

Phase I Geoenvironmental Site Assessment

Site: Tupa, Penley
Reference: 17-510-R1
Date: March 24





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QUALITY ASSURANCE

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EXECUTIVE SUMMARY

Site Address	Land off Penley Hall Drive, Penley, Wrexham, LL13 0JP
Grid Reference	E 341796, N 340177
Site Area	0.99 Ha.
Proposed Development	Fisher German LLP intends to construct a low-rise residential development comprising nine dwellings with associated gardens, estate roads and infrastructure.
Current Site Use	The subject site is an irregular-shaped parcel of land that can be accessed via a single-track lane off Winston Way. A single-storey brick structure with a potential ACM cement sheet roof is located in the centre of the site. This structure is formed of two elongated wings connected by a narrow brick corridor in the centre. No other structures have been noted onsite. Vehicular access to the site can be gained via a field gate that is located on the northwestern boundary of the site. This can be accessed via a single-track lane to the north Winston Way. There is no current pedestrian access to the site with all gates being overgrown. Scrub vegetation is present across the site with several sporadic semi-mature and mature trees also observed. The northeast corner of the site is overgrown with dense woodland. Localised areas of the south, west and east of the site are also overgrown. The presence of dense vegetation was a constraint to the ground investigation. No surface water features are noted on site; however, surface water pooling and boggy ground have been noted in the southern sector of the site. The building on site has a cement-bound corrugated roof. Due to the age of the structure, the noted cement sheeting and other building fabrics may comprise asbestos-containing material.
Site History	An examination of the relevant historical Ordnance Survey maps circa 1873 shows that the site comprised undeveloped land that formed part of the wider Penley Hall estate. Several trees are noted across the site and a pond is noted in the southern sector of the site. The pond is an elongated water body that extends off the southern boundary to the east. By 1954, the large pond located in the southern sector of the site had been infilled and was no longer mapped. During this time period several small rectangular structures have been constructed, along with the construction of roads and footpaths in the west of the site. These are believed to form part of a Polish Hospital that is mapped to the west of the site. Through to the 1990s buildings across the site have been constructed and then subsequently removed, along with a tennis court in the southeastern sector of the site. During the early 2000s through to the present day, the site has been left abandoned and the site has become heavily overgrown.



ENVIRONMENTAL SETTING

Geology	Drift Geology	Glacial Till - DIAMICTON
	Bedrock Geology	Helsby Sandstone Formation - SANDSTONE, Gravelly
	Faults	No geological faults have been recorded in close proximity to the site.
Geomorphology	Based on the initial geological assessment, a review of available topographic data and pertinent mapping, E3P has undertaken a preliminary geomorphological evaluation of the landform and its possible mechanism for formation. The site is relatively flat with localised drainage ditches. Due to the historical development of the site, limited levelling has likely been carried out on site. A pond on the south side of the site had been infilled pre-1974. A drainage ditch is located on the east side of the site, likely excavated during development.	
Hydrogeology	A Secondary (undifferentiated) Aquifer has been recorded on site in the drift geology with a Principal Aquifer in the bedrock geology. No groundwater abstraction licences are recorded within 1 km of the site.	
Hydrology	A small pond is located roughly 20 m to the northeast of the site. The majority of the site is listed within Flood Risk Zone 1 and is seen to be at low risk of flooding. It should be noted that in the northwestern sector of the site, there is an isolated pocket of the site that is noted to be in Flood Risk Zone 3 and the southern sector of the site an isolated pocket is noted to be in Flood Risk Zone 2.	
Utility Locations	A formal drainage survey has not been completed; however, a utility inspection chamber was identified in the centre of the site, and it is likely that further infrastructure is present leading to the former hospital building.	
Landfill Sites and Waste Sites	No landfill sites (current or historic) are located within 250 m of the Site. In the southern sector of the site, there is an infilled pond, and in this area, there is the potential for Made Ground infill as well as organic-rich alluvium deposits to be present. Made Ground deposits may produce hazardous ground gases such as methane and carbon dioxide.	
Radon	Radon Class 1 - less than 1% of homes are estimated to be at or above the Action Level. No radon protection measures are required.	
Unexploded Ordnance	Low risk UXO area - no further works required.	
PFAS	No potential current or historical sources of PFAS have been identified on site. No further risk assessment required.	
Hazardous Installations	No hazardous installations that could potentially prejudice the proposed construction of highly sensitive residential dwellings have been identified within influencing distance of the subject site.	



PRELIMINARY CONTAMINATED LAND ASSESSMENT

Human Health	Made Ground associated with infilled features and historical developments may be present across the site. This Made Ground is a potential source of heavy metals, Polycyclic Aromatic Hydrocarbons (PAHs), Asbestos, Ground gas and VOCs associated with pesticides. Construction workers and site end users may come into contact with potential contamination via dermal contact and ingestion, consumption of homegrown produce, inhalation of particulate and inhalation of gas.
Controlled Waters	The site is likely underlain by low-permeability clay that will afford protection to the underlying principal aquifer. However, while clay soil will mitigate subsurface migration of potential contaminants a construction water management plan will be required to protect ponds and ditches during construction works from both impacted soil and perched groundwater and from suspended solids.
Ground Gas	No landfill sites (current or historic) are located within 250 m of the site. The site has undergone some ground working with Made Ground and potential organic-rich deposits that may produce hazardous ground gases such as methane and carbon dioxide.

PRELIMINARY COAL MINING ASSESSMENT

Coal Mining/Land Stability	The site is not located within a Coal Authority mining reporting area – Low risk from coal mining related hazards.
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PRELIMINARY GEOTECHNICAL ASSESSMENT

Initial Geotechnical Assessment	Limited Made Ground fill deposits and obstructions are anticipated. Existing buildings will require demolition, with all relict foundations grubbing out before the proposed development's construction. A historical infilled pond is located in the south of the site, which is a potential source of alluvial deposits, silts and possible organic peat deposits, and potential depths of Made Ground.
Brine Workings	The site is not located within an area affected by brine workings.
Civil and Structural	Further assessment of the site will be required to determine to presence of any infilled ponds and hedges and to assess the underlying Glacial Till (clay) for effects related to moisture variation due to trees. Given the entire site is underlain by Glacial Till, soakaway drainage is unlikely to be feasible.
Abnormal Foundations	Abnormal foundations may be required in areas of soft clay and where deeper Made Ground is present. Deeper foundations may also be needed in areas of tree influence.

RECOMMENDATIONS

Further detailed intrusive ground investigation will be required to confirm the findings of the initial Conceptual Site Model and provide data for foundation and highways design so that a value-engineered development solution can be determined.



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Drawing List

17-510-R1-001 - Site Location Plan
17-510-R1-002 - Proposed Development Plan
17-510-R1-003 - Site Features Plan
17-510-R1-004 - Historical Features Plan



1. INTRODUCTION

1.1. BACKGROUND

Fisher German LLP have commissioned E3P on behalf of their client to undertake a Phase I Geoenvironmental Site Assessment at Land off Penley Hall Drive, Penley, Wrexham, LL13 0JP.

This report is required to determine potentially contaminated land and geotechnical liabilities for the proposed site redevelopment.

1.2. PROPOSED DEVELOPMENT

The landowner intends to construct a low-rise residential development comprising nine residential dwellings with associated gardens, estate roads and infrastructure. Drawing 17-510-R1-002 (APPENDIX IV) identifies the proposed development layout.

A snapshot of the proposed development layout is indicated in Figure 1.

Figure 1 **Snapshot of Proposed Development**



1.3. OBJECTIVES AND SCOPE

The objectives of the geoenvironmental investigation are as follows:

- Review historical plans, geology, hydrogeology, site sensitivity, floodplain issues, mining records and any local authority information available to complete a desk study in line with the Environment Agency (EA) document Land Contamination: Risk Management (LCRM) (updated June 2023).



- ✿ Assess the implications of any potential environmental risks, liabilities and development constraints associated with the site concerning the site's future use and in relation to off-site receptors.
- ✿ Assess the desk study information and, where possible, provide preliminary recommendations concerning foundations, pavement construction, general geotechnical issues, floor slabs and coal mining related issues.
- ✿ Provide recommendations regarding future works required.

1.4. SOURCES OF INFORMATION

Background information was sought from the following sources:

- ✿ Groundsure Enviro+Geo Insight Search Reference GS-DLG-KY1-95Y-DLT;
- ✿ Historical mapping dated 1873 to 2024. A selection of historical maps is reproduced in APPENDIX VI;
- ✿ Online planning records held by Wrexham County Borough Council;
- ✿ Consultations with representatives of Wrexham County Borough Council;
- ✿ Magic Map Groundwater Vulnerability Map;
- ✿ Radon: Guidance on protective measures for new buildings (BRE Document BR 211, 2007);
- ✿ British Geological Survey Map;
- ✿ Groundsure IO database;
- ✿ <https://zeticauxo.com/downloads-and-resources/risk-maps/>;
- ✿ <https://flood-map-for-planning.naturalresources.wales/>
- ✿ Search results | Catchment Data Explorer | Catchment Data Explorer

1.5. LIMITATIONS

The limitations of this report are presented in APPENDIX I.

1.6. RISK CLASSIFICATION

The description of risk classification and the likely action required as set out in CIRIA C552 are included in APPENDIX III.

1.7. CONFIDENTIALITY

E3P has prepared this report solely for the use of the client and those parties with whom a warranty agreement has been executed or with whom an assignment has been agreed. Should any third party wish to use or rely upon the report's contents, written approval must be sought from E3P; a charge may be levied against such consent.



2. SITE SETTING

2.1. SITE DETAILS

Table 1 **Site Details**

Site Address	Land off Penley Hall Drive, Penley, Wrexham, LL13 0JP
National Reference	Grid E 341796, N 340177
Site Area	0.99 Ha.
Site Ownership	Privately owned

The Glossary presented in APPENDIX II defines all acronyms used within this report.

A site location map is presented in APPENDIX IV as Drawing 17-510-R1-001.

2.2. CURRENT SITE USE

A site walkover was completed by an E3P representative on 29 February 2024, with the full details included in Table 2.



Table 2 **Site Description**

FEATURE	DESCRIPTION	PHOTOGRAPHIC EVIDENCE
Occupancy/Use	The subject site is an irregular-shaped parcel of land that can be accessed via a single-track lane off Winston Way. The site is currently disused.	
Structures	A single storey brick structure with a potential ACM cement sheet roof is located in the centre of the site. It is formed of two elongated wings connected by a narrow brick corridor in the centre. No other structures have been noted onsite.	
Retaining Structures	None identified.	
Slope	Minor undulations are noted across the site, however, there are no significant slopes.	



FEATURE	DESCRIPTION	PHOTOGRAPHIC EVIDENCE
Access	Vehicular access to the site can be gained via a field gate that is located on the northwestern boundary of the site. This can be accessed via a single-track lane to the north leading from Winston Way. There is no current pedestrian access to the site with all gates being overgrown. Areas of the site, particularly in the east of the site are heavily vegetated and due to the dense vegetation access to this area of the site by plant and drilling rigs will be limited.	 29/02/2024 112° E Tupa, Penley 17-510
Vegetation/Ecology	Scrub vegetation is present across the site with overgrown grasses and shrubbery. Several sporadic semi-mature and mature trees are located across the site. In the northeast corner of the site, significantly overgrown vegetation is present. Dense woodland and localised areas of overgrown vegetation are also located in the south and western parts of the site. A habitat survey will be required to support the planning application.	 29/02/2024 59° NE Tupa, Penley 17-510
Surface Water Features	No surface water features are noted on site; however, surface water pooling and boggy ground has been noted in the southern sector of the site.	 29/02/2024 175° S Tupa, Penley 17-510



FEATURE	DESCRIPTION	PHOTOGRAPHIC EVIDENCE
Hazardous Material Storage	No above-ground storage tanks (ASTs) or underground storage tanks (USTs) were observed during the preliminary site walkover.	
Asbestos-Containing Material (ACM)	The building on-site has cement-bound corrugated roof. Due to the age of the structure, the noted cement sheeting and the building fabric likely contain ACM. ACM material may be present on site due to the demolition of former structures that were previously present. A pre-demolition asbestos survey will be required within all existing buildings within the site boundary.	
Polychlorinated Biphenyls (PCBs)	No equipment that may contain PCBs, such as transformers or electric substations, is identified on the Site.	
PFAS/PFOA	No equipment that may contain PFAS/PFOA has been identified on the site.	
Waste Storage	No hazardous materials storage was observed during the site walkover.	
Drainage	A formal drainage survey has not been completed; however, a utility inspection chamber was identified in the central portion of the site and it is likely that further infrastructure leads to the structures onsite.	



2.3. SURROUNDING AREA

The immediate surrounding area land uses are summarised in Table 3.

Table 3 **Surrounding Land Uses**

DIRECTION	LAND USE
North	Penley Hall Cottage
East	Agricultural land
South	Residential Dwellings
West	Residential Dwellings and Public Open Space



3. SITE HISTORY

3.1. ON-SITE HISTORICAL DEVELOPMENT

A review of historical mapping and historical aerial imagery pertinent to the site is summarised in Table 4. In addition, historical site features are presented in Drawing No 17-510-R1-004 in APPENDIX IV.

Table 4 **Historical Development**

MAP EDITION	HISTORICAL LAND USE	HISTORICAL MAP EXCERPT
1873 1:10,560	The site is undeveloped and noted to form part of land that makes up part of the Penley Hall estate. Several trees are noted across the site and a pond is noted in the southern sector of the site. The pond is an elongated water body that extends off the southern boundary to the east.	

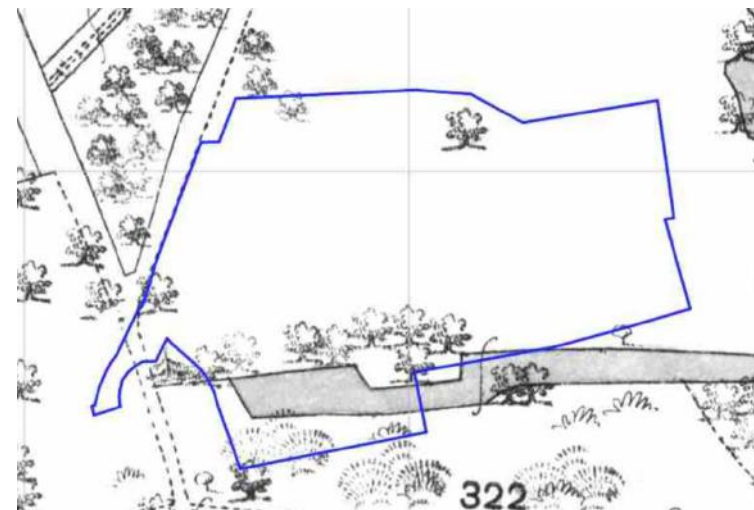


1874

1:2,500

The trees noted in the southern sector of the site appear to form a small woodland area to the north of the onsite pond.

No further changes are noted onsite.



