotechnical assessment will be required to provide suitable information to assess the ground conditions and provide geotechnical parameters for the geotechnical design and any mitigation measures developed.

6.3 Mitigation

- 6.3.1 This preliminary GCA has identified a very low risk potential for significant contamination to be present at the site, and therefore mitigation measures are not considered necessary at this stage.
- 6.3.2 A protocol for dealing with any unexpected contamination should be presented within the relevant documents (i.e. a Construction Environmental Management Plan).

6.4 Cumulative Effects

- 6.4.1 As the geotechnical and geoenvironmental risk assessment considers there is generally Very Low to Low risk, there are not anticipated to be any cumulative effects from the development from potential geotechnical or geoenvironmental impacts from the majority of the site. If any development is considered in the most southerly field (Moderate landslide risk) further assessment should be undertaken.

7 Essential Guidance for Report Readers

This report has been prepared within an agreed timeframe and to an agreed budget that will necessarily apply some constraints on its content and usage. The remarks below are presented to assist the reader in understanding the context of this report and any general limitations or constraints. If there are any specific limitations and constraints, they are described in the report text.

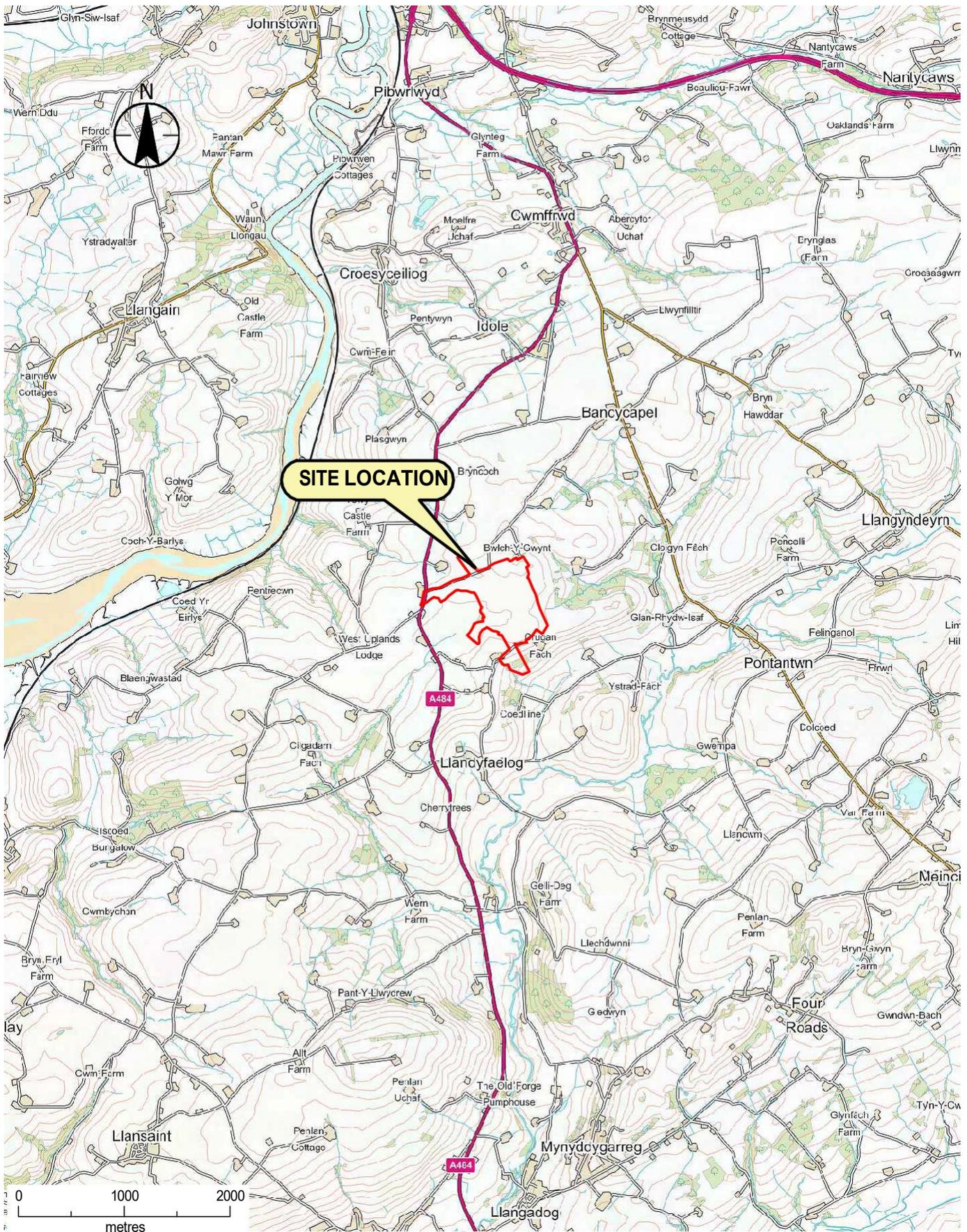
- 1 The opinions and recommendations expressed in this report are based on statute, guidance, and best practice current at the time of its publication. Stantec does not accept any liability whatsoever for the consequences of any future legislative changes or the release of subsequent guidance documentation, etc. Such changes may render some of the opinions and advice in this report inappropriate or incorrect and we will be pleased to advise if any report requires revision due to changing circumstances, especially those over one year old. Following delivery of any report Stantec has no obligation to advise the Client or any other party of such changes or their repercussions.
- 2 Some of the conclusions in this report may be based on third party data. No guarantee can be given for the accuracy or completeness of any of the third-party data used. Historical maps and aerial photographs provide a “snapshot” in time about conditions or activities at the site and cannot be relied upon as indicators of any events or activities that may have taken place at other times.
- 3 The conclusions and recommendations made in this report and the opinions expressed are based on the information reviewed and/or the ground conditions encountered in exploratory holes and the results of any field or laboratory testing undertaken. There may be ground conditions at the site that have not been disclosed by the information reviewed or by the investigative work undertaken. Such undisclosed conditions cannot be taken into account in any analysis and reporting.
- 4 Unless specifically stated to the contrary, this report does not purport to be a “Geotechnical Design Report” as defined in Clause 2.8 of Eurocode 7 (Geotechnical Design BS EN 1997-1:2004). Some of the data contained herein and used to support any geotechnical assessment presented in this report may be historical or for other reasons not fully compliant with the requirements of that code.
- 5 It should be noted that groundwater levels, groundwater chemistry, surface water levels, surface water chemistry, soil gas concentrations and soil gas flow rates can vary due to seasonal, climatic, tidal and manmade effects.
- 6 If the report indicates that asbestos has been identified within the ground, any work that involves, or is likely to involve, contact with asbestos must be undertaken in accordance with the Control of Asbestos Regulations 2012, particularly in regard to risk assessment, licencing and training. Risk assessment should be carried out prior to any activities that could lead to the disturbance of asbestos materials, either buried or on the ground surface and should include appropriate mitigation measures, such as damping down to prevent the spread of asbestos, air monitoring and minimum PPE and/or RPE requirements for the work proposed.
- 7 This report has been written for the sole use of the Client stated at the front of the report in relation to a specific development or scheme. The conclusions and recommendations presented herein are only relevant to the scheme or the phase of project under consideration. This report shall not be relied upon or transferred to any other party without the express written authorisation of Stantec. Any such party relies upon the report at its own risk.
- 8 The interpretation carried out in this report is based on scientific and engineering appraisal carried out by suitably experienced and qualified technical consultants based on the scope of our engagement. We have not taken into account the perceptions of, for example, banks,

insurers, other funders, lay people, etc, unless the report has been prepared specifically for that purpose. Advice from other specialists may be required such as the legal, planning and architecture professions, whether specifically recommended in our report or not.

- 9 Public or legal consultations or enquiries, or consultation with any Regulatory Bodies (such as the Environment Agency, Natural England or Local Authority) have taken place only as part of this work where specifically stated.

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Site Grid Reference: 241886E 213394N



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Client/Project:

National Grid

Llandyfaelog Substation

Prepared:
 davco

Checked:
 NC

Date:
 2025.11.04

Title

Site Location Plan

Revision:
 0

Figure



Key

-  Approximate Site Boundary
-  Photo Waypoints

Client/Project:
National Grid
Llandyfaelog Substation

Prepared:	Checked:	Date:
davco	NC	2025.11.04

Title
Site Walkover Plan

Revision:	Figure
0	2



Appendix A Stantec Methodology

Stantec Guide: Methodology for Assessment of Land Contamination (Wales)

1 INTRODUCTION

This document defines the approach adopted by Stantec in relation to the assessment of land contamination in Wales. The aim is for the approach to (i) be systematic and objective, (ii) provide for the assessment of uncertainty and (iii) provide a rational, consistent, transparent framework.

When preparing our methodology, we have made reference to various technical guidance documents and legislation referenced in Section 7 of which the principal documents are (i) Contaminated Land Statutory Guidance for Wales (Welsh Government 2012), (ii) online guidance Land Contamination: Risk Management (LCRM) (2023) accessed from GOV.UK, (iii) Contaminated land risk assessment: A guide to good practice (C552) (CIRIA 2001) (iv) Planning Policy Wales Edition 12 (PPW, 2024) (v) BS 10175 Investigation of potentially contaminated sites - Code of Practice (BSI 2017) (vi) The series of British Standards on Soil Quality BS 18400; and (vii) Development of Land Affected by Contamination: A Guide for Developers (WLCWG, 2017).

2 DEALING WITH LAND CONTAMINATION

Government policy on land contamination aims to prevent new contaminated land from being created and promotes a risk-based approach to addressing historical contamination. For historical contamination, regulatory intervention is held in reserve for land that meets the legal definition and cannot be dealt with through any other means, including through planning. Land is only considered to be “contaminated land” in the legal sense if it poses an unacceptable risk.

Part 2A of the Environmental Protection Act 1990 is a piece of primary legislation introduced to deal with the historic legacy of contaminated land. It was inserted into the Environmental Protection Act (1990) by section 57 of the Environment Act (1995) and later came into force in Wales on the 1st of July 2001. It places a statutory duty, on local authorities (as principle regulators), to inspect their areas in order to identify contaminated land. This is done in accordance with the local authorities published inspection strategy. Part 2A provides a risk-based approach to the identification and remediation of land where contamination poses an unacceptable risk to human health or the environment.

The Model Procedures for the Management of Land Contamination (CLR 11), were developed to provide the technical framework for applying a risk management process when dealing with land affected by contamination. The process involves identifying, making decisions on, and taking appropriate action to deal with land contamination in a way that is consistent with government policies and legislation within the UK. The approach, concepts and principles for land contamination management promoted by LCRM (and its predecessor CLR 11) are applied to the determination of planning applications. The

guidance given in LCRM follows the same principles.

Other legislative regimes may also provide a means of dealing with land contamination issues, such as the regimes for waste, water, environmental permitting, and environmental damage. Further, the law of statutory nuisance may result in contaminants being unacceptable to third parties whilst not attracting action under Part 2A or other environmental legislation.

2.1 Part 2A

Contaminated Land Statutory Guidance for Wales 2012 refers to The Contaminated Land (Wales) Regulations 2006 but is noted that The Contaminated Land (Wales) (Amendment) Regulations 2012 is also published.

The statutory definition of Contaminated Land, as described in Part 2A, is “*land which appears to the Local Authority in whose area it is situated to be in such a condition that, by reason of substances in, on or under the land that significant harm is being caused, or there is a significant possibility that such significant harm (SPOSH) could be caused, or significant pollution of controlled waters is being caused, or there is a significant possibility of such pollution (SPOSP) being caused*”.

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

Part 2A provides a means of dealing with unacceptable risks posed by land contamination to human health and the environment, and under the guidance enforcing authorities should seek to find and deal with such land. It states that “*under Part 2A the starting point should be that land is not contaminated land unless there is reason to consider otherwise. Only land where unacceptable risks are clearly identified, after a risk assessment has been undertaken in accordance with the Guidance, should be considered as meeting the Part 2A definition of contaminated land*”. Further, the guidance makes it clear that “*regulatory decisions should be based on what is reasonably likely, not what is hypothetically possible*”.

The overarching objectives of the Government’s policy on contaminated land and the Part 2A regime are:

- “(a) *To identify and remove unacceptable risks to human health and the environment.*
- (a) *To seek to ensure that contaminated land is made suitable for its current use.*
- (b) *To ensure that the burdens faced by individuals, companies and society as a whole are proportionate, manageable and compatible with the principles of sustainable development”.*

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The enforcing authority may need to decide whether and how to act in situations where decisions are not straight forward, and where there is uncertainty. *“In so doing, the authority should use its judgement to strike a reasonable balance between: (a) dealing with risks raised by contaminants in land and the benefits of remediating land to remove or reduce those risks; and (b) the potential impacts of regulatory intervention including financial costs to whoever will pay for remediation, health and environmental impacts of taking action, property blight, and burdens on affected people”.*

The authority is required to *“take a precautionary approach to the risks raised by contamination, whilst avoiding a disproportionate approach given the circumstances of each case”.* The aim is *“that the regime produces net benefits, taking account of local circumstances”.*

The guidance recognises that *“normal levels of contaminants in soils should not be considered to cause land to qualify as contaminated land, unless there is a particular reason to consider otherwise”.* Normal levels are quoted as:

- “a) natural presence of contaminants’ such as from underlying geology ‘that have not been shown to pose an unacceptable risk to health and the environment*
- b) ...low level diffuse pollution, and common human activity...”*

Similarly the guidance states that significant pollution or significant possibility of significant pollution of controlled waters is required for land to be considered contaminated and the *“fact that substances are merely entering water”* or *“where discharge from land is not discernible at a location immediately downstream”* does not constitute contaminated land.

To help achieve a more targeted approach to identifying and managing contaminated land in relation to the risk (or possibility) of harm to human health, the revised Statutory Guidance presented a new four category system for considering land under Part 2A, ranging from Category 4, where there is no risk that land poses a significant possibility of significant harm (SPOSH), or the level of risk is low, to Category 1, where the risk that land poses a significant possibility of significant harm (SPOSH) is unacceptably high.

For land that cannot be readily placed into Categories 1 or 4 further assessment is required. If there is sufficient concern that the risks could cause significant harm or have the significant possibility of significant harm the land is to be placed into Category 2. If the concern is not met land is considered Category 3.

The technical guidance clearly states that the currently published Soil Guidance Values (SGV's) and Generic Assessment Criteria (GAC's)

represent *“cautious estimates of level of contaminants in soils”* which should be considered *“no risk to health or, at most, a minimal risk”.* These values do not represent the boundary between categories 3 and 4 and *“should be considered to be comfortably within Category 4”.*

At the end of 2013 technical guidance in support of Defra's revised Statutory Guidance (SG) was published and then revised in 2014 (CL: AIRE 2014) which provided:

- A methodology for deriving C4SLs for four generic land-uses comprising residential, commercial, allotments and public open space; and
- A demonstration of the methodology, via the derivation of C4SLs for six substances – arsenic, benzene, benzo(a)pyrene, cadmium, chromium (VI) and lead.

For controlled waters, the revised Statutory Guidance states that the following types of pollution should be considered to constitute significant pollution of controlled waters:

- “(a) Pollution equivalent to “environmental damage” to surface water or groundwater as defined by The Environmental Damage (Prevention and Remediation) Regulations 2009, but which cannot be dealt with under those Regulations.*
- (b) Inputs resulting in deterioration of the quality of water abstracted, or intended to be used in the future, for human consumption such that additional treatment would be required to enable that use.*
- (c) A breach of a statutory surface water Environment Quality Standard, either directly or via a groundwater pathway.*
- (d) Input of a substance into groundwater resulting in a significant and sustained upward trend in concentration of contaminants (as defined in Article 2(3) of the Groundwater Daughter Directive (2006/118/EC)”.*

The guidance also states that, in some circumstances, significant concentrations at a compliance point (in groundwater or surface water) may constitute pollution of controlled waters.

As with SPOSH for human health, the revised Statutory Guidance presents a four-category system for Significant Pollution of controlled waters. Category 1 covers land where there is a strong and compelling case for SPOSP, for example where significant pollution would almost certainly occur if no action was taken to avoid it. Category 4 covers land where there is no risk or the risk is low, for example, where the land contamination is having no discernible impact on groundwater or surface water quality. Category 2 is for land where the risks posed

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to controlled waters are not high enough to consider the land as Category 1 but nonetheless are of sufficient concern to constitute SPOSP, Category 3 is for land where the risks posed to controlled waters are higher than low but not of sufficient concern to constitute SPOSP.

2.2 Planning Policy

Planning Policy Wales (PPW) (PPW Edition 11, February 2024) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales. Of these Welsh Office Circular 22/87, Development of Contaminated Land is relevant.

PPW contains the following relevant to ground conditions:

Previously Developed Land (para 3.55 – 3.56) – promotes development on previously developed (also referred to as brownfield) land in preference to greenfield sites where it is suitable for development.

The Best and Most Versatile Agricultural Land (para 3.58 – 3.59) defines what agricultural land should be conserved as a finite resource for the future.

Land in grades 1, 2 and 3a should only be developed if there is an overriding need for the development, and either previously developed land or land in lower agricultural grades is unavailable.

Land Contamination (para 6.9.16 – 6.9.21) includes the following:

When planning permission is granted, a notice should be issued to inform the applicant that the responsibility and subsequent liability for safe development and secure occupancy of the site rests with the developer and/or landowner.

It should also advise the applicant that, although the planning authority has used its best endeavours to determine the application on the basis of the information available to it, this does not mean that the land is free from contamination

Physical Ground Conditions and Land Instability (para 6.9.22 – 6.9.28) – identifies the need to identify instability and specifically

Land stability should be addressed and appropriate mitigation measures secured to protect both existing assets and proposed development itself

Any planning application in coal mining consultation areas may need to be accompanied by a coal mining risk assessment report

It is noted that Appendix A (Causes of Instability) and Appendix B (Sources of Information) of Planning Practice Guidance 14, 'Development on Unstable Land', 1990, remain in force in Wales until superseded by a Technical Advice Note.

Sustainable Drainage Systems (SuDS) and Development (para 6.6.17 – 6.6.19) require new developments of more than one dwelling or where the area covered by construction work equals or exceeds 100 square metres also require approval from the SuDS Approval Body (SAB) and development proposals should not result in the mobilisation of contaminants which may have an impact over a wider area.

De-risking Development (para 6.9.12 – 6.9.15) the planning system should “*ensure that development is suitable and that the physical, geo-technical, chemical and other relevant constraints on the land, including the anticipated impacts which climate change may have, are taken into account at all stages of the planning process*”.

2.3 Building Regulations

Approved Documents provide guidance on addressing the requirements contained in the Building Regulations 2010 and are accessed from <https://gov.wales/building-regulations-approved-documents>. Part C is resistance to contaminants and moisture.

Although environmental protection, planning and Building Regulations have different purposes their aims are similar and the processes for assessing the effects of pollutants and contaminants are also similar including the use of risk assessment and the identification of Pollutant Linkages.

3 APPROACH

As with CLR11 the guidance given in LCRM presents three stages of risk management: -

- (a) Stage 1 - Risk Assessment.
- (b) Stage 2 - Options Appraisal.
- (c) Stage 3 - Remediation.

Each stage has three tiers. The three tiers of Stage 1 Risk Assessment are: -

- Tier 1 - Preliminary Risk Assessment (PRA) - first tier of RA that develops the outline conceptual model (CM) and establishes whether there are any potentially unacceptable risks.
- Tier 2 - Generic Quantitative Risk Assessment (GQRA) - carried out using generic assessment criteria and assumptions to estimate risk.

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- Tier 3 - Detailed Quantitative Risk Assessment (DQRA) - carried out using detailed site-specific information to generate Site Specific Assessment Criteria (SSAC) as risk evaluation criteria.

For each tier of a Stage 1 - Risk Assessment you must:

1. Identify the hazard - establish contaminant sources.
2. Assess the hazard - use a source-pathway-receptor (S-P-R) pollutant linkage approach to find out if there is the potential for unacceptable risk.
3. Estimate the risk - predict what degree of harm or pollution might result and how likely it is to occur.
4. Evaluate the risk - decide whether a risk is unacceptable.

A Stantec Preliminary Investigation report normally comprises a desk study, walkover site reconnaissance and preliminary risk assessment (PRA). The project specific proposal defines the actual scope of work which might include review of ground investigation data in which case the report includes a GQRA.

Risk estimation involves identifying the magnitude of the potential consequence (taking into account both the potential severity of the hazard and the sensitivity of the receptor) and the magnitude of the likelihood i.e. the probability (taking into account the presence of the hazard and the receptor and the integrity of the pathway). This approach is promoted in current guidance such as R&D 66 (NHBC 2008).

For a PRA, Stantec's approach is that if a pollution linkage is identified then it represents a potentially unacceptable risk which either (1) remediation / direct risk management or (2) progression to further tiers of risk assessment (GQRA and GQRA) requiring additional data collection and enabling refinement of the CM using the site specific data.

4 IDENTIFICATION OF POLLUTANT LINKAGES AND DEVELOPMENT OF A CONCEPTUAL MODEL (CM)

For all Tiers of a Stage 1 Risk Assessment, the underlying principle to ground condition assessment is the identification of *pollutant linkages* in order to evaluate whether the presence of a source of contamination could potentially lead to harmful consequences. A pollutant linkage consists of the following three elements: -

- A source/hazard – a substance or situation which has the potential to cause harm or pollution;
- A pathway – a means by which the hazard moves along / generates exposure; and
- A receptor/target – an entity which is vulnerable to the potential adverse effects of the hazard.

The *Conceptual Model* identifies the types and locations of potential contaminant sources/hazards and potential receptors and potential migration/transportation pathway(s). The CM is refined through progression to further tiers of risk assessment (GQRA and GQRA) requiring additional data collection.

4.1 Hazard Identification

A hazard is a substance or situation that has the potential to cause harm. Hazards may be chemical, biological or physical.

In a PRA the potential for hazards to be present is determined from consideration of the previous or ongoing activities on or near to the site in accordance with the criteria presented in **Table 1**.

Based on the land use information Contaminants of Potential Concern (COPC) are identified. The COPC direct the scope of the collection of site-specific data and the analytical testing selected for subsequent Tiers.

At Tier 2 the site-specific data is evaluated using appropriate published assessment criteria (refer to Stantec document entitled Rationale for the Selection of Evaluation Criteria for a Generic Quantitative Risk Assessment (GQRA)). In general, published criteria have been developed using highly conservative assumptions and therefore if the screening criterion is not exceeded (and if enough samples from appropriate locations have been analysed) then the COPC is eliminated as a potential Hazard. It should be noted that exceedance does not necessarily indicate that a site is contaminated and/or unsuitable for use only that the COPC is retained as a potential Hazard. Published criteria are generated using models based on numerous and complex assumptions. Whether or not these assumptions are appropriate or sufficiently protective requires confirmation on a project by project basis. Manipulation of the default assumptions would normally form part of a Tier 3 Detailed Quantitative Risk Assessment (DQRA). When reviewing or assessing site specific data Stantec utilise published guidance on comparing contamination data with a critical concentration (CL:AIRE/CIEH 2008) which presents a structured process for employing statistical techniques for data assessment purposes.

4.2 Receptor and Pathway Identification

For all Tiers the potential receptors (for both on site and adjoining land) that will be considered are:

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- Human Health – including current and future occupiers, construction and future maintenance workers, and neighbouring properties/third parties;
- Ecological Systems;¹
- Controlled Waters² – Under section 78A(9) of Part 2A the term “pollution of controlled waters” means the entry into controlled waters of any poisonous, noxious or polluting matter or any solid waste matter. The term “controlled waters” in relation to Wales has the same meaning as in Part 3 of the Water Resources Act 1991, except that “ground waters” does not include waters contained in underground strata but above the saturation zone.
- Property - Animal or Crop (including timber; produce grown domestically, or on allotments, for consumption; livestock; other owned or domesticated animals; wild animals which are the subject of shooting or fishing rights); and
- Property - Buildings (any structure or erection, and any part of a building including any part below ground level, but does not include plant or machinery comprised in a building, or buried services such as sewers, water pipes or electricity cables including archaeological sites and ancient monuments).

If a receptor is taken forward for further assessment it will be classified in terms of its sensitivity, the criteria for which are presented in **Table 2**. Table 2 has been generated using descriptions of environmental receptor importance/value given in various guidance documents including R&D 66 (NHBC 2008), EA 2017 and Transport Analysis Guidance (based on DETR 2000). Human health and buildings classifications have been generated by Stantec using the attribute description for each class. Surface water sensitivity is classified using the Water Framework Directive (WFD) status for the River Basin obtained from: <https://environment.data.gov.uk/catchment-planning/>

The exposure pathway and modes of transport that will be considered are presented in **Table 3**.

4.3 Note regarding Ecological Systems

The Environment Agency (EA) has developed an ecological risk assessment framework which aims to provide a structured approach for assessing the

¹ International or nationally designated sites (as defined in the statutory guidance (Defra Circular 04/12)) “in the local area” will be identified as potential ecological receptors. A search radius of 1, 2 or 5km will be utilised depending on the site-specific circumstances (see also pathway identification). The Environment Agency has published an ecological risk assessment framework (EA 2008) which promotes (as opposed to statutorily enforces) consideration of additional receptors to include locally protected sites and protected or notable species. These additional potential receptors will only be considered if a Phase 1 habitat survey, undertaken in accordance with guidance (JNCC 1993), is commissioned and the data provided to Stantec. It should be noted that

risks to ecology from chemical contaminants in soils (EA 2008). In circumstances where contaminants in water represent a potential risk to aquatic ecosystems then risk assessors will need to consider this separately.

The framework consists of a three-tiered process: -

- Tier 1 is a screening step where the site soils chemical data is compared to a soil screening value (SSV)
- Tier 2 uses various tools (including surveys and biological testing) to gather evidence for any harm to the ecological receptors
- Tier 3 seeks to attribute the harm to the chemical contamination

Tier 1 is preceded by a desk study to collate information about the site and the nature of the contamination to assess whether pollutant linkages are feasible. The framework presents ten steps for ecological desk studies and development of a conceptual model as follows.

1. Establish Regulatory Context
2. Collate and Assess Documentary Information
3. Summarise Documentary Information
4. Identify Contaminants of Potential Concern
5. Identify Likely Fate Transport of Contaminants
6. Identify Potential Receptors of Concern
7. Identify Potential Pathways of Concern
8. Create a Conceptual Model
9. Identify Assessment and Measurement Endpoints
10. Identify Gaps and Uncertainties

The information in a standard PRA report covers Steps 1 to 4 inclusive. Step 5 considers fate and transport of contaminants and it should be noted that our standard report adopts a simplified approach considering only transport mechanisms. A simplified approach has also been adopted in respect of Steps 6 and 7 receptors (a detailed review of the ecological attributes has not been undertaken) and pathways (a food chain assessment has not been undertaken). Step 9 is outside the scope of our standard PRA report.

It should be noted that the PRA report will present an assessment for ecological systems (where identified as a receptor for a land contamination

without such a survey a Land Contamination risk assessment may conclude that the identification of potential ecological receptors is inconclusive (refer to Stantec Specification for a Preliminary Investigation (Desk Study and Site Reconnaissance).

² The definition of “pollution of controlled water” was amended by the introduction of Section 86 of the Water Act 2003. For the purposes of Part 2A groundwater does not include waters above the saturated zone and our assessment does not therefore address perched water other than where development causes a pathway to develop.

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assessment) considering the viability of the mode of transport given the site-specific circumstances and not specific pathways. The PRA may conclude that the risk to potential ecological receptors is inconclusive.

4.4 Note regarding Controlled Waters

Controlled waters are rivers, estuaries, coastal waters, lakes and groundwaters, but not perched waters.

The EU Water Framework Directive (WFD) 2000/60/EC provides for the protection of sub-surface, surface, coastal and territorial waters through a framework of river basin management. The EU Updated Water Framework Standards Directive 2014/101/EU amended the EU WFD to update the international standards therein; it entered into force on 20 November 2014 with the requirements for its provisions to be transposed in Member State law by 20 May 2016. Other EU Directives in the European water management framework include:

- the EU Priority Substances Directive 2013/39/EU;
- EU Groundwater Pollutants Threshold Values Directive 2014/80/EU amending the EU Groundwater Directive 2006/118/EC; and
- EU Biological Monitoring Directive 2014/101/EU.

The Ground Water Daughter Directive (GWDD) was enacted by the Groundwater Regulations (2009), which were subsumed by the Environmental Permitting Regulations (2010) which provide essential clarification including on the four objectives specifically for groundwater quality in the WFD: -

Achieve 'Good' groundwater chemical status by 2015, commonly referred to as 'status objective';
Achieve Drinking Water Protected Area Objectives;

Implement measures to reverse any significant and sustained upward trend in groundwater quality, referred to as 'trend objective'; and

Prevent or limit the inputs of pollutants into groundwater, commonly referred to as 'prevent or limit' objectives

Section 86 of the Water Act 2003 Contaminated land: pollution of controlled waters amends the Environmental Protection Act 1990 so that pollution of controlled waters must now be "significant" to meet the definition of statutory contaminated land.

The Water Framework Directive (WFD) requires the preparation, implementation and review of River Basin Management Plans (RBMP) on a six-year cycle. River basins are made up of lakes, rivers, groundwaters, estuaries and coastal waters, together with the land they drain. River Basin

Districts (RBD) and the WFD Waterbodies that they comprise are important spatial management units, regularly used in catchment management studies. River Basin Management Plans (RBMP) have been developed for the 11 River Basin Districts in England and Wales.

These were released by Defra in 2009 (Defra 2009) and updated in 2015.

These RBMP's establish the current status of waters within the catchments of the respective Districts and the current status of adjoining waters identified. As part of a Tier 2 risk assessment water quality data is screened against the WFD assessment criteria. Comparison with the RBMP's current status of waters for the catchment under consideration would form part of a Tier 3 assessment.

5 RISK ESTIMATION

Risk estimation classifies what degree of harm might result to a receptor (defined as consequence) and how likely it is that such harm might arise (probability).

At Tier 1 the consequence classification is generated by multiplying the hazard classification score and the receptor sensitivity score. This approach follows that presented in the republished R&D 66 (NHBC 2008).

The criteria for classifying probability are set out in **Table 4** and have been taken directly from Table 6.4 CIRIA C552 (CIRIA 2001). Probability considers the integrity of the exposure pathway.

The consequence classifications detailed in **Table 5** have been adapted from Table 6.3 presented in C552 and R&D 66 (Annex 4 Table A4.3).

The Tier 1 risk classification is estimated for each pollutant linkage using the matrix given in **Table 6** which is taken directly from C552 (Table 6.5).

Subsequent Tiers refine the CM through retention or elimination of potential hazards and pollutant linkages.

6 RISK EVALUATION

Evaluation criteria are the parameters used to judge whether harm or pollution needs further assessment or is unacceptable. The evaluation criteria used will depend on:

- the reasons for doing the RA and the regulatory context such as Part 2A or planning;
- the CM and pollutant linkages present;
- any criteria set by regulators;
- any advisory requirements such as from Public Health Wales;
- the degree of confidence and precaution required;
- the level of confidence required to judge whether a risk is unacceptable;

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- how you've used or developed more detailed assessment criteria in the later tiers of RA;
- the availability of robust scientific data;
- how much is known - for example, about the pathway mechanism and how the contaminants affect receptors; and
- any practical reasons such as being able to measure or predict against the criteria.

In order to put the Tier 1 risk classification into context the likely actions are described in **Table 7** which is taken directly from Table 6.6 of C552 (CIRIA 2001).

REFERENCES

BSI 2017 BS 10175:2011+A2:2017 Investigation of potentially contaminated sites - Code of Practice

BSI 2019 BS 8485:2015+A1:2019 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings

CIRIA 2001: Contaminated land risk assessment – a guide to good practice C552.

CIRIA 2008: Assessing risks posed by hazardous ground gases to buildings C655

CL: AIRE/CIEH 2008 Guidance on Comparing Soil Contamination Data with a Critical Concentration. Published by Contaminated Land: Applications in Real Environments (CL: AIRE) and the Chartered Institute of Environmental Health (CIEH)

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Management of Land Contamination CRL 11 by the Environment Agency (EA).

EA 2008 Ecological Risk Assessment Science Report Series SC070009 published by the Environment Agency (EA).

EA 2017 New groundwater vulnerability mapping methodology in England and Wales Report – SC040016/R Environment Agency (EA) September 2017

JNCC 1993 Handbook for Phase 1 Habitat Survey – A Technical for Environmental Audit prepared by the Joint Nature Conservancy Council (JNCC)

NHBC/EA/CIEH 2008: R&D Publication 66 Guidance for the safe development of housing on land affected by contamination.

Welsh Government 1987 Development of Contaminated Land (circular 22/87) Guidance on the identification, assessment and development of contaminated land August 1987.

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Welsh Government, 2012 Environmental Protection Act 1990, Guidance Document: Contaminated Land Statutory Guidance: 2012

Welsh Government, 2024 Planning Policy Wales Edition 12 | February 2024.

WLCWG, 2017. Development of Land Affected by Contamination: A Guide For Developers, Welsh Contaminated Land Group, May 2017.

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Table 1: Criteria for Classifying Hazards / Potential for Generating Contamination

Classification/Score	Potential for generating contamination/gas based on land use
Very Low 1	Land Use: Residential, retail or office use, agriculture Contamination: Limited. Gas generation potential: Soils with low organic content
Low 2	Land Use: Recent small scale industrial and light industry Contamination: locally slightly elevated concentrations. Gas generation potential: Soils with high organic content (limited thickness)
Moderate 3	Land Use: Railway yards, collieries, scrap yards, engineering works. Contamination: Possible widespread slightly elevated concentrations and locally elevated concentrations. Gas generation potential: Dock silt and substantial thickness of organic alluvium/peat
High 4	Land Use: Heavy industry, non-hazardous landfills. Contamination: Possible widespread elevated concentrations. Gas generation potential: Shallow mine workings Pre 1960s landfill
Very High 5	Land Use: Hazardous waste landfills, gas works, chemical works, Contamination: Likely widespread elevated concentrations. Gas generation potential: Landfill post 1960

"Greenfield" is land which has not been developed and there has been no use of agrochemicals

Table 2: Criteria for Classifying Receptor Sensitivity/Value

Classification	Definition
Very Low 1	Receptor of limited importance <ul style="list-style-type: none"> Groundwater: Unproductive strata (Strata with negligible significance for water supply or river baseflow) (previously Non-aquifer), Secondary B (water-bearing parts of non-aquifers), Secondary undifferentiated (previously minor or non-aquifer, but information insufficient to classify as secondary A or B) Surface water: WFD Surface Water status Bad Ecology: No local designation Buildings: Replaceable Human health: Unoccupied/limited access
Low 2	Receptor of local or county importance with potential for replacement <ul style="list-style-type: none"> Groundwater: Secondary A aquifer Surface water: WFD Surface Water status Poor Ecology: local habitat resources Buildings: Local value Human health: Minimum score 4 where human health identified as potential receptor
Moderate 3	Receptor of local or county importance with potential for replacement <ul style="list-style-type: none"> Groundwater: Principal aquifer Surface water: WFD Surface Water status Moderate Ecology: County wildlife sites, Areas of Outstanding Natural Beauty (AONB) Buildings: Area of Historic Character Human health: Minimum score 4 where human health identified as potential receptor
High 4	Receptor of county or regional importance with limited potential for replacement <ul style="list-style-type: none"> Groundwater: Source Protection Zone 2 or 3 Surface water: WFD Surface Water status Good Ecology: SSSI, National or Marine Nature Reserve (NNR or MNR) Buildings: Conservation Area Human health: Minimum score 4 where human health identified as potential receptor
Very High 5	Receptor of national or international importance <ul style="list-style-type: none"> Groundwater: Source Protection Zone (SPZ) 1 Surface water: WFD Surface Water status High Ecology: Special Areas of Conservation (SAC and candidates), Special Protection Areas (SPA and potentials) or wetlands of international importance (RAMSAR) Buildings: World Heritage site Human health: Residential, open spaces and uses where children are present

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Table 3: Exposure Pathway and Modes of Transport

Receptor	Pathway	Mode of transport
Human health	Ingestion	Fruit or vegetable leaf or roots
		Contaminated water
		Soil/dust indoors
		Soil/dust outdoors
	Inhalation	Particles (dust / soil) – outdoor
		Particles (dust / soil) - indoor
		Vapours – outdoor - migration via natural or anthropogenic pathways
		Vapours - indoor - migration via natural or anthropogenic pathways
	Dermal absorption	Direct contact with soil
		Direct contact with waters (swimming / showering)
Irradiation		
Groundwater	Leaching	Gravity / permeation
	Migration	Natural – groundwater as pathway Anthropogenic (e.g. boreholes, culverts, pipelines etc.)
Surface Water	Direct	Runoff or discharges from pipes
	Indirect	Recharge from groundwater
	Indirect	Deposition of windblown dust
Buildings	Direct contact	Sulphate attack on concrete, hydrocarbon corrosion of plastics
	Gas ingress	Migration via natural or anthropogenic paths
Ecological systems	See Notes	Runoff/discharge to surface water body
	See Notes	Windblown dust
	See Notes	Groundwater migration
	See Notes	At point of contaminant source
Animal and crop	Direct	Windblown or flood deposited particles / dust / sediments
	Indirect	Plants via root up take or irrigation. Animals through watering
	Inhalation	By livestock / fish - gas / vapour / particulates / dust
	Ingestion	Consumption of vegetation / water / soil by animals

Table 4: Classification of Probability

Classification	Definition
High likelihood	There is a pollution linkage and an event either appears very likely in the short-term and almost inevitable over the long-term, or there is already evidence at the receptor of harm / pollution.
Likely	There is a pollution linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short-term and likely over the long-term.
Low likelihood	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter-term.
Unlikely	There is a pollution linkage, but circumstances are such that it is improbable that an event would occur even in the very long-term.

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Table 5: Classification of Consequence (score = magnitude of hazard and sensitivity of receptor)

Classification Score	Examples
Severe 17-25 (3 out of 25 outcomes)	Human health effect - exposure likely to result in "significant harm" as defined in the Defra (2012) Part 2A Statutory Guidance ¹ . Controlled water effect - short-term risk of pollution (note: Water Resources Act contains no scope for considering significance of pollution) of sensitive water resource. Equivalent to EA Category 1 incident (persistent and/or extensive effects on water quality leading to closure of potable abstraction point or loss of amenity, agriculture or commercial value. Major fish kill. Ecological effect - short-term exposure likely to result in a substantial adverse effect. Catastrophic damage to crops, buildings or property
Medium 10-16 (7 out of 25 outcomes)	Human health effect - exposure could result in "significant harm" ¹ . Controlled water effect - equivalent to EA Category 2 incident requiring notification of abstractor Ecological effect - short-term exposure may result in a substantial adverse effect. Damage to crops, buildings or property
Mild 5-9 (7 out of 25 outcomes)	Human health effect - exposure may result in "significant harm" ¹ . Controlled water effect - equivalent to EA Category 3 incident (short lived and/or minimal effects on water quality). Ecological effect - unlikely to result in a substantial adverse effect. Minor damage to crops, buildings or property. Damage to building rendering it unsafe to occupy (for example foundation damage resulting in instability).
Minor 1-4 (8 out of 25 outcomes)	No measurable effect on humans. Protective equipment is not required during site works. Equivalent to insubstantial pollution incident with no observed effect on water quality or ecosystems. Repairable effects to crops, buildings or property. The loss of plants in a landscaping scheme. Discolouration of concrete.