1954

1:10,560

The large pond located in the southern sector of the site is no longer mapped, suggesting that this feature is likely to have been infilled.

Across the site several small rectangular structures have been constructed. These are believed to form part of a Polish Hospital that is mapped to the west of the site.

A road and footpath have been constructed in the west of the site.

No further changes are noted on site.





1974
1:2,500

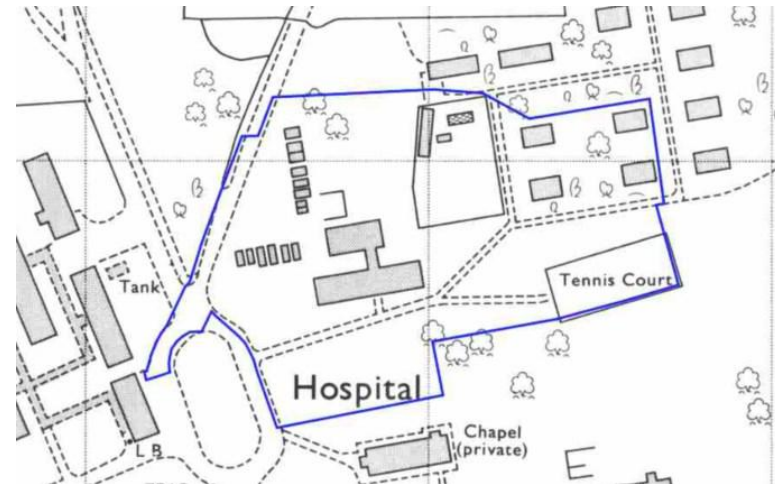
The site is now noted to be a hospital and structures have been erected across the site:

- ✚ Four square structures in the northeast.
- ✚ Several smaller structures in the north and centre of the site.
- ✚ Larger structure in the centre of the site – noted onsite during the walkover.

A tennis court has been added in the southeast corner of the site.

The footpath on-site runs from the eastern boundary, west linking the hospital building with the tennis court and surrounding the four structures on the northeast corner of the site.

No further significant changes were identified.

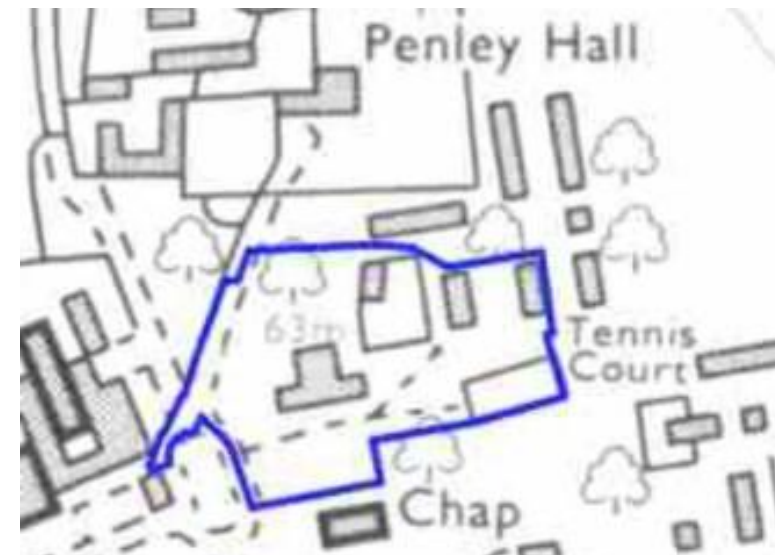


1980
1:10,000

The small structures in the north and centre of the site have been removed and the four structures in the northeast of the site appear to have been extended into two large, elongated buildings.

Trees across the site are no longer mapped, however this is likely due to the scale of the site mapping.

No further significant changes were identified.



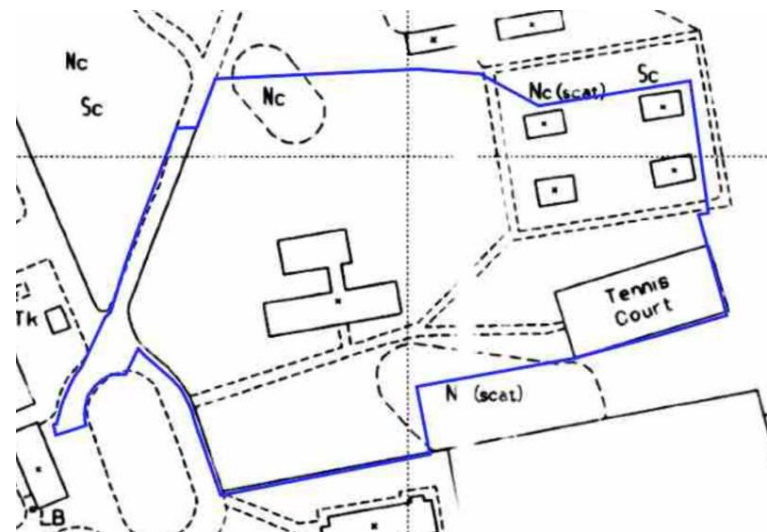


1995
1:2,500

A structure in the north of the site has been removed.

The higher resolution mapping indicates that the structures in the northeast were not extended.

No further significant changes were identified.



2009
Google Earth
Aerial
Imagery

The site is heavily vegetated with mature trees present across the site. There is a small elongated strip of grassland to the north of the disused tennis court and the only structure that is visible onsite is present in the centre of the site.





2024
1:10,000

The four structures located in the northeast corner of the site are no longer present on site and have likely been demolished.

The tennis court located in the southeast corner of the site is no longer present on site.

No further significant changes were identified.





3.2. SUMMARY OF ON-SITE HISTORICAL DEVELOPMENT

The following summary points have been highlighted after a detailed review of the historical mapping series.

- ✳ Multiple historical developments have been carried out on site.
- ✳ A small number of the buildings remain on site.
- ✳ A pond was located on the south side of the site has been infilled.

3.2.1. POTENTIAL HISTORICAL CONTAMINATION ISSUES

- ✳ Made Ground associated with historical developments on site has the potential to contain heavy metals, TPH and PAH in localised areas of the site.
- ✳ Due to the age of the structures that are still present onsite, and observations made during the walkover ACM is likely to have been used as part of the building fabric. As previous structures have been demolished, the presence of ACM within the surrounding Made Ground cannot be discounted.
- ✳ The infilled pond on the south side of the site could contain organic material and Made Ground, with the potential of being a source of volatile organic compounds as well as ground gas in the form of CO₂ and CH₄.

3.2.2. POTENTIAL HISTORICAL GEOTECHNICAL ISSUES

- ✳ The site is likely underlain by Glacial Till, throughout. Given the mature and semi mature trees on site, present and historical, foundation solutions will be required to account for the volume change potential of cohesive ground.
- ✳ Remaining structures on site will require demolition with foundations and obsolete services grubbing out.
- ✳ Localised areas of historical development have the potential to comprise deeper Made Ground deposits.
- ✳ Any Made Ground across the site will be variable in nature, may contain obstructions and will not be suitable as a founding stratum. This may result in the need for an abnormal foundation solution.
- ✳ The infilled pond on the south side of the site could contain alluvial and organic deposits, silt and potential deep Made Ground.



3.3. OFF-SITE HISTORICAL DEVELOPMENT

A review of potentially contaminative uses identified on historical Ordnance Survey maps within a 100 m radius of the Site is summarised in Table 5.

Table 5 Surrounding Historical Development

SURROUNDING FEATURE	DISTANCE	DATES	DIRECTION
Pond (extends onto site) Then: Infilled	0 m	Pre 1873 – Pre 1949 Pre 1949 – Present	East
Tank Then: No Longer Present	10 m	Pre 1974–Pre 2010 Pre 2010–Present	West
Ponds Then: Infilled and replaced with structures associated with the Hospital Then: Single pond present	20-40 m	Pre 1873 – Pre 1974 Pre 1974 – Pre 2001 Pre 2001 – Present	Northeast
Penley Hall	60 m	Pre 1874 – Present	North
Electrical Substation	90 m	Pre 1974 – Present	Southwest
Pond Then: Infilled and replaced with structures associated with the Hospital Then: Penley Hall Industrial Park Then: Housing	95 m	Pre 1874 – Pre 1949 Pre 1949 – Pre 2010 Pre 2010 – Pre 2024 Pre 2024 – Present	Southwest
Pump Then: No longer recorded	95 m	Pre 1899 – Pre 1912 Pre 1912 – Present	Northwest

3.4. ANECDOTAL INFORMATION

According to online records, the site was previously used as one of three Polish Military Hospitals located in Penley.

The site was constructed as United States Army hospital during the Second World War and founded in 1946. The site was built to care for Polish ex-servicemen who fought alongside the Allies during the war. At the peak, during the early 1950s the hospital cared for and housed 2000 patients and staff. The hospital was transferred to the NSH and ran and managed by North East Wales NHS Trust and closed in 2002.

Table 6 Summary of Anecdotal Information

**PLATE 01 –
Penley Hospital**

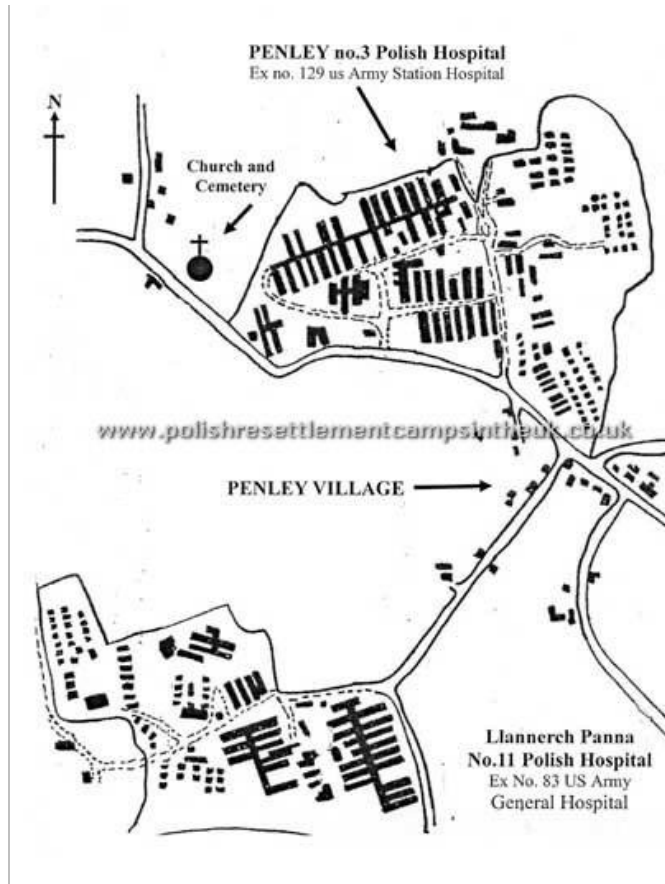
<https://news.wrexham.gov.uk/penley-hospital-the-story-of-a-polish-community-in-wales/>





**PLATE 02 –
Map of Penley Hospital**

<https://www.polishresettlementcampsintheuk.co.uk/penley.htm>





4. ENVIRONMENTAL SETTING

4.1. GEOLOGY

The British Geological Survey (BGS) map (Sheet 121) for the Site (1:50,000, Solid and Drift editions) and online records indicate the area is underlain by the geological sequence presented in Table 7.

Table 7 Summary of Underlying Geology

GEOLOGICAL UNIT	CLASSIFICATION	DESCRIPTION	AQUIFER CLASSIFICATION
Drift	Glacial Till	DIAMICTON	Secondary Undifferentiated Aquifer
Solid	Helsby Sandstone Formation	SANDSTONE, Gravelly	Principal Aquifer

E3P has reviewed online records and there are no freely available borehole records within 200 m of the site boundary. The closest BGS borehole recorded is situated 237 m to the south of the site. Due to the distance from the site this record is not seen to be representative of the onsite geology.

The BGS mapping has not identified no faults within 500m of site.

4.2. HYDROGEOLOGY

The Groundsure report indicates that the Site is not located within a groundwater source protection zone. Furthermore, there are no groundwater/potable abstractions within 1 km of the Site.

4.3. HYDROLOGY

Surface water features within 50 m of the subject site are summarised in Table 9.

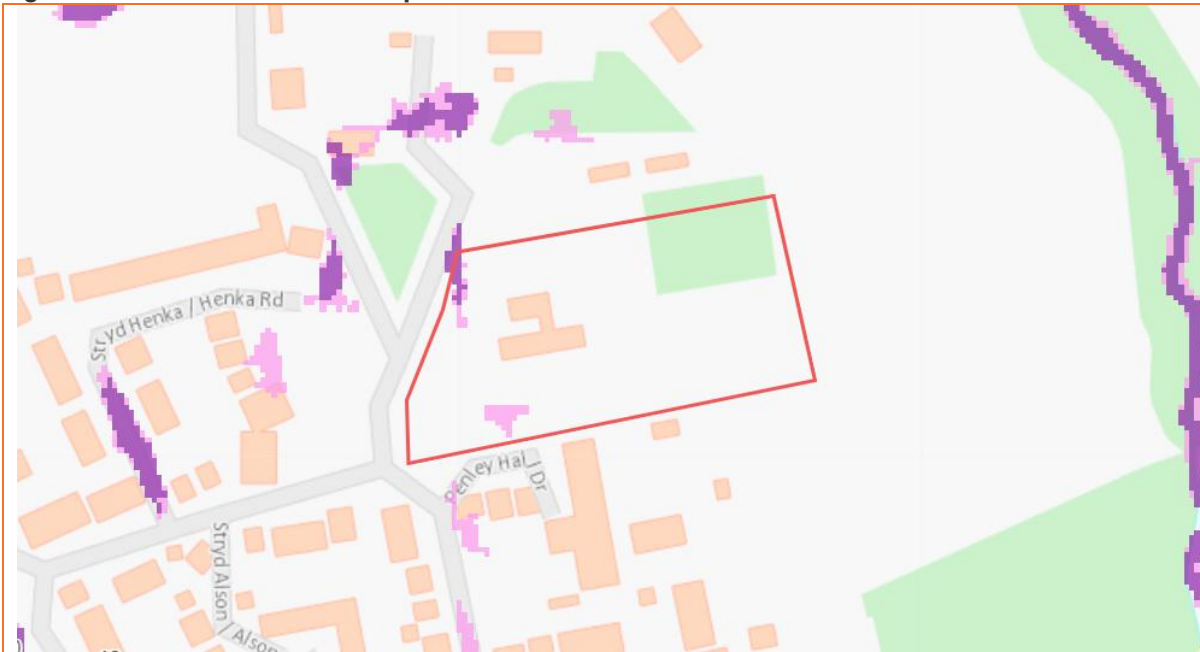
Table 8 Surface Water Features

SURFACE WATER FEATURE	EA CLASSIFICATION	QUALITY	DISTANCE (M)	DIRECTION
Unnamed Pond	N/A	Unknown	20 – 35 m	Northeast

The site is predominantly located within a currently defined “Flood Risk Zone 1”, defined as land assessed as having less than 1 in 1,000 annual probability of river or sea flooding (< 0.1%) and, as such, is considered to be unaffected by river flooding. In the northwestern sector of the site there is an isolated pocket of the site that is noted to be in “Flood Risk Zone 3” and in the southern sector of the site an isolated pocket that is noted to be in “Flood Risk Zone 2”. In addition, the Groundsure report states there is a moderate to high risk for groundwater flooding at the Site. The Environment Agency (EA) Flood Risk Maps for the Site are presented in Figure 2 and Figure 3.