¹ Significant harm includes death, disease, serious injury, genetic mutation, birth defects or impairment of reproductive function. The local authority may also consider other health effects to constitute significant harm such as physical injury; gastrointestinal disturbances; respiratory tract effects; cardio-vascular effects; central nervous system effects; skin ailments; effects on organs such as the liver or kidneys; or a wide range of other health impacts. Whether or not these would constitute significant harm would depend on the seriousness of harm including impact on health, quality of life and scale of impact.

Table 6: Classification of Risk (Combination of Consequence Table 5 and Probability Table 4)

Probability	Consequence			
	Severe	Medium	Mild	Minor
High likelihood	Very high	High	Moderate	Low
Likely	High	Moderate	Moderate/	Low
Low likelihood	Moderate	Moderate	Low	Very low
Unlikely	Low	Low	Very low	Very low

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Table 7: Description of Risks and Likely Action Required

Risk Classification	Description
Very high risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation is likely to be required in the short term.
High risk	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short-term and are likely over the longer-term.
Moderate risk	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer-term.
Low risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very low risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.

Appendix B Site Walkover Photographs



Waypoint (WP) 01: Field 1 viewed from the northwest.



WP02: Boundary between fields 11 and 12 viewed from the east.



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**SW SUBSTATION ENVIRONMENTAL
PHOTOGRAPHIC RECORD**

Appendix	
Date	10/10/2023
Drawn by	JW
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WP03: Field 10 viewed from the northwest.



WP04: Ground conditions on field 13, indicative of much of the site.



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**SW SUBSTATION ENVIRONMENTAL
PHOTOGRAPHIC RECORD**

Appendix	
Date	10/10/2023
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WP05: Field 2 viewed from the northwest.



WP06: Gate between fields 2 and 3 viewed from the northwest.



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**SW SUBSTATION ENVIRONMENTAL
PHOTOGRAPHIC RECORD**

Appendix	
Date	10/10/2023
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Checked by	
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Appendix C Groundsure Report

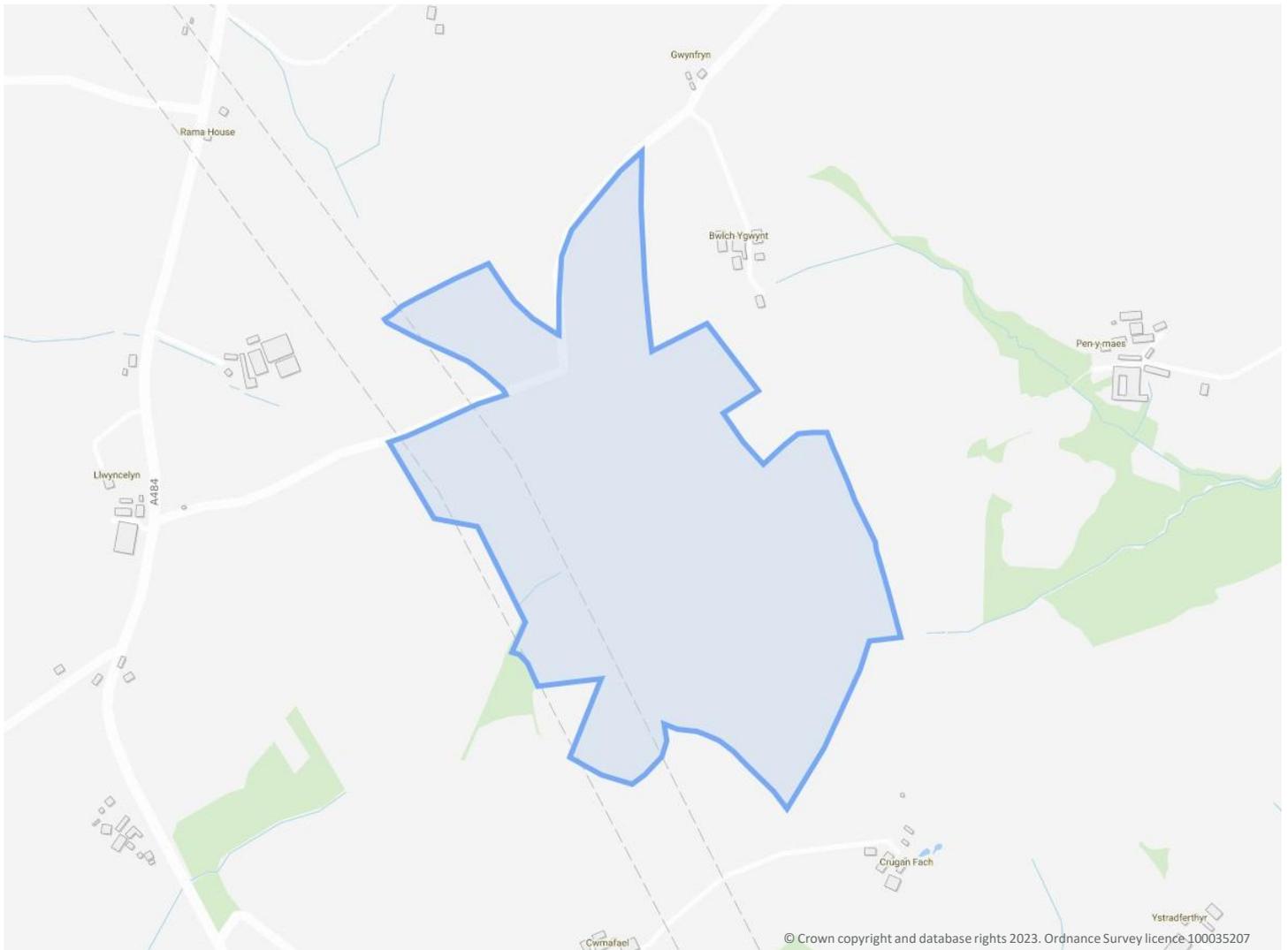
241853,213448,

Order Details

Date: 25/07/2023
Your ref: EPL022853_
Our Ref: HMD-DIN-DZB-ZM6-3AY

Site Details

Location: 241886 213394
Area: 35.19 ha
Authority: [Sir Gaerfyrddin – Carmarthenshire County Council](#) 4



[Summary of findings](#)

[p. 2 >](#)

[Aerial image](#)

[p. 9 >](#)

[OS MasterMap site plan](#)

N/A: >10ha

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info@groundsure.com 4

01273 257 755

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 >	0	0	3	1	-
15 >	1.2 >	Historical tanks >	0	0	2	0	-
15	1.3	Historical energy features	0	0	0	0	-
16	1.4	Historical petrol stations	0	0	0	0	-
16	1.5	Historical garages	0	0	0	0	-
16	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
17 >	2.1 >	Historical industrial land uses >	0	0	4	1	-
18 >	2.2 >	Historical tanks >	0	0	2	0	-
18	2.3	Historical energy features	0	0	0	0	-
18	2.4	Historical petrol stations	0	0	0	0	-
19	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
20	3.1	Active or recent landfill	0	0	0	0	-
20	3.2	Historical landfill (BGS records)	0	0	0	0	-
21	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
21	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
21	3.5	Historical waste sites	0	0	0	0	-
21	3.6	Licensed waste sites	0	0	0	0	-
21 >	3.7 >	Waste exemptions >	0	0	3	19	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
24 >	4.1 >	Recent industrial land uses >	3	2	6	-	-
25	4.2	Current or recent petrol stations	0	0	0	0	-
25	4.3	Electricity cables	0	0	0	0	-
25 >	4.4 >	Gas pipelines >	0	0	1	0	-
26	4.5	Sites determined as Contaminated Land	0	0	0	0	-



26	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
26	4.7	Regulated explosive sites	0	0	0	0	-
26	4.8	Hazardous substance storage/usage	0	0	0	0	-
27	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
27	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
27	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
27	4.12	Radioactive Substance Authorisations	0	0	0	0	-
27 >	4.13 >	<u>Licensed Discharges to controlled waters ></u>	0	0	1	2	-
28	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
28	4.15	Pollutant release to public sewer	0	0	0	0	-
28	4.16	List 1 Dangerous Substances	0	0	0	0	-
29	4.17	List 2 Dangerous Substances	0	0	0	0	-
29 >	4.18 >	<u>Pollution Incidents (EA/NRW) ></u>	0	0	1	1	-
29	4.19	Pollution inventory substances	0	0	0	0	-
30	4.20	Pollution inventory waste transfers	0	0	0	0	-
30	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	<u>Hydrogeology ></u>	On site	0-50m	50-250m	250-500m	500-2000m
31 >	5.1 >	<u>Superficial aquifer ></u>	Identified (within 500m)				
33 >	5.2 >	<u>Bedrock aquifer ></u>	Identified (within 500m)				
34 >	5.3 >	<u>Groundwater vulnerability ></u>	Identified (within 50m)				
35 >	5.4 >	<u>Groundwater vulnerability- soluble rock risk ></u>	Identified (within 0m)				
36	5.5	Groundwater vulnerability- local information	None (within 0m)				
37 >	5.6 >	<u>Groundwater abstractions ></u>	0	0	0	0	1
38 >	5.7 >	<u>Surface water abstractions ></u>	0	0	0	0	1
38	5.8	Potable abstractions	0	0	0	0	0
39	5.9	Source Protection Zones	0	0	0	0	-
39	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	<u>Hydrology ></u>	On site	0-50m	50-250m	250-500m	500-2000m
40 >	6.1 >	<u>Water Network (OS MasterMap) ></u>	1	1	6	-	-



41 >	6.2 >	Surface water features >	1	1	8	-	-
41 >	6.3 >	WFD Surface water body catchments >	2	-	-	-	-
42 >	6.4 >	WFD Surface water bodies >	0	0	0	-	-
42 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-

Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
43	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
43	7.2	Historical Flood Events	0	0	0	-	-
43	7.3	Flood Defences	0	0	0	-	-
44	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
44	7.5	Flood Storage Areas	0	0	0	-	-
45	7.6	Flood Zone 2	None (within 50m)				
45	7.7	Flood Zone 3	None (within 50m)				

Page	Section	Surface water flooding >					
46 >	8.1 >	Surface water flooding >	1 in 30 year, 0.3m – 1.0m (within 50m)				

Page	Section	Groundwater flooding >					
48 >	9.1 >	Groundwater flooding >	Low (within 50m)				

Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
49 >	10.1 >	Sites of Special Scientific Interest (SSSI) >	0	0	0	0	2
50	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
50 >	10.3 >	Special Areas of Conservation (SAC) >	0	0	0	0	1
51	10.4	Special Protection Areas (SPA)	0	0	0	0	0
51	10.5	National Nature Reserves (NNR)	0	0	0	0	0
51	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
51 >	10.7 >	Designated Ancient Woodland >	0	0	2	2	45
53	10.8	Biosphere Reserves	0	0	0	0	0
54	10.9	Forest Parks	0	0	0	0	0
54	10.10	Marine Conservation Zones	0	0	0	0	0
54	10.11	Green Belt	0	0	0	0	0
54	10.12	Proposed Ramsar sites	0	0	0	0	0



54	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
55	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
55	10.15	Nitrate Sensitive Areas	0	0	0	0	0
55	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
56	10.17	SSSI Impact Risk Zones	0	-	-	-	-
56	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
57	11.1	World Heritage Sites	0	0	0	-	-
57	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
57	11.3	National Parks	0	0	0	-	-
57	11.4	Listed Buildings	0	0	0	-	-
58	11.5	Conservation Areas	0	0	0	-	-
58	11.6	Scheduled Ancient Monuments	0	0	0	-	-
58	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
59 >	12.1 >	Agricultural Land Classification >	Grade 3b (within 250m)				
60	12.2	Open Access Land	0	0	0	-	-
60	12.3	Tree Felling Licences	0	0	0	-	-
60	12.4	Environmental Stewardship Schemes	0	0	0	-	-
61	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
62	13.1	Priority Habitat Inventory	0	0	0	-	-
62	13.2	Habitat Networks	0	0	0	-	-
62	13.3	Open Mosaic Habitat	0	0	0	-	-
62	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
63 >	14.1 >	10k Availability >	Identified (within 500m)				
64	14.2	Artificial and made ground (10k)	0	0	0	0	-
65	14.3	Superficial geology (10k)	0	0	0	0	-



65	14.4	Landslip (10k)	0	0	0	0	-
66	14.5	Bedrock geology (10k)	0	0	0	0	-
66	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
67 >	15.1 >	50k Availability >	Identified (within 500m)				
68	15.2	Artificial and made ground (50k)	0	0	0	0	-
68	15.3	Artificial ground permeability (50k)	0	0	-	-	-
69 >	15.4 >	Superficial geology (50k) >	1	0	1	0	-
70 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
70	15.6	Landslip (50k)	0	0	0	0	-
70	15.7	Landslip permeability (50k)	None (within 50m)				
71 >	15.8 >	Bedrock geology (50k) >	2	0	2	0	-
72 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
72 >	15.10 >	Bedrock faults and other linear features (50k) >	1	0	1	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
73	16.1	BGS Boreholes	0	0	0	-	-
Page	Section	Natural ground subsidence >					
74 >	17.1 >	Shrink swell clays >	Very low (within 50m)				
75 >	17.2 >	Running sands >	Very low (within 50m)				
77 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
78 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
79 >	17.5 >	Landslides >	Low (within 50m)				
81 >	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
83 >	18.1 >	BritPits >	0	0	1	0	-
84 >	18.2 >	Surface ground workings >	0	0	4	-	-
84	18.3	Underground workings	0	0	0	0	0
84	18.4	Underground mining extents	0	0	0	0	-
85	18.5	Historical Mineral Planning Areas	0	0	0	0	-

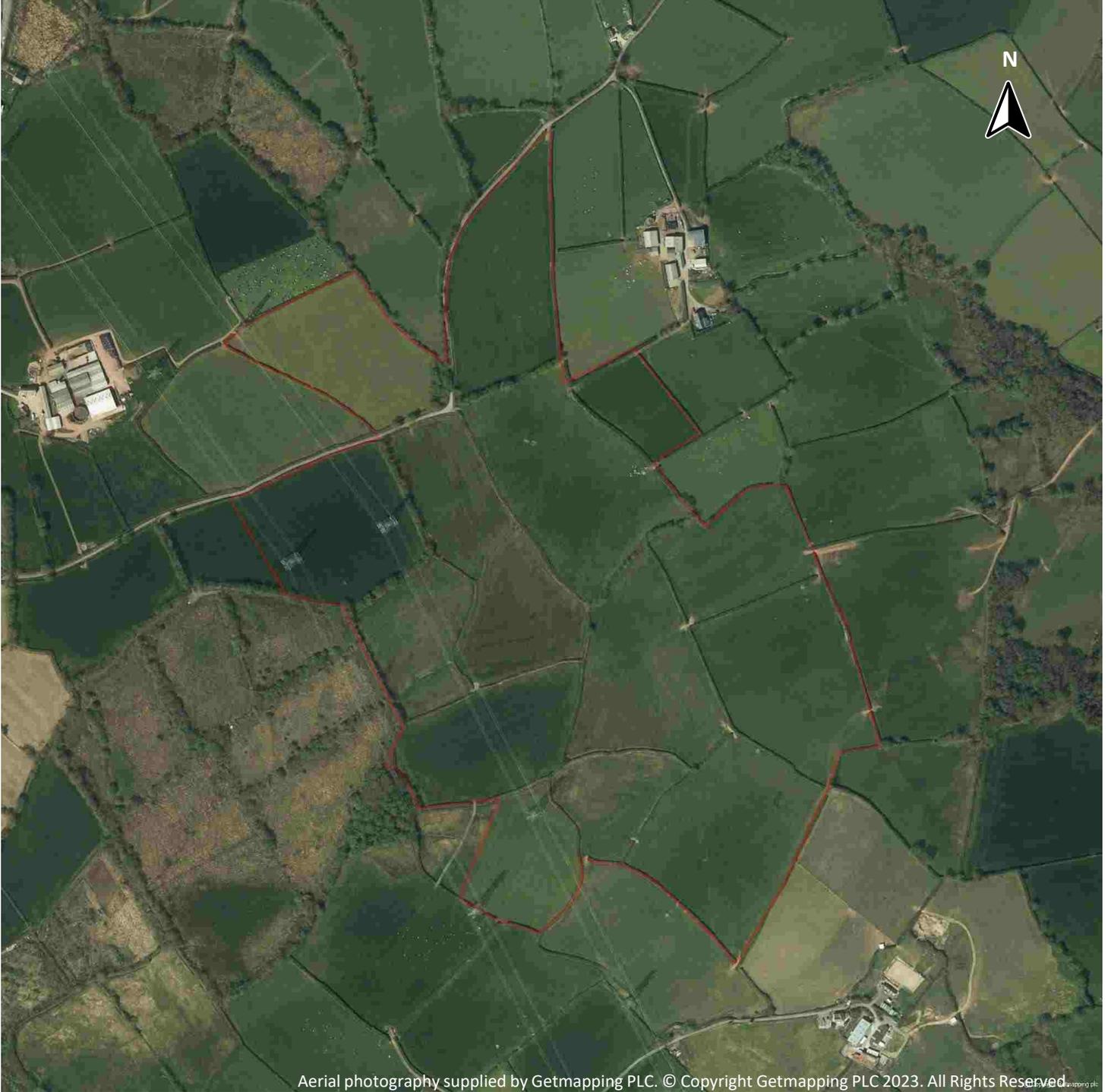


85 >	18.6 >	Non-coal mining >	2	0	0	0	1
86	18.7	JPB mining areas	None (within 0m)				
86	18.8	The Coal Authority non-coal mining	0	0	0	0	-
86	18.9	Researched mining	0	0	0	0	-
86	18.10	Mining record office plans	0	0	0	0	-
87	18.11	BGS mine plans	0	0	0	0	-
87	18.12	Coal mining	None (within 0m)				
87	18.13	Brine areas	None (within 0m)				
87	18.14	Gypsum areas	None (within 0m)				
87	18.15	Tin mining	None (within 0m)				
88	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
89	19.1	Natural cavities	0	0	0	0	-
89	19.2	Mining cavities	0	0	0	0	0
89	19.3	Reported recent incidents	0	0	0	0	-
89	19.4	Historical incidents	0	0	0	0	-
90	19.5	National karst database	0	0	0	0	-
Page	Section	Radon >					
91 >	20.1 >	Radon >	Between 5% and 10% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
93 >	21.1 >	BGS Estimated Background Soil Chemistry >	11	8	-	-	-
94	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
94	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
95	22.1	Underground railways (London)	0	0	0	-	-
95	22.2	Underground railways (Non-London)	0	0	0	-	-
95	22.3	Railway tunnels	0	0	0	-	-
95	22.4	Historical railway and tunnel features	0	0	0	-	-
95	22.5	Royal Mail tunnels	0	0	0	-	-



96	22.6	Historical railways	0	0	0	-	-
96	22.7	Railways	0	0	0	-	-
96	22.8	Crossrail 1	0	0	0	0	-
96	22.9	Crossrail 2	0	0	0	0	-
96	22.10	HS2	0	0	0	0	-

Recent aerial photograph



Capture Date: 13/04/2020

Site Area: 35.19ha



Contact us with any questions at:

info@groundsure.com 4

01273 257 755

Date: 25 July 2023

Recent site history - 2017 aerial photograph



Capture Date: 25/05/2017

Site Area: 35.19ha



Recent site history - 2013 aerial photograph



Capture Date: 04/06/2013

Site Area: 35.19ha



Contact us with any questions at:

info@groundsure.com 4

01273 257 755

Date: 25 July 2023

Recent site history - 2009 aerial photograph



Capture Date: 11/09/2009

Site Area: 35.19ha



Contact us with any questions at:

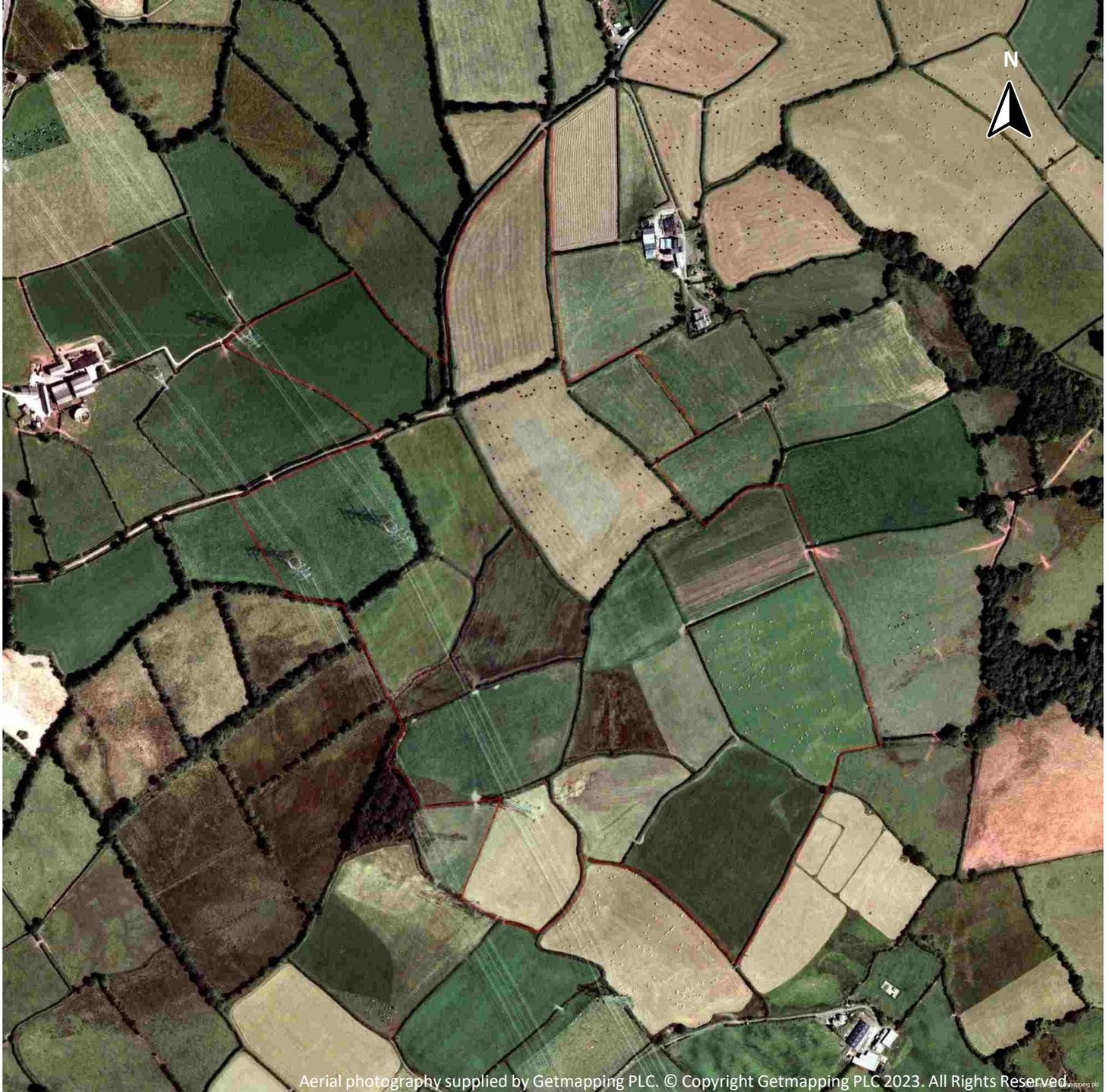
info@groundsure.com 4

01273 257 755

Date: 25 July 2023



Recent site history - 2000 aerial photograph

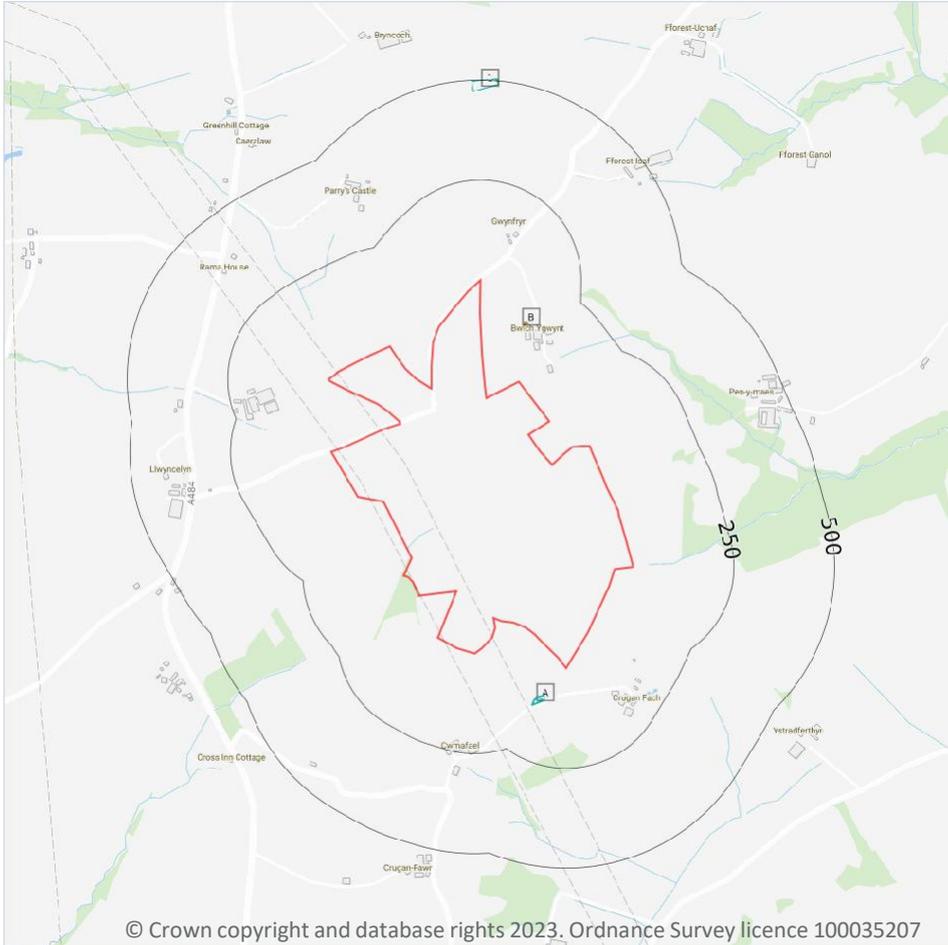


Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2023. All Rights Reserved.

Capture Date: 20/07/2000

Site Area: 35.19ha

1 Past land use



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks

1.1 Historical industrial land uses

Records within 500m 4

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
A	89m S	Unspecified Old Quarry	1887	262588

ID	Location	Land use	Dates present	Group ID
A	89m S	Unspecified Quarry	1946 – 1948	273554
A	98m S	Unspecified Quarry	1907	316384
1	472m N	Unspecified Ground Workings	1887	266664

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

2

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

Features are displayed on the Past land use map on [page 14 >](#)

ID	Location	Land use	Dates present	Group ID
B	108m N	Unspecified Tank	1990	33153
B	112m N	Unspecified Tank	1990	33154

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m

0

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

This data is sourced from Ordnance Survey / Groundsure.



1.4 Historical petrol stations

Records within 500m

0

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

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m

0

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

This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

Records within 500m

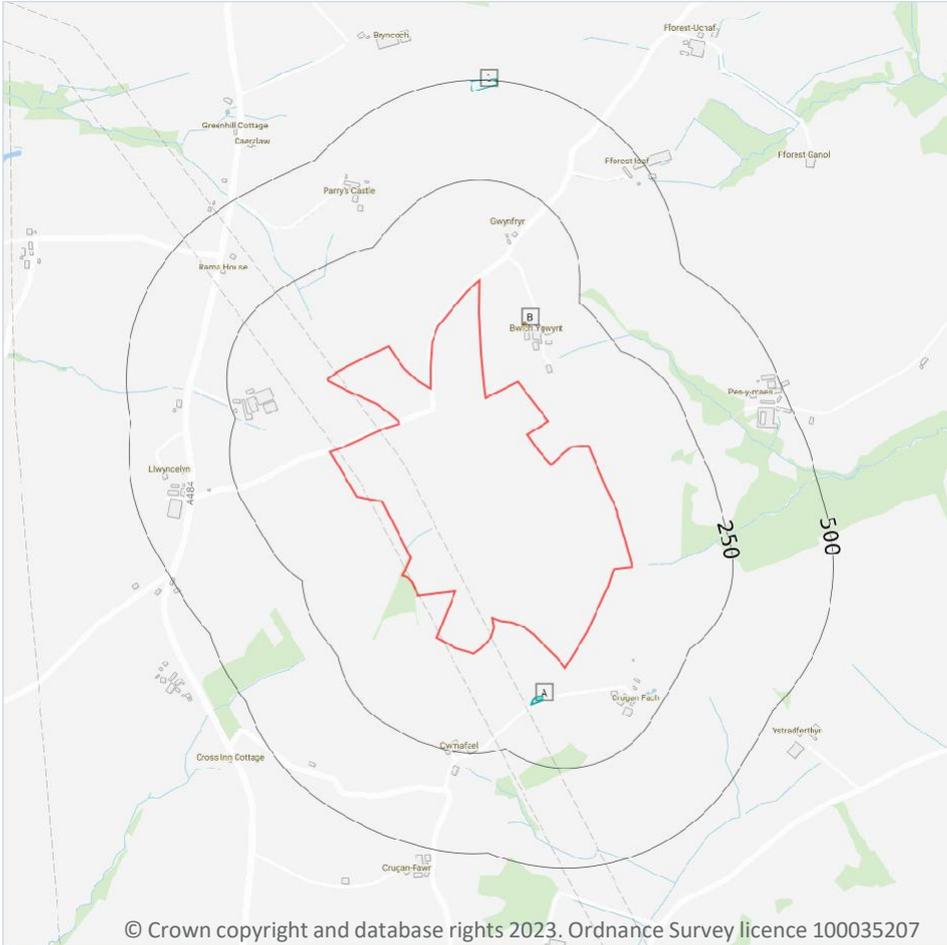
0

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

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



2 Past land use - un-grouped



Site Outline

Search buffers in metres (m)

- Historical industrial land uses
- Historical tanks

2.1 Historical industrial land uses

Records within 500m 5

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 17](#) >

ID	Location	Land Use	Date	Group ID
A	89m S	Unspecified Quarry	1946	273554
A	89m S	Unspecified Old Quarry	1887	262588
A	94m S	Unspecified Quarry	1948	273554

ID	Location	Land Use	Date	Group ID
A	98m S	Unspecified Quarry	1907	316384
1	472m N	Unspecified Ground Workings	1887	266664

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m

2

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

Features are displayed on the Past land use – un-grouped map on [page 17 >](#)

ID	Location	Land Use	Date	Group ID
B	108m N	Unspecified Tank	1990	33153
B	112m N	Unspecified Tank	1990	33154

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

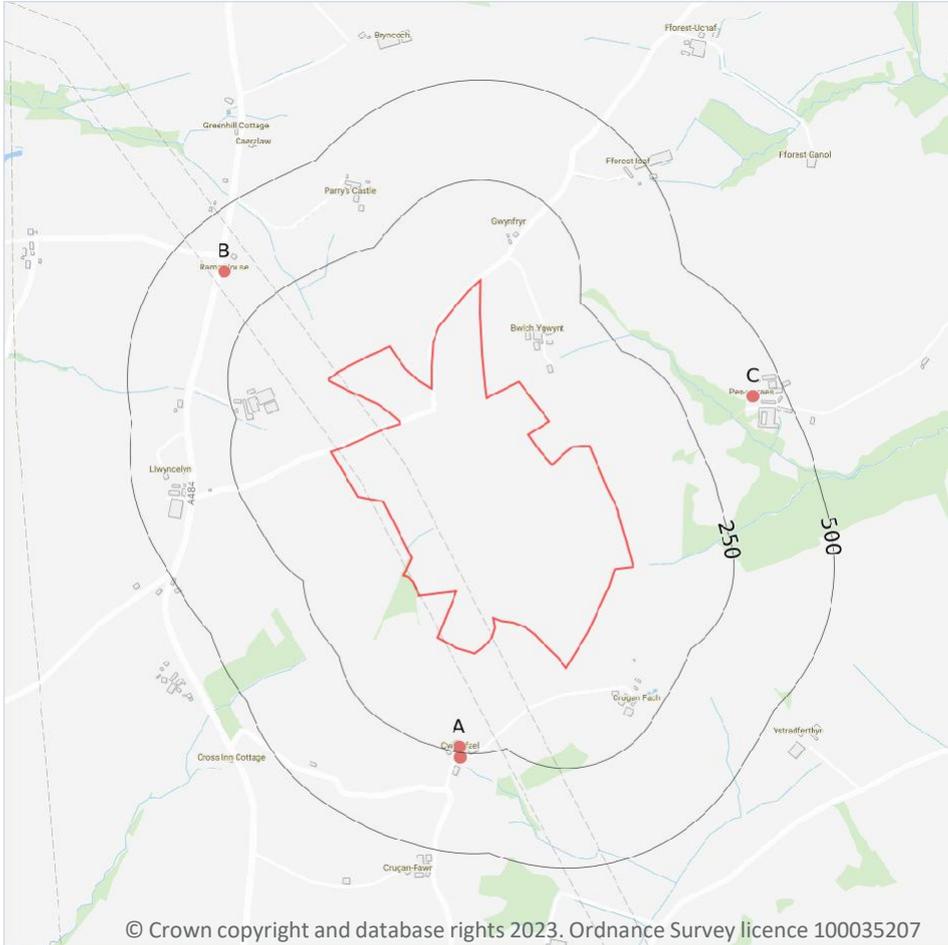
0

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

22

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 20 >](#)



ID	Location	Site	Reference	Category	Sub-Category	Description
A	238m S	Cwmafael Llandyfaelog Kidwelly Sir Gaerfyrddin SA175RF	NRW-WME023662	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
A	238m S	Cwmafael Llandyfaelog Kidwelly Sir Gaerfyrddin SA175RF	NRW-WME023663	Disposing of waste exemption	On a farm	Burning waste in the open
A	238m S	Cwmafael Llandyfaelog Kidwelly Sir Gaerfyrddin SA175RF	NRW-WME023664	Using waste exemption	On a farm	Use of waste in construction
A	262m S	Cwmafael, Llandyfaelog, Kidwelly, Sir Gaerfyrddin, SA17 5RF	NRW-WME055053	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
A	262m S	Cwmafael, Llandyfaelog, Kidwelly, Sir Gaerfyrddin, SA17 5RF	NRW-WME055054	Disposing of waste exemption	On a farm	Burning waste in the open
A	262m S	Cwmafael, Llandyfaelog, Kidwelly, Sir Gaerfyrddin, SA17 5RF	NRW-WME055055	Using waste exemption	On a farm	Use of waste in construction
B	375m NW	A&M Griffiths Ltd, Llwynygwcw, Uplands, Caerfyrddin, Carmarthenshire, SA328DX	NRW-WME021812	Storing waste exemption	On a farm	Storage of waste in a secure place
B	375m NW	A&M Griffiths Ltd, Llwynygwcw, Uplands, Caerfyrddin, Carmarthenshire, SA328DX	NRW-WME021812	Using waste exemption	On a farm	Use of waste for a specified purpose
B	375m NW	A&M Griffiths Ltd, Llwynygwcw, Uplands, Caerfyrddin, Carmarthenshire, SA328DX	NRW-WME021812	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
B	375m NW	A&M Griffiths Ltd, Llwynygwcw, Uplands, Caerfyrddin, Carmarthenshire, SA328DX	NRW-WME021812	Disposing of waste exemption	On a farm	Burning waste in the open
B	375m NW	A&M Griffiths Ltd, Llwynygwcw, Uplands, Caerfyrddin, Carmarthenshire, SA328DX	NRW-WME021812	Storing waste exemption	On a farm	Storage of waste in secure containers

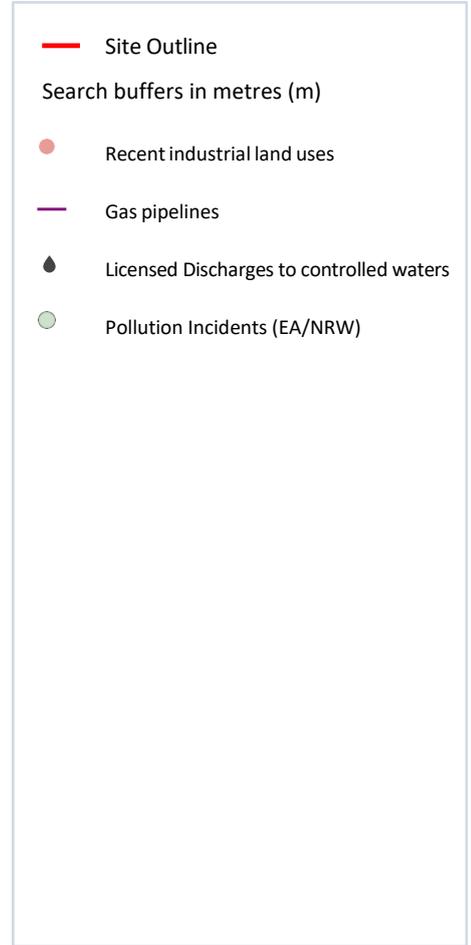
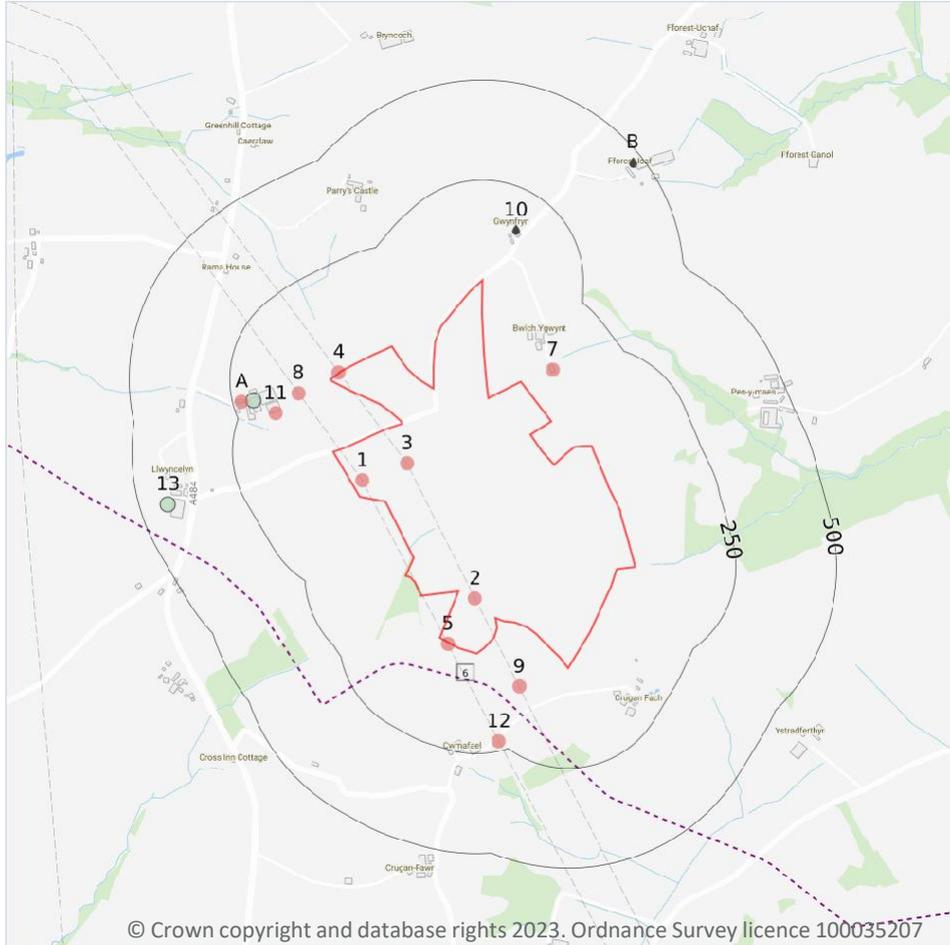