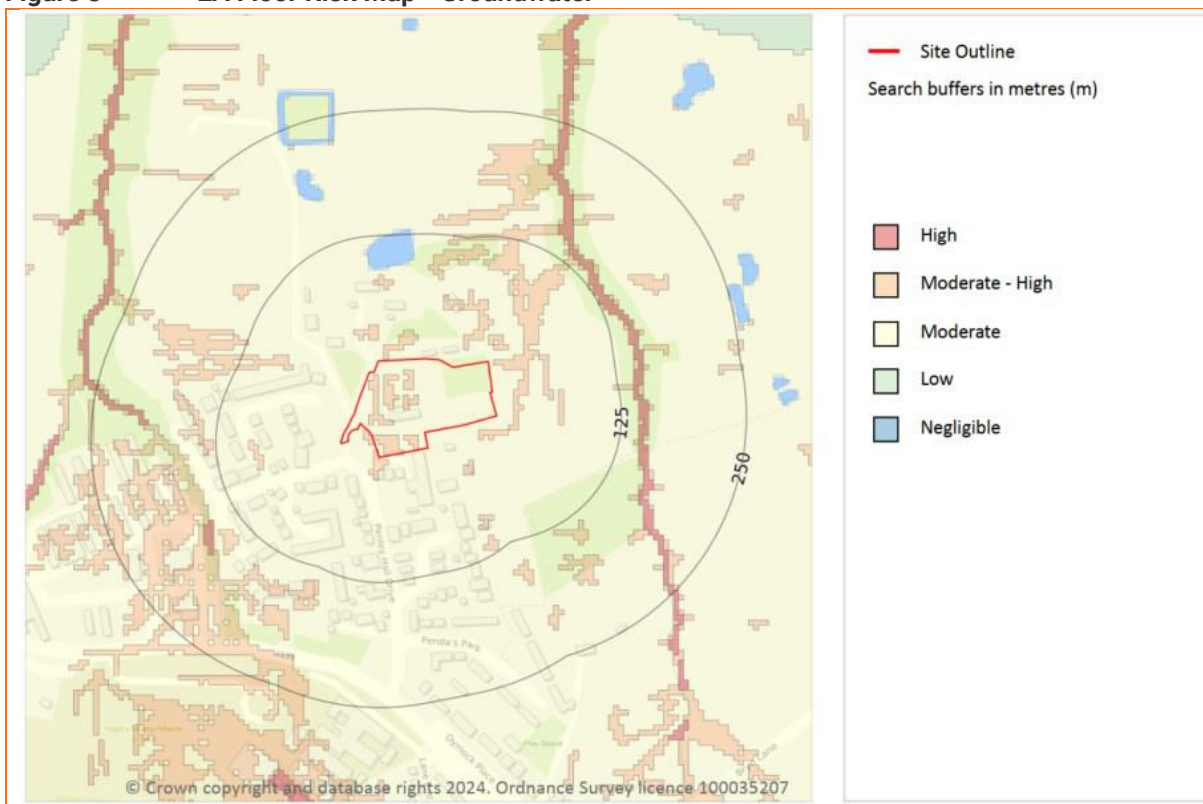


Figure 2 EA Flood Risk Map – Surface Water



Source - <https://flood-map-for-planning.naturalresources.wales/>

Figure 3 EA Floor Risk Map - Groundwater



Source – Groundsure mapping

4.4. RADON RISK POTENTIAL

The Groundsure report indicates the site is situated in an area where less than 1% of homes are above the “Action Level” and that the BGS reports that full radon protective measures are not necessary for the construction of new dwellings or extensions.



4.5. LANDFILL SITES

No landfills are identified within 500 m of the site.

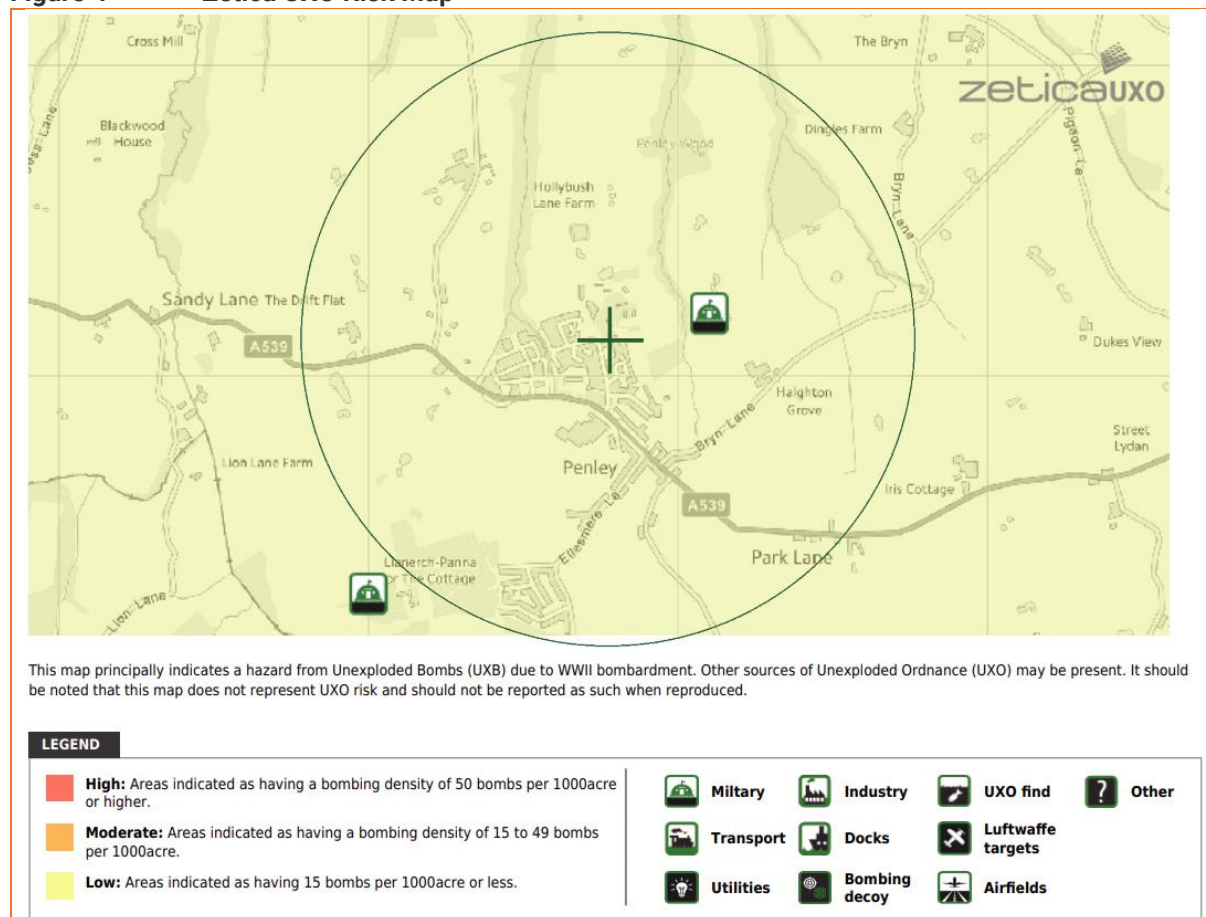
4.6. WASTE MANAGEMENT LICENSES AND ENVIRONMENTAL PERMITS

One waste exemption licence is identified within 250 m from the site relating to the use of waste in construction, 238 m to the southwest of the site.

4.7. UNEXPLODED ORDNANCE

The regional unexploded bomb risk map from Zetica (2014) indicates that the site is in an area at low risk from possible unexploded ordnance (UXO) resulting from the Second World War. The Zetica UXO Risk Map is presented in Figure 4.

Figure 4 Zetica UXO Risk Map



Source - <https://zeticauxo.com/downloads-and-resources/risk-maps/>



4.8. INDUSTRIAL LAND USES

The site is located within a predominantly agricultural and residential area; therefore, there are limited entries within the trade directory for industrial land uses. Two industrial land uses have been identified on site and 24 m southwest of site respectively, both relating to hospitals and regarded as currently inactive.

4.9. SITE SENSITIVITY ASSESSMENT

The site is assessed to be located within a “Low to Moderate” sensitivity setting, as discussed in Table 9.

Table 9 Site Sensitivity Assessment

SENSITIVITY PROFILE	DISCUSSION	RATING
Groundwater Source Protection Zone or Drinking Water Safeguard Zone	The Groundsure report indicates that the site is not located within a groundwater source protection zone.	Low
Distance to the Closest Groundwater Abstraction Point	No groundwater/potable abstractions within 1 km of the Site.	Low
Aquifer Classification in Superficial Drift Deposits	Secondary Undifferentiated Aquifer	Low
Aquifer Classification in Bedrock	Principal Aquifer	High
Is the Site Underlain by Low-Permeability Drift to Depths in Excess of 10 m?	The underlying superficial deposits are likely to comprise low-permeability clay soils which may reduce the potential for mobile phase contaminants to migrate towards the bedrock aquifer or adjacent watercourses. However, this will require confirming through intrusive investigation.	Moderate
Is the Site Located Within 50 m of a Surface Watercourse?	A pond is located roughly 25 m to the northeast of the site boundary.	Moderate
Sensitive Land Uses	None.	Low
Sensitive Ecological Receptors	The site is densely vegetated but statutory ecological sites have been identified with proximity	Moderate
OVERALL SITE ENVIRONMENTAL SENSITIVITY		Low to Moderate



4.10. REGULATORY DATABASE

The information summarised in Table 10 has been obtained from a commercially available environmental database. The summary table only includes records from within 250 m of the subject site and is not otherwise detailed in the report.

Table 10 **Summary of Environmental Data**

RECORD	ENTRIES WITHIN 250 m	DETAILS
Contaminated Land Register Entries and Notices	0	None Identified
Authorised Industrial Processes (IPC/IPPC/LAPPC)	9	Closest relates to electrical repair and servicing, 104 m south of site.
Fuel Stations Entries	0	None Identified
Licensed Radioactive Substances	0	None Identified
Enforcements, Prohibitions or Prosecutions	0	None Identified
Discharge Consents	5	Closest relates to sewage (treated effluent) discharge, 136 m northeast of site.
Pollution Incidents	2	Closest (105 m South) Unknown Pollutant <i>Water Impact: No Details</i> <i>Land Impact: Category 3 (Minor)</i> <i>Air Impact: No Details</i>
Consents Issued Under the Planning (Hazardous Substances) Act 1990	0	None Identified
Control of Major Accident Hazard (COMAH) Sites	0	None Identified



5. PRELIMINARY GEOTECHNICAL ASSESSMENT

5.1. GEOTECHNICAL DATA

Geotechnical data presented within a commercially available environmental database is summarised in Table 11.

Table 11 **Summary of Geotechnical Data**

HAZARD	DESIGNATION
Shrink-Swell Clay	Very low risk
Landslides	Very low risk
Ground Dissolution	Negligible
Compressible Ground	Very low risk
Collapsible Deposits	Very low risk
Running Sand	Very low risk

5.2. ARTIFICIAL LANDFORM AND GEOMORPHOLOGY

Based on the initial geological assessment, a review of available topographic data and pertinent mapping, E3P has undertaken a preliminary geomorphological evaluation of the landform and its possible mechanism for formation.

The site is relatively flat with localised drainage ditches. Due to the historical development of the site, it is likely that limited artificial levelling has been carried out on site. A large pond in the southern sector of the has previously been infilled pre. A drainage ditch is located on the east side of site, likely excavated during development.

5.3. GROUND CAVITIES AND SINK HOLES

Information within the Groundsure Report states the site is within an area of no hazard to very low hazard from rock solubility.

5.4. PRELIMINARY GEOTECHNICAL ASSESSMENT

Based on the desk-study information, the following geotechnical assessment has been made:

- ✳ Given the relatively undeveloped nature of the site, it is likely there will be limited Made Ground fill deposits and obstructions. Existing buildings will require demolition, with all relict foundations grubbing out before the proposed development's construction.
- ✳ A historical infilled pond is located in the south of the site, which is a potential source of alluvial deposits, silts and possible organic peat deposits, and potential depths of Made Ground. An investigation will be required to assess these and undertake in-situ geotechnical testing to determine the potential foundation solution for plots in these areas.
- ✳ The site is likely underlain by Glacial Till, throughout. Given the mature and semi mature trees on site, present and historical, foundation solutions will be required to account for the volume change potential of cohesive ground.



- ✦ Due to the presence semi-mature and mature trees across the site, volumetric cohesive deposits may be present in the northern sector of the site, resulting in the need for heave precautions to be included within the design of foundations. In areas where granular deposits are not present heave precautions will not be required.
- ✦ The site is not hugely undulating, with little topographical variances. Substantial earthworks are not likely to be required to create a level developable platform in these areas of the site.
- ✦ Due to the likely clay underlying the site, soakaway drainage is anticipated to be poor on-site.

5.5. COAL MINING

The site is not located in a coal mining reporting area and is not located within an area at risk from ground instability arising from historic coal mining activities. No further assessment is required in relation to coal mining.



6. INITIAL CONCEPTUAL SITE MODEL

Under EA LCRM (updated June 2023) and BSI 10175 (Code of Practice for Investigation of Potentially Contaminated Land), and BS EN ISO 21365:2021 (Soil Quality – Conceptual models for potentially contaminated sites), E3P has developed a Tier 1 risk assessment comprising an initial conceptual site model (CSM) to identify potential contamination sources, migration pathways and receptors within the study area. An initial screening of the on and potential off-site sources of contamination has been undertaken in Table 12, with the more detailed initial CSM included overleaf as Table 13.

Table 12 Initial Contaminant Source Screening

SOURCE	SOIL	GROUNDWATER	GROUND GAS
ON-SITE			
Made Ground	Heavy Metals, TPHs, PAHs, ACMs	Heavy Metals, PAHs, VOCs,	Volatile vapours
Infilled Pond	Heavy Metals, VOCs, TPHs, PAHs	Heavy Metals, PAHs, TPHs, VOCs	CO ₂ & CH ₄
ACM building materials	Asbestos	N/A	N/A
OFF-SITE			
Historical Tank	TPHs, VOCs	TPHs, VOCs	Volatile vapours
Historical Structures	Heavy Metals, TPHs, PAHs, ACMs	Unlikely	Unlikely
Infilled Ponds	Heavy Metals, VOCs, TPHs, PAHs, ACMs	Heavy Metals, PAHs, TPHs, VOCs	CO ₂ & CH ₄



After reviewing all environmentally pertinent information and the potential contaminant sources, the following initial conceptual site model has been developed for the site.