ID	Location	Site	Reference	Category	Sub-Category	Description
B	375m NW	A&M Griffiths Ltd, Llwynygcw, Uplands, Caerfyrddin, Carmarthenshire, SA328DX	NRW- WME021812	Using waste exemption	On a farm	Use of waste in construction
B	375m NW	A&M Griffiths Ltd, Llwynygcw, Uplands, Caerfyrddin, Carmarthenshire, SA328DX	NRW- WME021812	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
C	422m E	Penymaes, Pontantwn, Kidwelly, Sir Gaerfyrddin, SA17 5NE	NRW- WME054431	Using waste exemption	Not on a farm	Use of waste in construction
C	422m E	Penymaes, Pontantwn, Kidwelly, Sir Gaerfyrddin, SA17 5NE	NRW- WME054450	Using waste exemption	On a farm	Use of waste in construction
C	422m E	Penymaes, Pontantwn, Kidwelly, Sir Gaerfyrddin, SA17 5NE	NRW- WME045543	Using waste exemption	On a farm	Pig and poultry ash
C	422m E	Penymaes, Pontantwn, Kidwelly, Sir Gaerfyrddin, SA17 5NE	NRW- WME045543	Disposing of waste exemption	On a farm	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
C	422m E	Penymaes, Pontantwn, KIDWELLY, Dyfed, SA175NE	NRW- WME013568	Using waste exemption	On a farm	Use of waste for a specified purpose
C	422m E	Penymaes, Pontantwn, KIDWELLY, Dyfed, SA175NE	NRW- WME013568	Treating waste exemption	On a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
C	422m E	Penymaes, Pontantwn, KIDWELLY, Dyfed, SA175NE	NRW- WME013568	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
C	422m E	Penymaes, Pontantwn, KIDWELLY, Dyfed, SA175NE	NRW- WME013568	Disposing of waste exemption	On a farm	Burning waste in the open
C	422m E	Penymaes Pontantwn Kidwelly Sir Gaerfyrddin SA175NE	NRW- WME026108	Using waste exemption	Not on a farm	Use of waste in construction

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



4 Current industrial land use



4.1 Recent industrial land uses

Records within 250m **11**

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on [page 24 >](#)

ID	Location	Company	Address	Activity	Category
1	On site	Pylon	Dyfed, SA32	Electrical Features	Infrastructure and Facilities
2	On site	Pylon	Dyfed, SA17	Electrical Features	Infrastructure and Facilities
3	On site	Pylon	Dyfed, SA32	Electrical Features	Infrastructure and Facilities

ID	Location	Company	Address	Activity	Category
4	2m NW	Pylon	Dyfed, SA32	Electrical Features	Infrastructure and Facilities
5	4m S	Pylon	Dyfed, SA17	Electrical Features	Infrastructure and Facilities
7	81m NE	H I Evans	Bwlch y Gwynt, -, Pontantwn, Kidwelly, Dyfed, SA17 5NL	Livestock Farming	Farming
8	87m NW	Pylon	Dyfed, SA32	Electrical Features	Infrastructure and Facilities
9	123m S	Pylon	Dyfed, SA17	Electrical Features	Infrastructure and Facilities
11	161m W	Slurry Tank	Dyfed, SA32	Waste Storage, Processing and Disposal	Infrastructure and Facilities
12	226m S	Pylon	Dyfed, SA17	Electrical Features	Infrastructure and Facilities
A	228m W	A & M Griffiths	Llwynygcw, -, Uplands, Carmarthen, Dyfed, SA32 8DX	Dairy Farming	Farming

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 24 >](#)



ID	Location	Pipe Name	Details	
6	69m S	HERBRANDST ON TO FELINDRE	Pipe Number: – Pipeline Safety Regulations Number: – Ownership: National Grid Maximum Operating Pressure (Bar): –	Pipeline Diameter (mm): 1200 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

3

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 24 >](#)



ID	Location	Address	Details	
10	149m N	GWYNFRYN PONTANTWN KIDWELLY, PONTANTWN KIDWELLY, KIDWELLY	Effluent Type: UNSPECIFIED Permit Number: BM0031601 Permit Version: 1 Receiving Water: UNDERGROUND STRATA	Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 07/07/1983 Effective Date: 07/07/1983 Revocation Date: –
B	475m NE	BANCYCAPEL, PONTANTWN	Effluent Type: UNSPECIFIED Permit Number: BP0108501 Permit Version: 1 Receiving Water: TO LAND	Status: REVOKED – UNSPECIFIED Issue date: 01/01/1901 Effective Date: 01/01/1901 Revocation Date: 15/12/1988
B	475m NE	BANCYCAPEL, PONTANTWN	Effluent Type: UNSPECIFIED Permit Number: BP0108501 Permit Version: 2 Receiving Water: TO LAND	Status: CONSENT EXPIRED – TIME LIMIT Issue date: 16/12/1988 Effective Date: 16/12/1988 Revocation Date: 10/10/1994

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

2

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 24 >](#)

ID	Location	Details	
A	198m W	Incident Date: 30/10/2015 Incident Identification: 1384588 Pollutant: Multiple Pollutants Pollutant Description: 2 Pollutants Including Slurry and Dilute Slurry	Water Impact: – Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)
13	430m W	Incident Date: 27/11/2002 Incident Identification: 123392 Pollutant: Agricultural Materials and Wastes Pollutant Description: Slurry and Dilute Slurry	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) 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

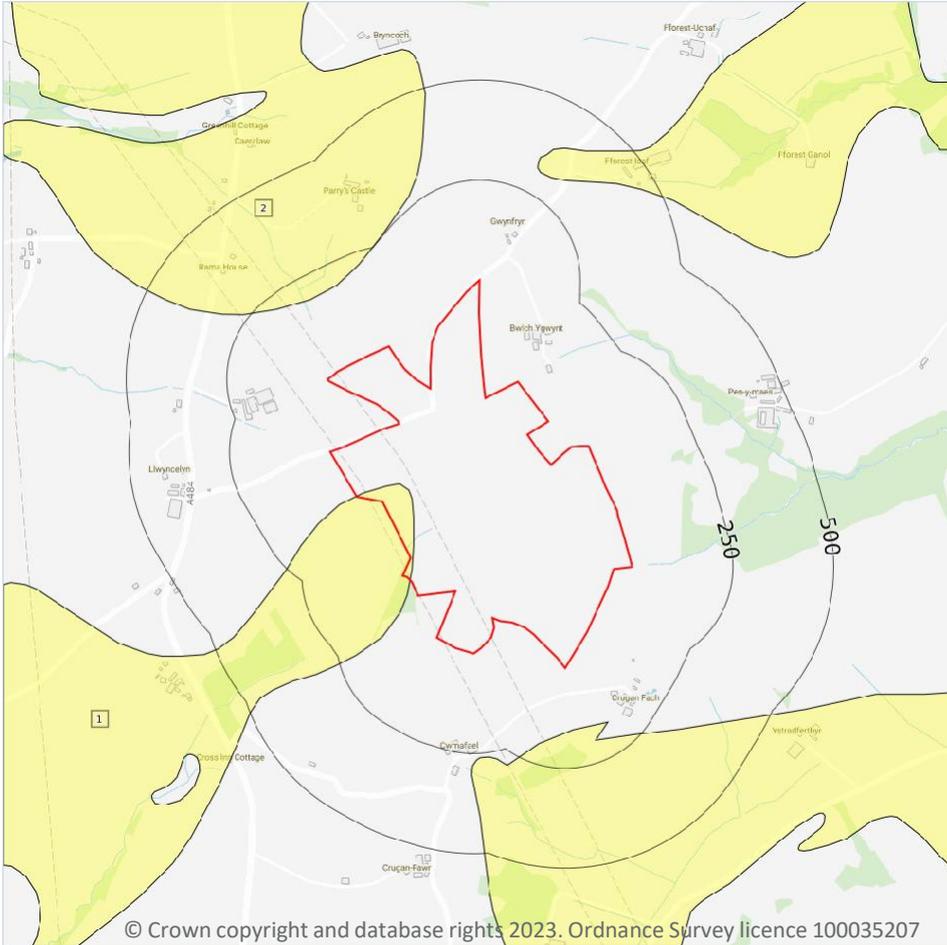
0

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



5.1 Superficial aquifer

Records within 500m

2

Aquifer status of groundwater held within superficial geology.

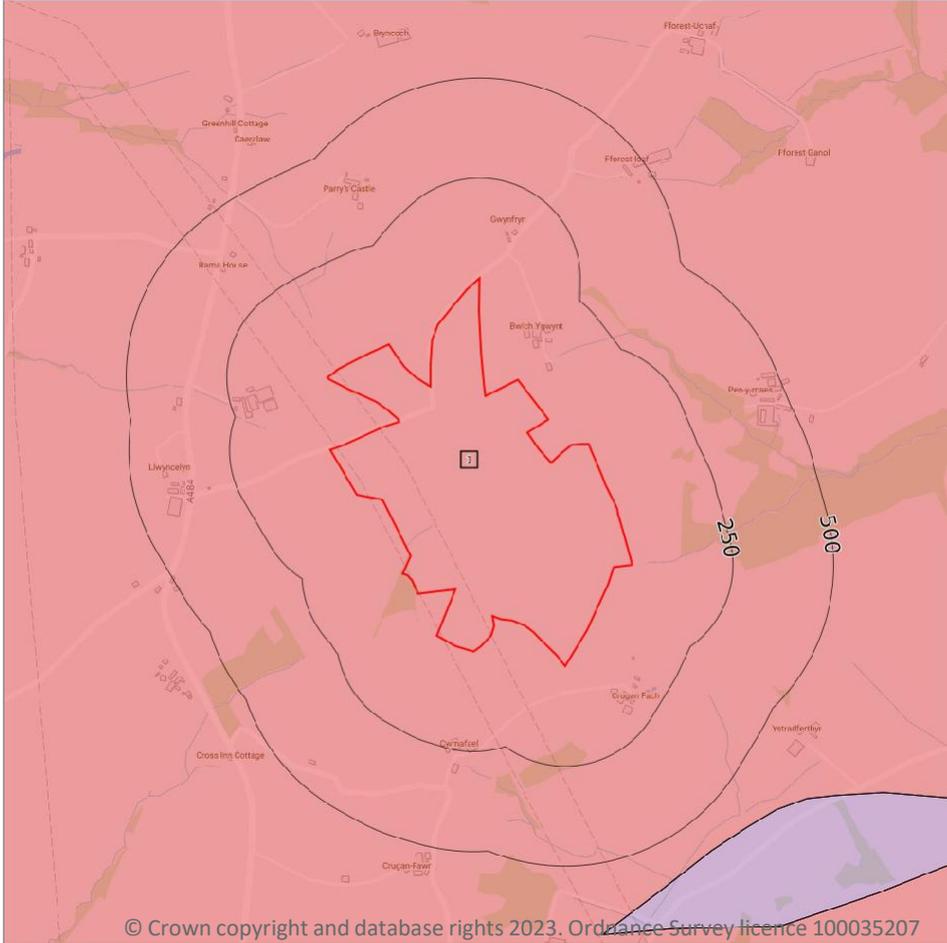
Features are displayed on the Hydrogeology map on [page 31](#) >

ID	Location	Designation	Description
1	On site	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
2	190m NW	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

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

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5.2 Bedrock aquifer

Records within 500m

1

Aquifer status of groundwater held within bedrock geology.

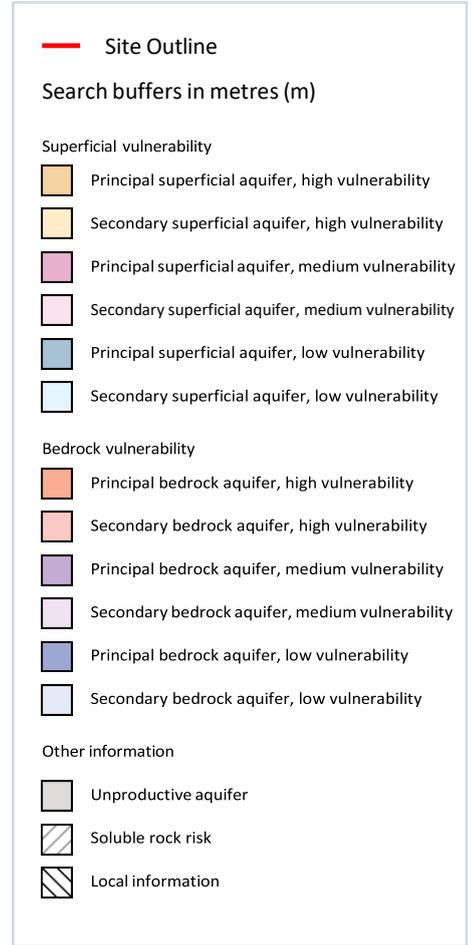
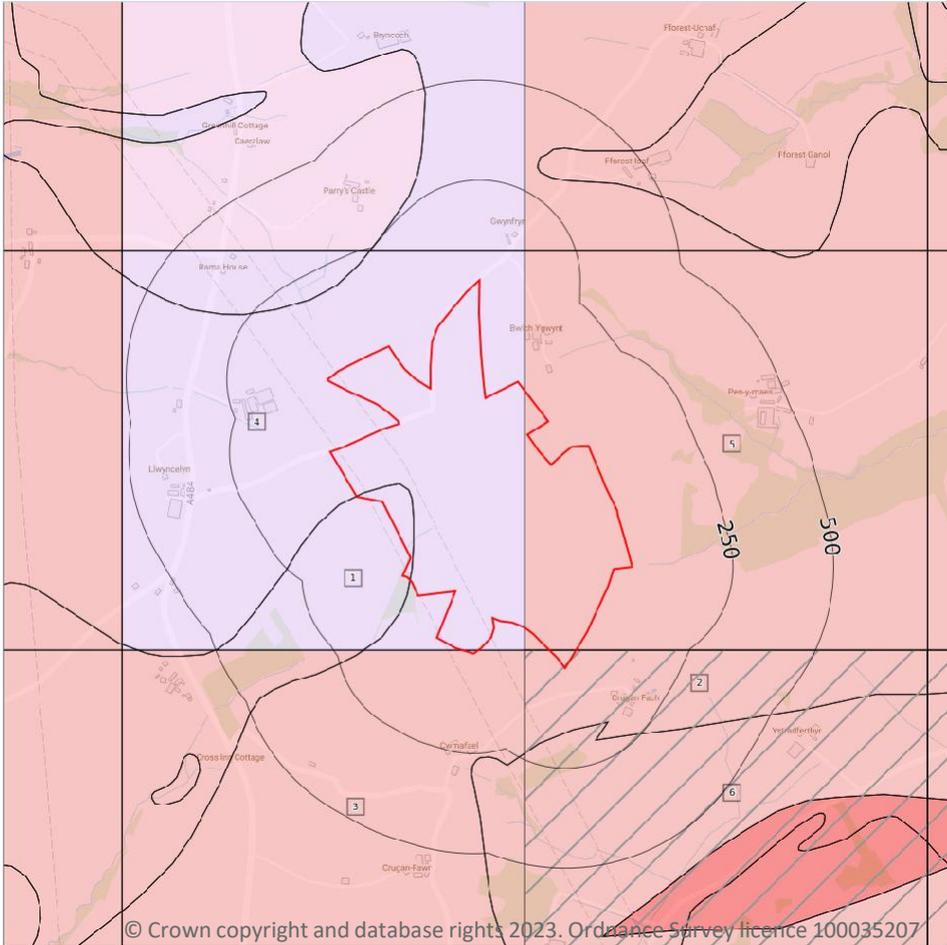
Features are displayed on the Bedrock aquifer map on [page 33](#) >

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

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



Groundwater vulnerability



5.3 Groundwater vulnerability

Records within 50m

5

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

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

Features are displayed on the Groundwater vulnerability map on [page 34](#) >



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

1

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



ID	Maximum soluble risk category	Percentage of grid square covered by maximum risk
6	Very significant soluble rocks are likely to be present with a moderate possibility of localised natural subsidence or dissolution-related degradation of bedrock, especially in adverse conditions such as concentrated surface or subsurface water flow.	7.000000000000001%

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

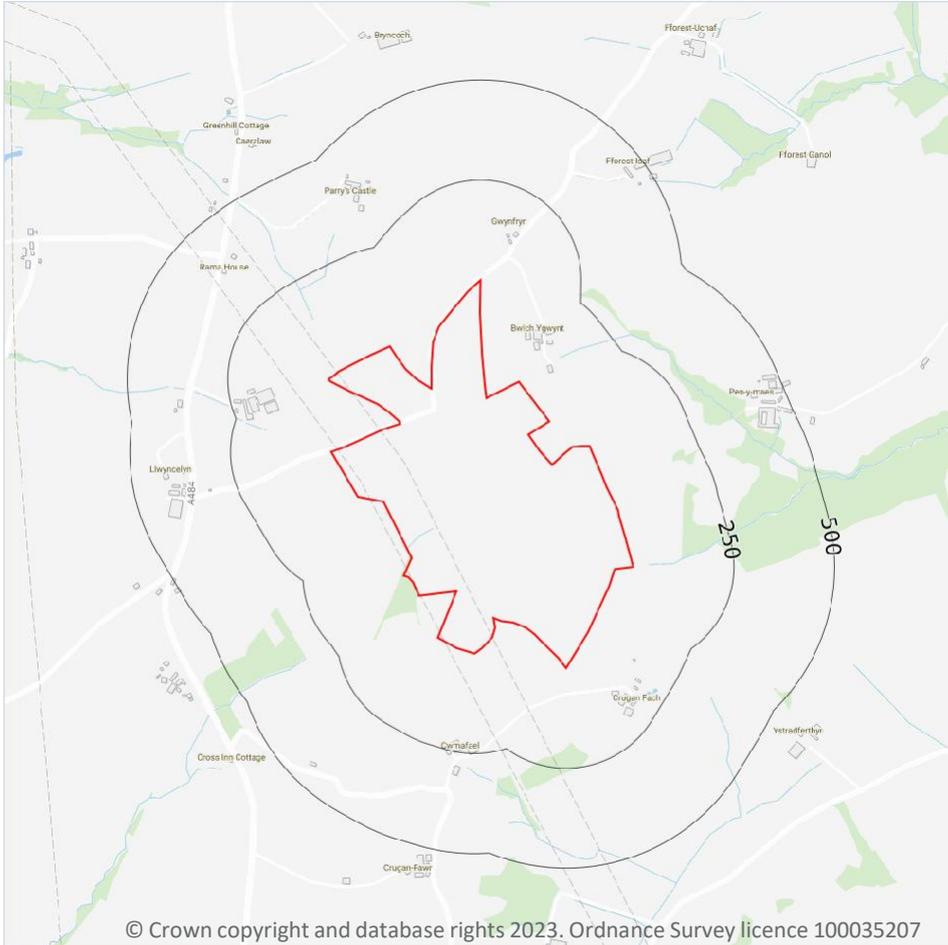
5.5 Groundwater vulnerability- local information

Records on site	0
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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 4.

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

Abstractions and Source Protection Zones



5.6 Groundwater abstractions

Records within 2000m

1

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

Features are displayed on the Abstractions and Source Protection Zones map on [page 37 >](#)

ID	Location	Details	
-	1682m S	Status: Historical Licence No: 22/60/7/0059 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: WELL IN ENCLOSURE NO. 1866 AT GELLI FARM Data Type: Point Name: Rees Easting: 242400 Northing: 211300	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 31/01/1966 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m

1

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

Features are displayed on the Abstractions and Source Protection Zones map on [page 37 >](#)

ID	Location	Details	
-	1384m SE	Status: Historical Licence No: 22/60/7/0125 Details: Hydraulic Testing Direct Source: EAW Surface Water Point: GWENDRAETH FACH Data Type: Point Name: NACAP Land & Marine Easting: 243310 Northing: 212280	Annual Volume (m ³): 16000 Max Daily Volume (m ³): 4800 Original Application No: - Original Start Date: 15/04/2007 Expiry Date: 30/07/2007 Issue No: 1 Version Start Date: 15/04/2007 Version End Date: -

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

5.8 Potable abstractions

Records within 2000m

0

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

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



5.9 Source Protection Zones

Records within 500m

0

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

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

5.10 Source Protection Zones (confined aquifer)

Records within 500m

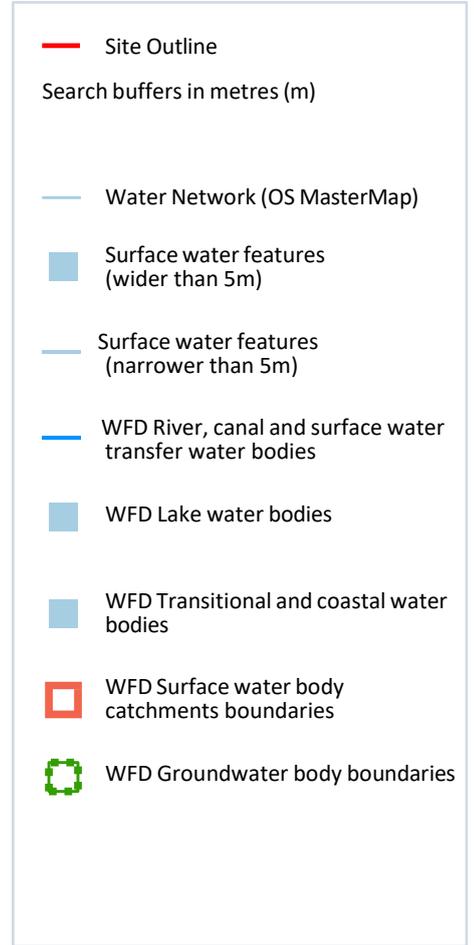
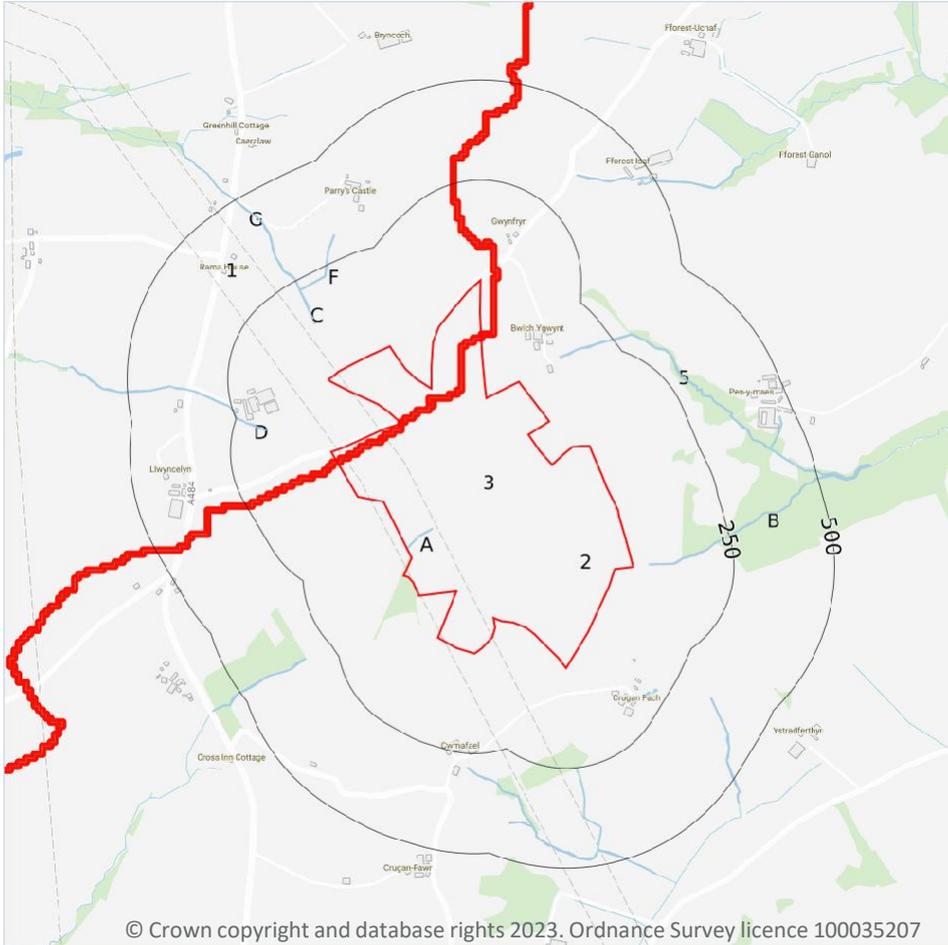
0

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

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



6 Hydrology



6.1 Water Network (OS MasterMap)

Records within 250m

8

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 40 >](#)

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	39m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
5	116m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	132m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	169m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	224m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	225m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	247m W	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m

10

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

Features are displayed on the Hydrology map on [page 40 >](#)

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site

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 40 >](#)

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	On site	Coastal catchment	Not part of a river WB catchment	162	Tywi	Carmarthen Bay and the Gower
2	On site	River WB catchment	Gwendraeth Fach - headwaters to tidal limit	GB110060029400	Gwendraeth Fach and Fawr	Carmarthen Bay and the Gower

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

6.4 WFD Surface water bodies

Records identified

1

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

Features are displayed on the Hydrology map on [page 40 >](#)

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	1266m S	River	Gwendraeth Fach – headwaters to tidal limit	GB110060029400	Good	Good	Good	2016

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

6.5 WFD Groundwater bodies

Records on site

1

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

Features are displayed on the Hydrology map on [page 40 >](#)

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
3	On site	Tywi, Taf and Gwendraeths	GB41002G200500	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

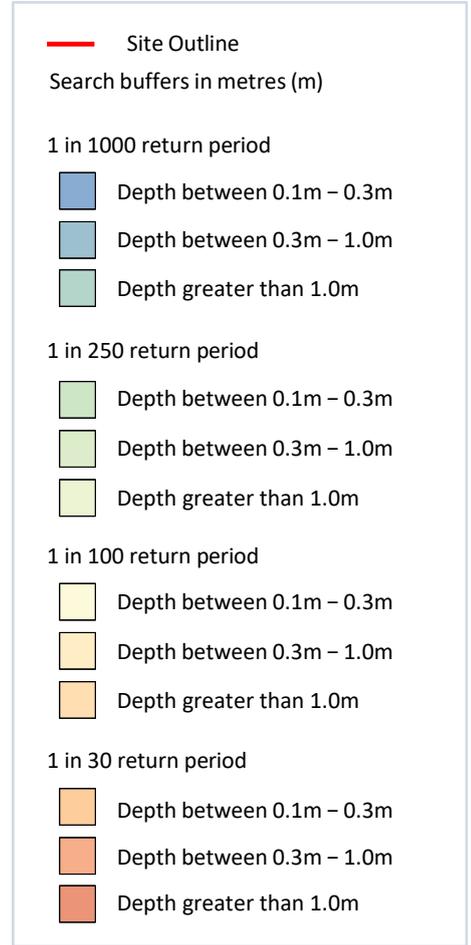
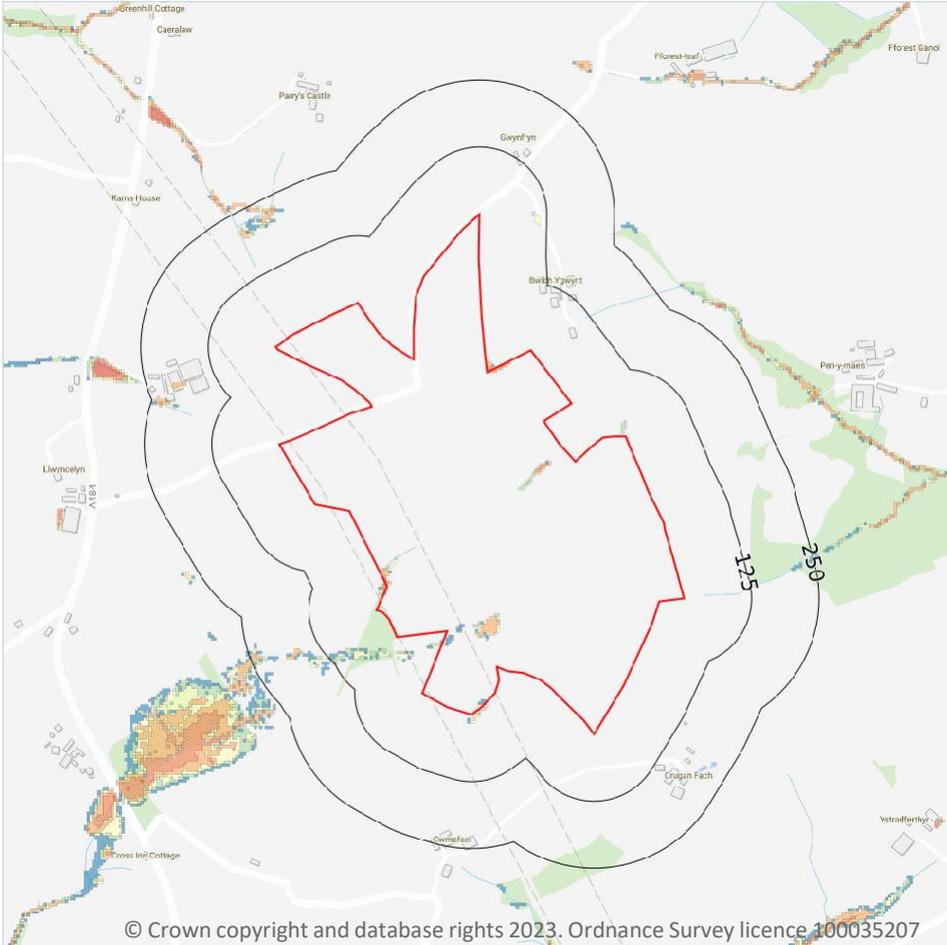
0

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



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 46 >](#)

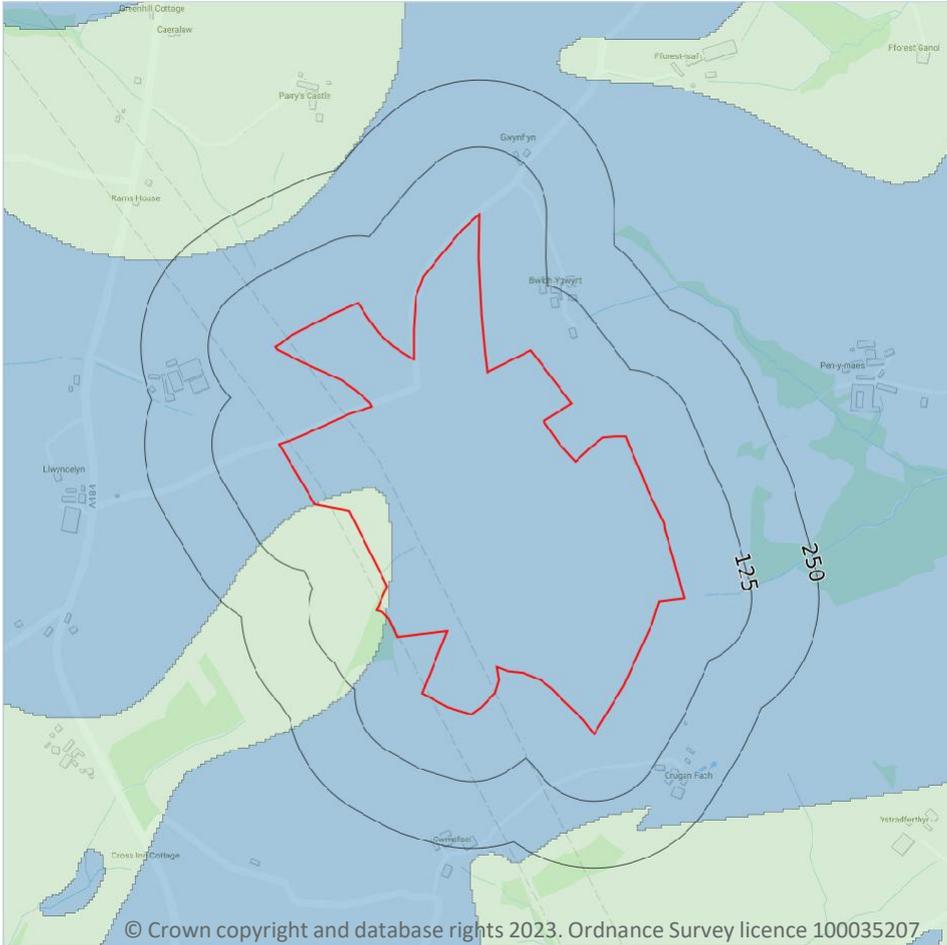
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

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



9.1 Groundwater flooding

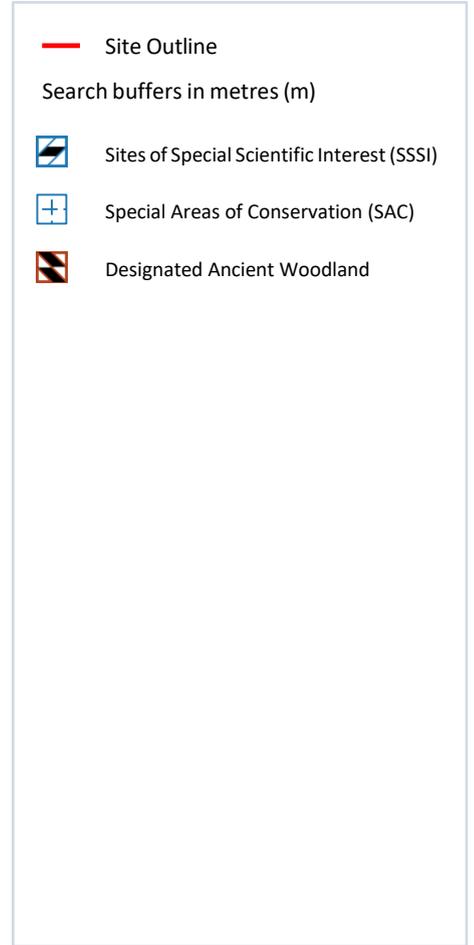
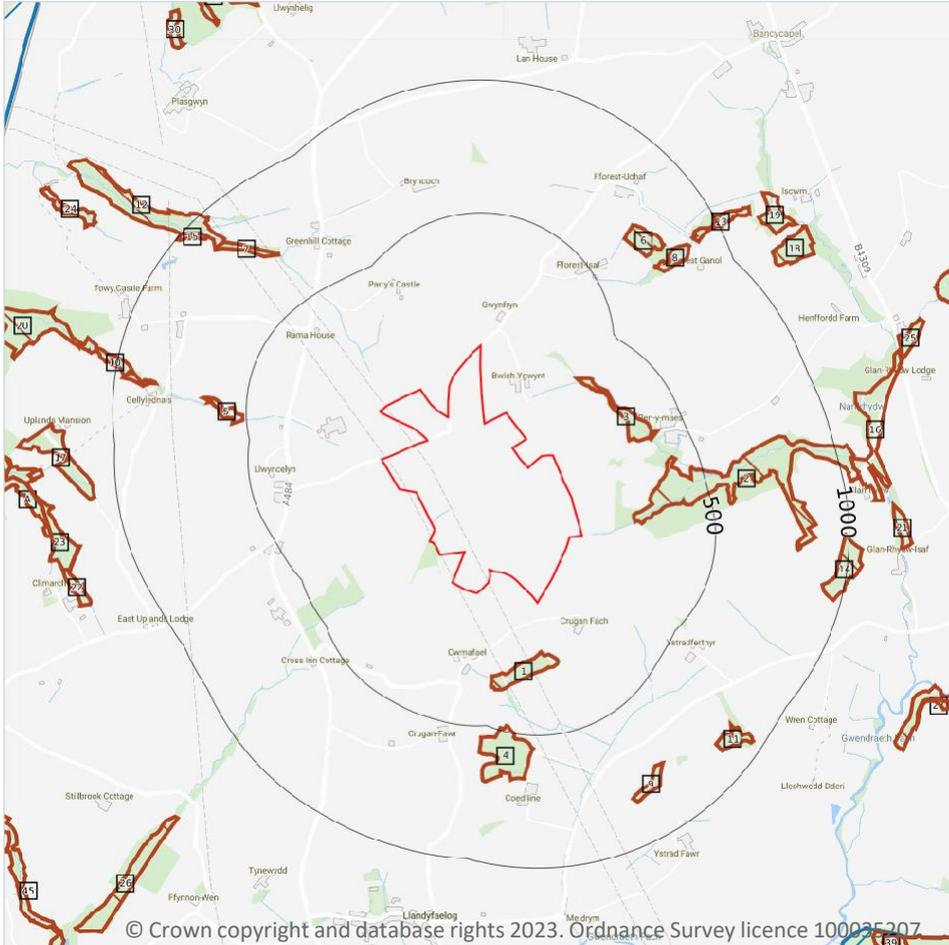
Highest risk on site	Low
Highest risk within 50m	Low

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

Features are displayed on the Groundwater flooding map on [page 48 >](#)

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

2

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

Features are displayed on the Environmental designations map on [page 49](#) >

ID	Location	Name	Data source
32	1636m W	Afon Tywi	Natural Resources Wales



ID	Location	Name	Data source
36	1715m SE	Coed Gwempa	Natural Resources Wales

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0
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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	1
-----------------------------	----------

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.