Table 13 Initial Conceptual Model

CONTAMINANT RISK			LIKELIHOOD	SEVERITY	LEVEL OF RISK	JUSTIFICATION
SOURCES	MIGRATION PATHWAYS	RECEPTORS				
HUMAN HEALTH						
Made Ground Heavy Metals, TPHs, PAHs, ACMs Infilled Pond Heavy Metals, VOCs, TPHs, PAHs	Accidental ingestion and/or dermal contact with contaminated soil and/or leachate. PL1/PL2 Inhalation of contaminated dust. PL3	Human Health – construction workers Human Health – end users	Likely	Medium	Moderate/Low	Made Ground is likely to be present on site associated with the infilling of former pond in the southern sector and as a result of historical development onsite. Site personnel have a greater chance of coming into contact with contaminated soils. Particularly during excavation and soil recovery works. Intrusive investigation and assessment to determine the requirement for a cover system in soft landscaped areas.
Tanks VOCs, hydrocarbons, volatile PAHs (naphthalene)	Inhalation of vapours. PL4 Migration through permeable strata and preferential pathways.	Human Health – end users Human Health – Off-site receptors	Unlikely	High	Moderate/Low	The initial site walkover has not identified the presence of fuel storage tanks which may be a source of TPHs/VOCs. Historical mapping suggests that a tank was present roughly 10 m to the west of the site. The usage of the tank is unclear and there are no recorded spillage incidents. An intrusive investigation should be undertaken across the site.



CONTAMINANT RISK			LIKELIHOOD	SEVERITY	LEVEL OF RISK	JUSTIFICATION
SOURCES	MIGRATION PATHWAYS	RECEPTORS				
Made Ground and building materials Asbestos (Asbestos containing materials (ACM) and loose fibres)	Inhalation (of fibres). Construction works disturbing bound material and releasing fibres. PL3	Human Health – construction workers, end land users, and users of adjacent sites	Likely	High	Moderate/High	Potential ACM has been noted as part of the building fabric within the structures onsite. Made Ground surrounding the area of the former structures on site may contain ACM associated with the demolition of these structures. Risk of inhalation of fibres during Ground Investigation and construction works. Disturbance of ACMs and dust fibres from construction would increase the risk to adjacent sites. Intrusive investigation will be required to determine the presence of ACMs and develop appropriate mitigation measures.
Made Ground Sulphate from potential ash within the Made Ground.	Sulphate attack on concrete. PL6	Building concrete	Low likelihood	Low	Low	Due to the potential presence of Made Ground on the site, the potential for sulphate in ash deposits is high which may impact the proposed building concrete. Intrusive investigation will be required to assess the concrete classification.
Made Ground Organic contaminants such as hydrocarbons, solvents	Ingestion of tainted water supply. PL7	Human Health – End Users Water pipeline	Low likelihood	Low	Moderate/Low	Low likelihood as significant contamination is not anticipated at pipeline depth across the west of the site (0.75–1.35 m). Intrusive investigation is required to confirm if Made Ground is present onsite.



CONTAMINANT RISK			LIKELIHOOD	SEVERITY	LEVEL OF RISK	JUSTIFICATION
SOURCES	MIGRATION PATHWAYS	RECEPTORS				
Made Ground Phytotoxic contaminants	Direct contact (plant uptake). PL8	Flora	Low likelihood	Low	Low	Low likelihood as contamination is not considered likely. Contamination may be taken up by flora in soft landscaping/gardens. Intrusive investigation is required.
CONTROLLED WATERS						
Groundwater	Contact with contaminated groundwater. PL2 Contaminants leached from the Made Ground and off-site sources PL5	Human Health – site personnel Human Health – end users	Low likelihood	Medium	Moderate/Low	The site is likely underlain by low permeability clay that will afford protection to the underlying principal aquifer. An intrusive investigation will be required to assess ground conditions and groundwater levels, as well as assess any mobile contamination on site.



CONTAMINANT RISK			LIKELIHOOD	SEVERITY	LEVEL OF RISK	JUSTIFICATION
SOURCES	MIGRATION PATHWAY	RECEPTORS				
GROUND GAS						
Ground gases methane and carbon dioxide in Made Ground and associated with the infilled pond	Inhalation of ground gas. PL4	Human Health – site personnel	Low likelihood	High	Moderate/Low	A period of ground gas monitoring will be required to determine the gas regime for the site.
	Accumulation of ground gas in confined spaces (asphyxiation or explosion)	Human Health – end users Infrastructure and services				
Radon	Inhalation of ground gas. PL4	Human Health – site personnel	Unlikely	Low	Very low	The Groundsure report indicates the site is situated in an area where less than 1% of homes are above the “Action Level” and that the BGS reports that full radon protective measures are not necessary for the construction of new dwellings or extensions.
	Accumulation of ground gas in confined spaces (carcinogenic)	Human Health – end users				

Main exposure pathways:

PL1 = soil ingestion, PL2 = dermal contact and ingestion, PL3 = dust inhalation; PL4 = Vapour/Gas Inhalation; PL5 = Vertical / Lateral Migration; PL6 = Corrosion of concrete; PL7=Tainting of water supply; PL8 = Uptake by plants.

LEVEL OF RISK

Very Low	
Low	
Low/Moderate	
Moderate	
Moderate/High	
High	

END OF REPORT

APPENDIX I LIMITATIONS



1. This report and its findings should be considered concerning the terms of reference and objectives agreed upon between E3P and the client, as indicated in Section 1.3.
2. For the work, reliance has been placed on publicly available data from the sources identified. The information is not necessarily exhaustive, and further information relevant to the Site may be available from other sources. When using the information, it has been assumed that it is correct. No attempt has been made to verify the information.
3. This report has been produced following current UK policy and legislative requirements for land and groundwater contamination which are enforced by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and require advice from legal professionals.
4. During the site walkover, a reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover, no attempt has been made to enter areas of the Site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not been made known or accessible.
5. Access considerations, the presence of services and the activities being carried out on the Site limited the locations where sampling locations could be installed and the techniques that could be used.
6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.
7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials, this is for indicative purposes only and does not constitute or replace full and proper surveys.
8. The report's executive summary, conclusions and recommendations sections provide an overview and guidance only. They should not be relied on explicitly without fully considering the report's context.
9. E3P cannot be held responsible for any use of the report or its contents for any purpose other than that it was prepared for. The copyright in this report and other plans and documents designed by E3P is owned by them, and no such plans or documents may be reproduced, published or adapted without written consent. However, complete copies of this may be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied. Still, no professional liability or warranties shall be extended to other parties by E3P in this connection without their explicit written agreement.
10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.

APPENDIX II

GLOSSARY



TERMS

ACM	Asbestos-containing material	MMP	Materials management plan
ADS	Acoustic design statement	ND	Not detected
AST	Above-ground storage tank	NDP	Nuclear density probe
BGS	British Geological Survey	NMP	Noise management plan
BSI	British Standards Institute	NPSE	Noise policy statement for England
BTEX	Benzene, toluene, ethylbenzene, xylenes	NR	Not recorded
CA	Coal Authority	PAH	Polycyclic aromatic hydrocarbon
CBR	California bearing ratio	PCB	Polychlorinated biphenyl
CIEH	Chartered Institute of Environmental Health	PI	Plasticity index
CIRIA	Construction Industry Research Association	PID	Photo ionisation detector
CLEA	Contaminated land exposure assessment	POS	Public open space
CML	Council of Mortgage Lenders	PPE	Personnel protective equipment
CoC	Contaminants of concern	ProPG	Professional practice guidance
CSM	Conceptual site model	QA	Quality assurance
DNAPL	Dense non-aqueous phase liquid (chlorinated solvents, PCB)	SGV	Soil guideline value
DWS	Drinking water standard	SPH	Separate-phase hydrocarbon
EA	Environment Agency	SPT	Standard penetration test
EQS	Environmental quality standard	SVOC	Semi-volatile organic compound
FFL	Finished floor level	TPH	Total and speciated petroleum hydrocarbon
GAC	General assessment criteria	TPH CWG	Total Petroleum Hydrocarbon (Criteria Working Group)
GL	Ground level	UKWIR	United Kingdom Water Infrastructure Risk
GSV	Gas screening value	UST	Underground storage tank
HCV	Health criteria value	VCC	Vibro-concrete column
ICSM	Initial conceptual site model	VOC	Volatile organic compound
LEL	Lower explosive limit	VRSC	Vibro-replacement stone columns
LMRL	Lower method reporting limit	VSC	Vibro-stone columns
LNAPL	Light non-aqueous phase liquid (petrol, diesel, kerosene)	WHO	World Health Organisation



MCV	Moisture condition value	WRAP	Waste and Resources Action Programme
MIBK	Methyl isobutyl ketone	WTE	Water table elevation
m	Metres	ppm	Parts per million
km	Kilometres	mg/m³	Milligram per metre cubed
% v/v	Percent volume in air	m bgl	Metres below ground level
mb	Millibars (atmospheric pressure)	m bcl	Metre below cover level
l/hr	Litres per hour	mAOD	Metres above ordnance datum (sea level)
µg/l	Micrograms per litre (parts per billion)	kN/m²	Kilonewtons per metre squared
ppb	Parts per billion	µm	Micrometre
mg/kg	Milligrams per kilogram (parts per million)	SSRT	Site Specific Remediation Target
PSD	Particle Size Distribution	DD	Dry Density
CL:AIRE	Contaminated Land: Applications in Real Environments	Mc	Moisture Content
ρ	Bulk Density	GPR	Ground Penetrating Radar
NDP	Nuclear Density Probe	FFL	Finished Floor Level
LEL	Lower Explosive Limit	UKWIR	UK Water Industry Research
CIRIA	Construction Industry Research and Information Association	LOD	Limit of Detection
PFAS	Per- and Poly-Fluorinated Substances	PFOA	Perfluorooctanoic Acid

APPENDIX III

RISK CLASSIFICATION



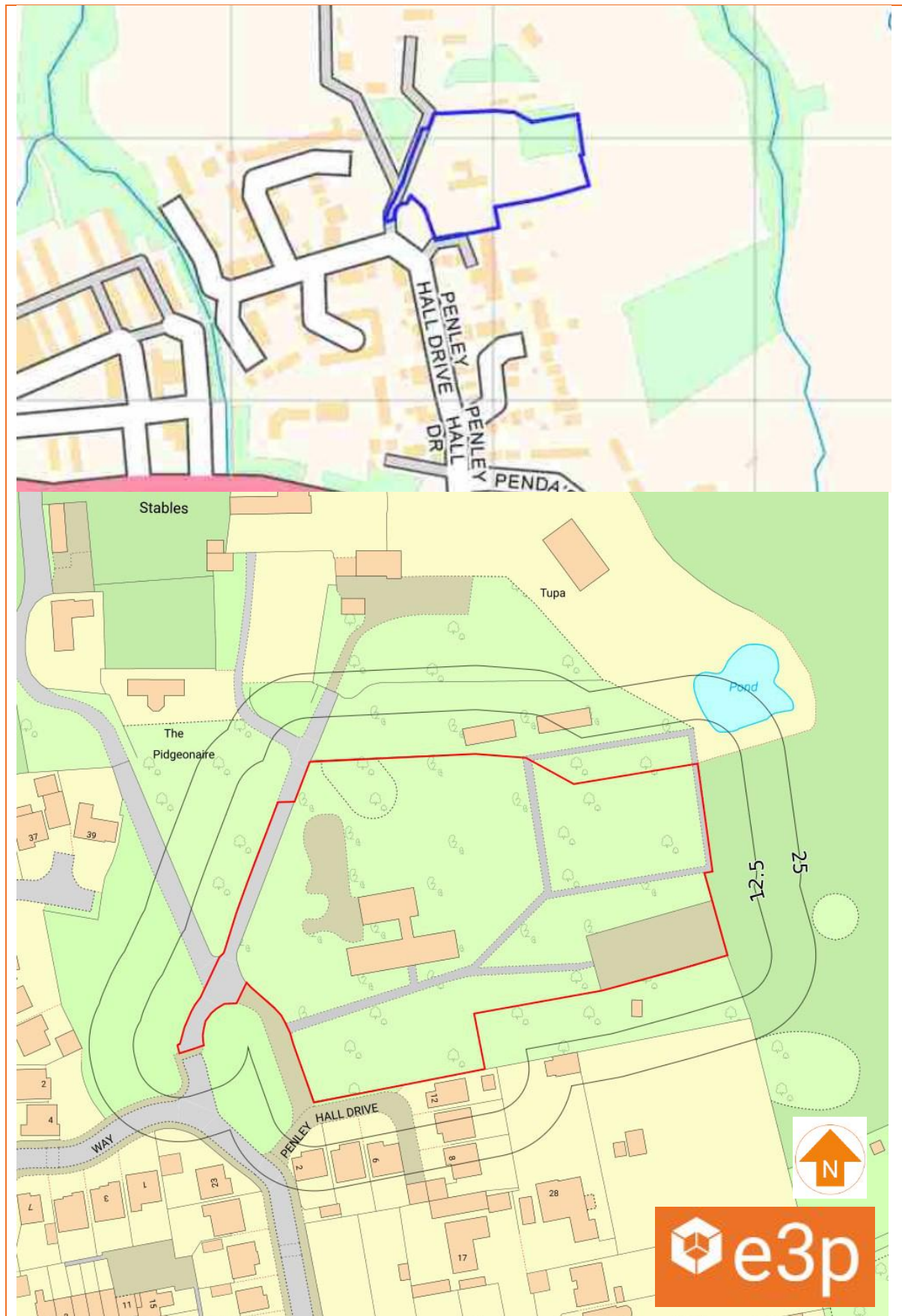
RISK CLASSIFICATION

RISK	DEFINITION
Low	There are unlikely to be significant contaminated land liabilities/geotechnical constraints associated with the property.
Low Moderate	There are unlikely to be significant contaminated land liabilities/geotechnical constraints associated with the property with regard to the proposed use. However, minor issues may require further consideration in the event of future redevelopment of the Site.
Moderate	Some potential contaminated land liabilities/geotechnical constraints are likely to affect the property as a result of historical and/or current activities. The risks identified are unlikely to pose an immediate significant issue but the purchaser/developer may wish to make further enquiries of the vendor or undertake further environmental improvements. Redevelopment of the Site will likely require further site investigation.
Moderate High	Some potentially significant contaminated land liabilities/geotechnical constraints have been identified at the property that requires further assessment, including intrusive ground investigations.
High	Significant potential contaminated land liabilities/geotechnical constraints have been identified at the property. Further assessment including intrusive ground investigation will be required to determine the level of risk and associated liability.