Features are displayed on the Environmental designations map on [page 49 >](#)

ID	Location	Name	Features of interest	Habitat description	Data source
33	1636m W	Carmarthen Bay and Estuaries / Bae Caerfyrddin ac Aberoedd	Subtidal sandbanks; Estuaries; Intertidal mudflats and sandflats; Lagoons; Shallow inlets and bays; Glasswort and other annuals colonising mud and sand; Cord-grass swards; Atlantic salt meadows; Dunes with sea-buckthorn; Sea caves; Sea lamprey; River lamprey; Allis shad; Twaite shad; Lesser horseshoe bat; Greater horseshoe bat; Otter; Grey seal.	Shingle, Sea cliffs, Islets; Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes	Natural Resources Wales

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

49

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 49 >](#)

ID	Location	Name	Woodland Type
1	186m S	Unknown	Ancient Semi Natural Woodland
2	205m E	Unknown	Ancient Semi Natural Woodland
3	285m E	Unknown	Ancient Semi Natural Woodland
4	478m S	Unknown	Restored Ancient Woodland Site



ID	Location	Name	Woodland Type
5	514m W	Unknown	Ancient Semi Natural Woodland
6	672m NE	Unknown	Ancient Semi Natural Woodland
7	699m NW	Unknown	Ancient Semi Natural Woodland
8	716m NE	Unknown	Ancient Semi Natural Woodland
9	756m SE	Unknown	Ancient Semi Natural Woodland
10	845m W	Unknown	Restored Ancient Woodland Site
11	852m SE	Unknown	Ancient Semi Natural Woodland
12	863m NW	Unknown	Ancient Semi Natural Woodland
13	891m NE	Unknown	Ancient Semi Natural Woodland
14	918m E	Unknown	Restored Ancient Woodland Site
15	920m NW	Unknown	Ancient Semi Natural Woodland
16	1048m E	Unknown	Restored Ancient Woodland Site
17	1085m W	Unknown	Restored Ancient Woodland Site
18	1104m NE	Unknown	Restored Ancient Woodland Site
19	1147m NE	Unknown	Ancient Semi Natural Woodland
20	1148m W	Unknown	Restored Ancient Woodland Site
21	1170m E	Unknown	Ancient Semi Natural Woodland
22	1176m W	Unknown	Ancient Semi Natural Woodland
23	1180m W	Unknown	Ancient Semi Natural Woodland
A	1269m W	Unknown	Ancient Semi Natural Woodland
A	1271m W	Unknown	Ancient Semi Natural Woodland
24	1279m NW	Unknown	Ancient Semi Natural Woodland
B	1294m W	Unknown	Restored Ancient Woodland Site
25	1347m E	Unknown	Restored Ancient Woodland Site
26	1358m SW	Unknown	Restored Ancient Woodland Site
27	1385m SE	Unknown	Restored Ancient Woodland Site
B	1389m W	Unknown	Restored Ancient Woodland Site
28	1420m SE	Unknown	Restored Ancient Woodland Site



ID	Location	Name	Woodland Type
29	1528m NW	Unknown	Plantation on Ancient Woodland Site
30	1558m NW	Unknown	Plantation on Ancient Woodland Site
31	1563m NE	Unknown	Ancient Semi Natural Woodland
-	1695m W	Unknown	Restored Ancient Woodland Site
-	1710m W	Unknown	Restored Ancient Woodland Site
-	1761m W	Unknown	Restored Ancient Woodland Site
-	1762m W	Unknown	Ancient Semi Natural Woodland
-	1763m W	Unknown	Ancient Semi Natural Woodland
39	1771m SE	Unknown	Ancient Semi Natural Woodland
-	1784m SE	Unknown	Ancient Semi Natural Woodland
-	1789m NW	Unknown	Ancient Semi Natural Woodland
-	1806m W	Unknown	Ancient Semi Natural Woodland
-	1830m W	Unknown	Ancient Semi Natural Woodland
43	1860m SE	Unknown	Ancient Semi Natural Woodland
-	1868m NW	Unknown	Restored Ancient Woodland Site
45	1881m SW	Unknown	Ancient Semi Natural Woodland
-	1957m NE	Unknown	Ancient Semi Natural Woodland

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

10.8 Biosphere Reserves

Records within 2000m

0

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

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



10.9 Forest Parks

Records within 2000m

0

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

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m

0

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

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

10.11 Green Belt

Records within 2000m

0

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

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

10.12 Proposed Ramsar sites

Records within 2000m

0

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

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m

0

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

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



10.14 Potential Special Protection Areas (pSPA)

Records within 2000m

0

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

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m

0

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

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

Records within 2000m

0

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

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



SSSI Impact Zones and Units

10.17 SSSI Impact Risk Zones

Records on site

0

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

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m

0

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

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



11 Visual and cultural designations

11.1 World Heritage Sites

Records within 250m

0

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

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

11.2 Area of Outstanding Natural Beauty

Records within 250m

0

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

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

11.3 National Parks

Records within 250m

0

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

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

11.4 Listed Buildings

Records within 250m

0

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



This data is sourced from 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

0

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

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

11.7 Registered Parks and Gardens

Records within 250m

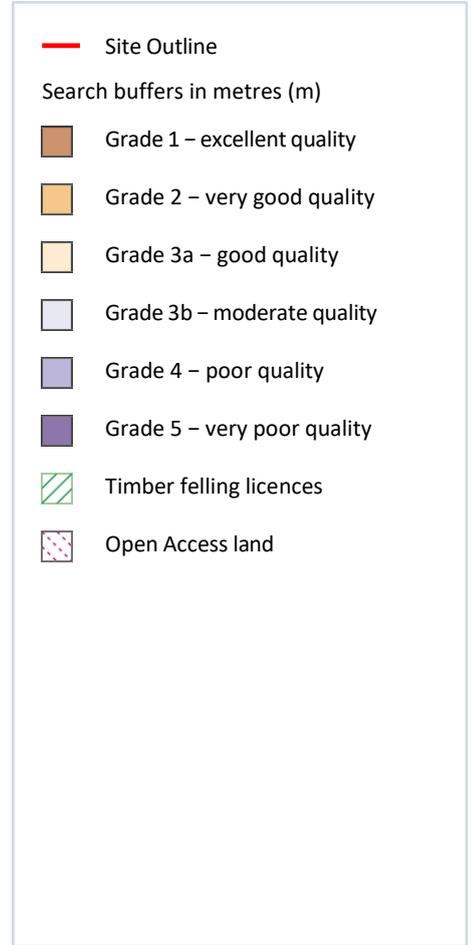
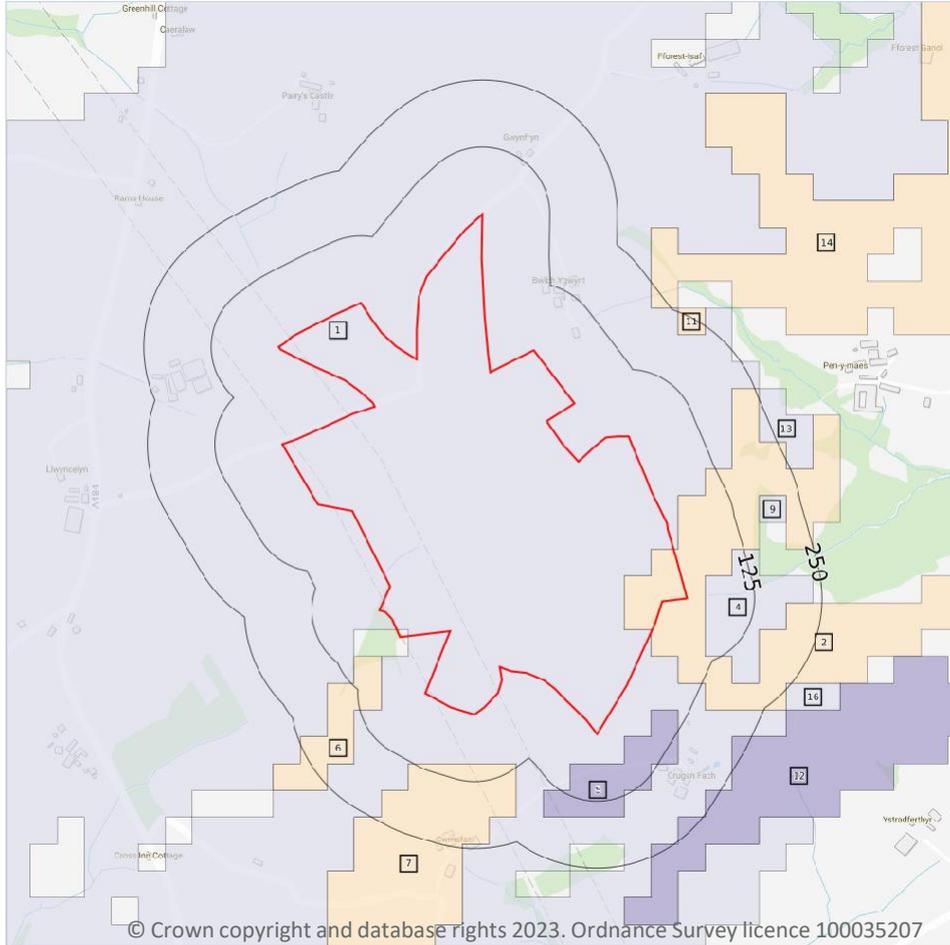
0

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



12.1 Agricultural Land Classification

Records within 250m

12

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 59](#) >

ID	Location	Classification	Description
1	On site	Grade 3b	Moderate quality agricultural land
2	On site	Grade 3a	Good to moderate quality agricultural land
4	33m SE	Grade 3b	Moderate quality agricultural land

ID	Location	Classification	Description
5	45m SE	Grade 4	Poor quality agricultural land
6	50m SW	Grade 3a	Good to moderate quality agricultural land
7	92m S	Grade 3a	Good to moderate quality agricultural land
9	166m E	Grade 3b	Moderate quality agricultural land
11	211m NE	Grade 3a	Good to moderate quality agricultural land
12	216m SE	Grade 4	Poor quality agricultural land
13	219m E	Grade 3b	Moderate quality agricultural land
14	221m NE	Grade 3a	Good to moderate quality agricultural land
16	242m SE	Grade 3b	Moderate quality agricultural land

This data is sourced from Natural Resources Wales.

12.2 Open Access Land

Records within 250m

0

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

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

12.3 Tree Felling Licences

Records within 250m

0

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m

0

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. 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

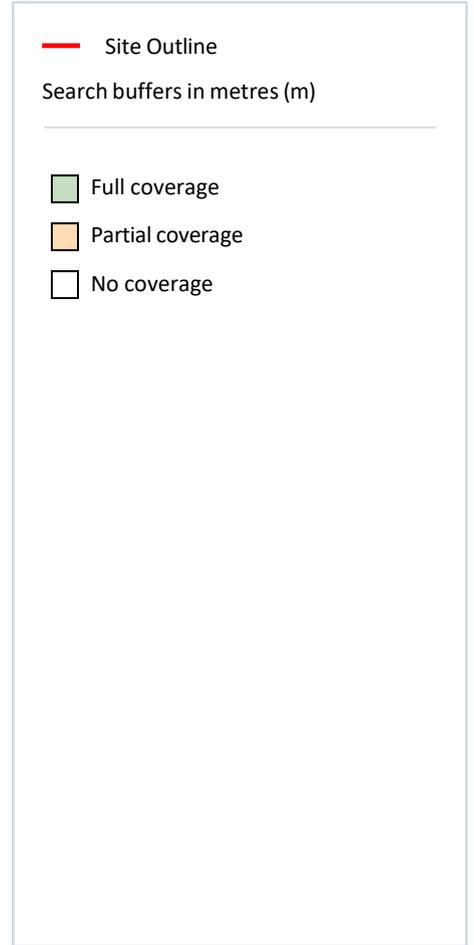
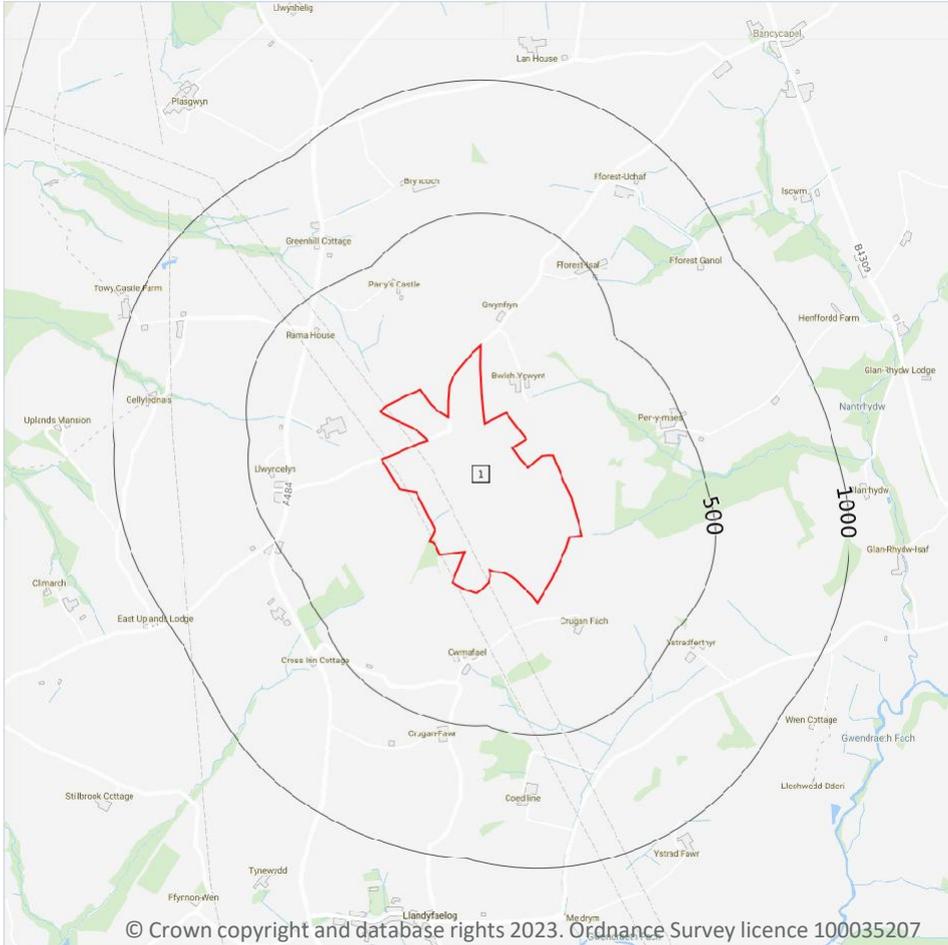
0

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



14.1 10k Availability

Records within 500m

1

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

Features are displayed on the Geology 1:10,000 scale – Availability map on [page 63](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	No coverage	No coverage	No coverage	No coverage	NoCov

This data is sourced from the British Geological Survey.



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

14.2 Artificial and made ground (10k)

Records within 500m

0

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

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Superficial

14.3 Superficial geology (10k)

Records within 500m

0

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

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m

0

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

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Bedrock

14.5 Bedrock geology (10k)

Records within 500m

0

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

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m

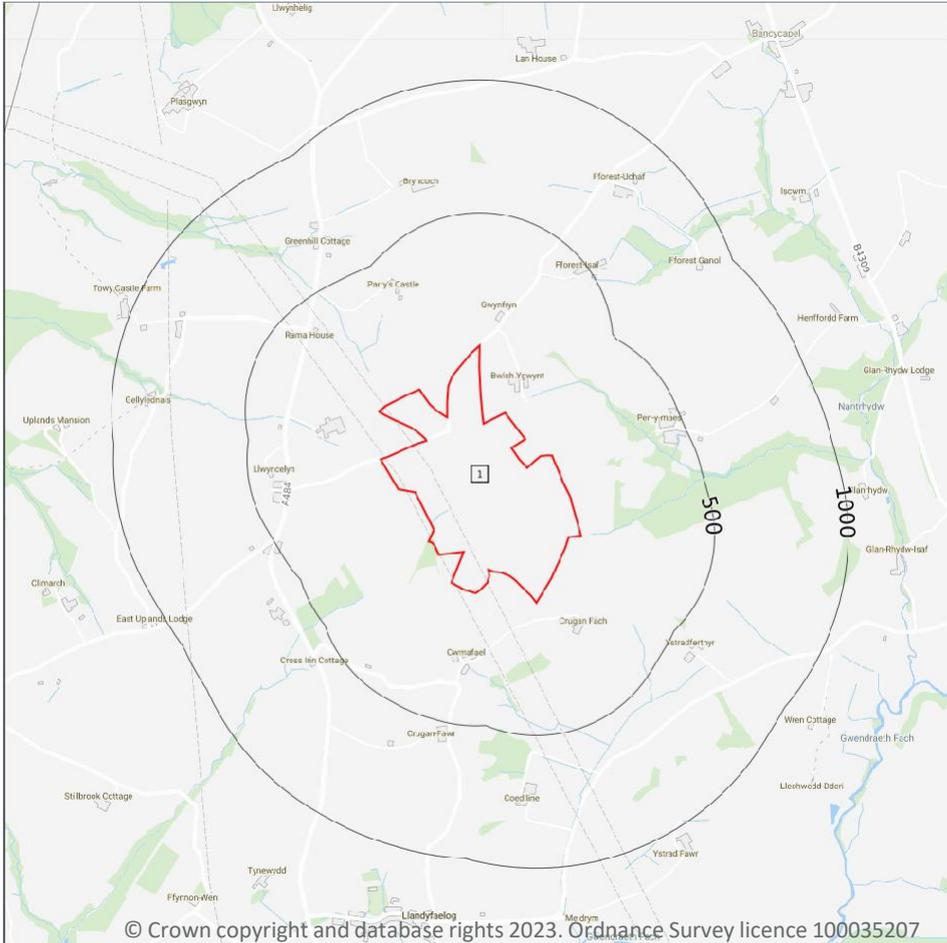
0

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

This data is sourced from the British Geological Survey.



15 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m

1

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

Features are displayed on the Geology 1:50,000 scale – Availability map on [page 67](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	EW229_carmarthen_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

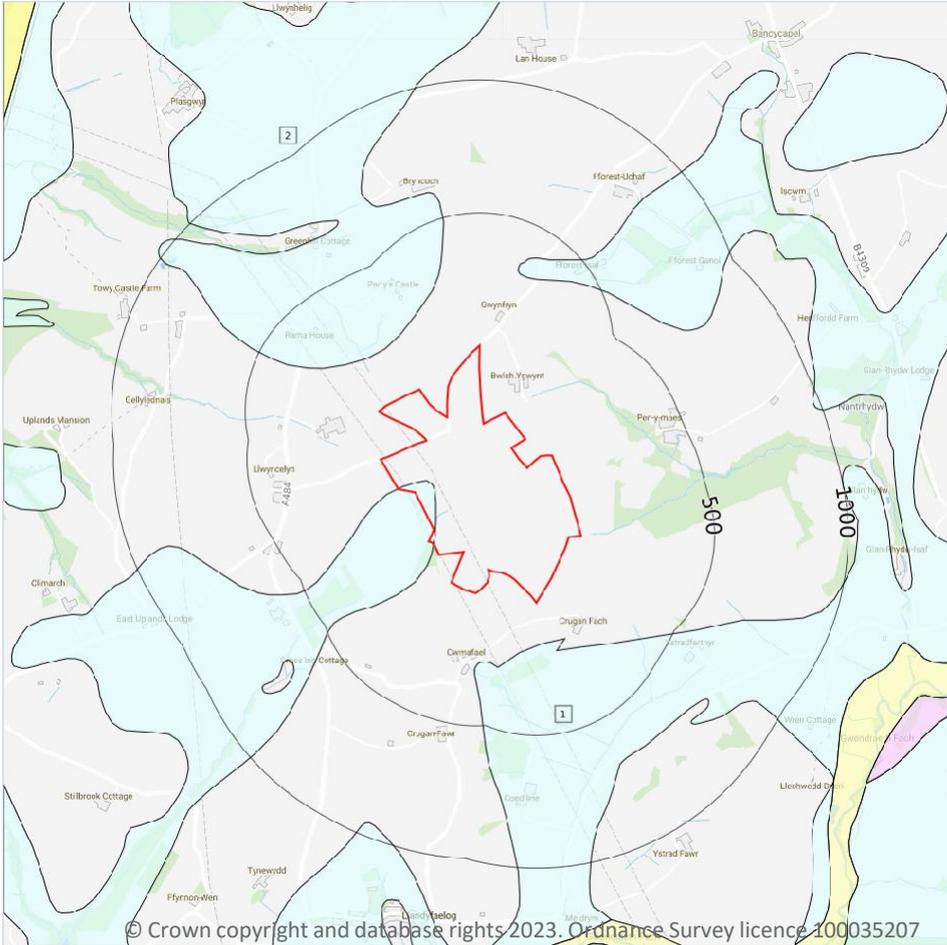
0

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

2

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale – Superficial map on [page 69](#) >

ID	Location	LEX Code	Description	Rock description
1	On site	TILLD-DMTN	TILL, DEVANSIAN	DIAMICTON

2	190m NW	TILLD-DMTN	TILL, DEVANSIAN	DIAMICTON
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This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m **1**

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	Mixed	High	Low

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m **0**

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

This data is sourced from the British Geological Survey.

15.7 Landslip permeability (50k)

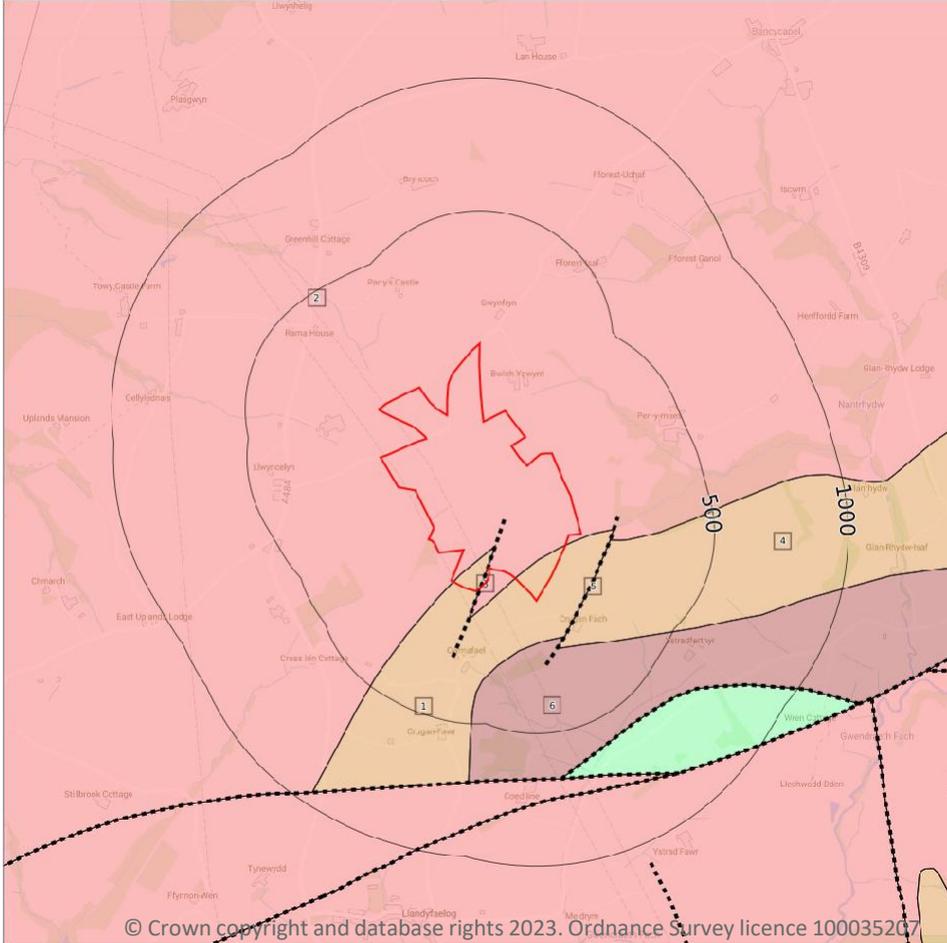
Records within 50m **0**

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

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Bedrock



- Site Outline
- Search buffers in metres (m)
- Bedrock faults and other linear features (50k)
- Bedrock geology (50k)
- Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m

4

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale – Bedrock map on [page 71](#) >

ID	Location	LEX Code	Description	Rock age
1	On site	SB-SDST	SENNI FORMATION - SANDSTONE	PRAGIAN
2	On site	MIH-ARSC	MILFORD HAVEN GROUP - ARGILLACEOUS ROCKS AND [SUBORDINATE/SUBEQUAL] SANDSTONE AND CONGLOMERATE, INTERBEDDED	-
4	111m SE	SB-SDST	SENNI FORMATION - SANDSTONE	PRAGIAN



ID	Location	LEX Code	Description	Rock age
6	155m S	BRS-SDST	BROWNSTONES FORMATION – SANDSTONE	LOCHKOVIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	2
---------------------------	----------

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	Fracture	Moderate	Moderate
On site	Fracture	Moderate	Low

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

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

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 71 >](#)

ID	Location	Category	Description
3	On site	FAULT	Fault, inferred, displacement unknown
5	111m SE	FAULT	Fault, inferred, displacement unknown

This data is sourced from the British Geological Survey.



16 Boreholes

16.1 BGS Boreholes

Records within 250m

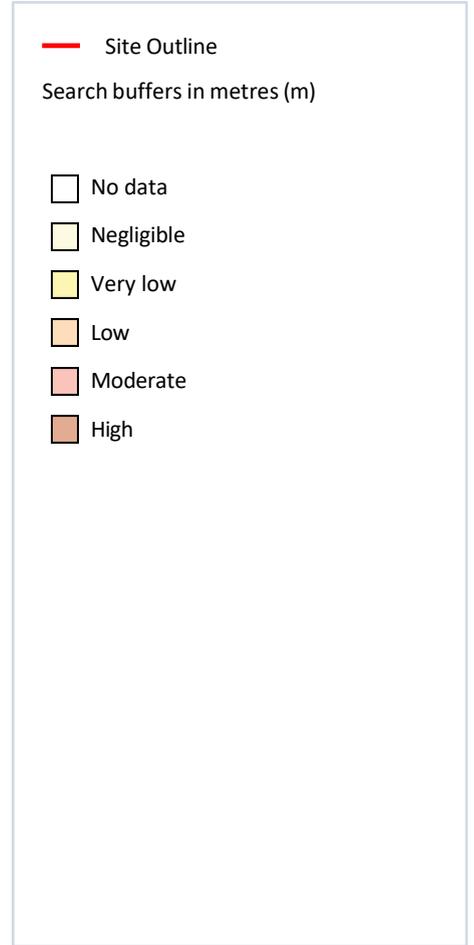
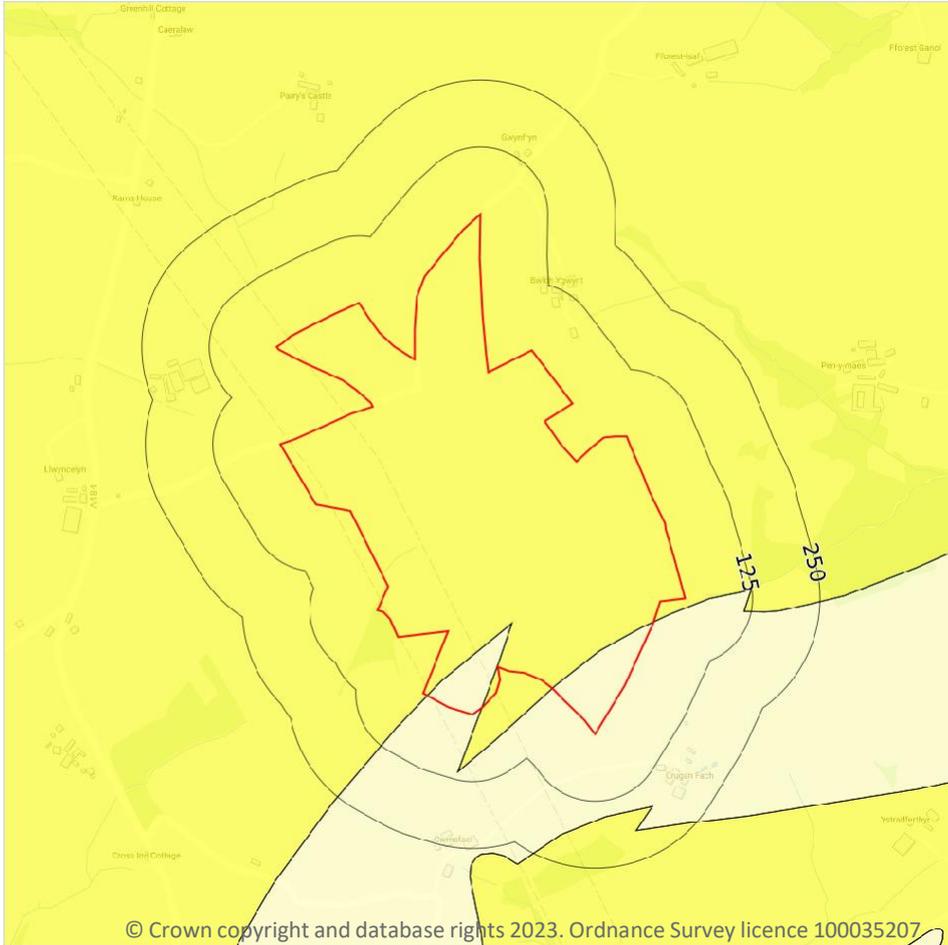
0

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



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).

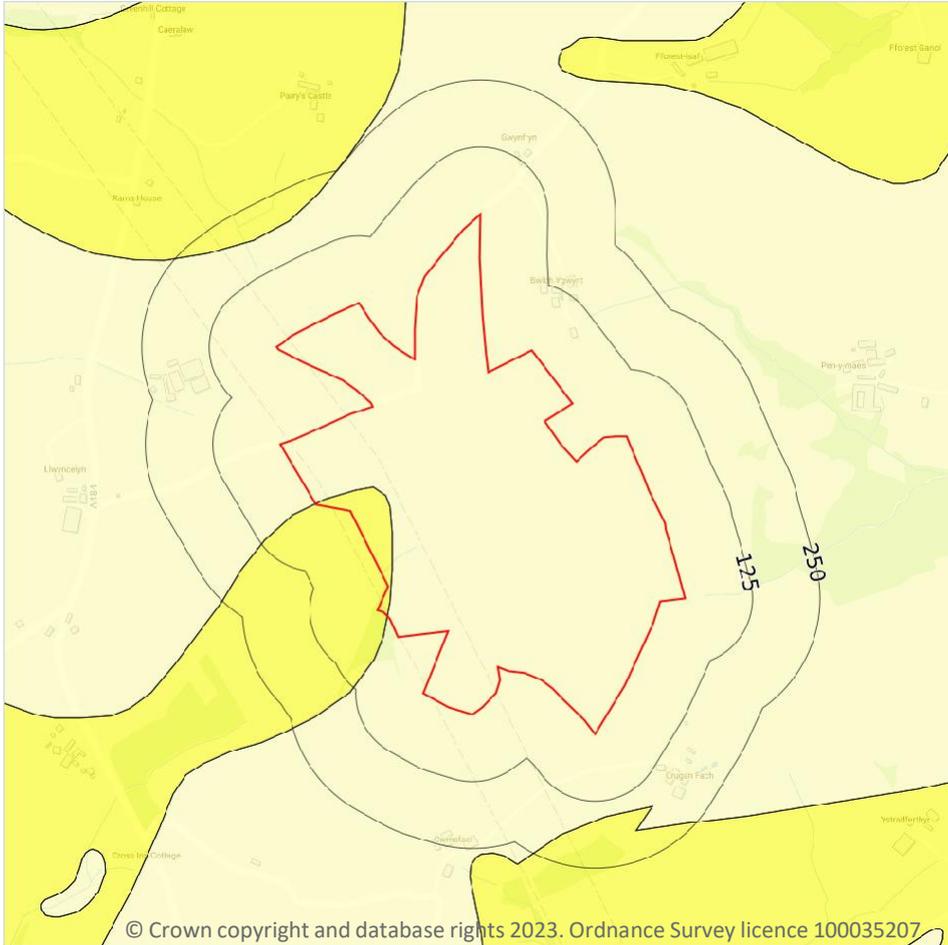
Features are displayed on the Natural ground subsidence – Shrink swell clays map on [page 74](#) >

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.

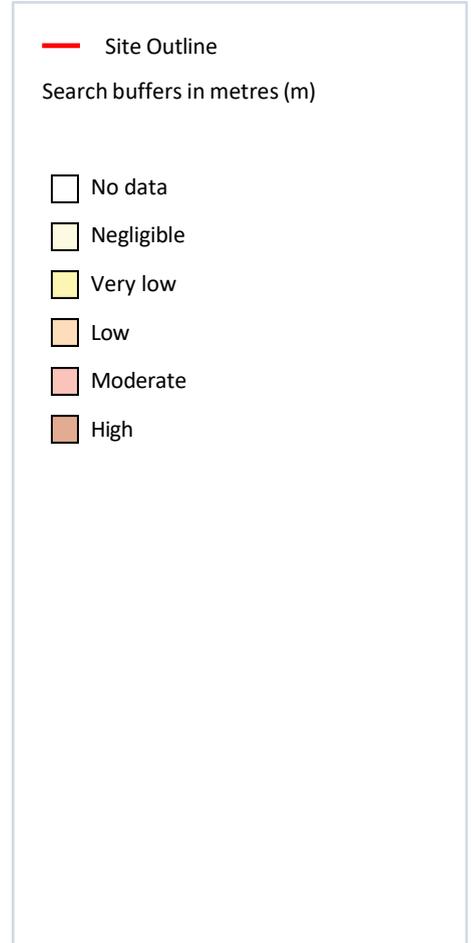
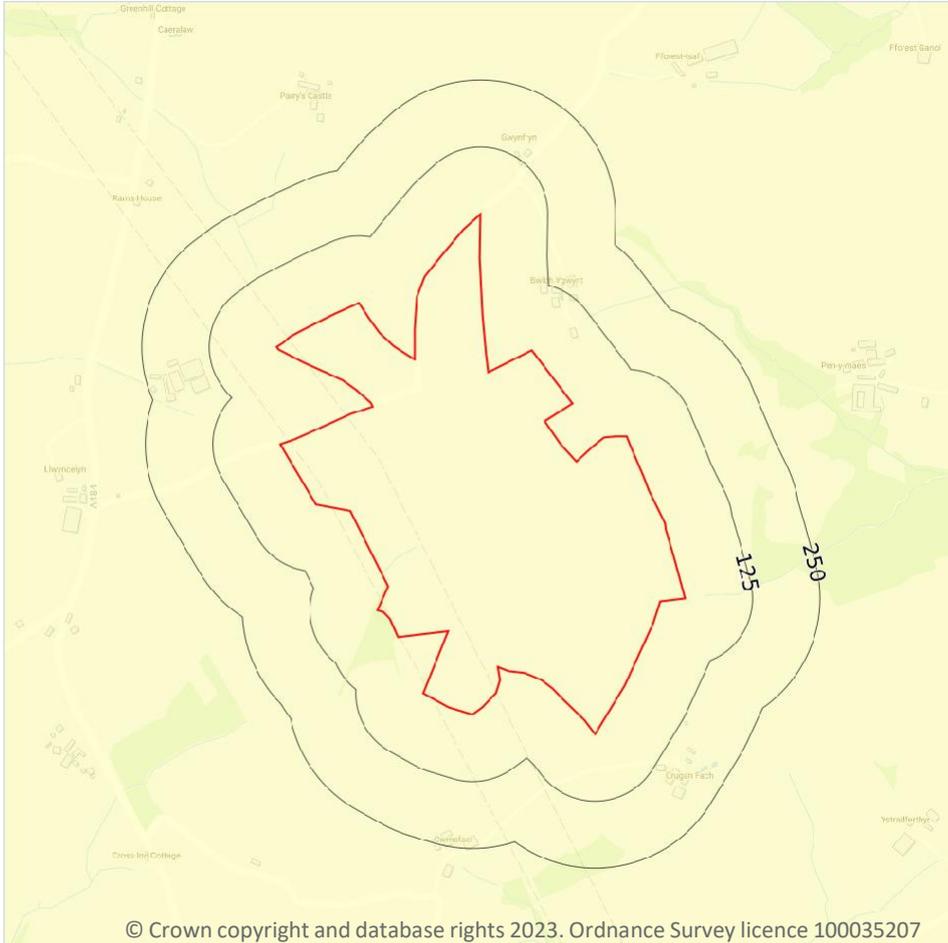
Features are displayed on the Natural ground subsidence – Running sands map on [page 75](#) >

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



17.3 Compressible deposits

Records within 50m

1

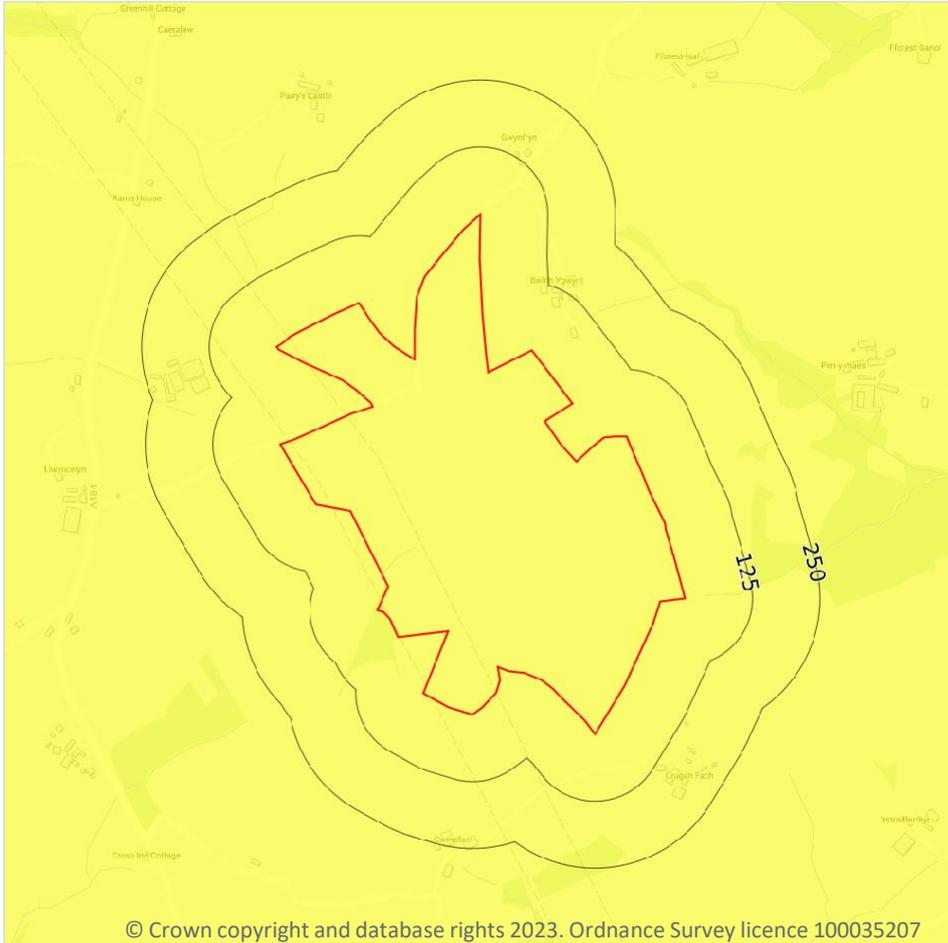
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence – Compressible deposits map on [page 77 >](#)

Location	Hazard rating	Details
On site	Negligible	Compressible strata are not thought to occur.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



— Site Outline
Search buffers in metres (m)

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

17.4 Collapsible deposits

Records within 50m

1

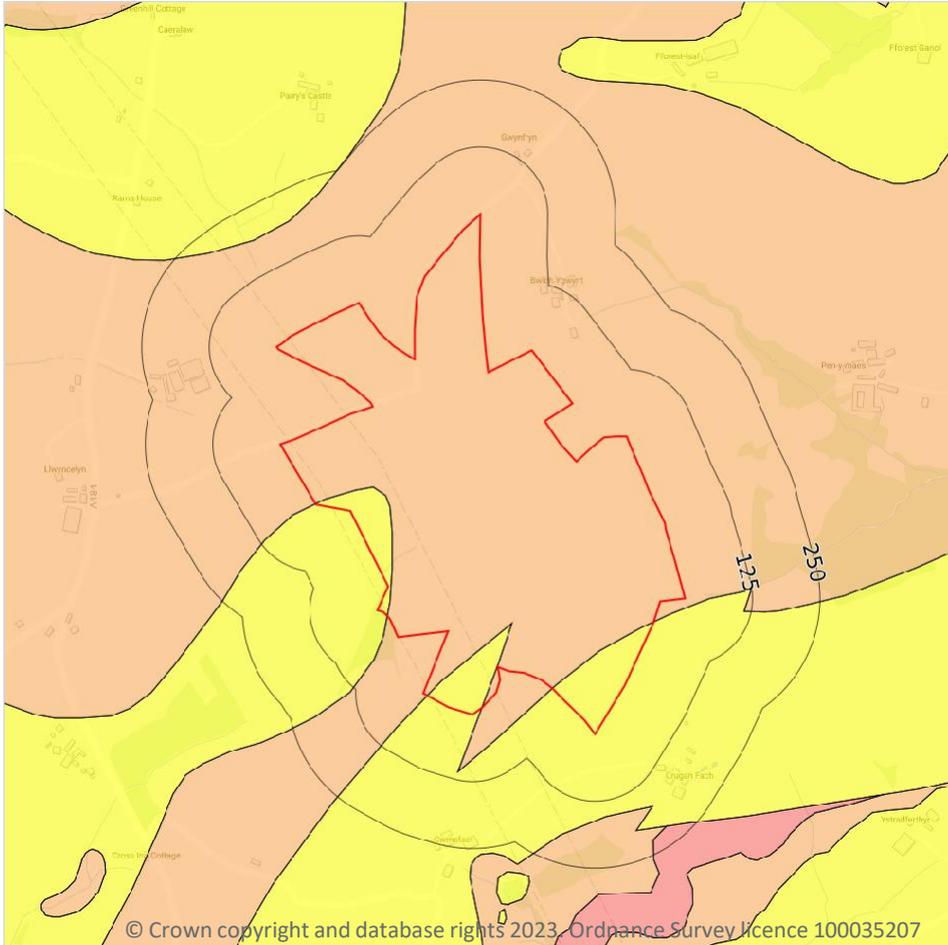
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence – Collapsible deposits map on [page 78](#) >

Location	Hazard rating	Details
On site	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



— Site Outline
Search buffers in metres (m)

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

17.5 Landslides

Records within 50m

2

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

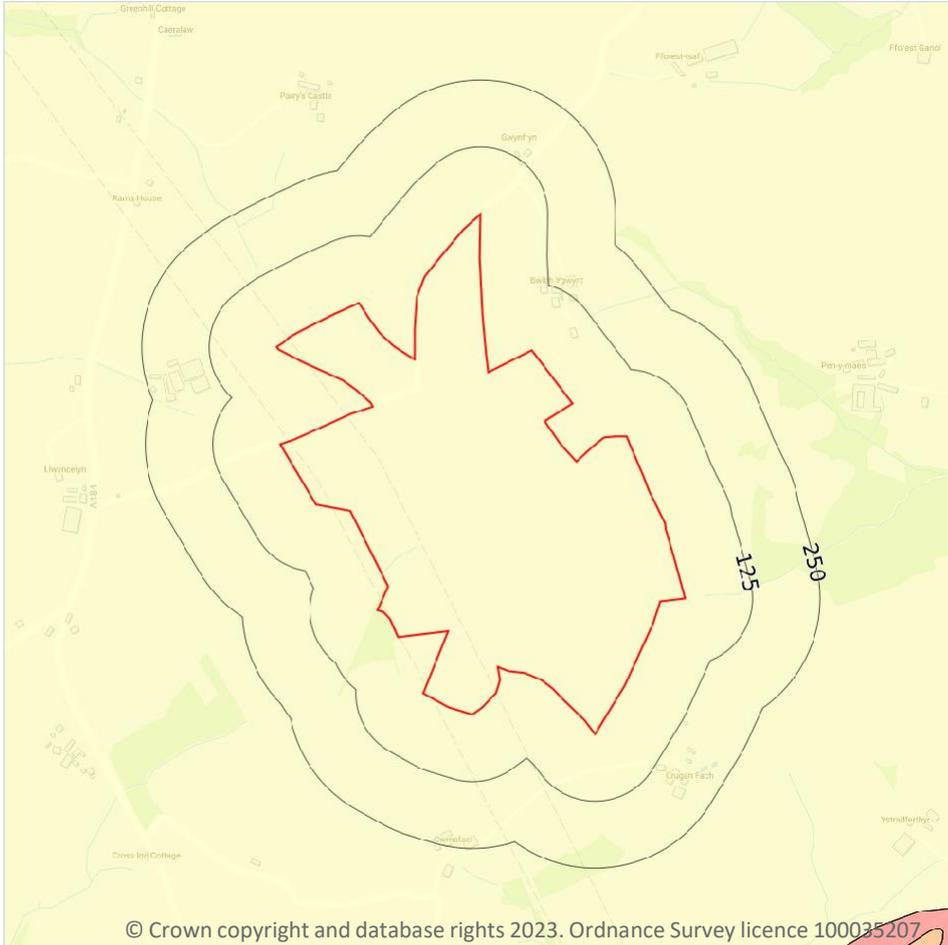
Features are displayed on the Natural ground subsidence – Landslides map on [page 79 >](#)

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

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



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.