APPENDIX IV DRAWINGS



DRAWING 17-510-R1-001 – SITE LOCATION PLAN





Notes:					
P1	REVA	07.03.2024	OW	JW	MJ
Phase	Issue	Date	Drawn	Checked	PM

Client:	
Fisher German LLP	
Job Title:	
Tupa, Pensley	

Job No:
17-510
Drawing No:
002

Date:
07.03.2024
Scale:
1:1000 @ A3



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Historical Features Former Buildings and Structures Former Pond Former Hospital Building Tennis Court
--



Site Features

- | | | | |
|---|--------------------------------|---|--------------|
|  | Dense Vegetation |  | Gates |
|  | Boggy |  | Tennis Court |
|  | Former Hospital Building |  | Manhole |
|  | Heavily Vegetated Areas | | |
|  | Heavily Vegetated and Boggy | | |
|  | Footpath | | |
|  | Heavily Vegetated Hardstanding | | |
|  | Gates | | |

Notes:

P1	REVA	07.03.2024	OW	JW	MJ
Phase	Issue	Date	Drawn	Checked	PM

Client:

Fisher German LLP

Job Title:

Tupa, Pensley

Job No:

17-510

Drawing No:

004

Date:

07.03.2024

Scale:

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APPENDIX V

PHOTOGRAPHS



PLATE 1 VIEW OF FORMER HOSPITA BUILDING FACING SOUTH-EAST



PLATE 2 VIEW OF NORTH WEST SIDE OF FACING NORTHWEST





PLATE 3 **VIEW OF FORMER TENNIS COURT FACING WEST**



PLATE 4 **VIEW OF SITE FACING SOUTH-EAST**



APPENDIX VI

HISTORICAL MAPS

Site Details:

Penley, Wrexham

Client Ref: 007526
Report Ref: GS-8OP-CEB-JQ2-5WT
Grid Ref: 341795, 340171

Map Name: County Series

Map date: 1874

Scale: 1:2,500

Printed at: 1:2,500



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

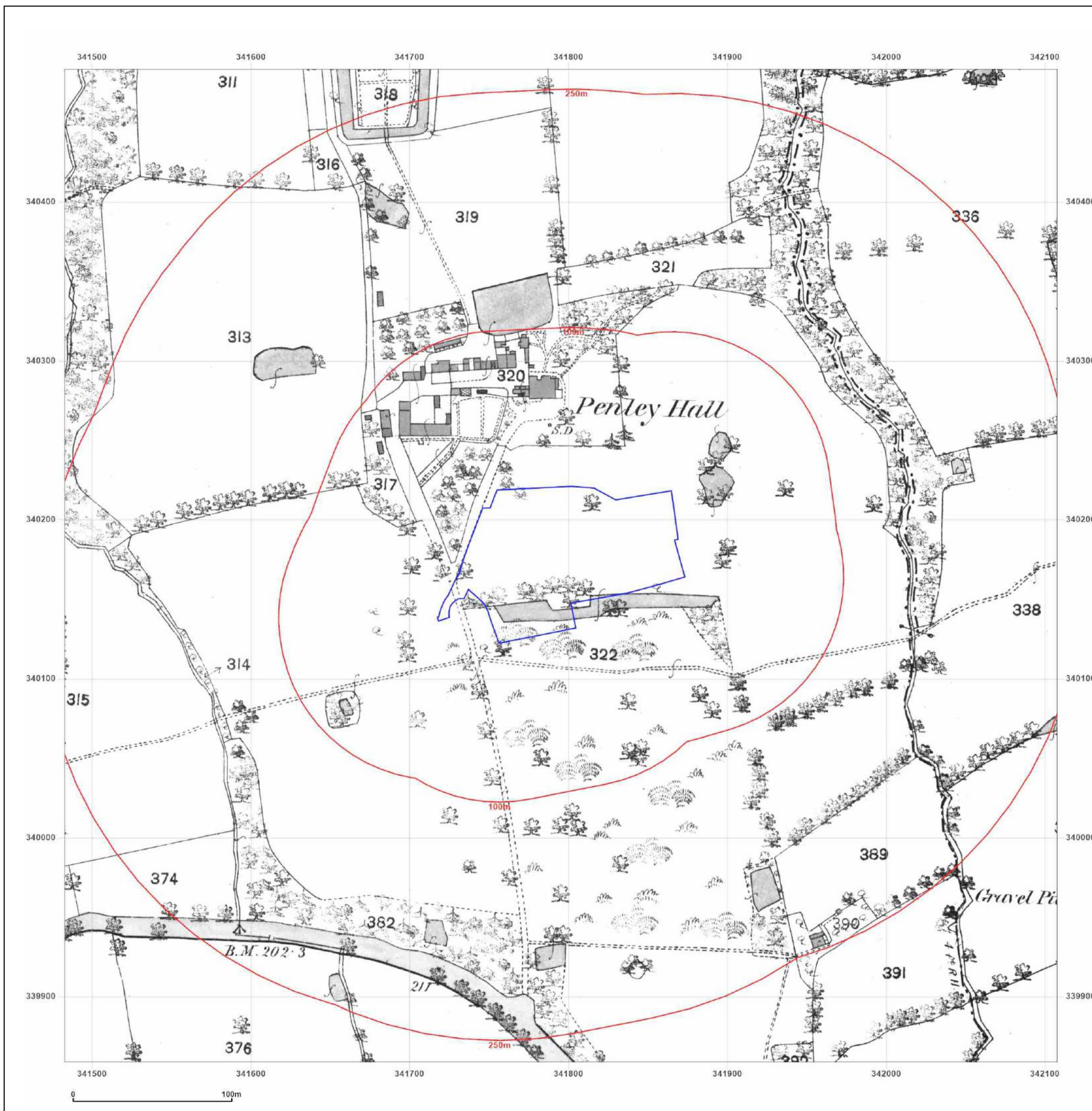


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Site Details:

Penley, Wrexham

Client Ref: 007526
Report Ref: GS-8OP-CEB-JQ2-5WT
Grid Ref: 341795, 340171

Map Name: County Series

Map date: 1876

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1876
Revised 1876
Edition N/A
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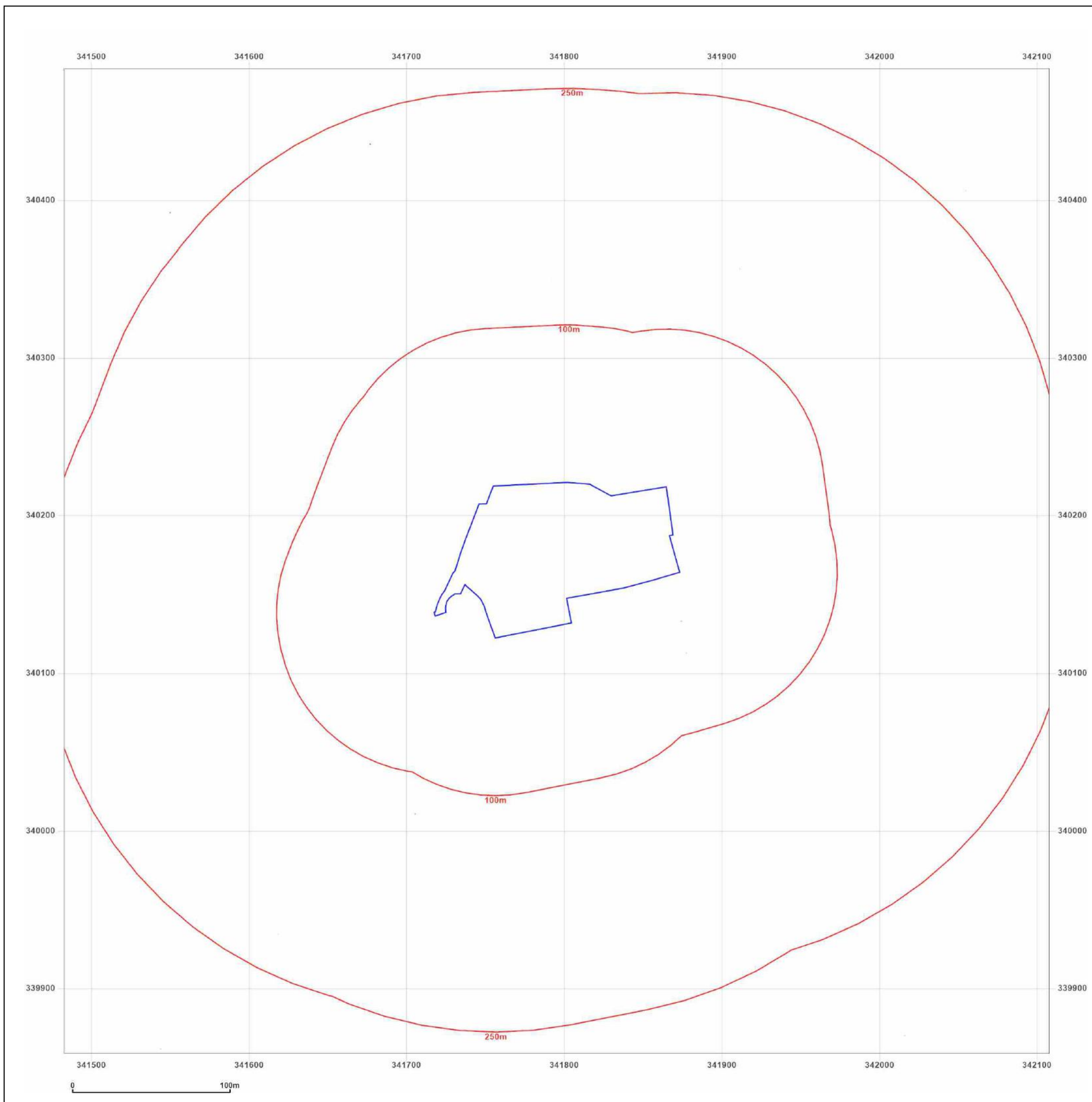


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Site Details:

Penley, Wrexham

Client Ref: 007526
Report Ref: GS-8OP-CEB-JQ2-5WT
Grid Ref: 341795, 340171

Map Name: County Series

Map date: 1899

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1899
 Revised 1899
 Edition N/A
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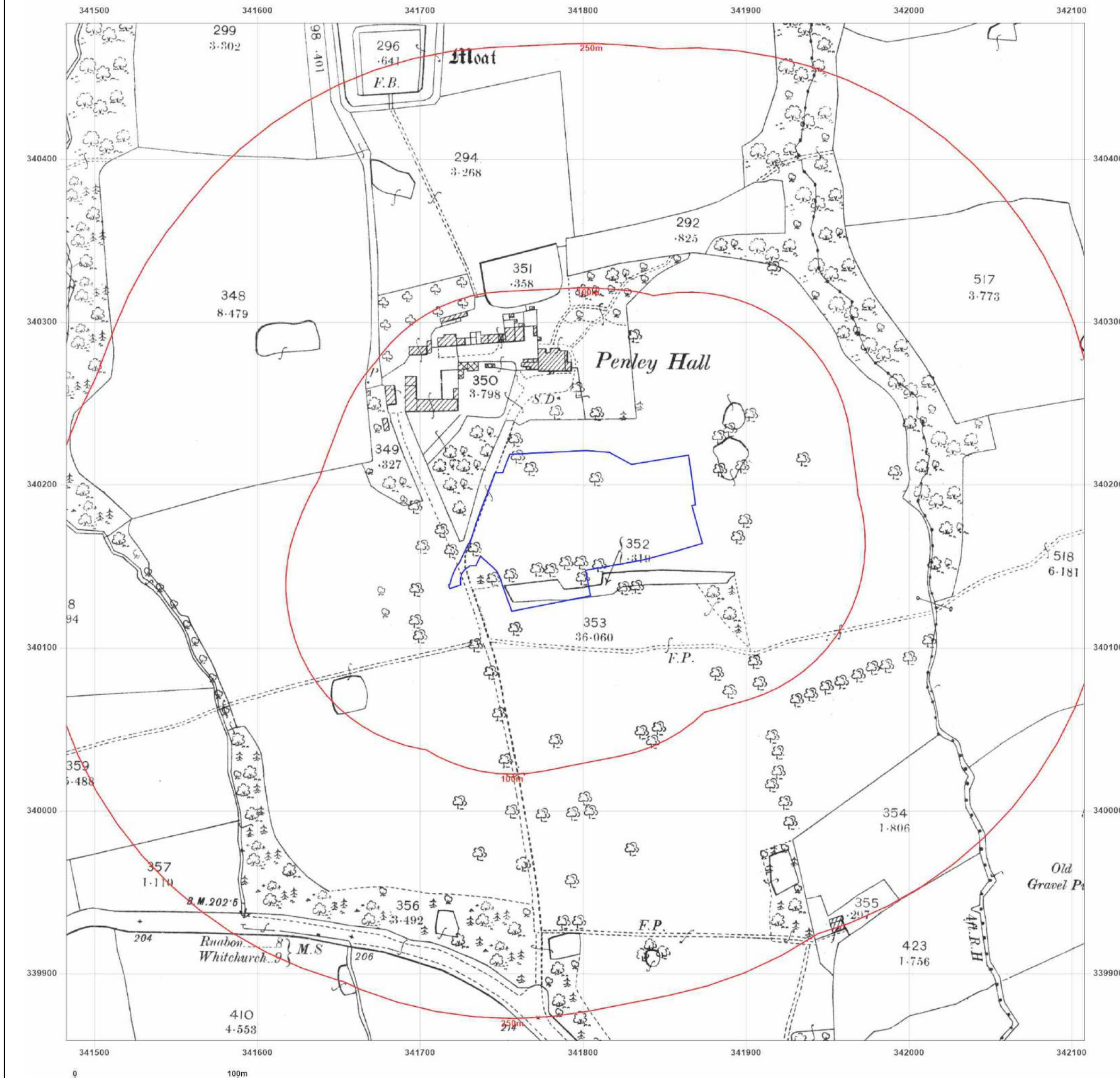


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Grid Ref: 341795, 340171

Map Name: County Series

Map date: 1901

Scale: 1:2,500

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 Revised 1901
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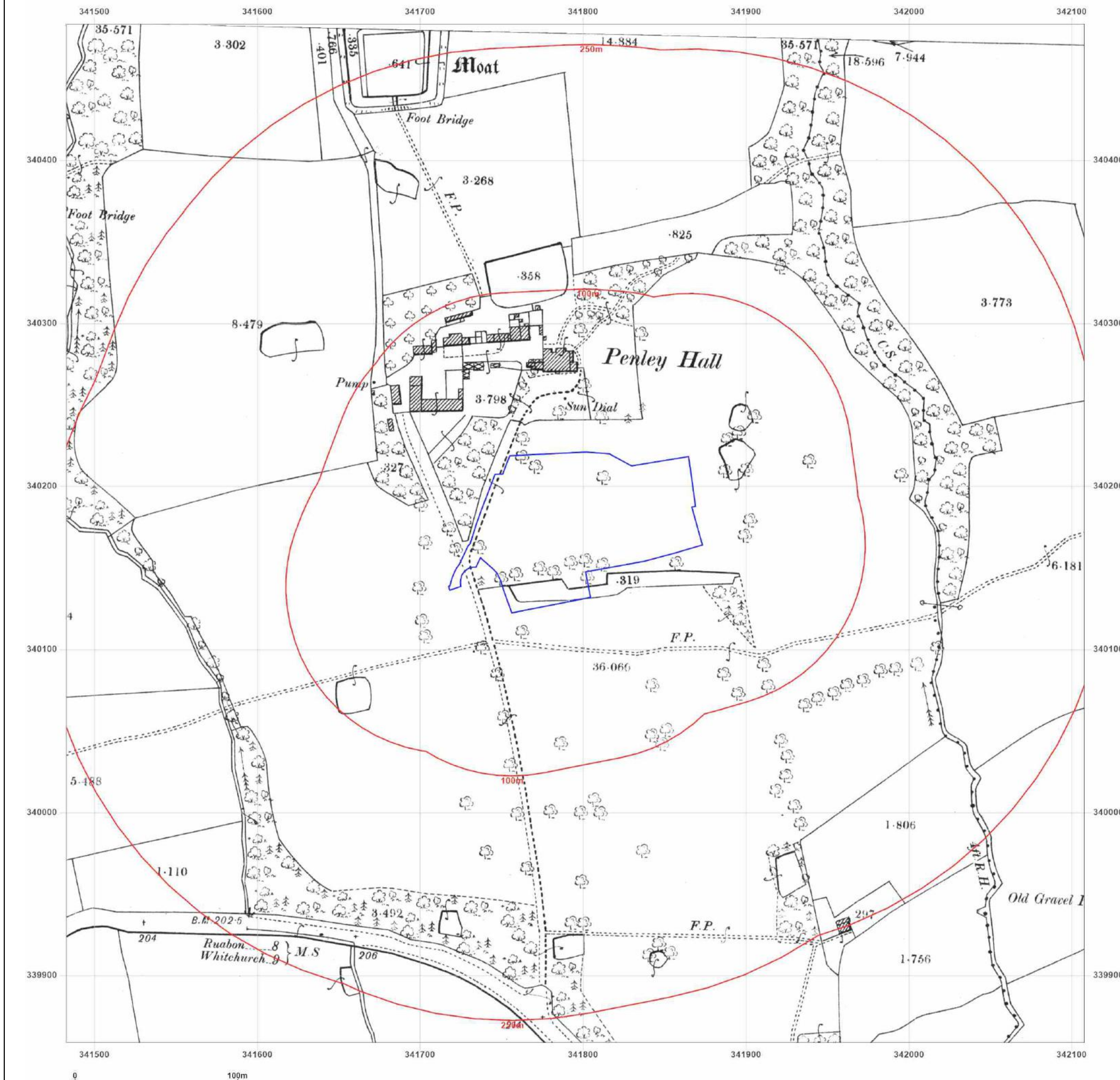


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Report Ref: GS-8OP-CEB-JQ2-5WT
Grid Ref: 341795, 340171

Map Name: County Series

Map date: 1912

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Printed at: 1:2,500



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 Revised 1912
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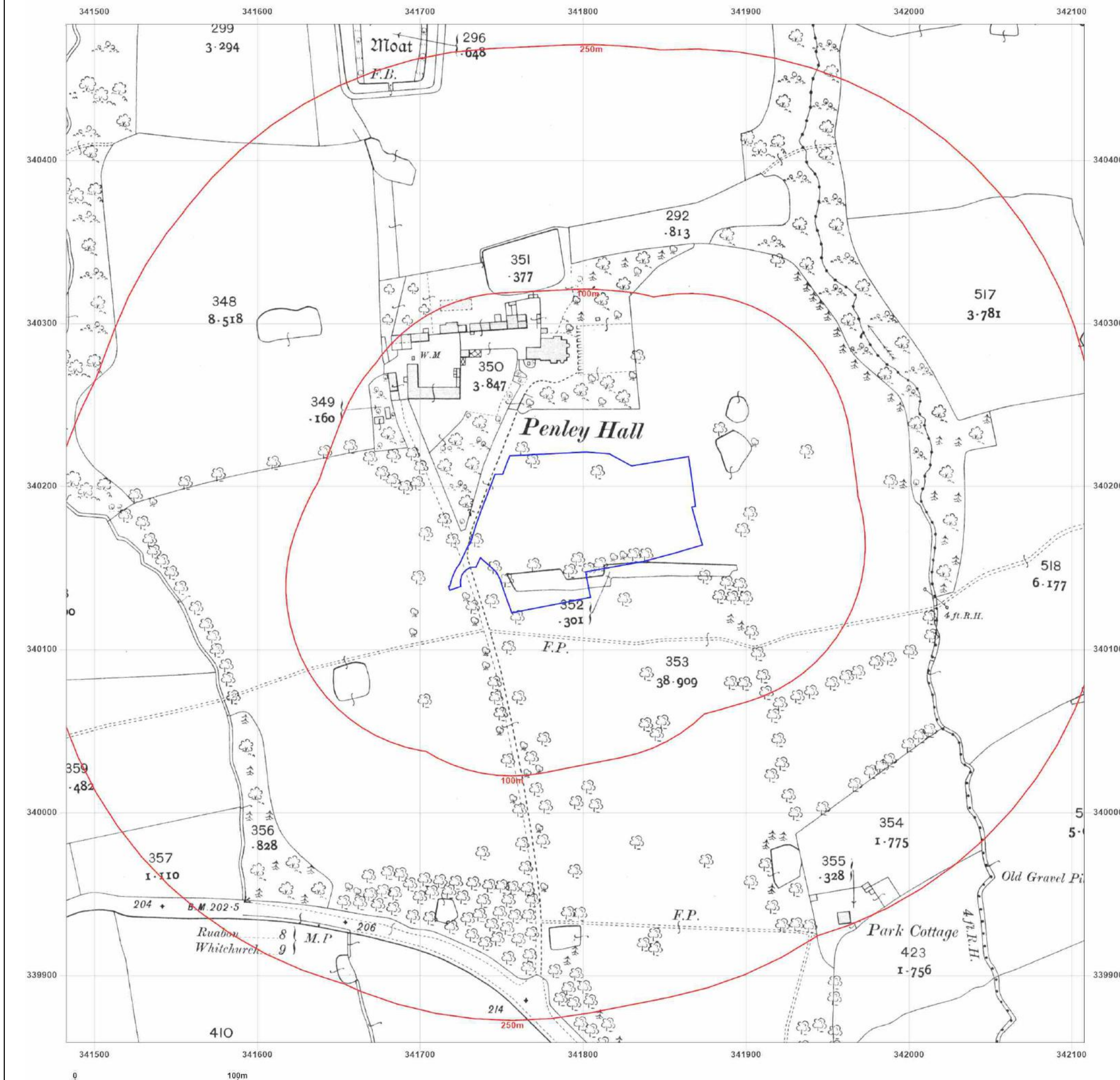


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Grid Ref: 341795, 340171

Map Name: County Series

Map date: 1926

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Surveyed 1926
Revised 1926
Edition N/A
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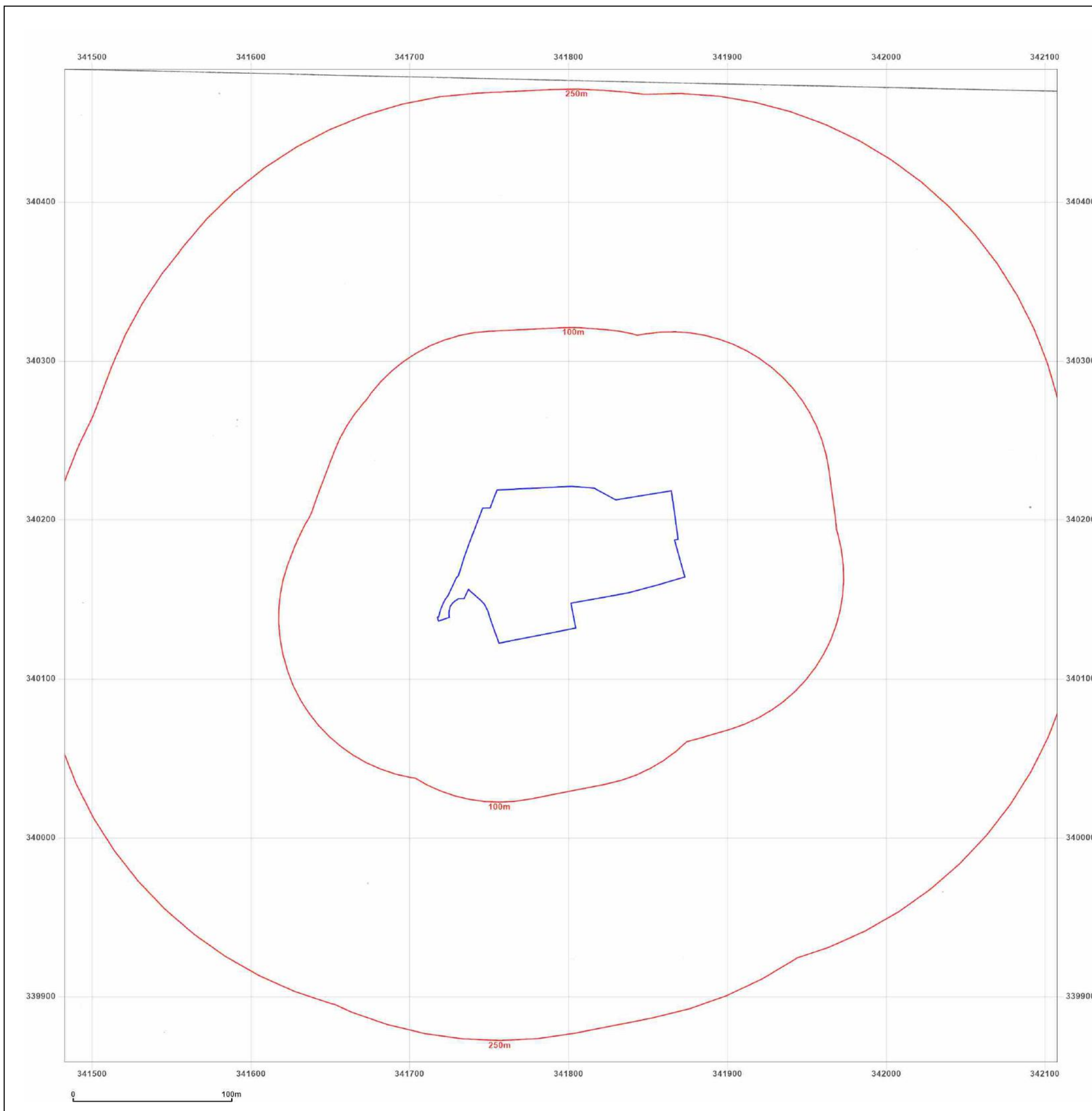


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Client Ref: 007526
Report Ref: GS-8OP-CEB-JQ2-5WT
Grid Ref: 341795, 340171

Map Name: National Grid

Map date: 1974

Scale: 1:2,500

Printed at: 1:2,500



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Revised 1974
Edition N/A
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Revised 1974
Edition N/A
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Revised 1974
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Report Ref: GS-8OP-CEB-JQ2-5WT
Grid Ref: 341795, 340171

Map Name: National Grid

Map date: 1975

Scale: 1:2,500

Printed at: 1:2,500



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 Edition N/A
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 Edition N/A
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Site Details:

Penley, Wrexham

Client Ref: 007526
Report Ref: GS-8OP-CEB-JQ2-5WT
Grid Ref: 341795, 340171

Map Name: National Grid

Map date: 1992-1995

Scale: 1:2,500

Printed at: 1:2,500



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 Edition N/A
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 Revised N/A
 Edition N/A
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Site Details:

Penley, Wrexham

Client Ref: 007526
Report Ref: GS-8OP-CEB-JQ2-5WT
Grid Ref: 341795, 340171

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250



2003



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Site Details:

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Client Ref: 007526
Report Ref: GS-8OP-CEB-JQ2-5WT
Grid Ref: 341795, 340171

Map Name: County Series

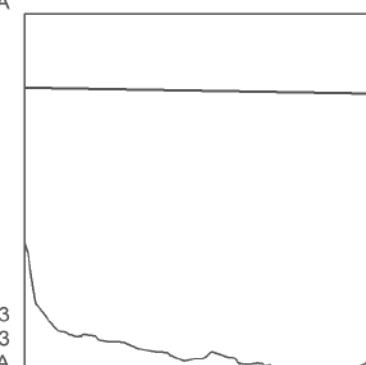
Map date: 1873

Scale: 1:10,560

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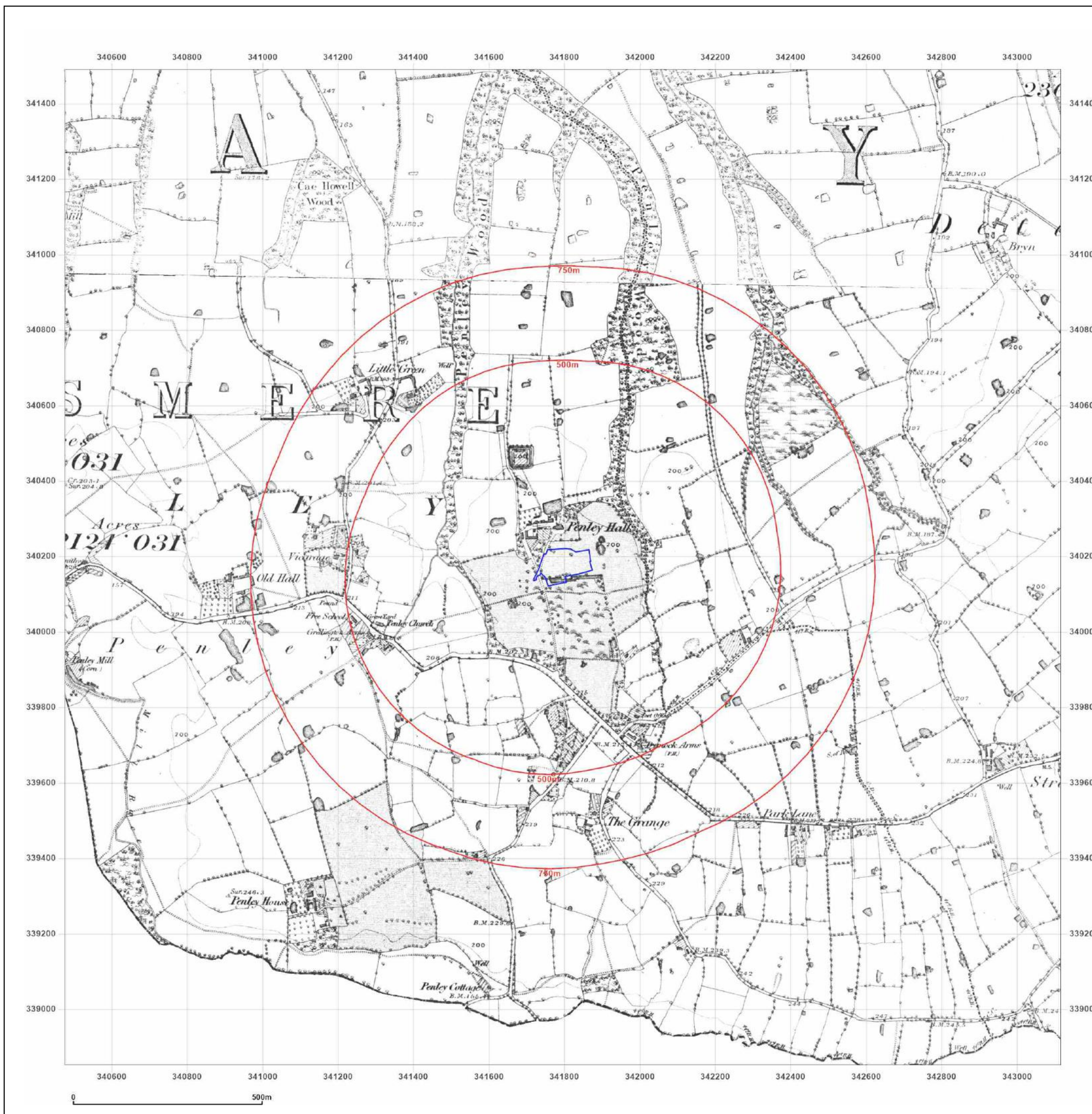