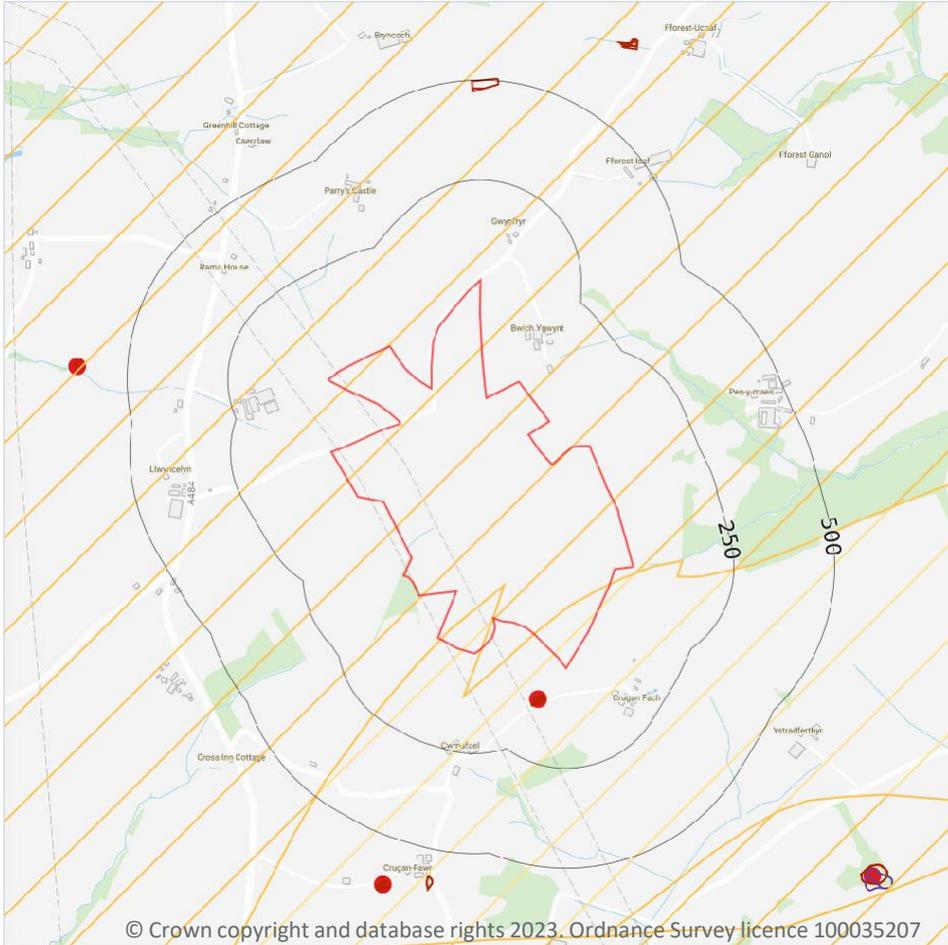
Features are displayed on the Natural ground subsidence – Ground dissolution of soluble rocks map on [page 81](#)

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



18.1 BritPits

Records within 500m

1

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 83](#) >

ID	Location	Details	Description
A	103m S	Name: Crygan-fach Address: Pontantwn, ST CLEARs, Carmarthenshire 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

4

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 83](#) >

ID	Location	Land Use	Year of mapping	Mapping scale
A	89m S	Unspecified Quarry	1946	1:10560
A	89m S	Unspecified Old Quarry	1887	1:10560
A	94m S	Unspecified Quarry	1948	1:10560
A	98m S	Unspecified Quarry	1907	1:10560

This data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m

0

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

This 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

3

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories – vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

Features are displayed on the Mining and ground workings map on [page 83](#) >

ID	Location	Name	Commodity	Class	Likelihood
1	On site	Not available	Vein Mineral	A	Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
2	On site	Berwyn Hills	Vein Mineral	B	Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
4	587m SE	Not available	Vein Mineral	B	Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.

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

0

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

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.

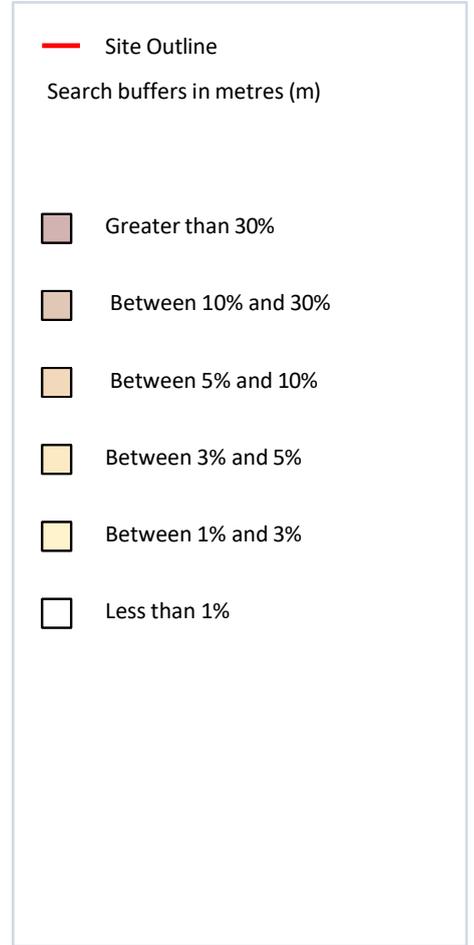
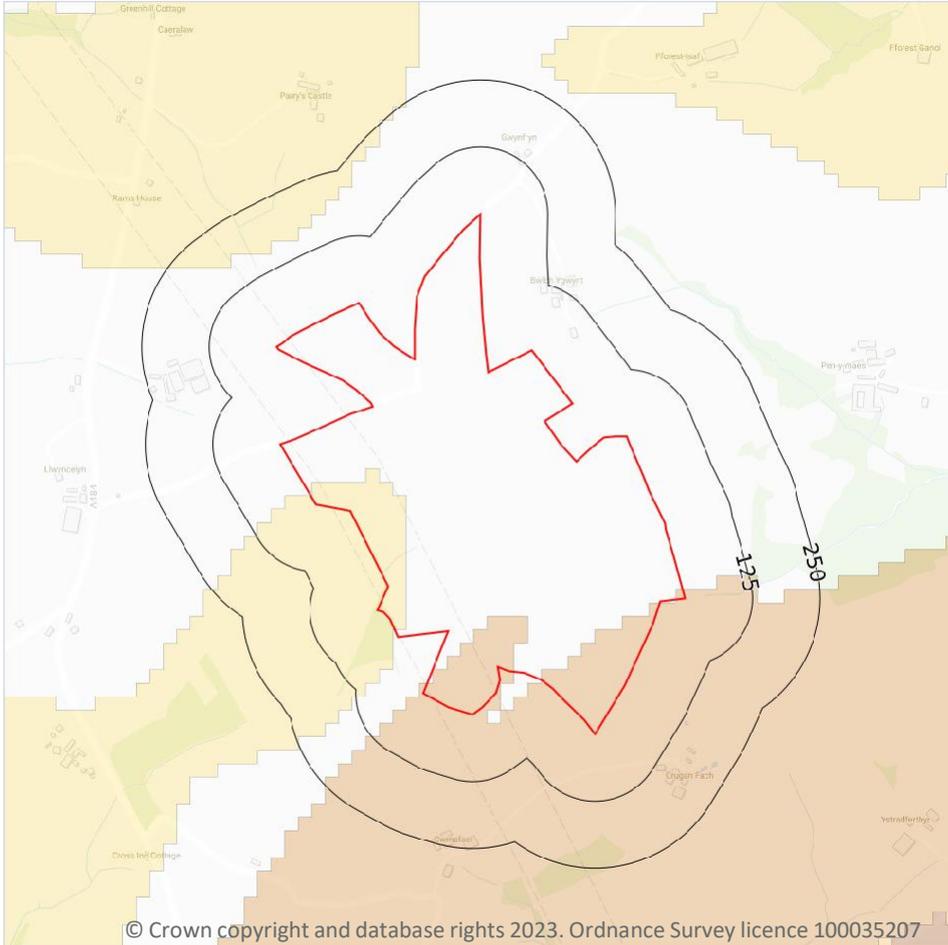
Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over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



20.1 Radon

Records on site

3

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 91](#) >

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	Less than 1%	None
On site	Between 5% and 10%	Basic

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

19

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km². In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km²; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
3m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
3m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
10m NW	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
17m W	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
28m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
36m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
36m S	15 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
43m S	15 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 km²).

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 km².

This data is sourced from the British Geological Survey.

22 Railway infrastructure and projects

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

0

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

This data is sourced from Ordnance Survey/Groundsure.

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

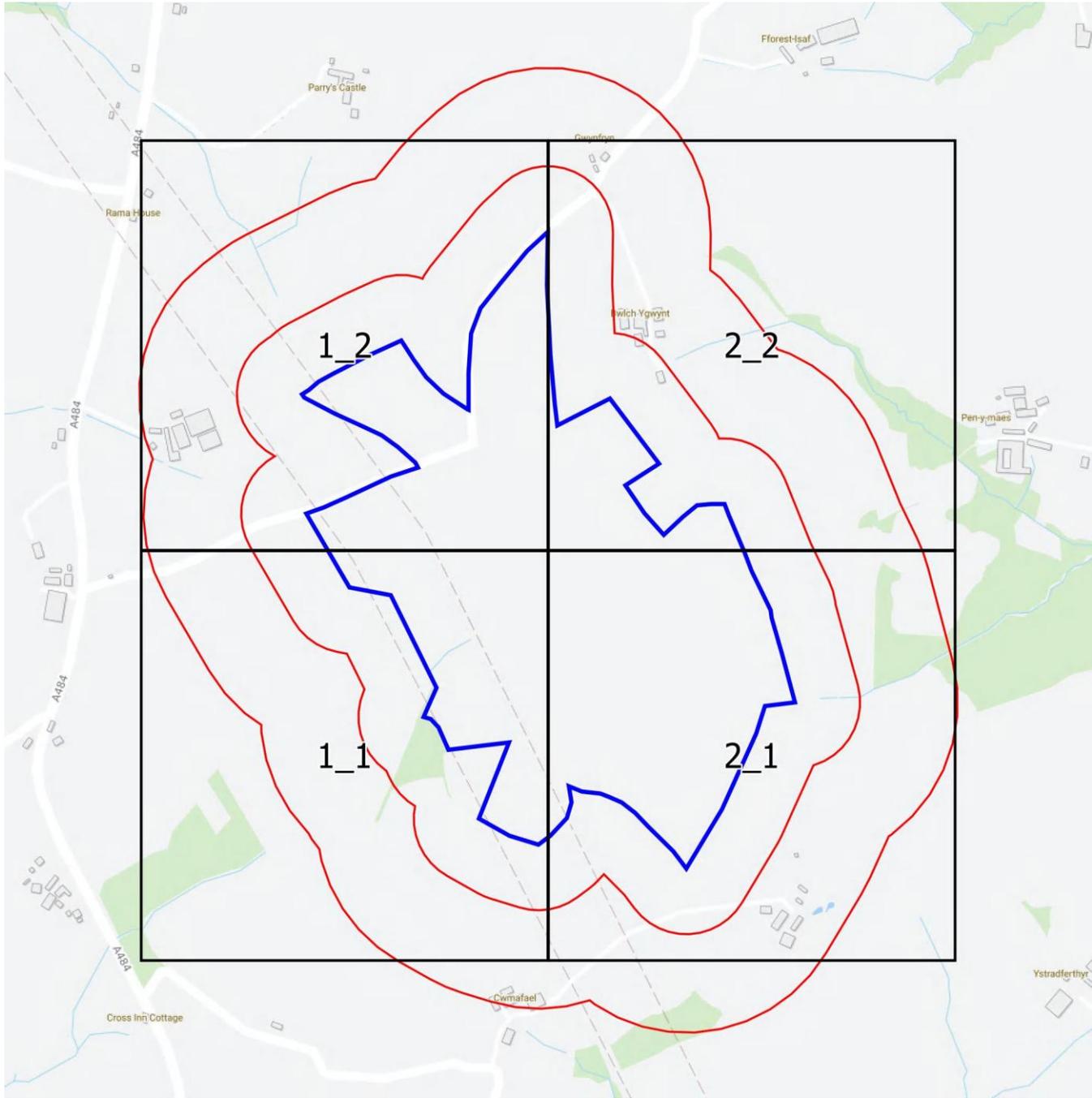
Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see <https://www.groundsure.com/sources-reference> 4.

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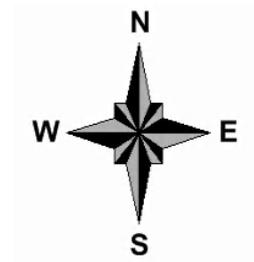


Appendix D Historical Maps



Groundsure
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1:2,500 Scale Grid Index



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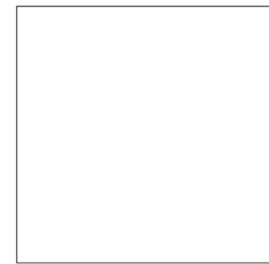
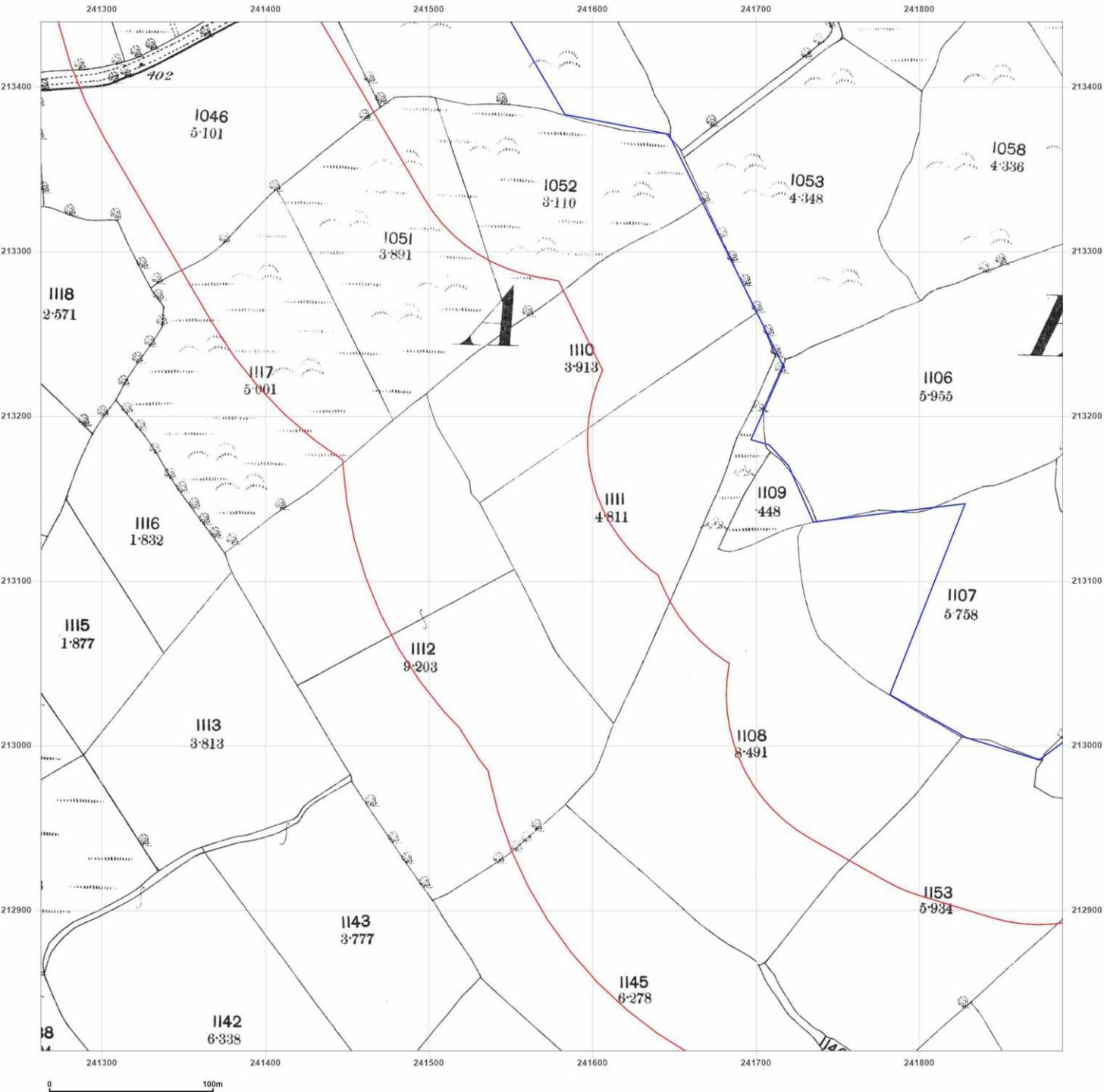
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Map Name: County Series

Map date: 1888

Scale: 1:2,500

Printed at: 1:2,500



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 Revised 1888
 Edition N/A
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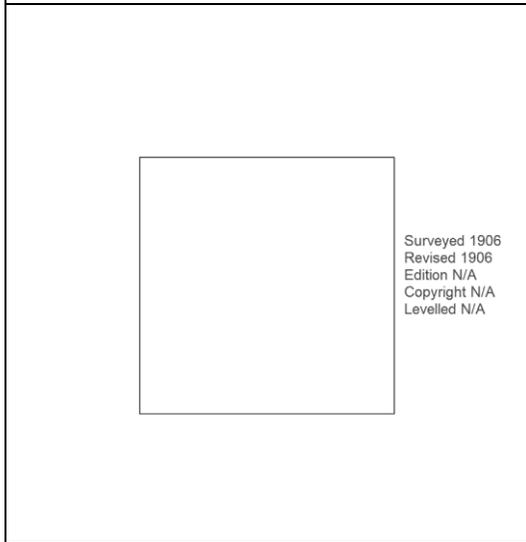
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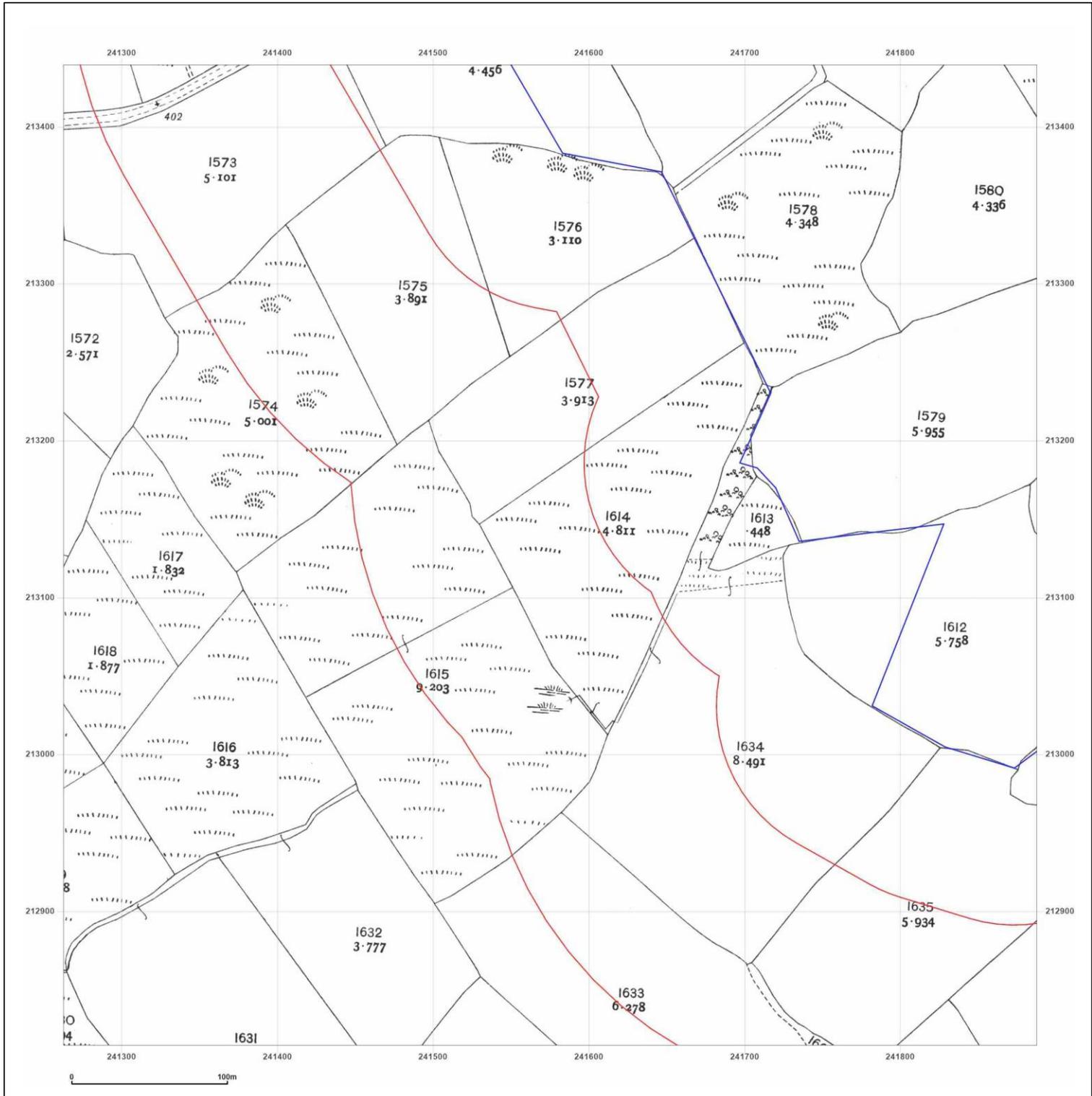


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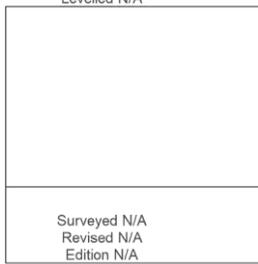
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Scale: 1:2,500

Printed at: 1:2,500



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



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

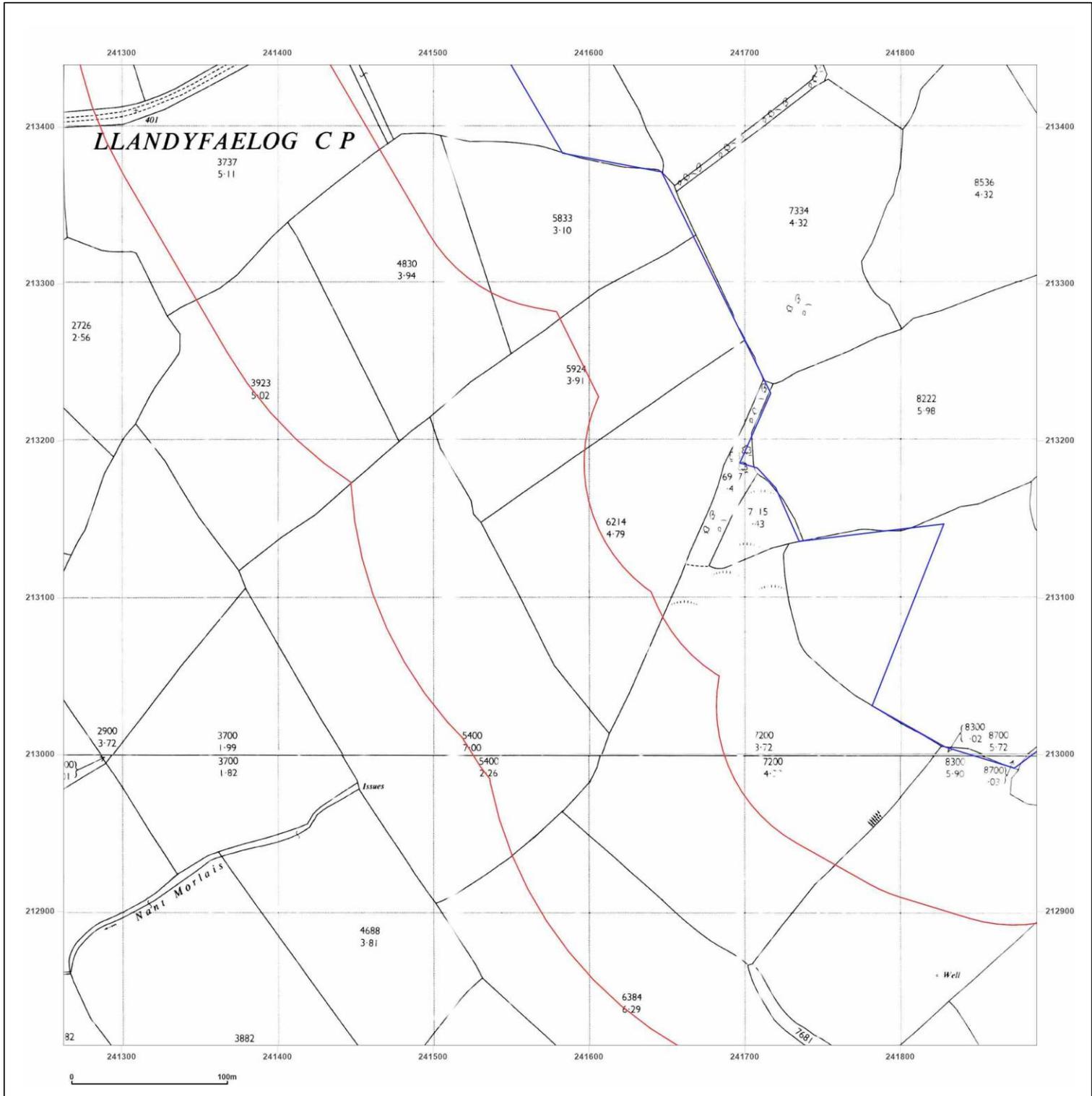


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 Edition N/A
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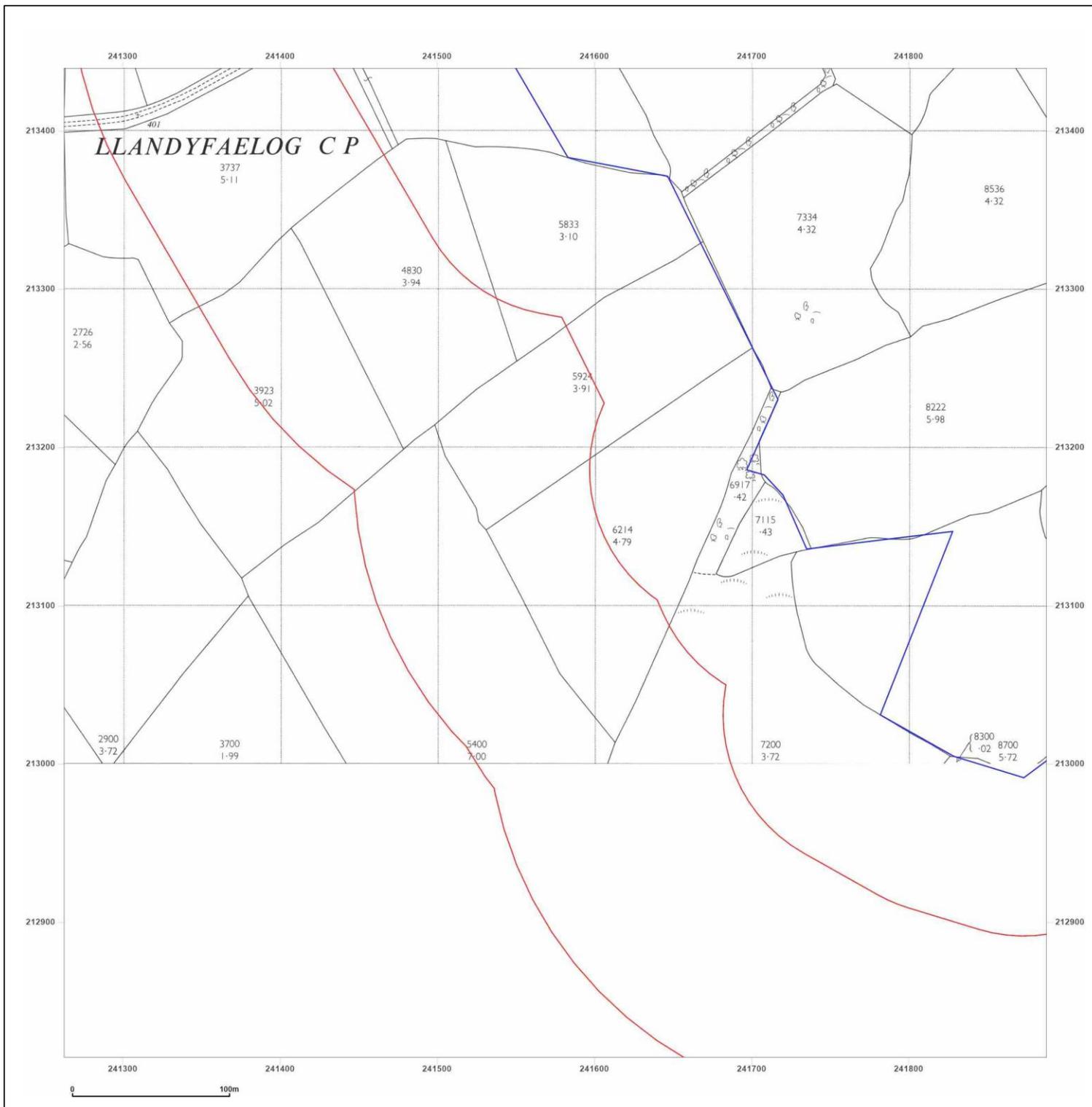


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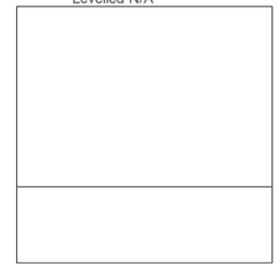
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 Edition N/A
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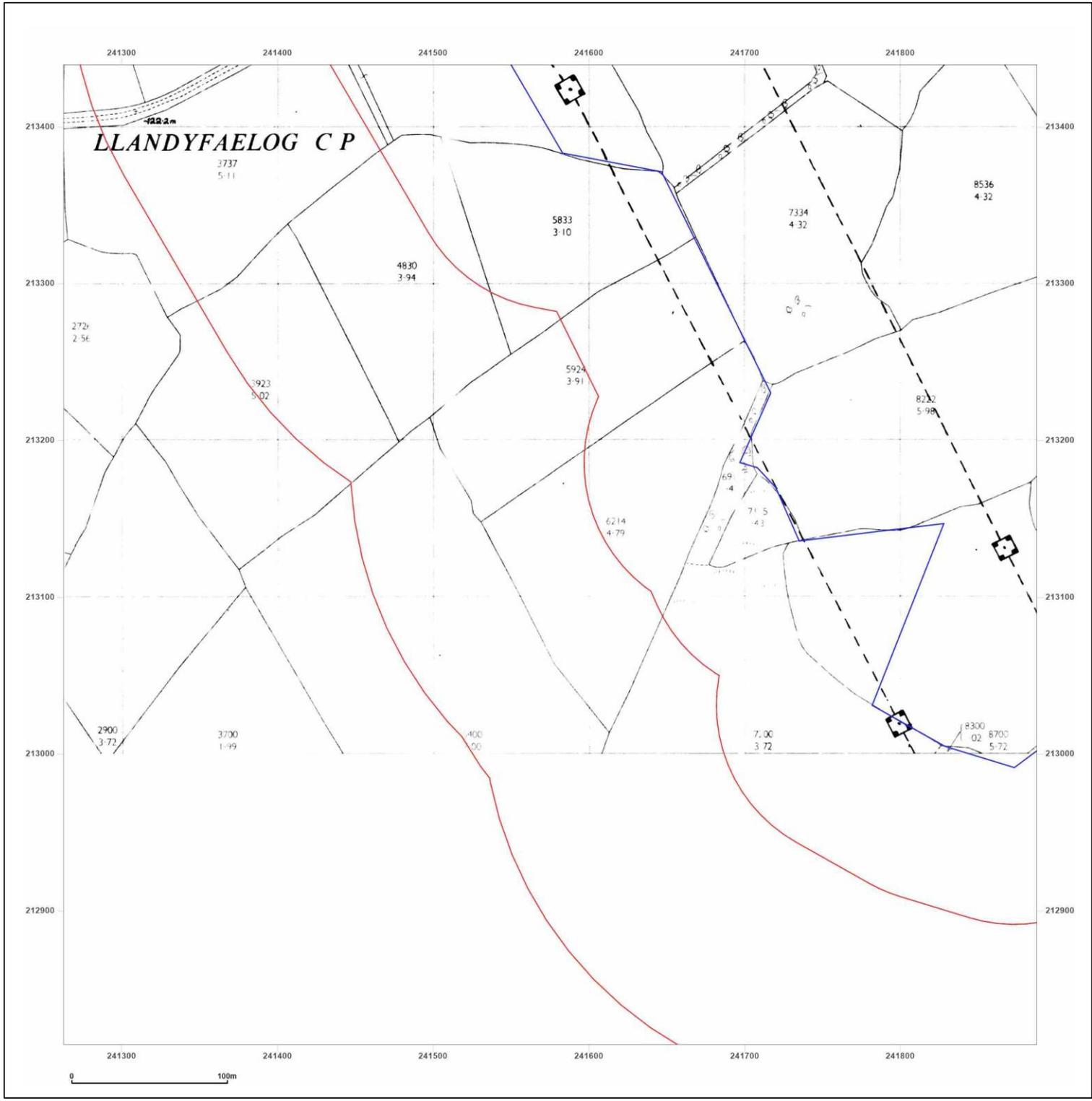