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Site Details:

Penley, Wrexham

Client Ref: 007526
Report Ref: GS-8OP-CEB-JQ2-5WT
Grid Ref: 341795, 340171

Map Name: County Series

Map date: 1874

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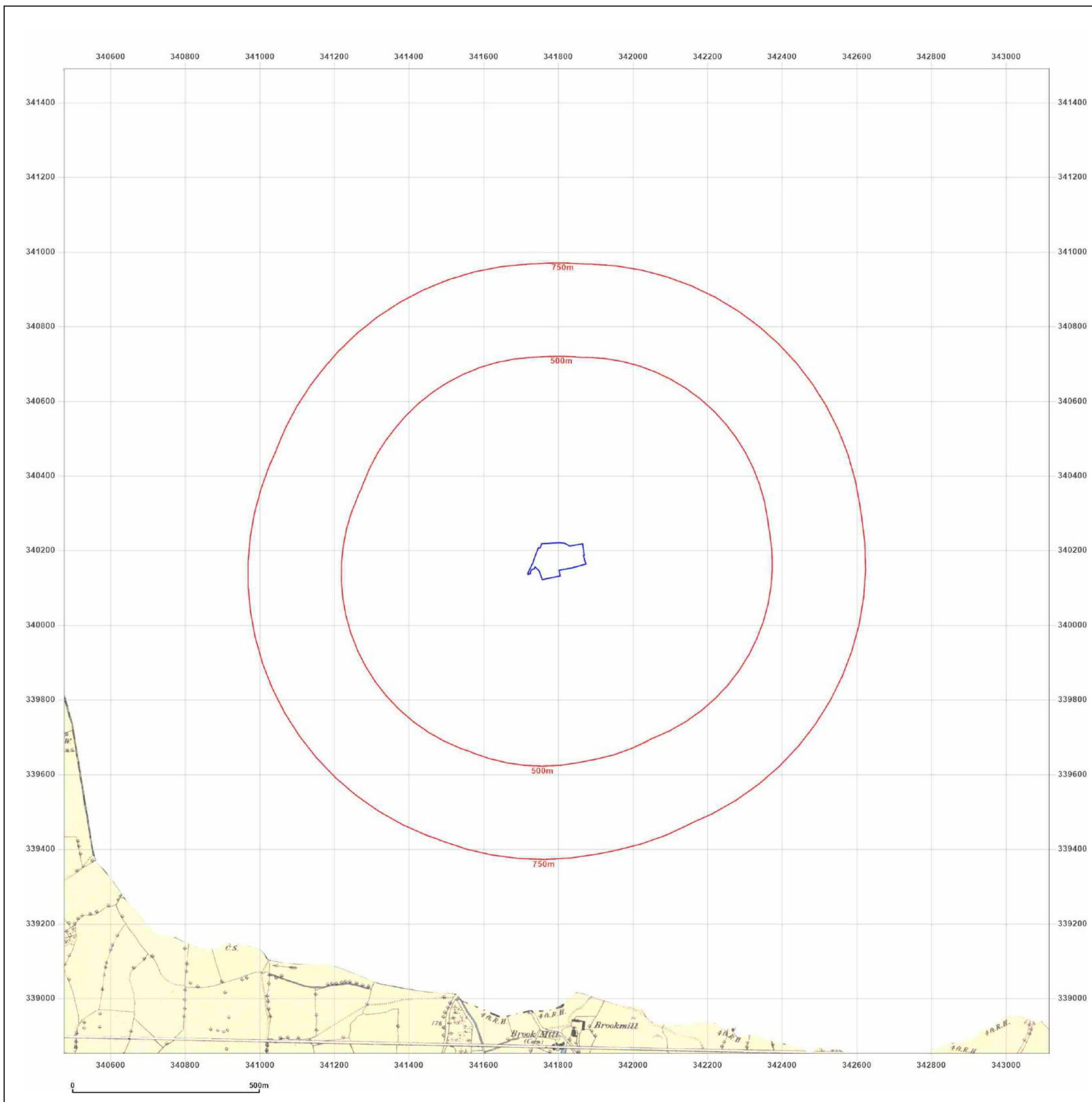


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Report Ref: GS-8OP-CEB-JQ2-5WT
Grid Ref: 341795, 340171

Map Name: County Series

Map date: 1883-1884

Scale: 1:10,560

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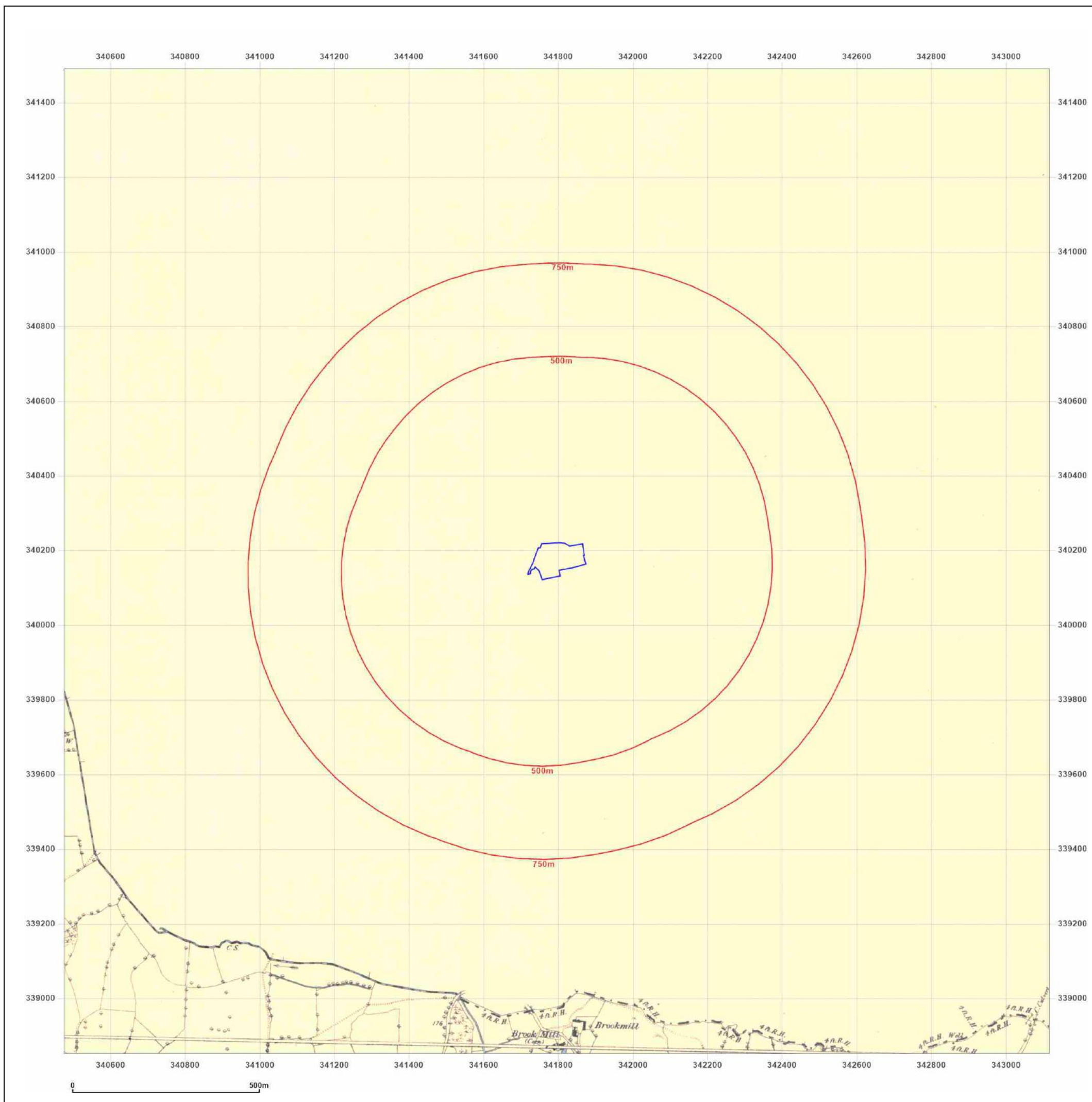


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Report Ref: GS-8OP-CEB-JQ2-5WT
Grid Ref: 341795, 340171

Map Name: County Series

Map date: 1898

Scale: 1:10,560

Printed at: 1:10,560



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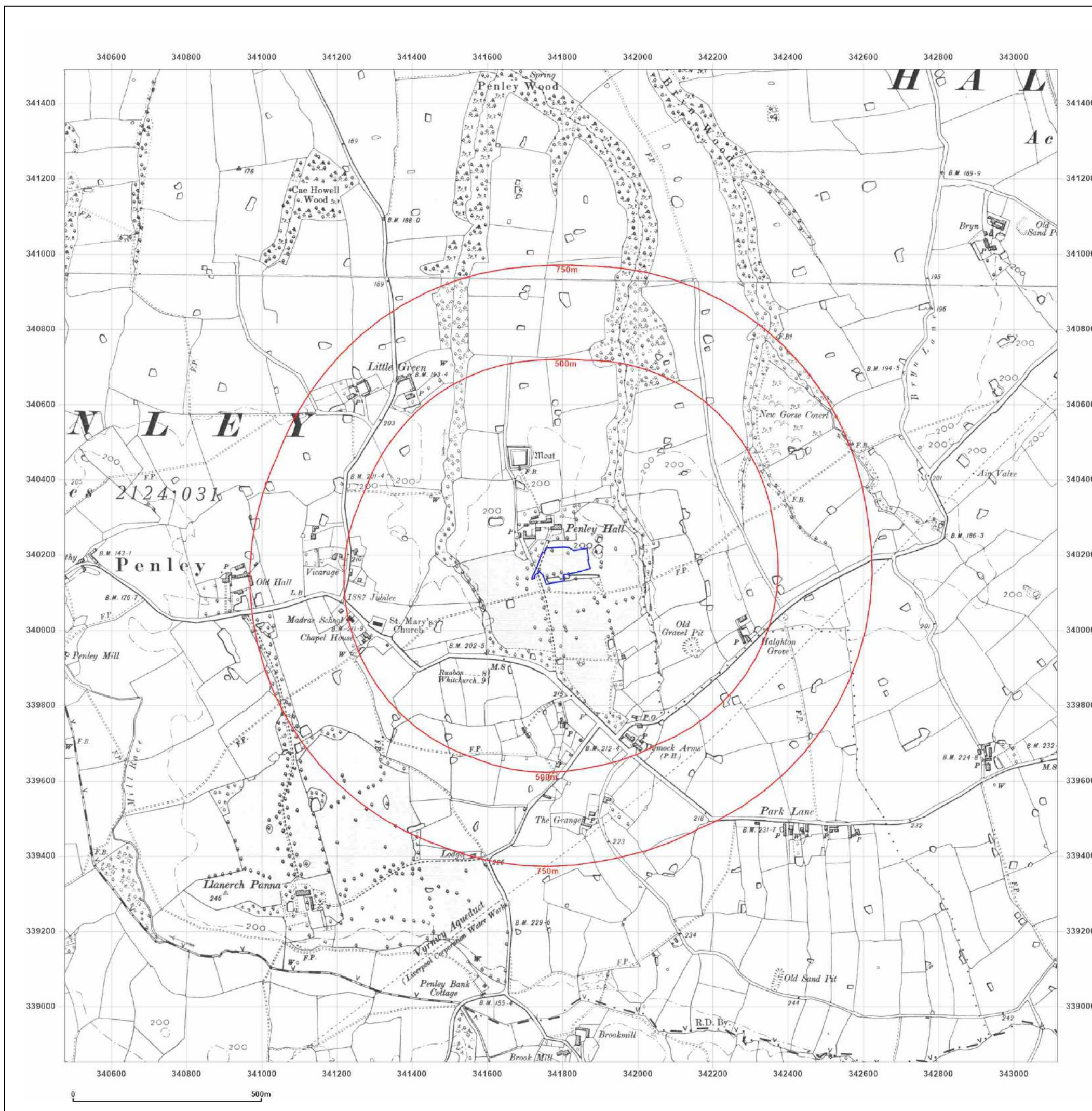


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Report Ref: GS-8OP-CEB-JQ2-5WT
Grid Ref: 341795, 340171