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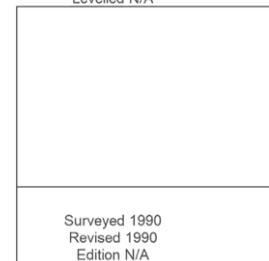
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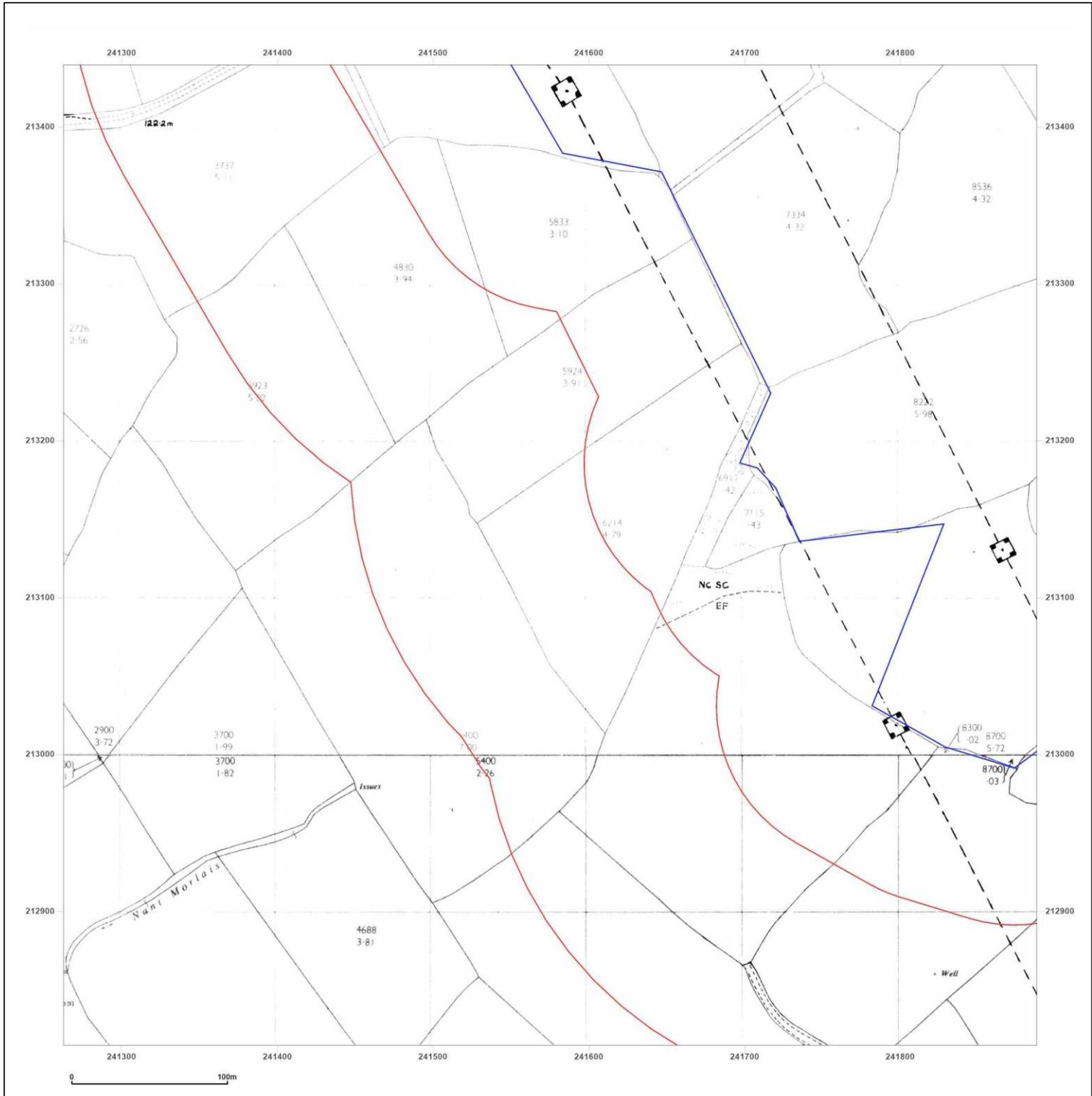


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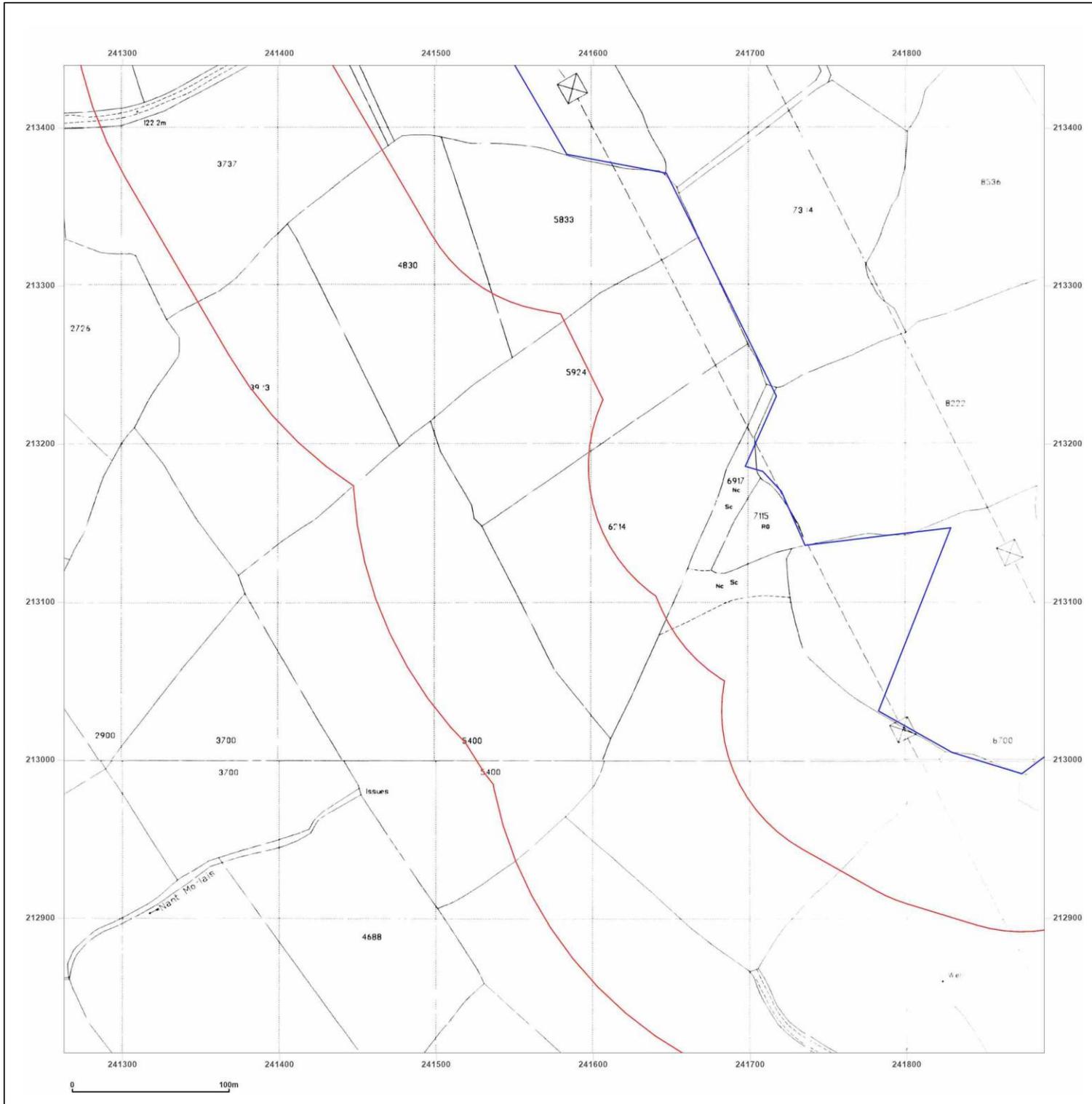


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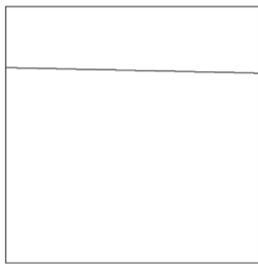
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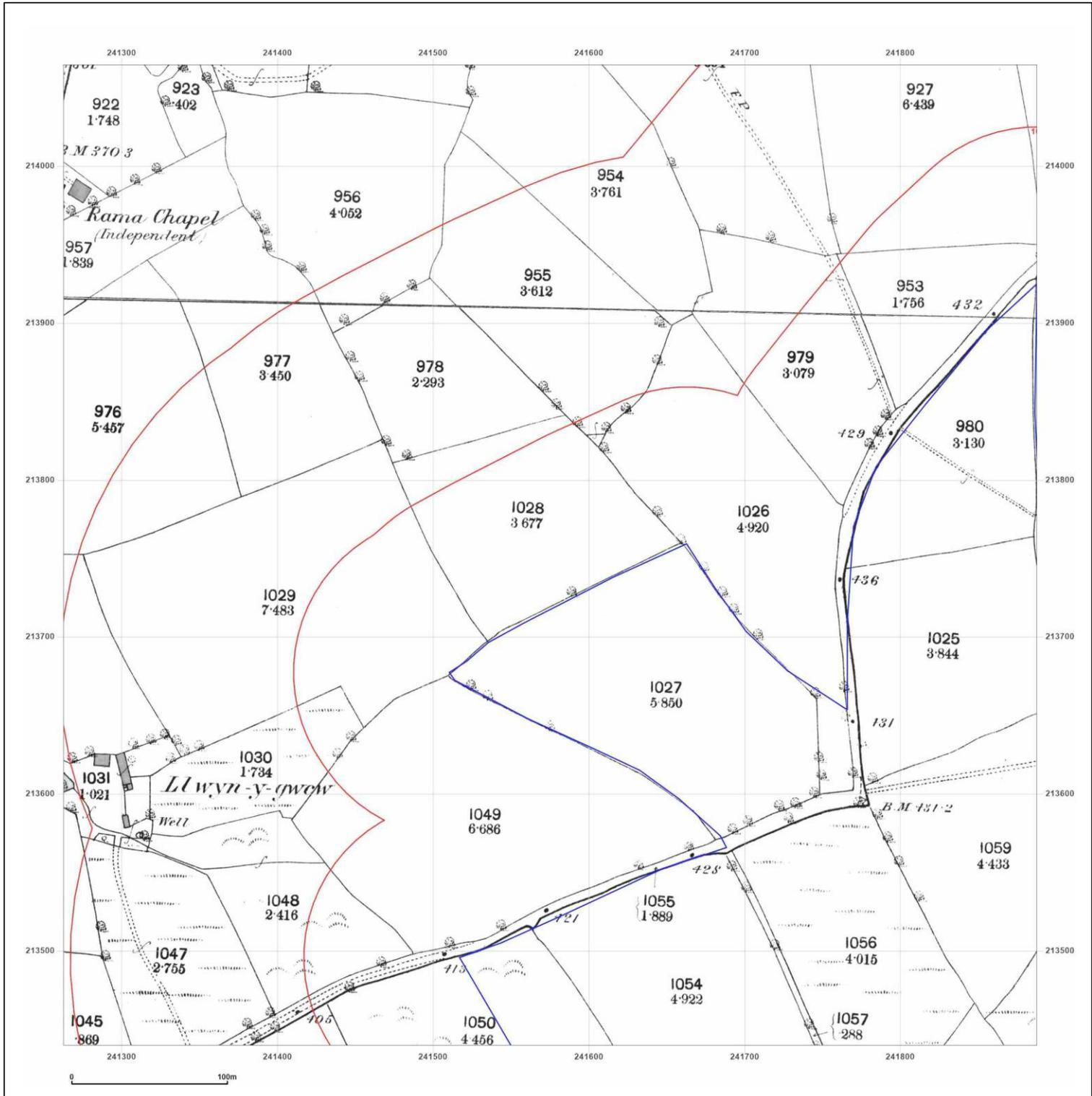


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 Edition N/A
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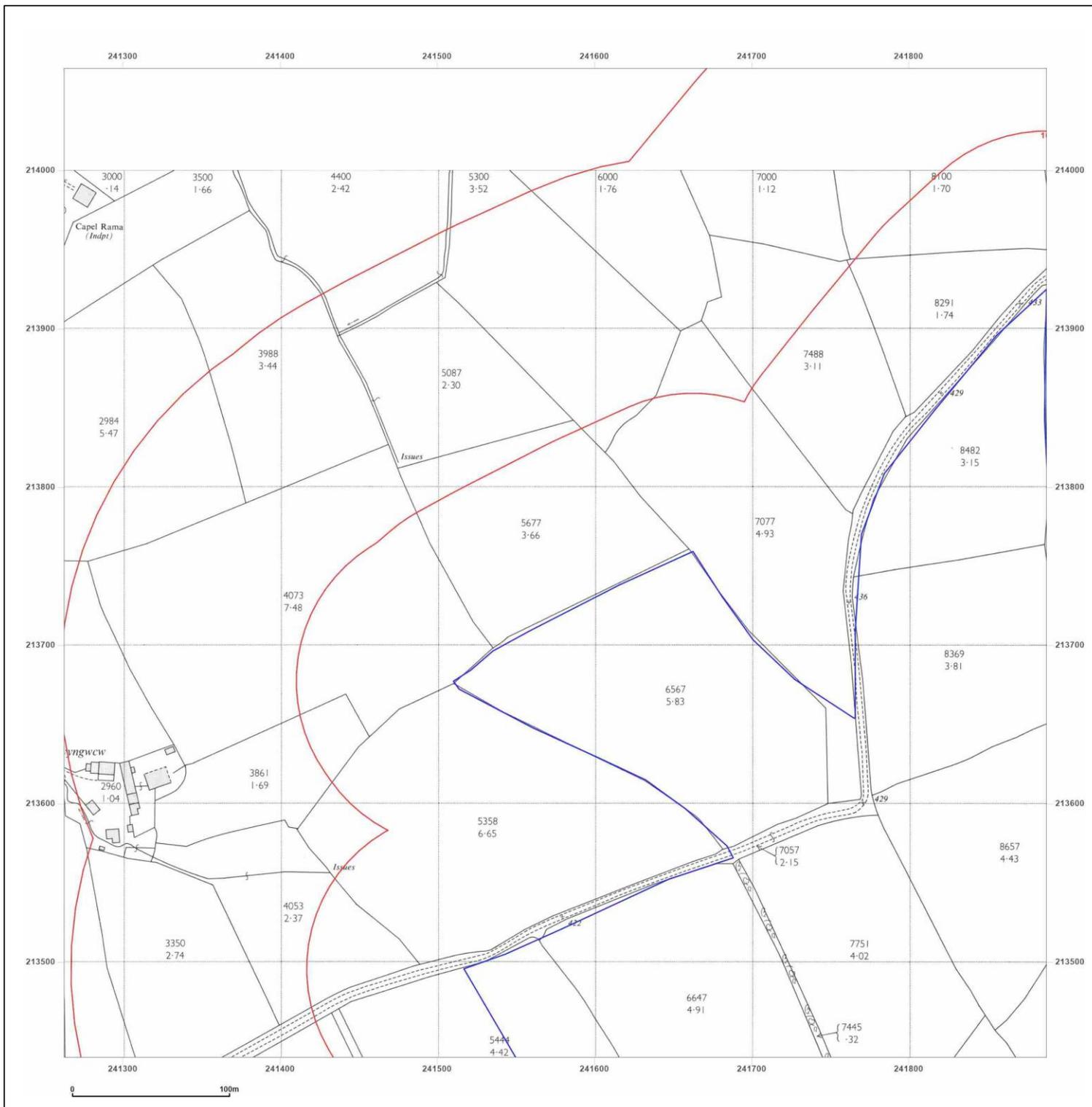


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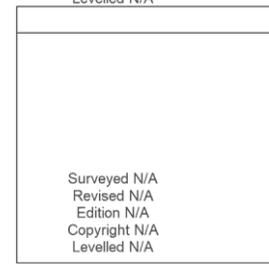
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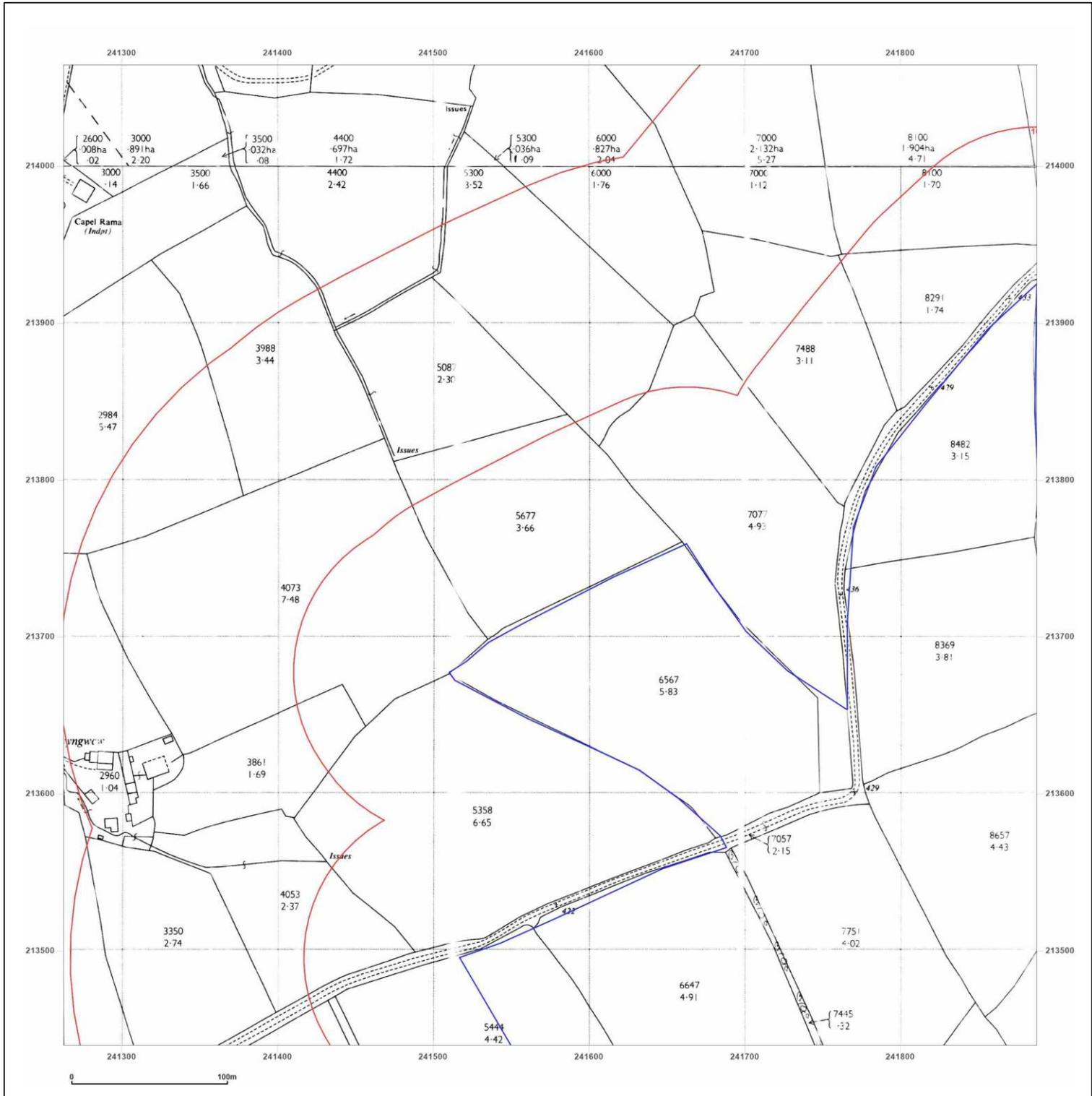


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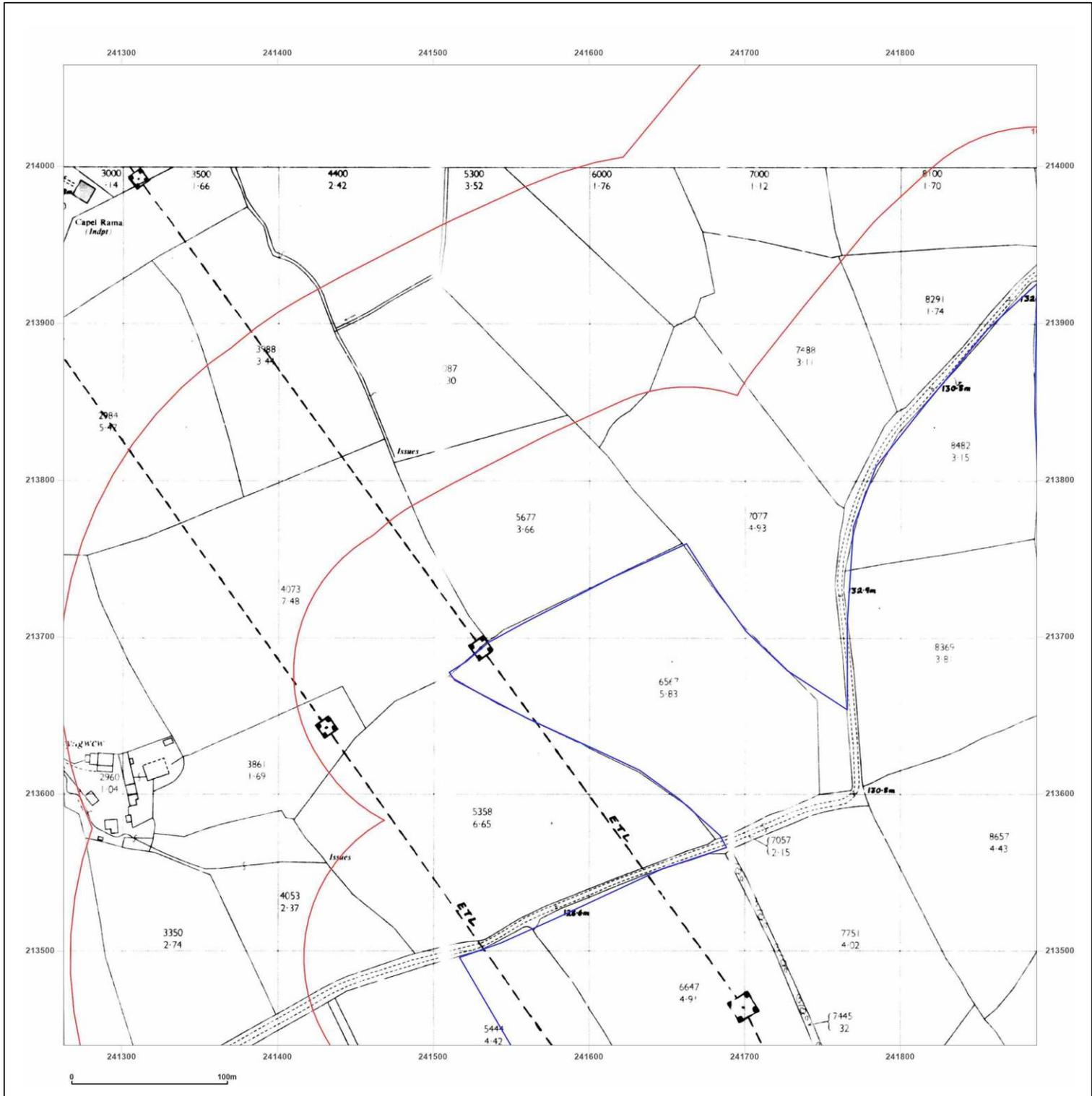


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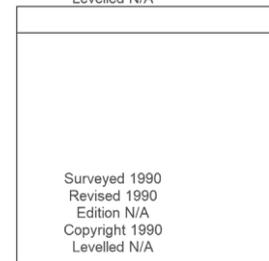
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 Edition N/A
 Copyright 1990
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 Edition N/A
 Copyright 1990
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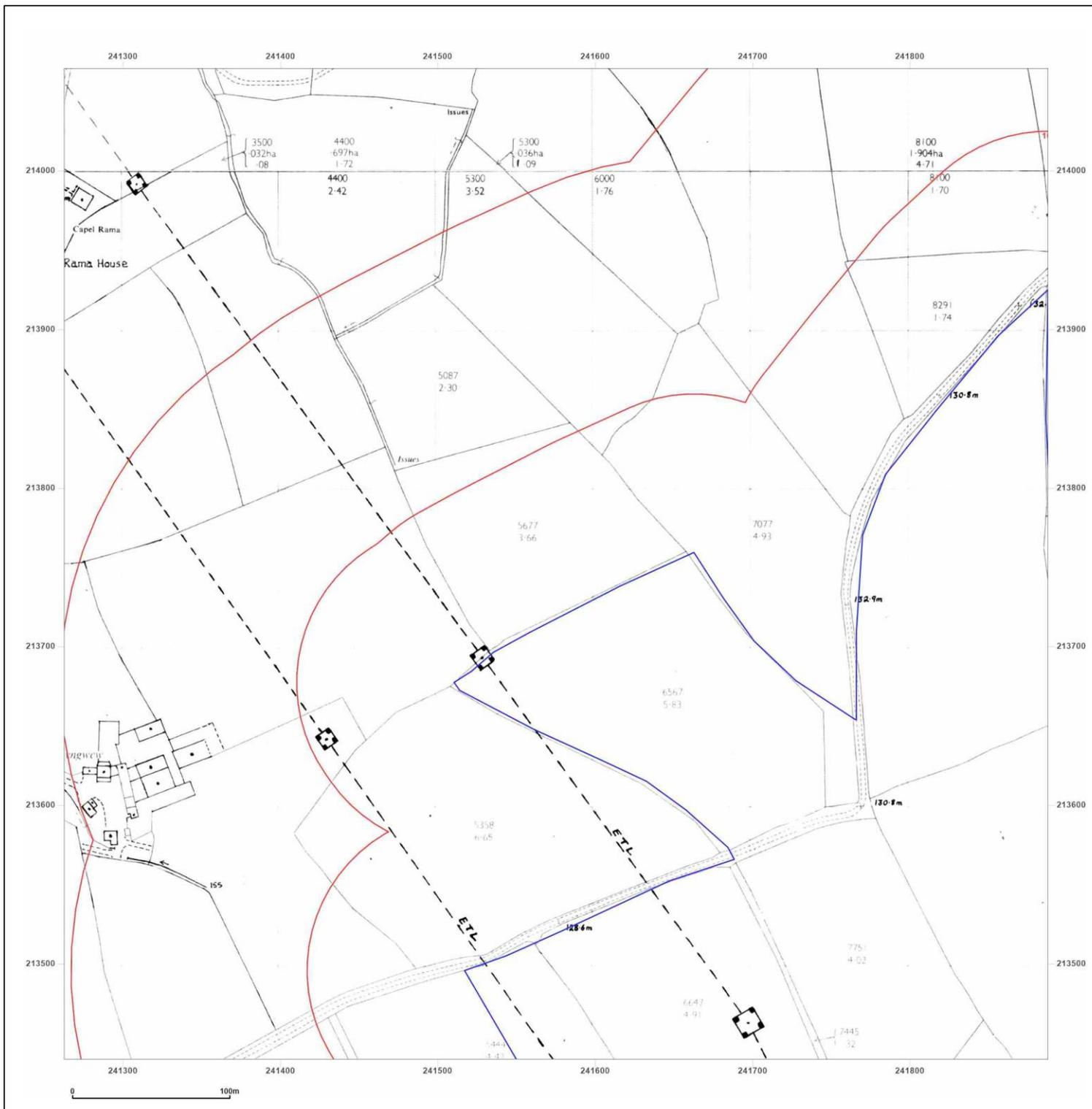


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 Edition N/A
 Copyright 1995
 Levelled N/A

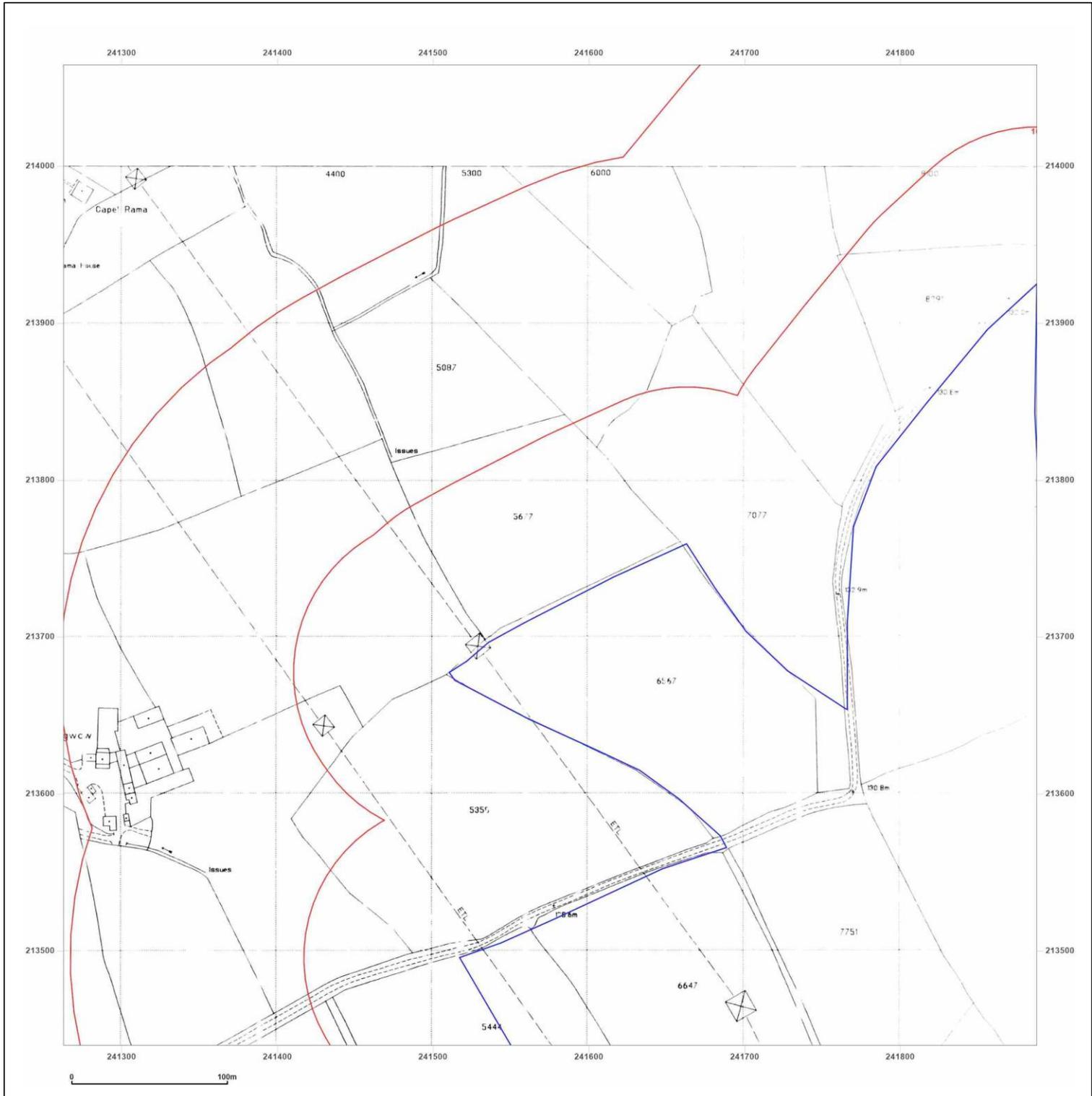


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Site Details:

241853,213448

Client Ref: EPL022853_
 Report Ref: HMD-PMH-L7X-TS6-IOR_LS_2_1
 Grid Ref: 242200, 213127

Map Name: County Series

Map date: 1888

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1888
 Revised 1888
 Edition N/A
 Copyright N/A
 Levelled N/A

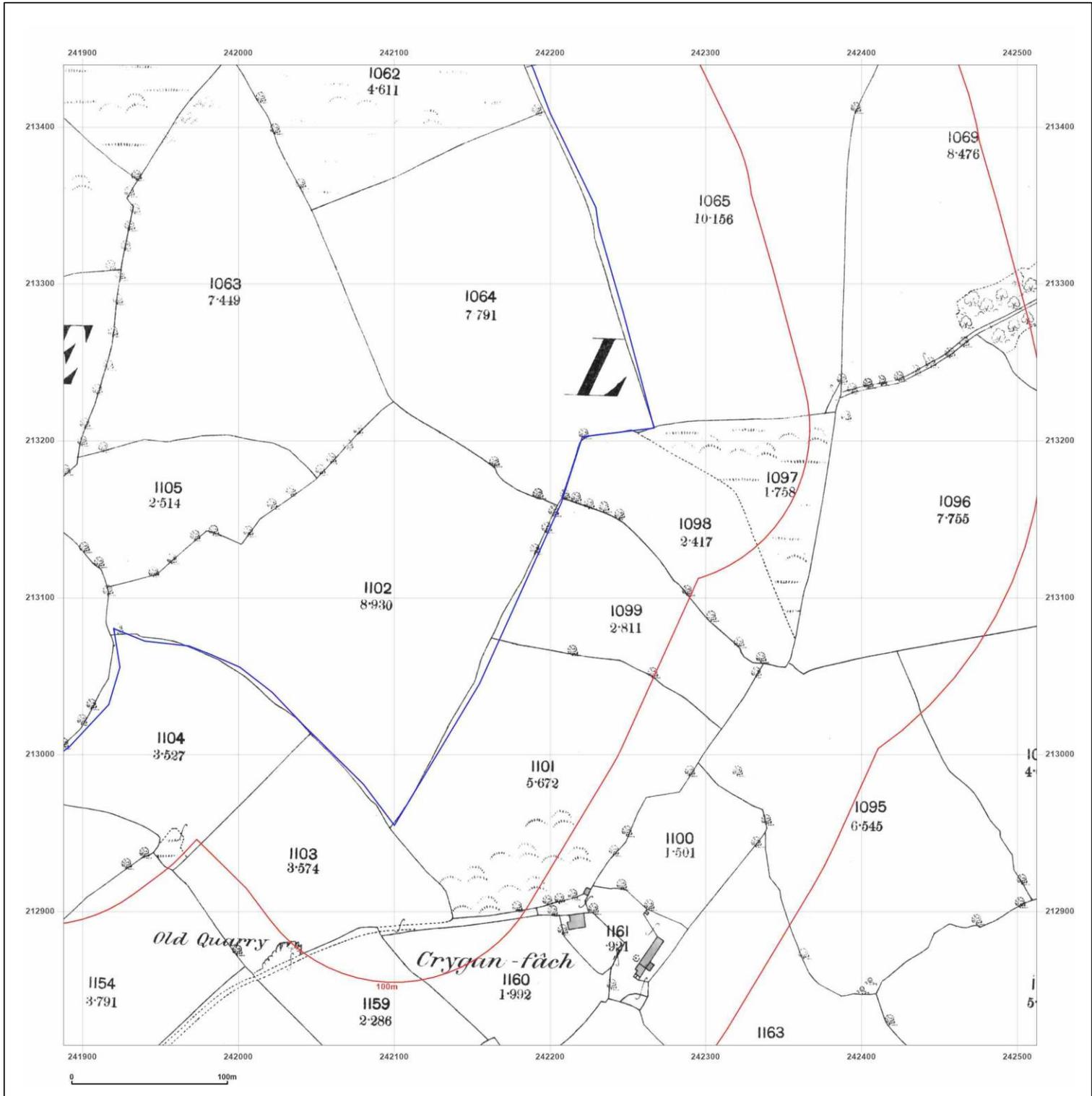


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Site Details:

241853,213448

Client Ref: EPL022853_
 Report Ref: HMD-PMH-L7X-TS6-IOR_LS_2_1
 Grid Ref: 242200, 213127

Map Name: County Series

Map date: 1906

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1906
 Revised 1906
 Edition N/A
 Copyright N/A
 Levelled N/A

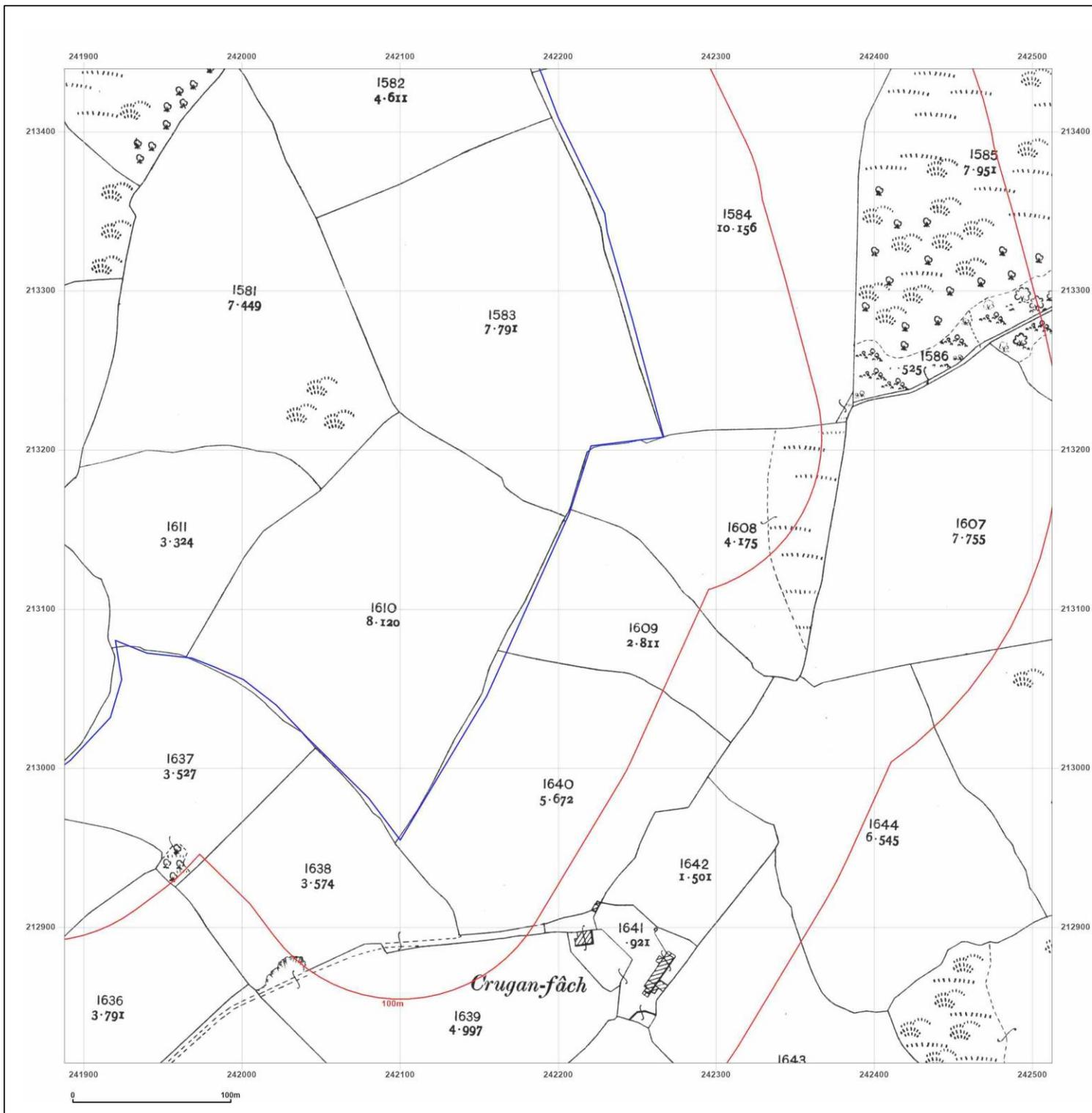


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Site Details:

241853,213448

Client Ref: EPL022853_
 Report Ref: HMD-PMH-L7X-TS6-IOR_LS_2_1
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Map Name: National Grid

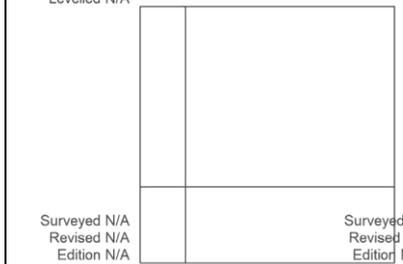
Map date: 1968-1969

Scale: 1:2,500

Printed at: 1:2,500



Surveyed N/A	Surveyed 1967
Revised N/A	Revised 1967
Edition N/A	Edition N/A
Copyright N/A	Copyright 1969
Levelled N/A	Levelled 1947



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

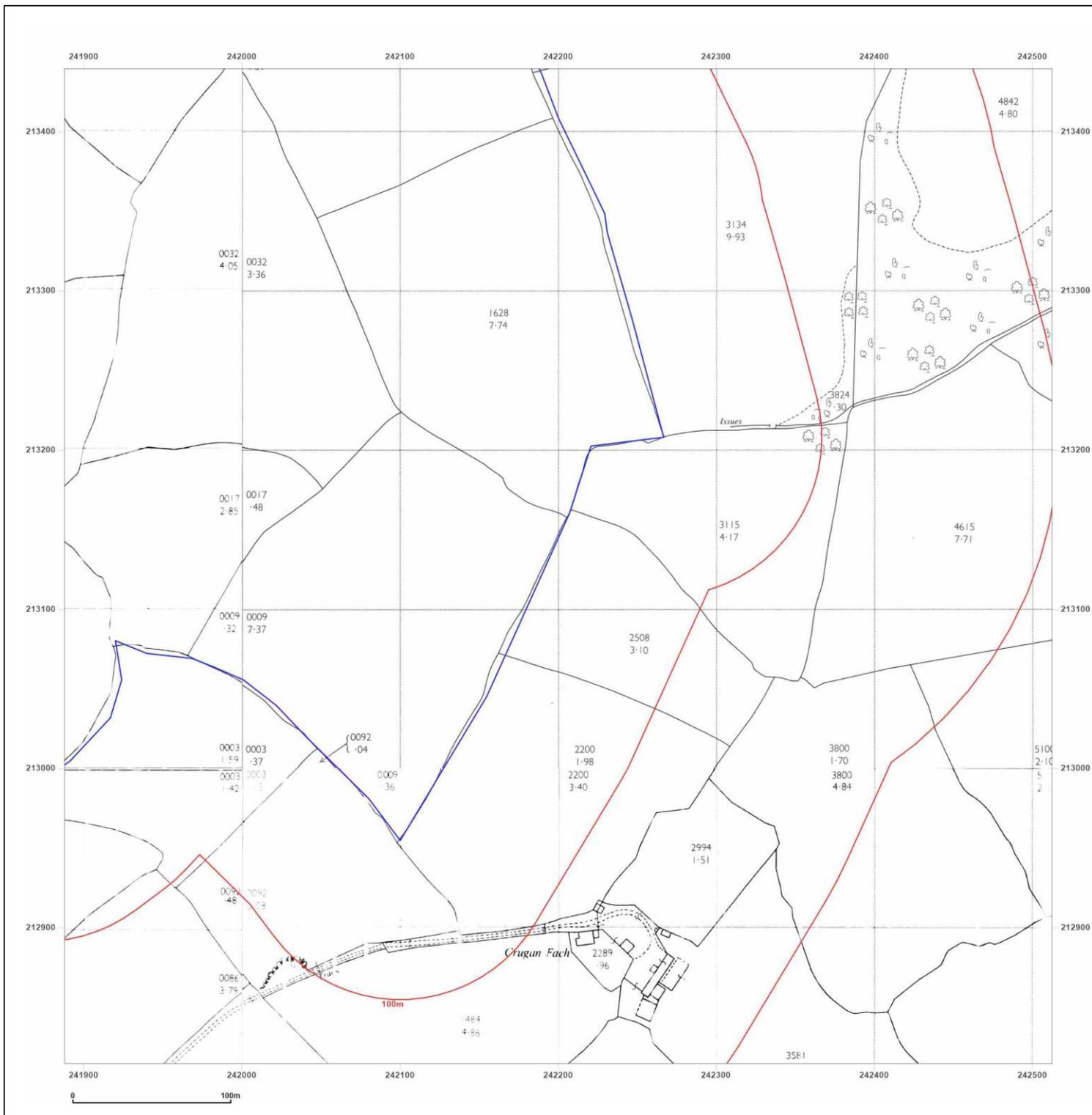


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Site Details:

241853,213448

Client Ref: EPL022853_
 Report Ref: HMD-PMH-L7X-TS6-IOR_LS_2_1
 Grid Ref: 242200, 213127

Map Name: National Grid

Map date: 1969

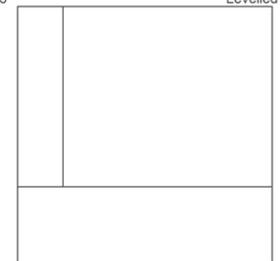
Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1967
 Revised 1967
 Edition N/A
 Copyright 1969
 Levelled 1956

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

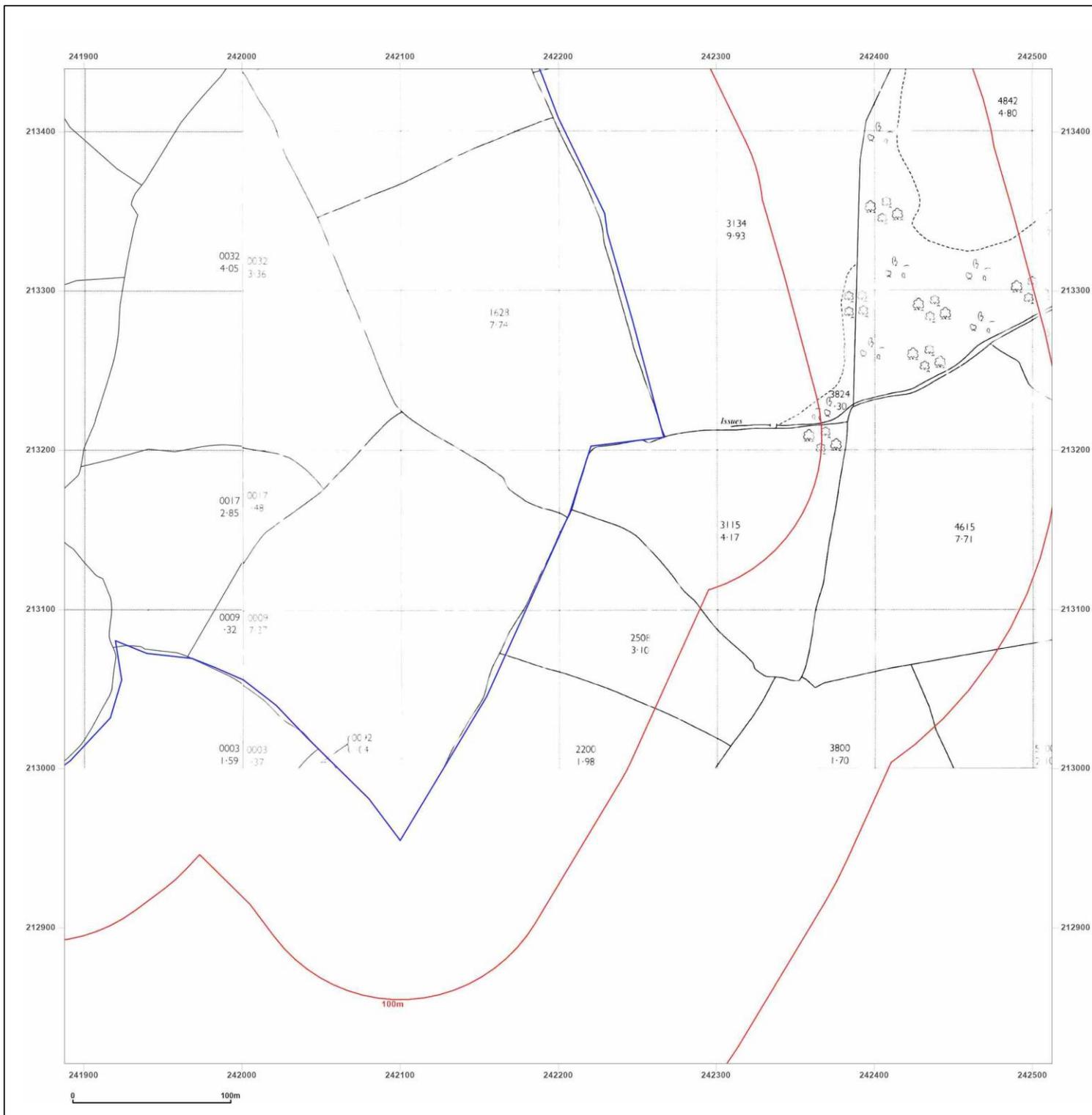


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Site Details:

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Client Ref: EPL022853_
 Report Ref: HMD-PMH-L7X-TS6-IOR_LS_2_1
 Grid Ref: 242200, 213127

Map Name: National Grid

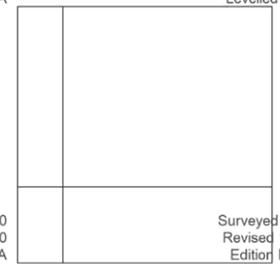
Map date: 1990

Scale: 1:2,500

Printed at: 1:2,500



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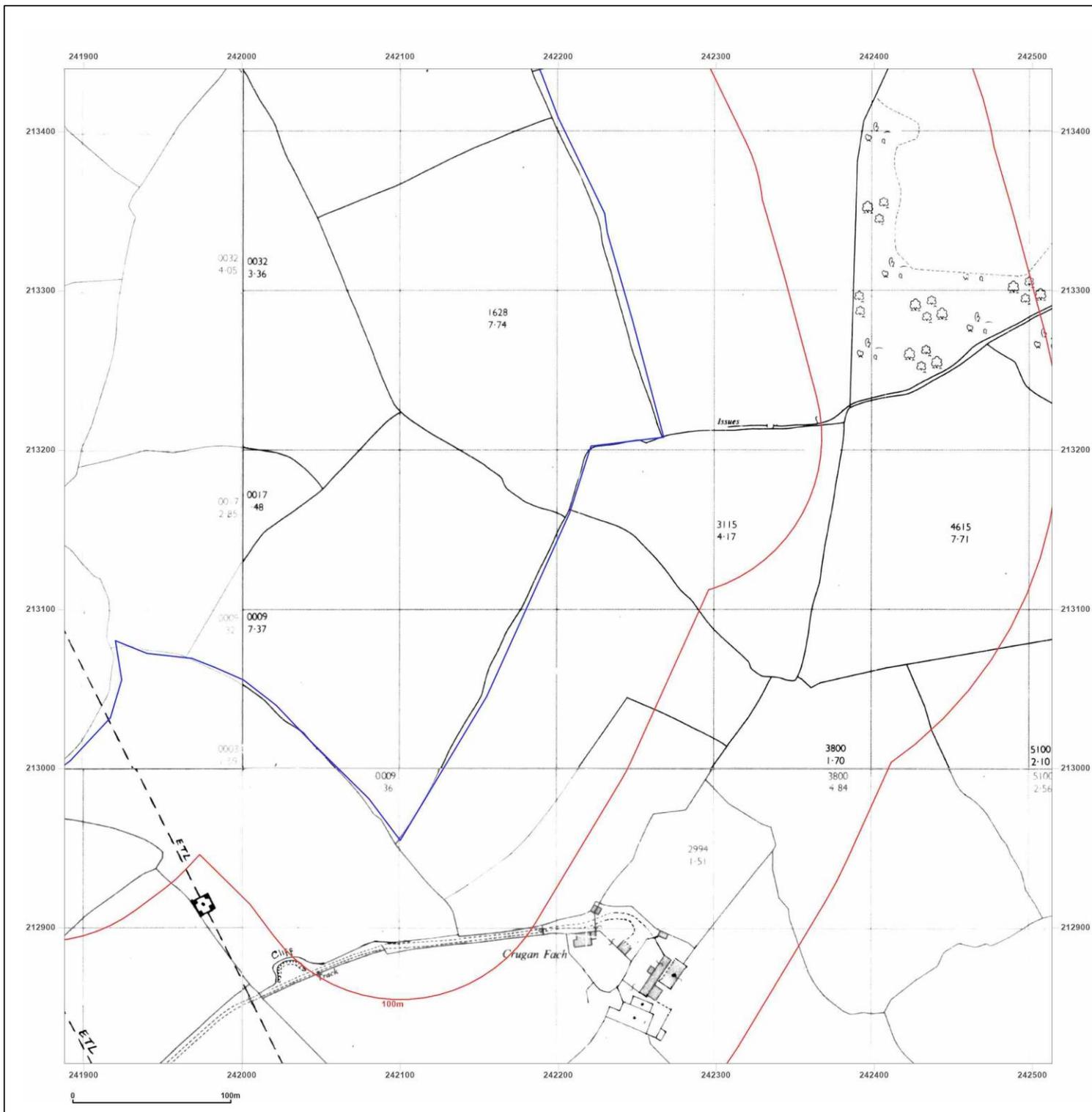


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Site Details:

241853,213448

Client Ref: EPL022853_
 Report Ref: HMD-PMH-L7X-TS6-IOR_LS_2_1
 Grid Ref: 242200, 213127

Map Name: National Grid

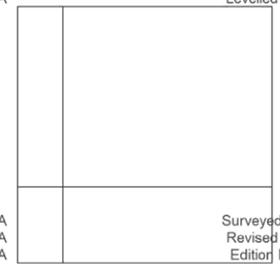
Map date: 1990-1995

Scale: 1:2,500

Printed at: 1:2,500



Surveyed N/A	Surveyed N/A
Revised N/A	Revised N/A
Edition N/A	Edition N/A
Copyright 1995	Copyright 1995
Levelled N/A	Levelled N/A



Surveyed N/A	Surveyed N/A
Revised N/A	Revised N/A
Edition N/A	Edition N/A
Copyright 1995	Copyright 1995
Levelled N/A	Levelled N/A

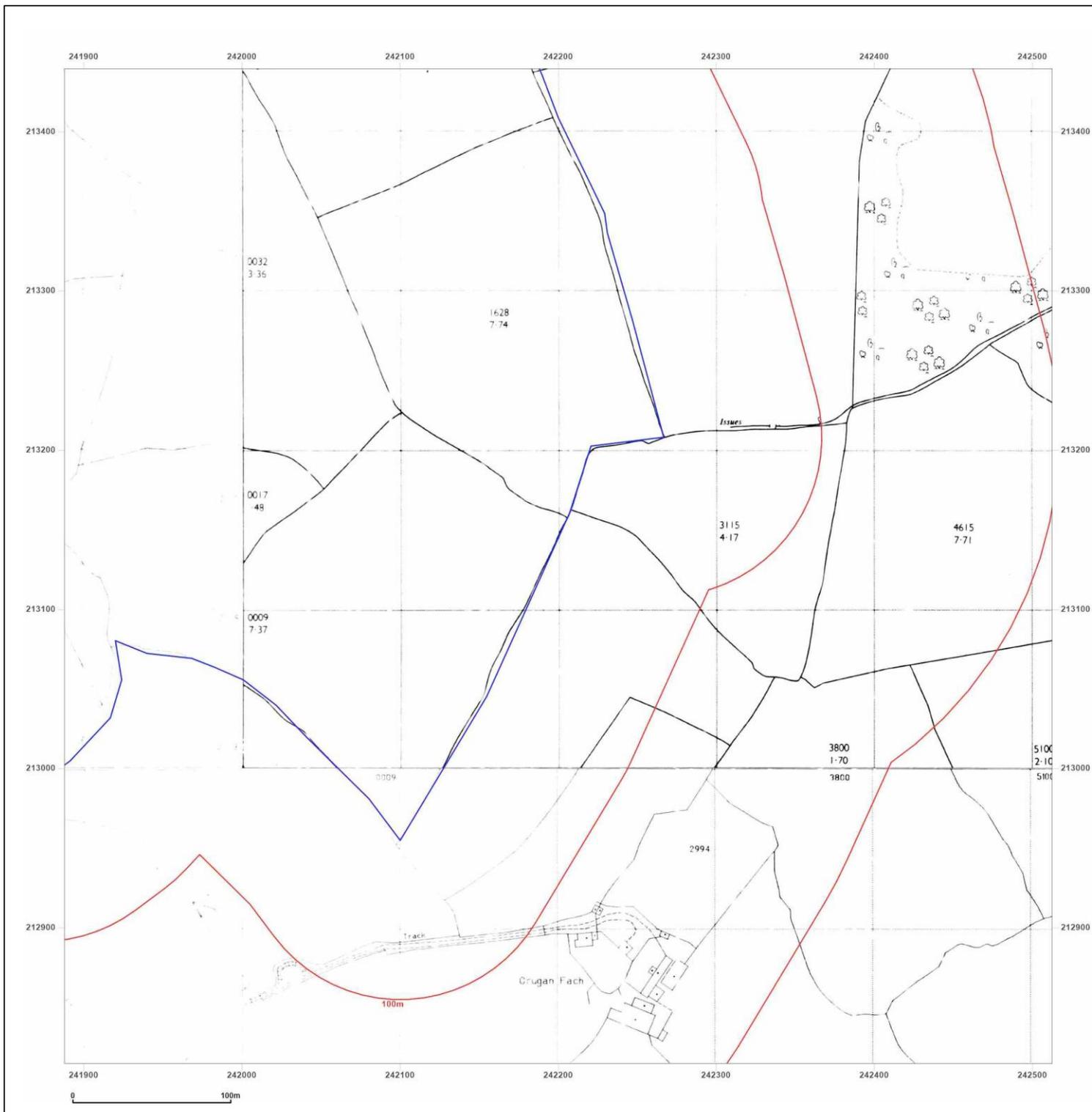


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Site Details:

241853,213448

Client Ref: EPL022853_
 Report Ref: HMD-PMH-L7X-TS6-IOR_LS_2_2
 Grid Ref: 242200, 213752

Map Name: County Series

Map date: 1888

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1888
 Revised 1888
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1888
 Revised 1888
 Edition N/A
 Copyright N/A
 Levelled N/A

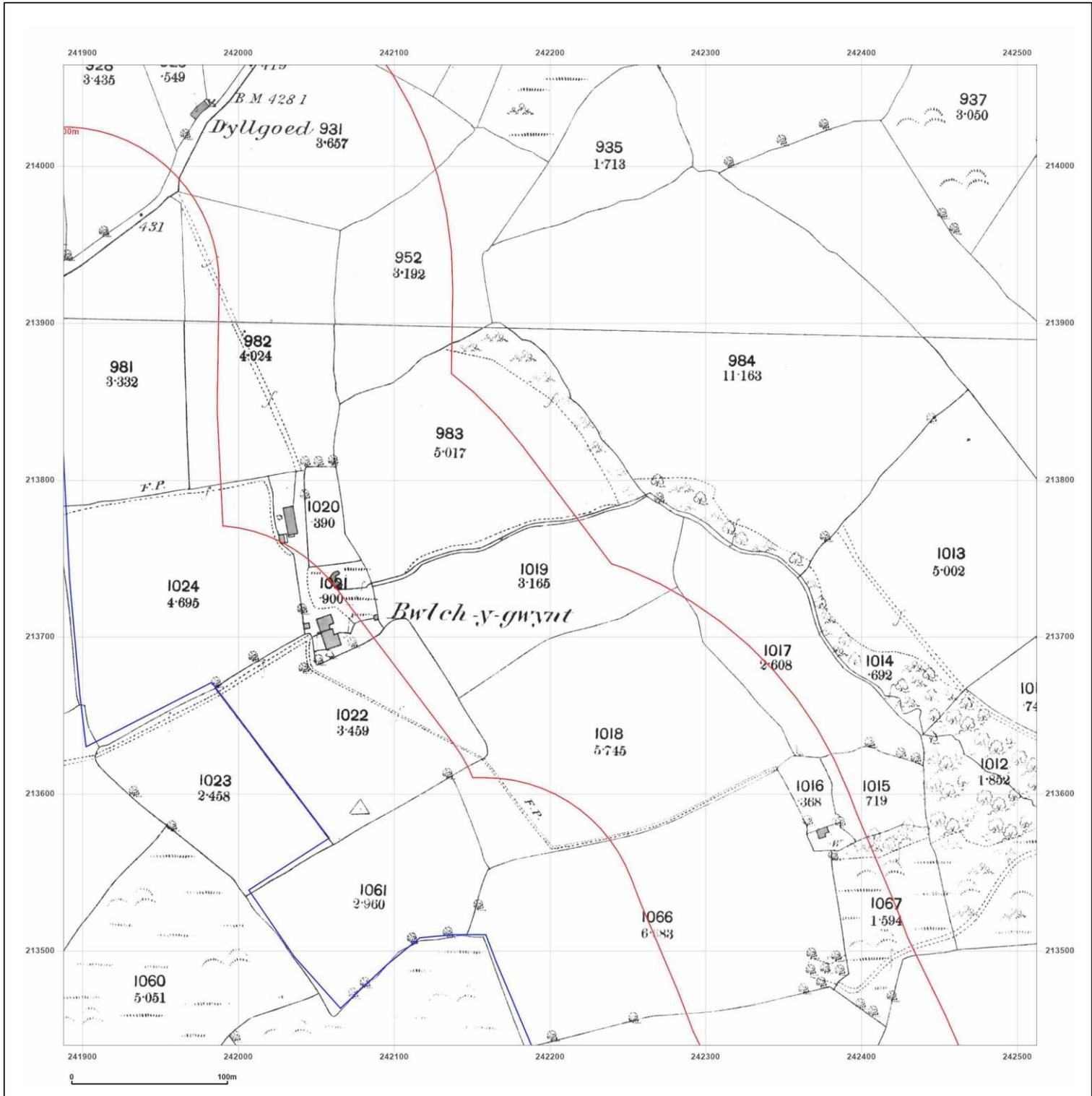


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Site Details:

241853,213448

Client Ref: EPL022853_
 Report Ref: HMD-PMH-L7X-TS6-IOR_LS_2_2
 Grid Ref: 242200, 213752

Map Name: National Grid

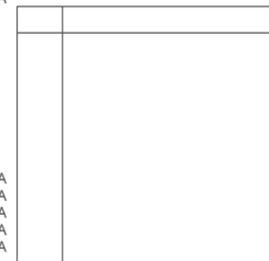
Map date: 1968-1970

Scale: 1:2,500

Printed at: 1:2,500



Surveyed N/A	Surveyed 1969
Revised N/A	Revised 1969
Edition N/A	Edition N/A
Copyright N/A	Copyright 1970
Levelled N/A	Levelled 1947



Surveyed N/A	Surveyed 1967
Revised N/A	Revised 1967
Edition N/A	Edition N/A
Copyright N/A	Copyright 1969
Levelled N/A	Levelled 1947

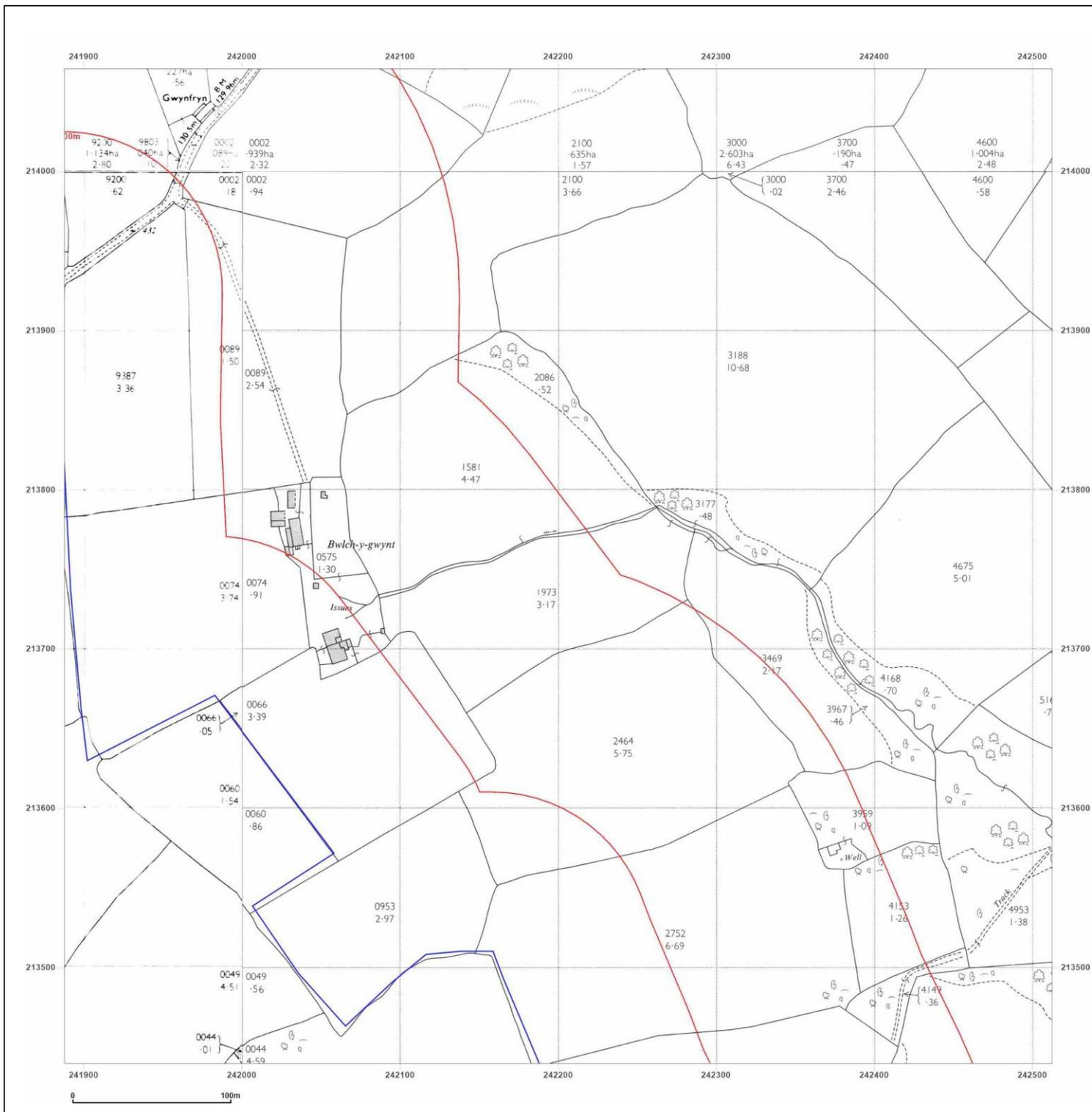


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Site Details:

241853,213448

Client Ref: EPL022853_
 Report Ref: HMD-PMH-L7X-TS6-IOR_LS_2_2
 Grid Ref: 242200, 213752

Map Name: National Grid

Map date: 1969-1970

Scale: 1:2,500

Printed at: 1:2,500



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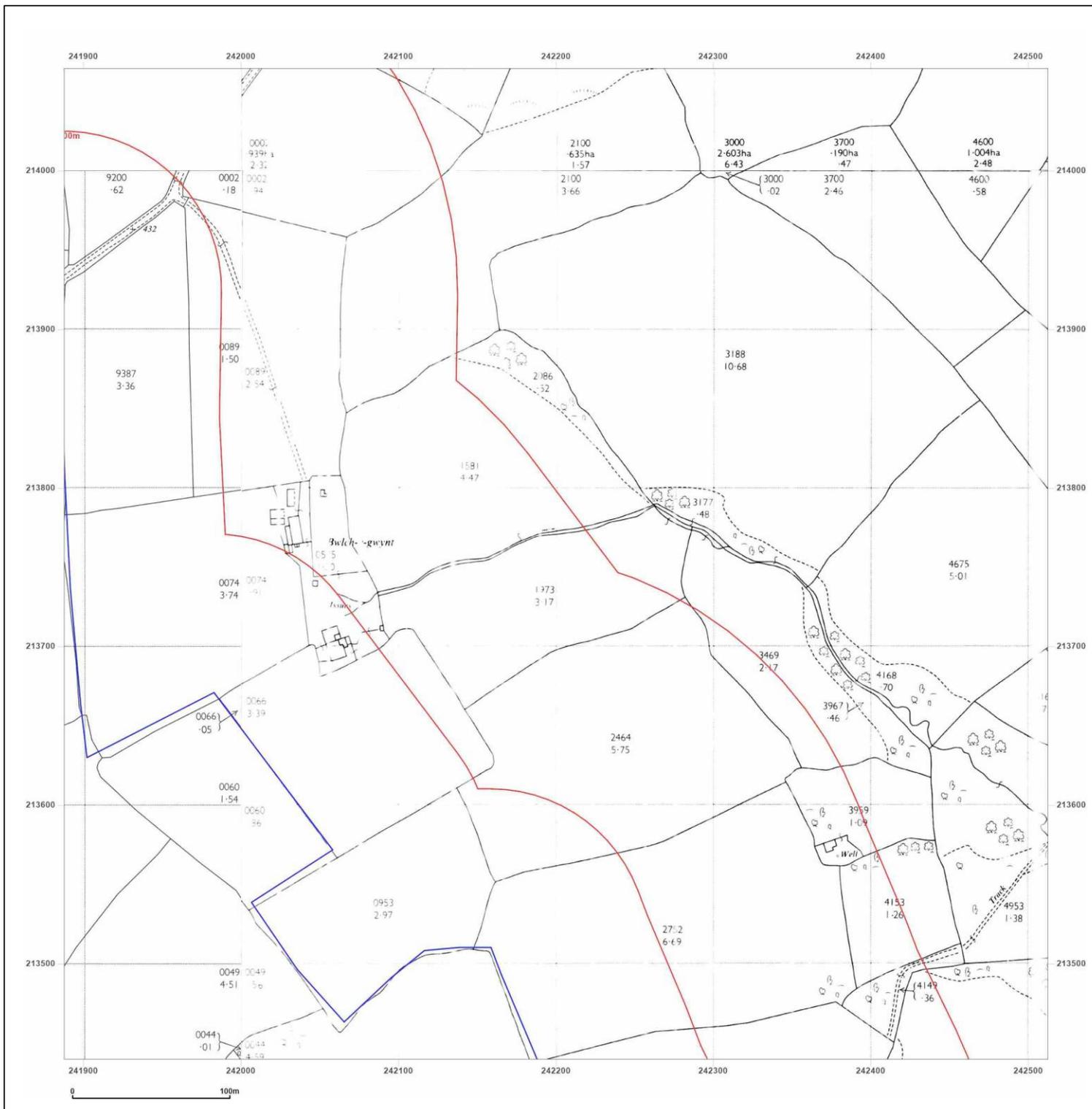


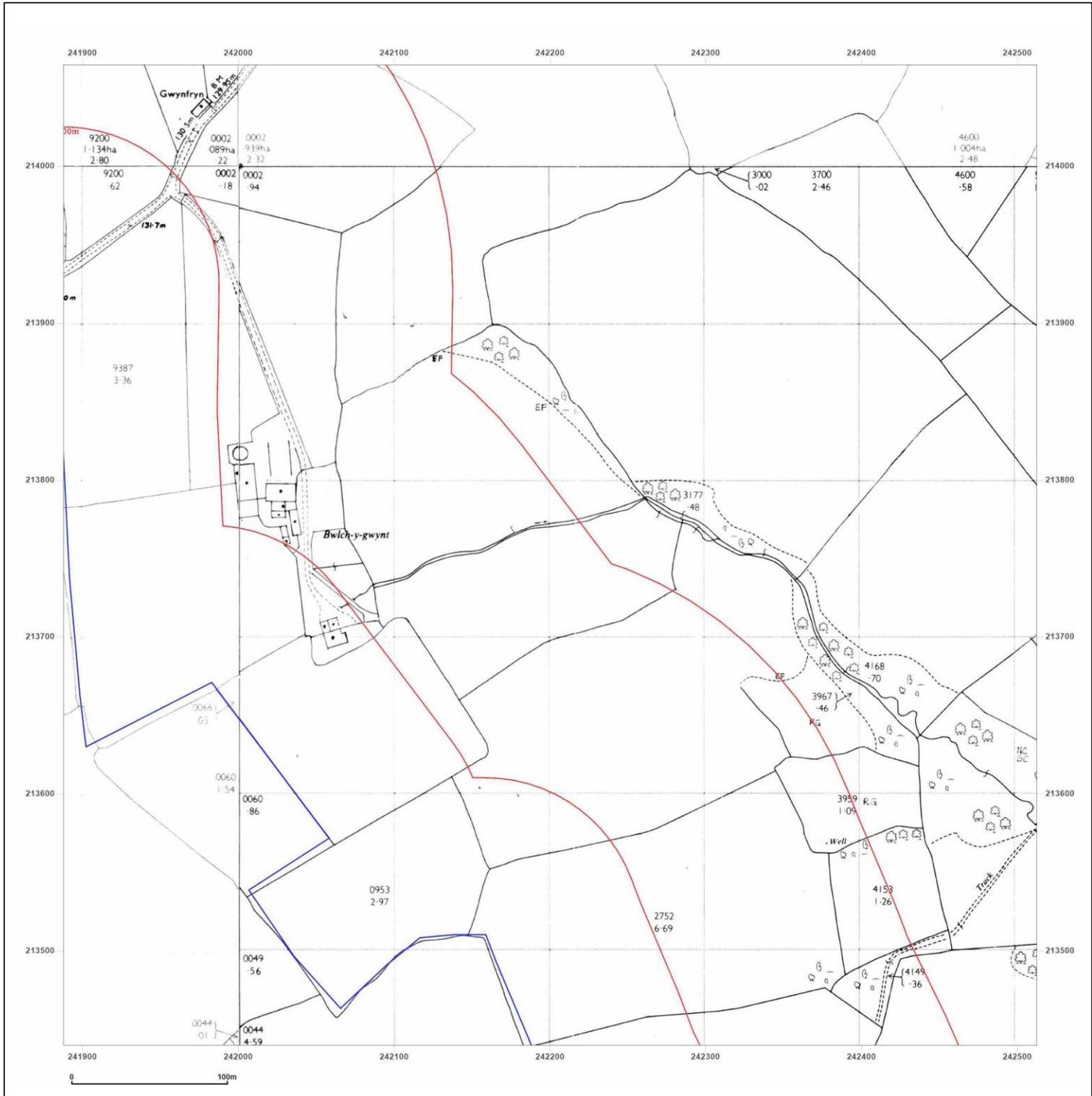
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Surveyed 1990 Revised 1990 Edition N/A Copyright 1990 Levelled N/A	Surveyed 1990 Revised 1990 Edition N/A Copyright 1990 Levelled N/A



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Client Ref: EPL022853_
 Report Ref: HMD-PMH-L7X-TS6-IOR_LS_2_2
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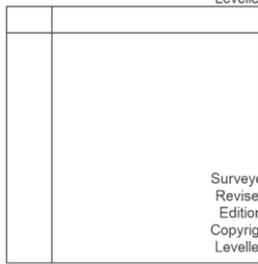
Map Name: National Grid

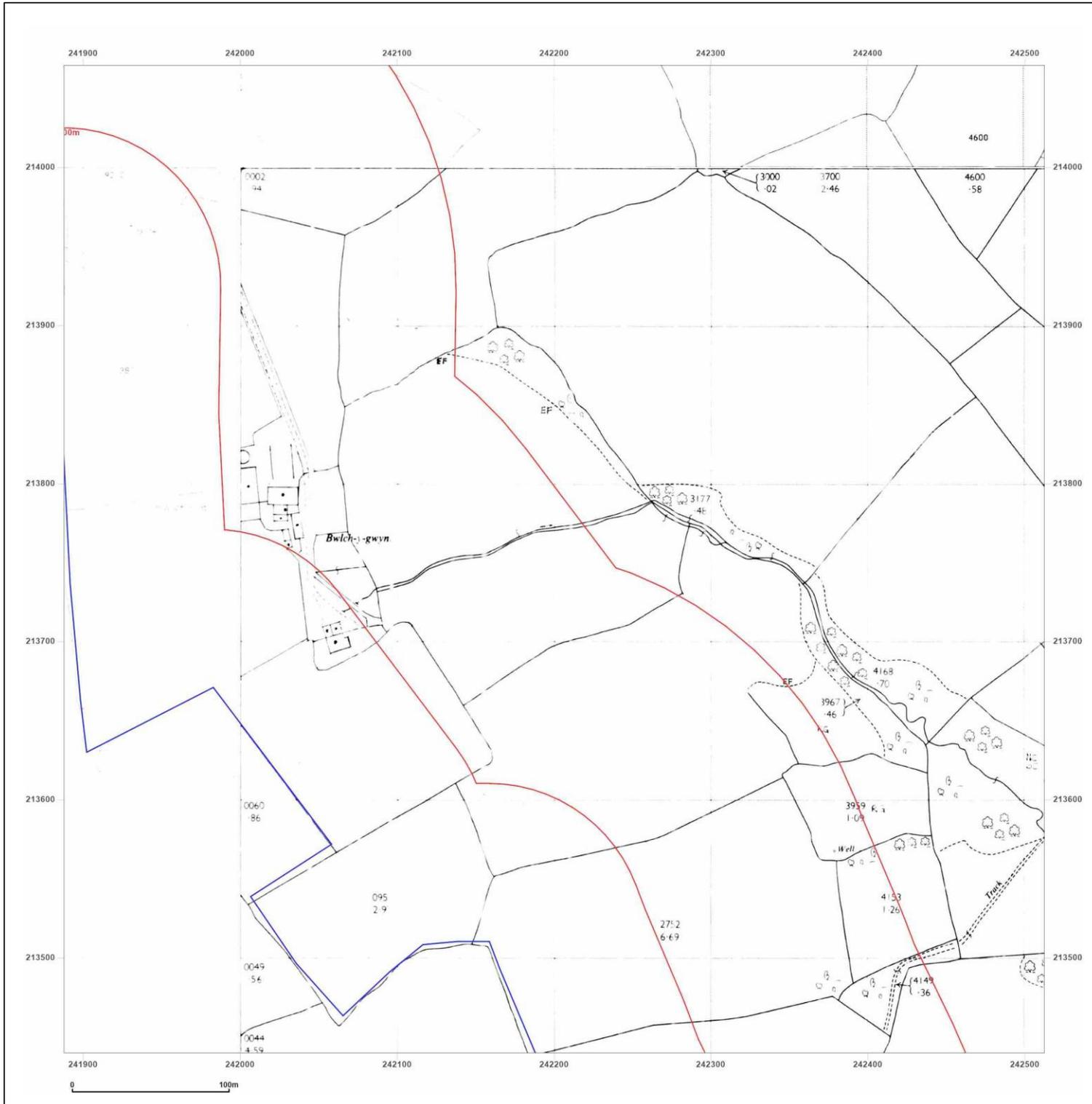
Map date: 1990-1995

Scale: 1:2,500

Printed at: 1:2,500



<p>Surveyed N/A Revised N/A Edition N/A Copyright 1995 Levelled N/A</p>		<p>Surveyed N/A Revised N/A Edition N/A Copyright N/A Levelled N/A</p>
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Site Details:

241853,213448

Client Ref: EPL022853_
 Report Ref: HMD-PMH-L7X-TS6-IOR
 Grid Ref: 241888, 213440

Map Name: County Series

Map date: 1887

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1887 Revised 1887 Edition N/A Copyright N/A Levelled N/A		Surveyed 1887 Revised 1887 Edition N/A Copyright N/A Levelled N/A
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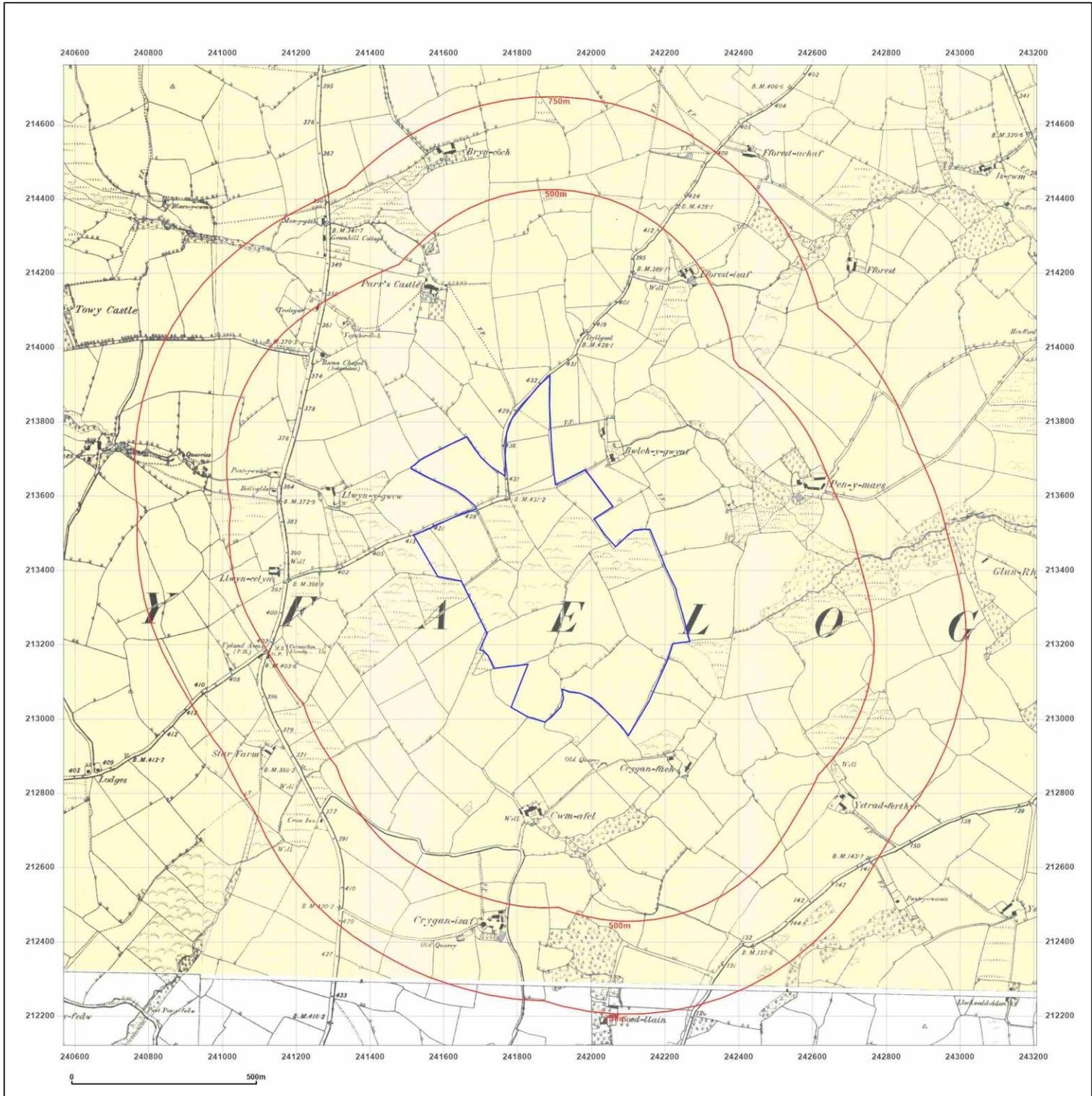


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Site Details:

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Client Ref: EPL022853_
 Report Ref: HMD-PMH-L7X-TS6-IOR
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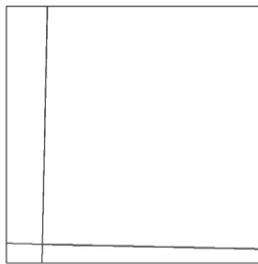
Map Name: County Series

Map date: 1946-1948

Scale: 1:10,560

Printed at: 1:10,560



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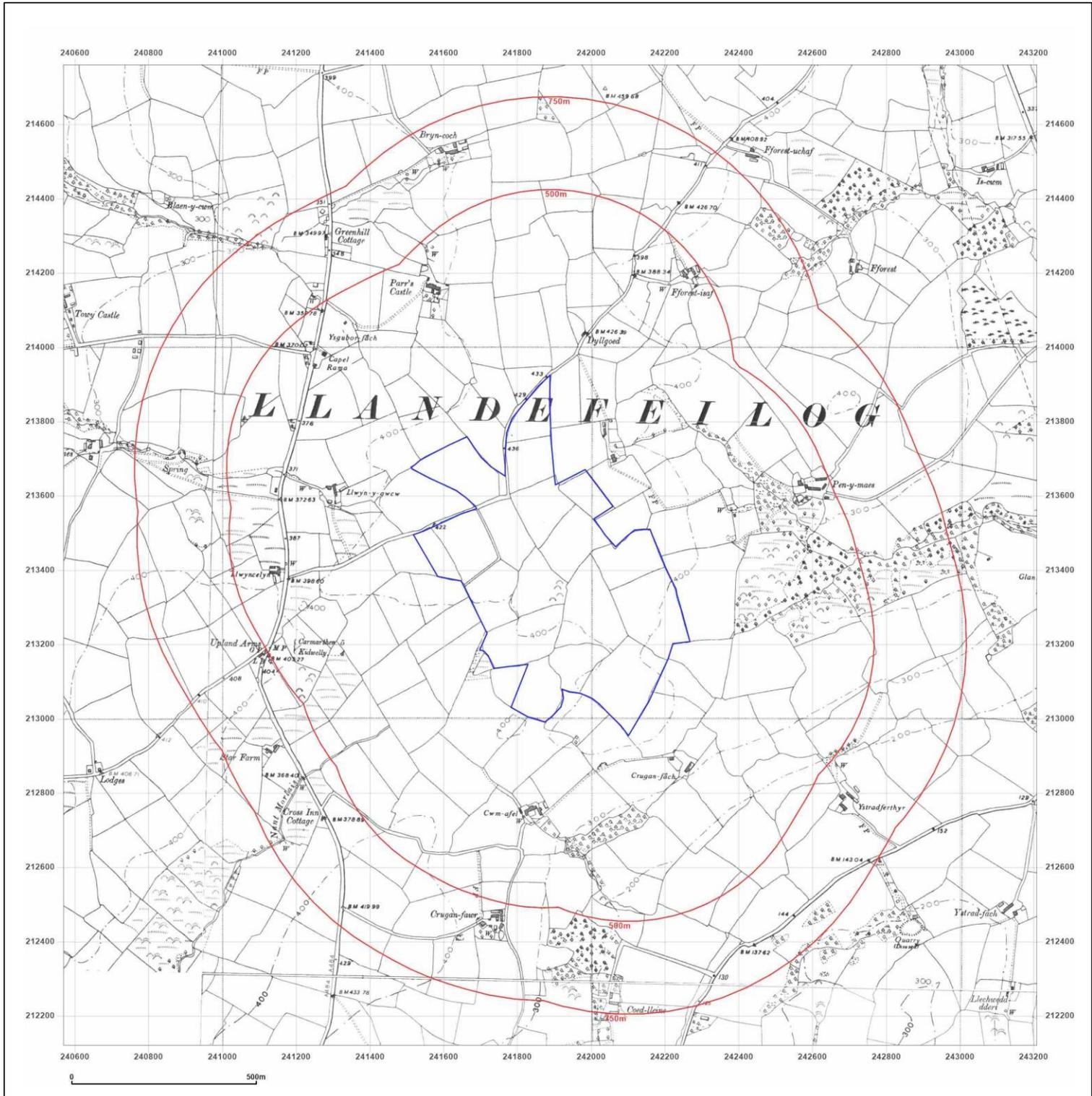


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Client Ref: EPL022853_
 Report Ref: HMD-PMH-L7X-TS6-IOR
 Grid Ref: 241888, 213440

Map Name: Provisional

Map date: 1964

Scale: 1:10,560

Printed at: 1:10,560



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

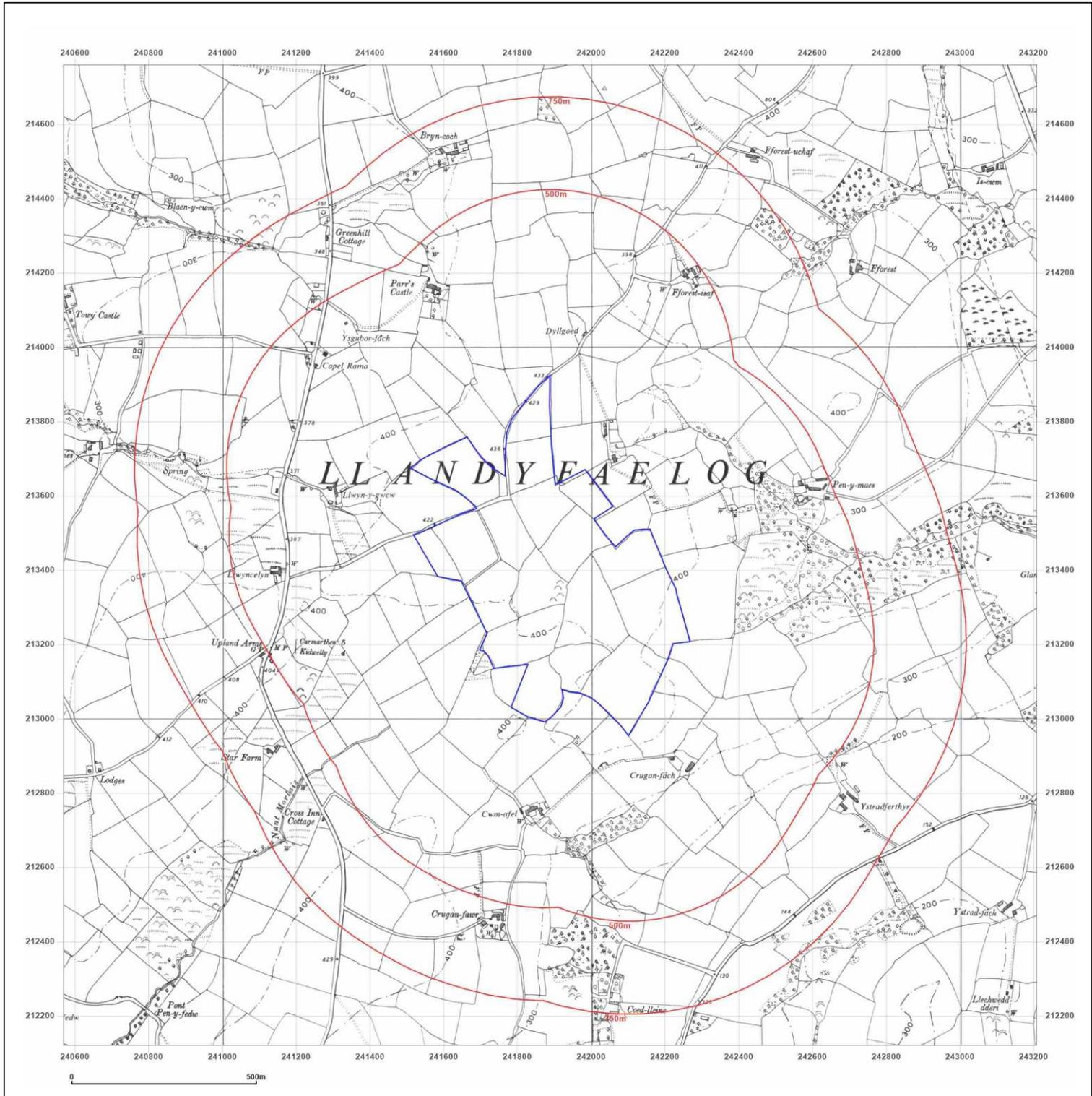


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Site Details:

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Client Ref: EPL022853_
 Report Ref: HMD-PMH-L7X-TS6-IOR
 Grid Ref: 241888, 213440

Map Name: National Grid

Map date: 1972

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1971
 Revised 1972
 Edition N/A
 Copyright 1972
 Levelled 1964

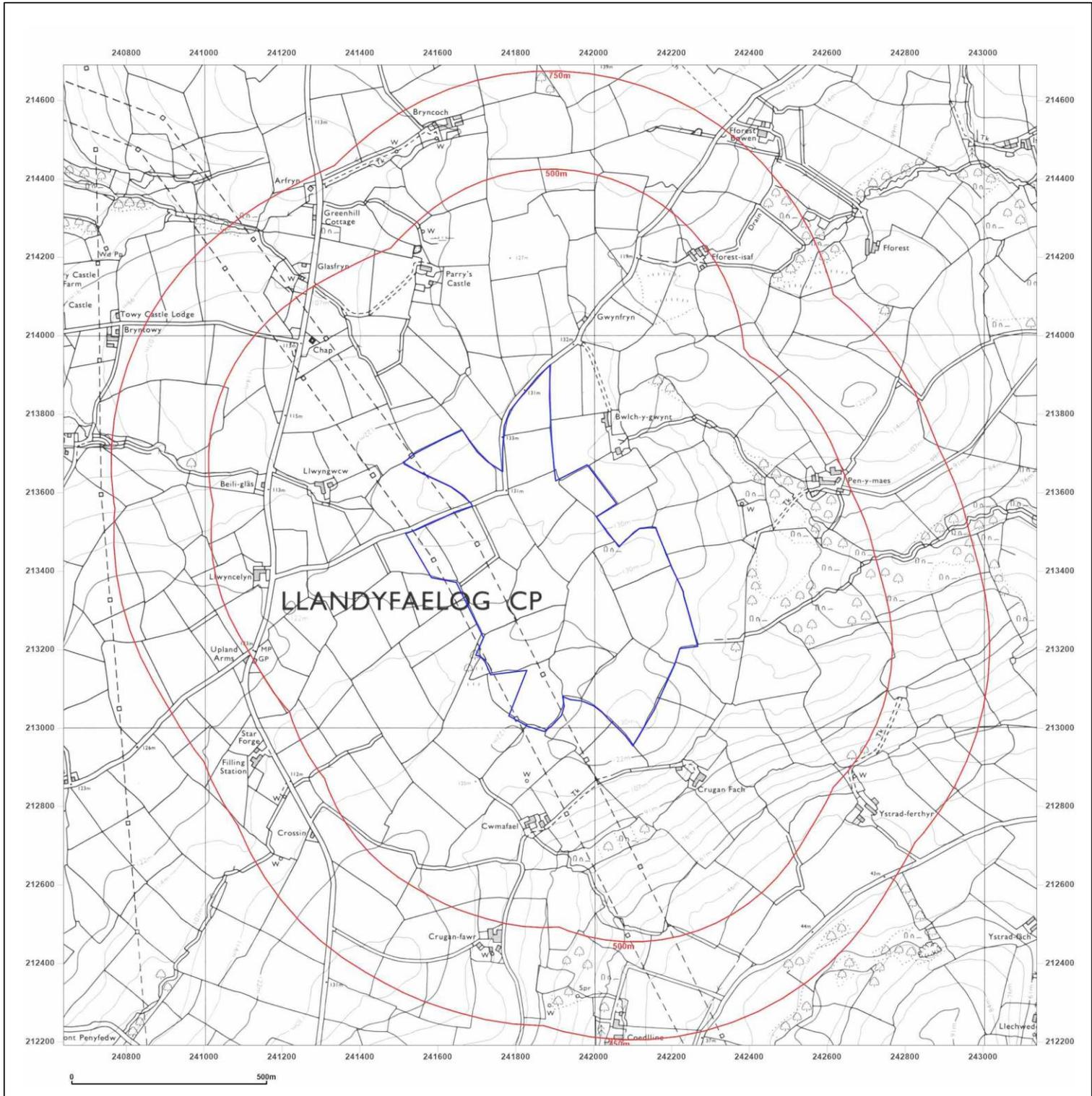


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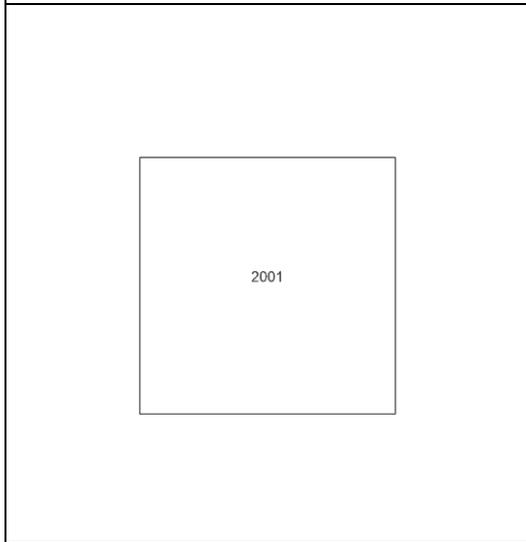
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 Grid Ref: 241888, 213440

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000

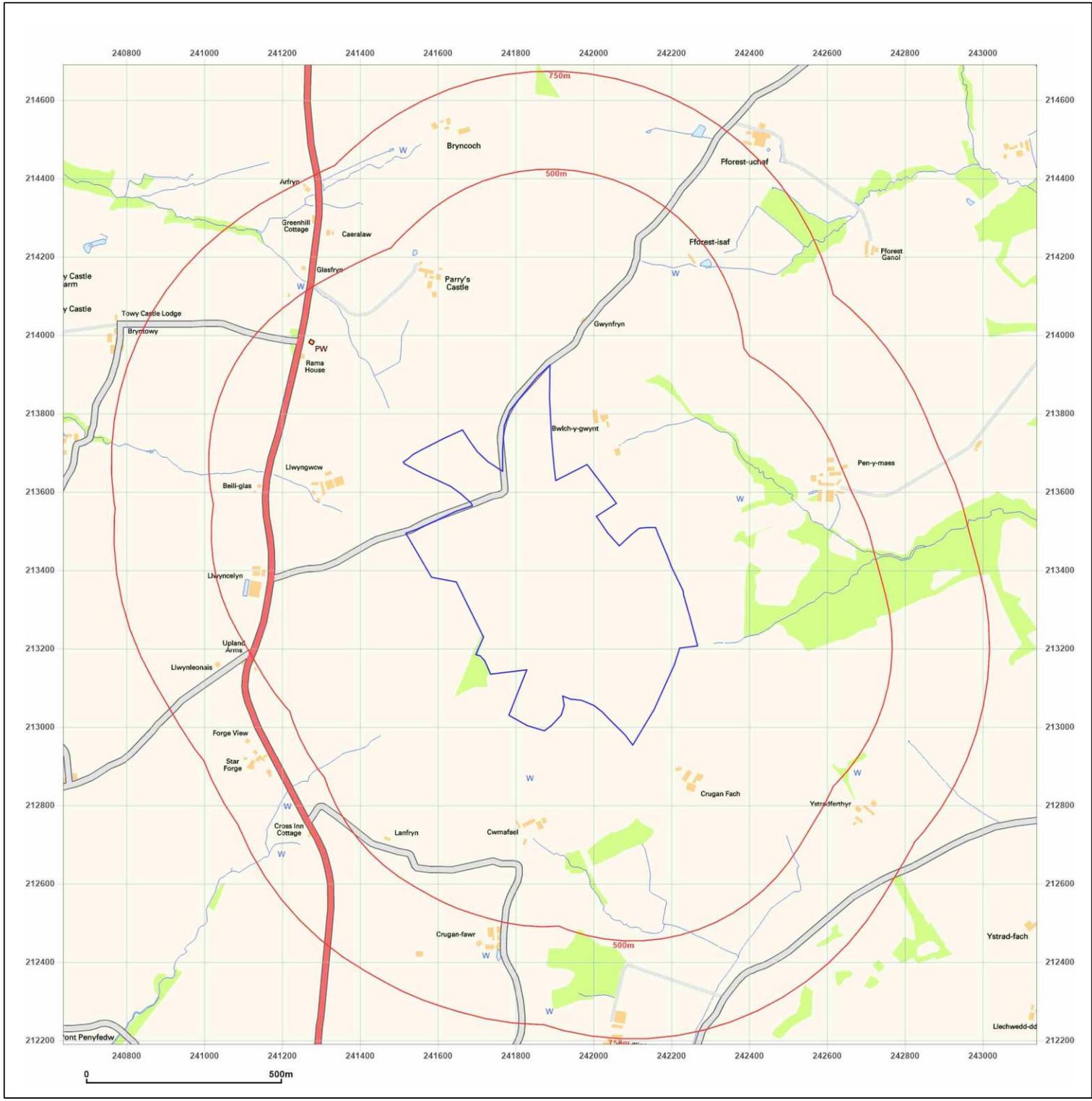


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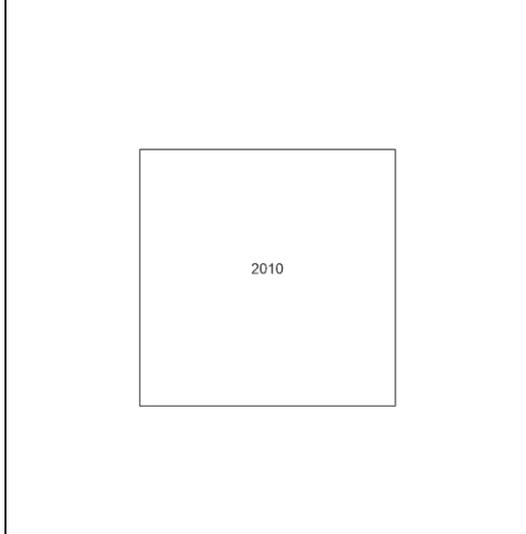
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Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000

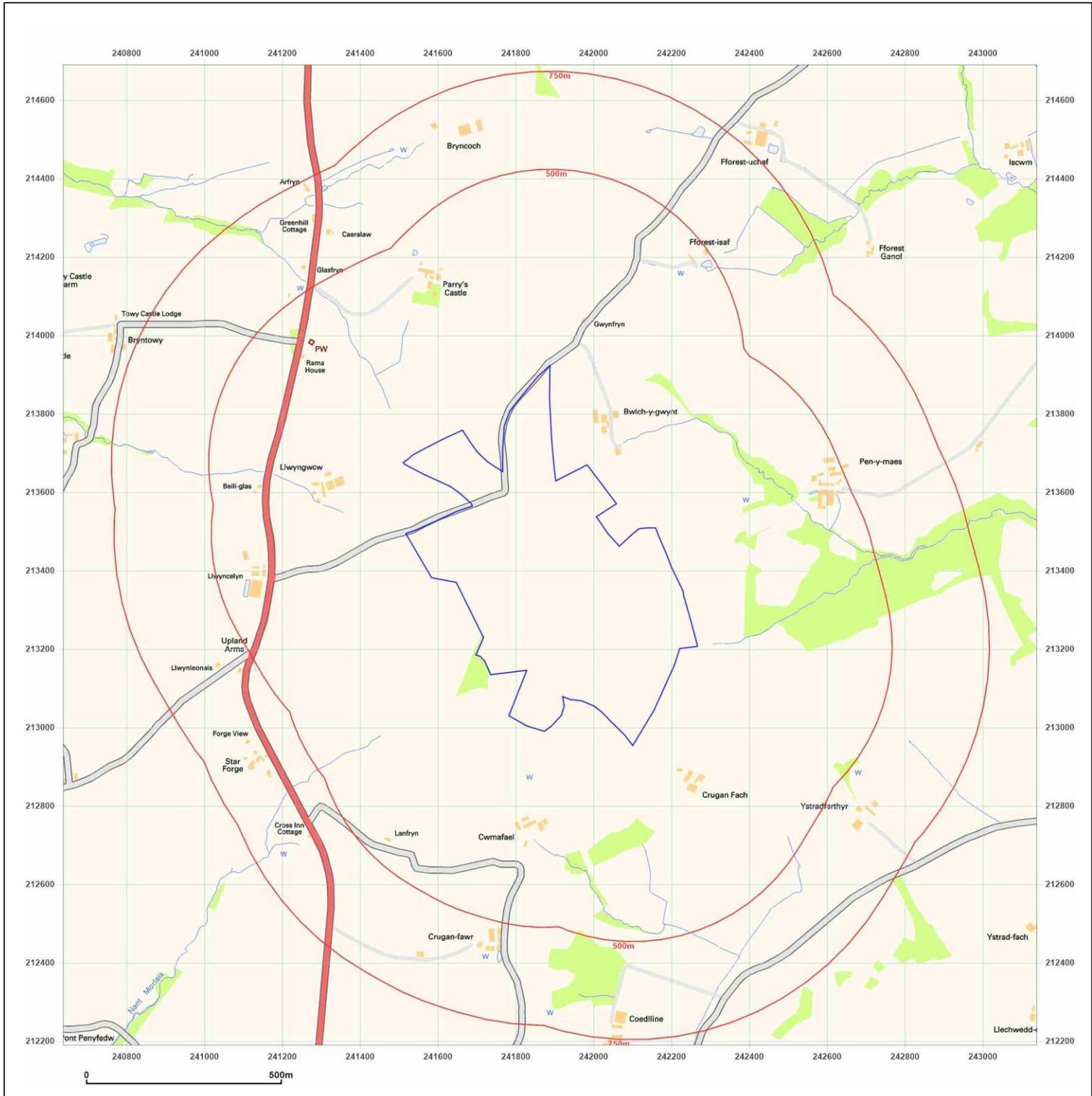


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241853,213448

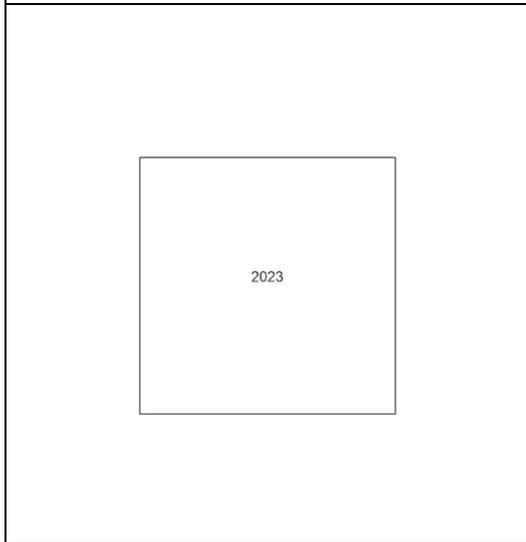
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 Report Ref: HMD-PMH-L7X-TS6-IOR
 Grid Ref: 241888, 213440

Map Name: National Grid

Map date: 2023

Scale: 1:10,000

Printed at: 1:10,000

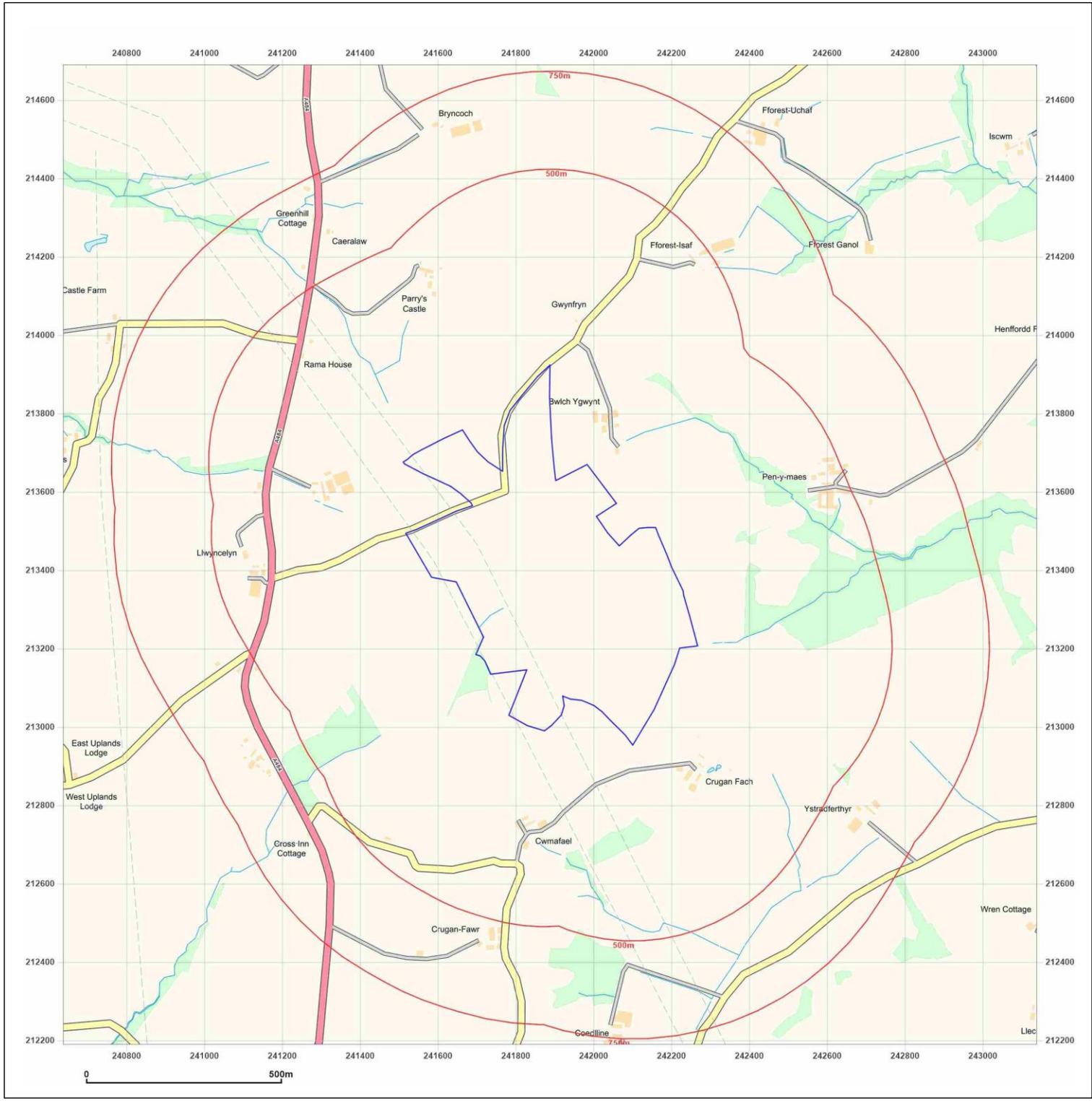


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Appendix E Risk Estimation Table

Receptor	Receptor Sensitivity ('0' if not present)	Pathway	Present (Y=1, N=0)	EPH & Solvents	PAHs	Inorganics and Metals	Asbestos	Biocides	Permanent Gases	Consequence	Probability/Likelihood	Estimated Risk
Human Health - On-Site Current Users	4	Ingestion of fruit or vegetable leaf or roots	1	6	6	6	x	6	x	Mild	Unlikely	Very Low
		Ingestion of contaminated drinking water	0	6	6	x	x	6	x	N/A	N/A	N/A
		Ingestion of water / sediments when swimming	0	6	6	6	6	6	x	N/A	N/A	N/A
		Ingestion of soil/dust indoors	1	6	6	6	6	6	x	Mild	Unlikely	Very Low
		Ingestion of soil/dust outdoors	1	6	6	6	6	6	x	Mild	Unlikely	Very Low
		Inhalation of particles (dust / soil) indoor and outdoor	1	6	6	6	6	6	x	Mild	Unlikely	Very Low
		Inhalation of vapours/gases - outdoor	1	6	x	x	x	x	6	Mild	Unlikely	Very Low
		Inhalation of vapours/gases - indoor	1	6	x	x	x	x	6	Mild	Unlikely	Very Low
		Dermal absorption via direct contact with soil	1	6	6	6	6	6	x	Mild	Unlikely	Very Low
		Dermal absorption via waters (swimming / showering)	0	6	6	6	6	6	x	N/A	N/A	N/A
Human Health On-Site Future User	N/A	Ingestion of fruit or vegetable leaf or roots	0	6	6	6	x	6	x	N/A	N/A	N/A
		Ingestion of contaminated drinking water	0	6	6	x	x	6	x	N/A	N/A	N/A
		Ingestion of water / sediments when swimming	0	6	6	x	x	6	x	N/A	N/A	N/A
		Ingestion of soil/dust indoors	0	6	6	6	6	6	x	N/A	N/A	N/A
		Ingestion of soil/dust outdoors	0	6	6	6	6	6	x	N/A	N/A	N/A
		Inhalation of particles (dust / soil) indoor and outdoor	0	6	6	6	6	6	x	N/A	N/A	N/A
		Inhalation of vapours - outdoor	0	6	x	x	x	x	6	N/A	N/A	N/A
		Inhalation of vapours - indoor	0	6	x	x	x	x	6	N/A	N/A	N/A
		Dermal absorption via direct contact with soil	0	6	6	6	6	6	x	N/A	N/A	N/A
		Dermal absorption via waters (swimming / showering)	0	6	6	6	6	6	x	N/A	N/A	N/A
Human Health - Neighbours	5	Ingestion of fruit or vegetable leaf or roots	1	6	6	6	x	6	x	Medium	Unlikely	Low
		Ingestion of contaminated drinking water	0	6	6	x	x	6	x	N/A	N/A	N/A
		Ingestion of water / sediments when swimming	0	6	6	x	x	6	x	N/A	N/A	N/A
		Ingestion of soil/dust indoors	1	6	6	6	6	6	x	Medium	Unlikely	Low
		Ingestion of soil/dust outdoors	1	6	6	6	6	6	x	Medium	Unlikely	Low
		Inhalation of particles (dust / soil) indoor and outdoor	1	6	6	6	6	6	x	Medium	Unlikely	Low
		Inhalation of vapours - outdoor	1	6	x	x	x	x	6	Medium	Unlikely	Low
		Inhalation of vapours - indoor	1	6	x	x	x	x	6	Medium	Unlikely	Low
		Dermal absorption via direct contact with soil	0	6	6	6	6	6	x	N/A	N/A	N/A
		Dermal absorption via waters (swimming / showering)	0	6	6	6	6	6	x	N/A	N/A	N/A
Human Health - Construction/Maintenance Workers	4	Ingestion of soil/dust indoors	1	6	6	6	6	6	x	Mild	Unlikely	Very Low
		Ingestion of soil/dust outdoors	1	6	6	6	6	6	x	Mild	Unlikely	Very Low
		Inhalation of particles (dust / soil) outdoor	1	6	6	6	6	6	x	Mild	Unlikely	Very Low
		Inhalation of vapours - outdoor	1	6	x	x	x	x	6	Mild	Unlikely	Very Low
		Inhalation of vapours - indoor	1	6	x	x	x	x	6	Mild	Unlikely	Very Low
		Dermal absorption via direct contact with soil	1	6	6	6	6	6	x	Mild	Unlikely	Very Low
		Dermal absorption via waters (swimming / showering)	0	6	6	6	6	6	x	N/A	N/A	N/A
Groundwater (Shallow)	2	Leaching	1	6	6	6	x	6	x	Minor	Unlikely	Very Low
		Migration via natural or anthropogenic	1	6	6	6	x	6	x	Minor	Unlikely	Very Low
Groundwater (Deep)	0	Leaching	0	6	6	6	x	6	x	N/A	N/A	N/A
		Migration via natural or anthropogenic	0	6	6	6	x	6	x	N/A	N/A	N/A
Surface Water	0	Direct runoff or discharges from pipes	0	6	6	6	6	6	x	N/A	N/A	N/A
		Indirect via recharge from groundwater (hydraulic flow)	0	6	6	6	6	6	x	N/A	N/A	N/A
		Deposition of wind blown dust	0	6	6	6	6	6	x	N/A	N/A	N/A
Property - Buildings	0	Direct contact	0	6	6	6	x	x	x	N/A	N/A	N/A
		Explosion due to gas migration via natural / anthropogenic	0	6	x	x	x	x	6	N/A	N/A	N/A
Ecological Systems	0	Direct deposition of particles / dust - wind blown or flood	0	6	6	6	6	6	x	N/A	N/A	N/A
		Indirect - through watering	0	6	6	6	x	6	6	N/A	N/A	N/A
		Inhalation of gases/vapours or particulates/dust by animals	0	6	6	6	6	6	6	N/A	N/A	N/A
		Ingestion of of vegetation / water / soil by animals	0	6	6	6	6	6	x	N/A	N/A	N/A
Property - Animal/Crop	0	Direct (including deposition via wind or flood)	0	6	6	6	6	6	x	N/A	N/A	N/A
		Indirect (through watering)	0	6	6	6	x	6	x	N/A	N/A	N/A
		Inhalation of gas / vapour / particulates / dust by animals	0	6	6	6	6	6	6	N/A	N/A	N/A
		Ingestion of vegetation / water / soil by animals	0	6	6	6	6	6	x	N/A	N/A	N/A

Risk estimation establishes the magnitude and probability of the possible consequences (what degree of harm might result and how likely). The criteria for classifying probability and consequence are set out in Tables 4 and 5 of the Stantec methodology. Green text highlights one or more elements of the Pollutant Linkage are missing and therefore eliminated

EPH = Extractable hydrocarbons
PAHs = Poly Aromatic Hydrocarbons
Note For Metals there is an Inhalation pathway if Mercury is present
Note for PAHs there are Inhalation and/or Solubility pathways for some eg Naphthalene

	Client	National Grid	Llandyfaelog - South Wales Substation TABLE SUMMARISING POLLUTANT LINKAGES AND RISK ESTIMATION				Date	06/11/2025
							A3 Scale	NTS
						Drawn By	NC	
						Checked By	VKR	
Caversham Bridge House, Waterman Place, Reading, RG1 8DN Tel 0118 950 0761 Fax 0118 959 7499		HAZARD CLASSIFICATION	2					