Map Name: County Series

Map date: 1899

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1873
Revised 1899
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Surveyed 1874
Revised 1899
Edition N/A
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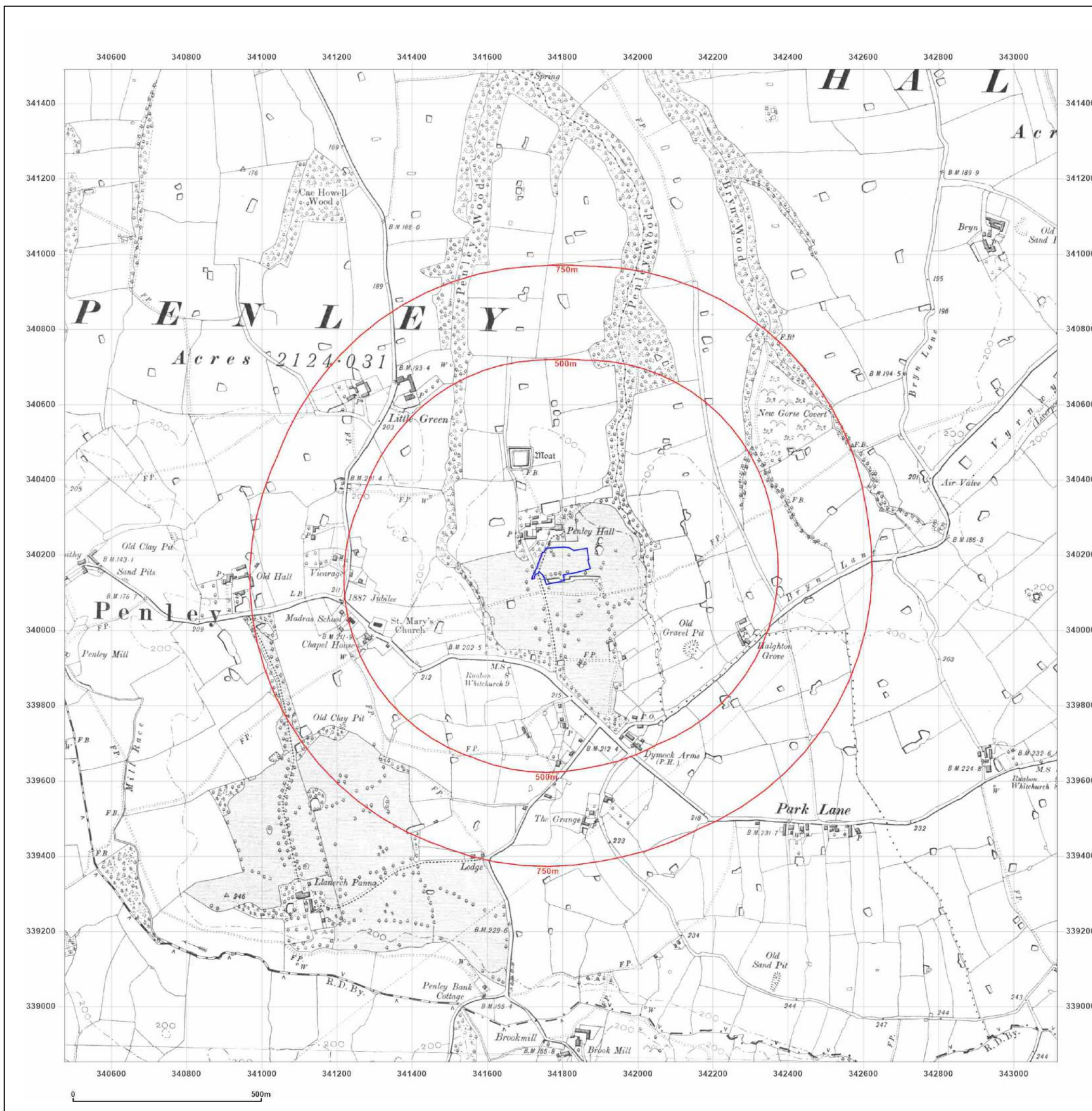


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Report Ref: GS-8OP-CEB-JQ2-5WT
Grid Ref: 341795, 340171

Map Name: County Series

Map date: 1914

Scale: 1:10,560

Printed at: 1:10,560



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Revised 1914
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Surveyed 1872
Revised 1914
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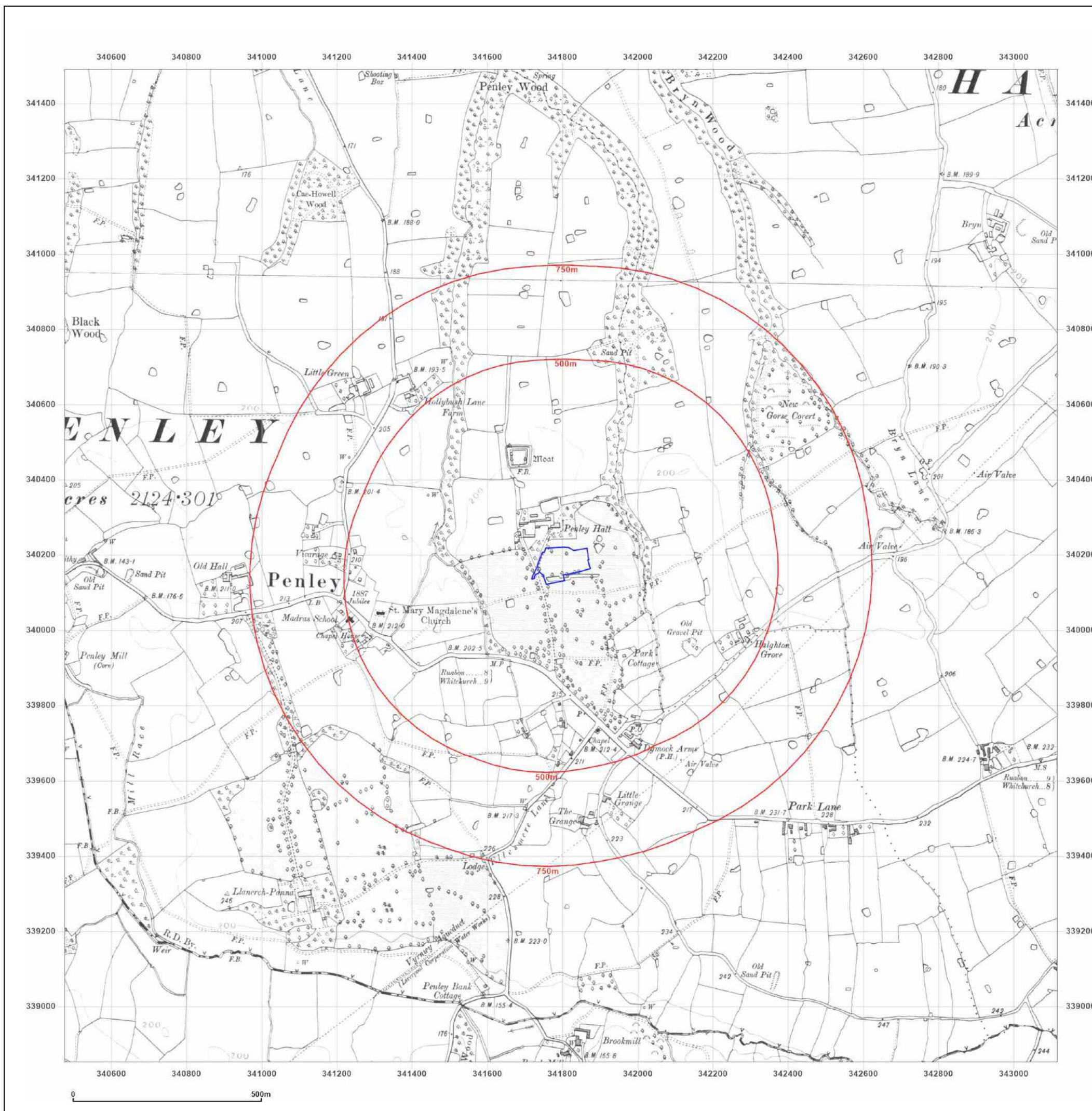


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Report Ref: GS-8OP-CEB-JQ2-5WT
Grid Ref: 341795, 340171

Map Name: County Series

Map date: 1929-1930

Scale: 1:10,560

Printed at: 1:10,560



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Edition 1929
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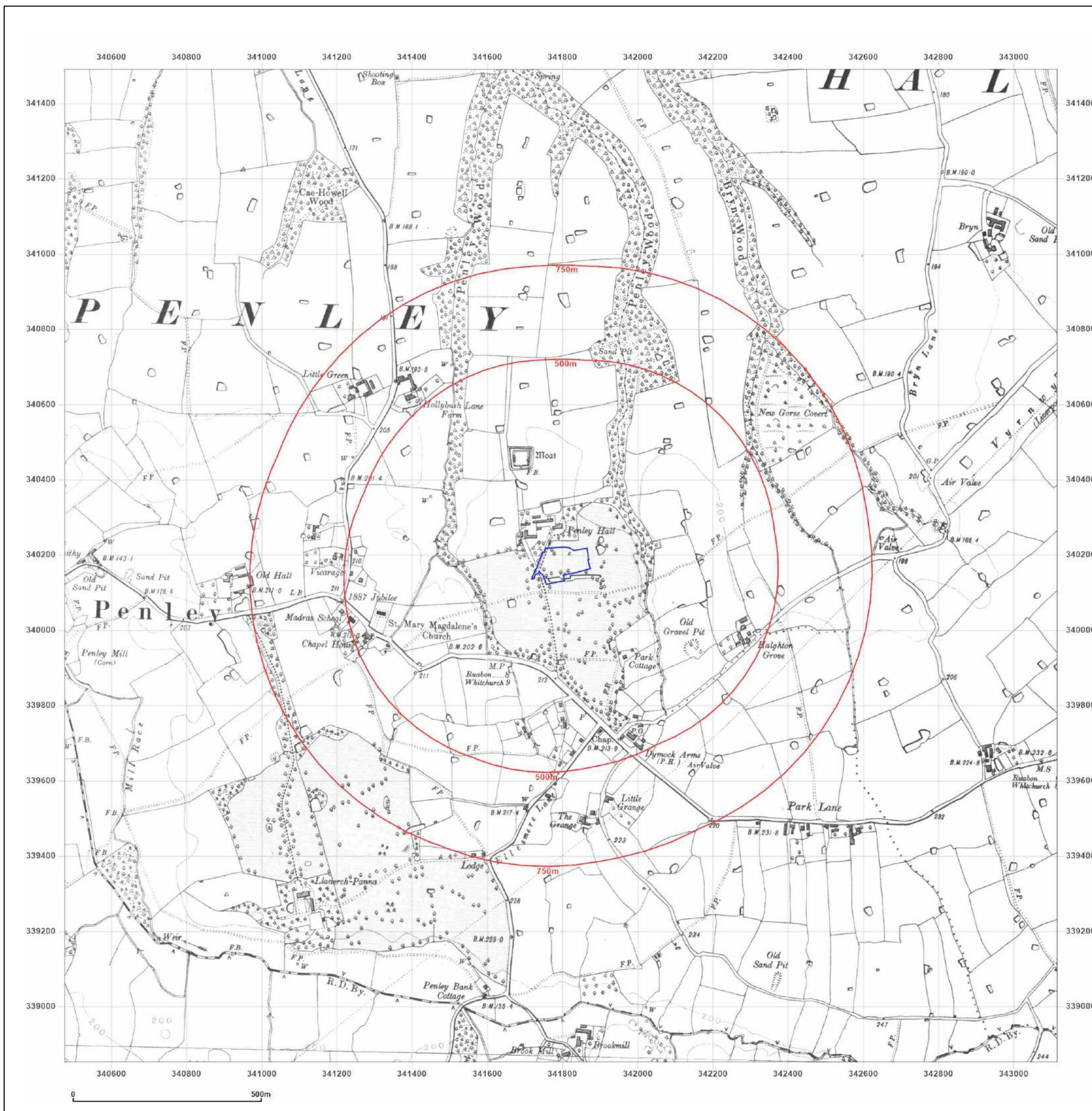


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Site Details:

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Client Ref: 007526
Report Ref: GS-8OP-CEB-JQ2-5WT
Grid Ref: 341795, 340171

Map Name: Provisional

Map date: 1949-1954

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1949
Revised 1949
Edition N/A
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Surveyed N/A
Revised 1954
Edition N/A
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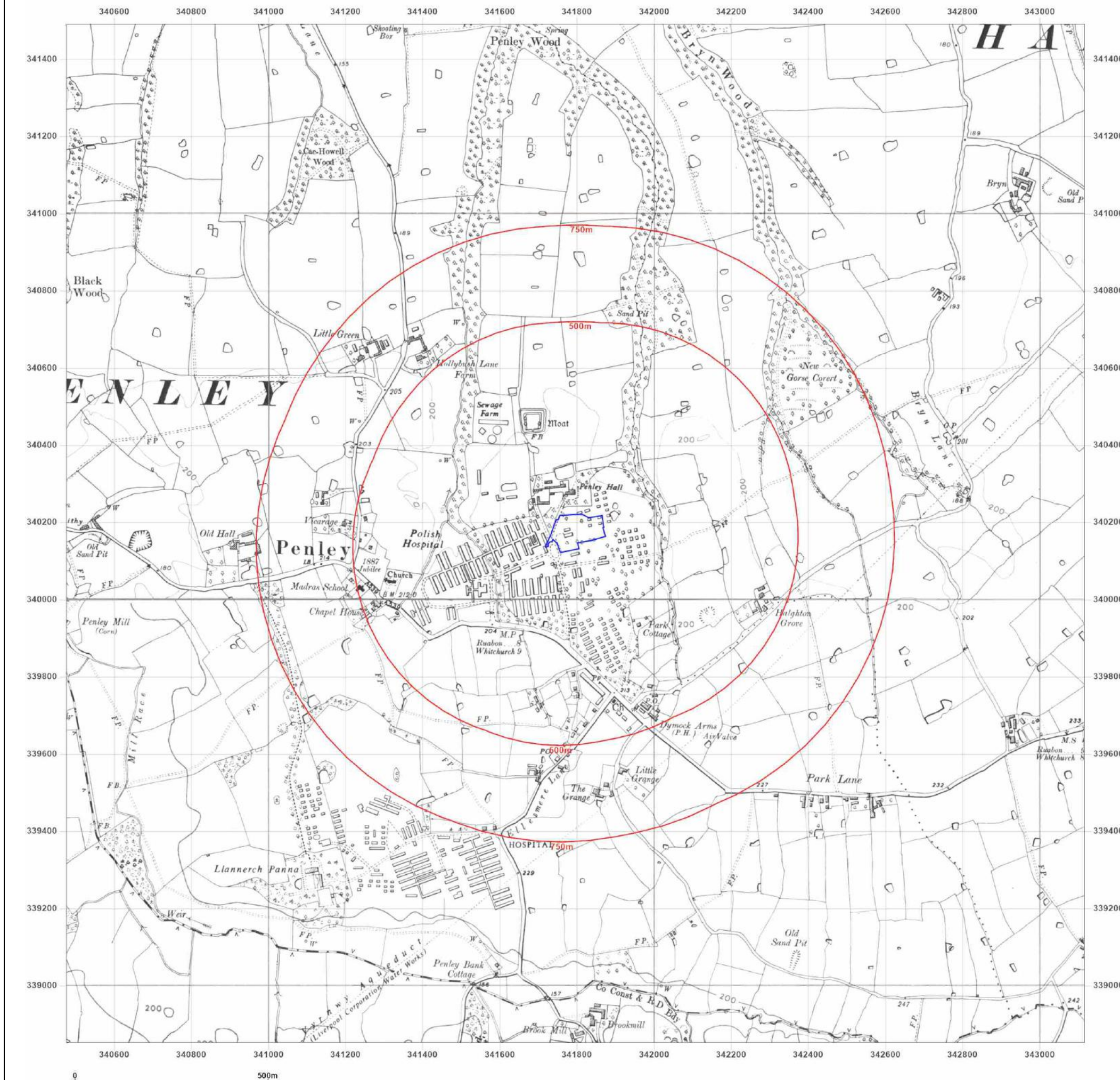


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Report Ref: GS-8OP-CEB-JQ2-5WT
Grid Ref: 341795, 340171

Map Name: Provisional

Map date: 1970

Scale: 1:10,560

Printed at: 1:10,560



Surveyed N/A
Revised 1970
Edition N/A
Copyright 1954
Levelled N/A

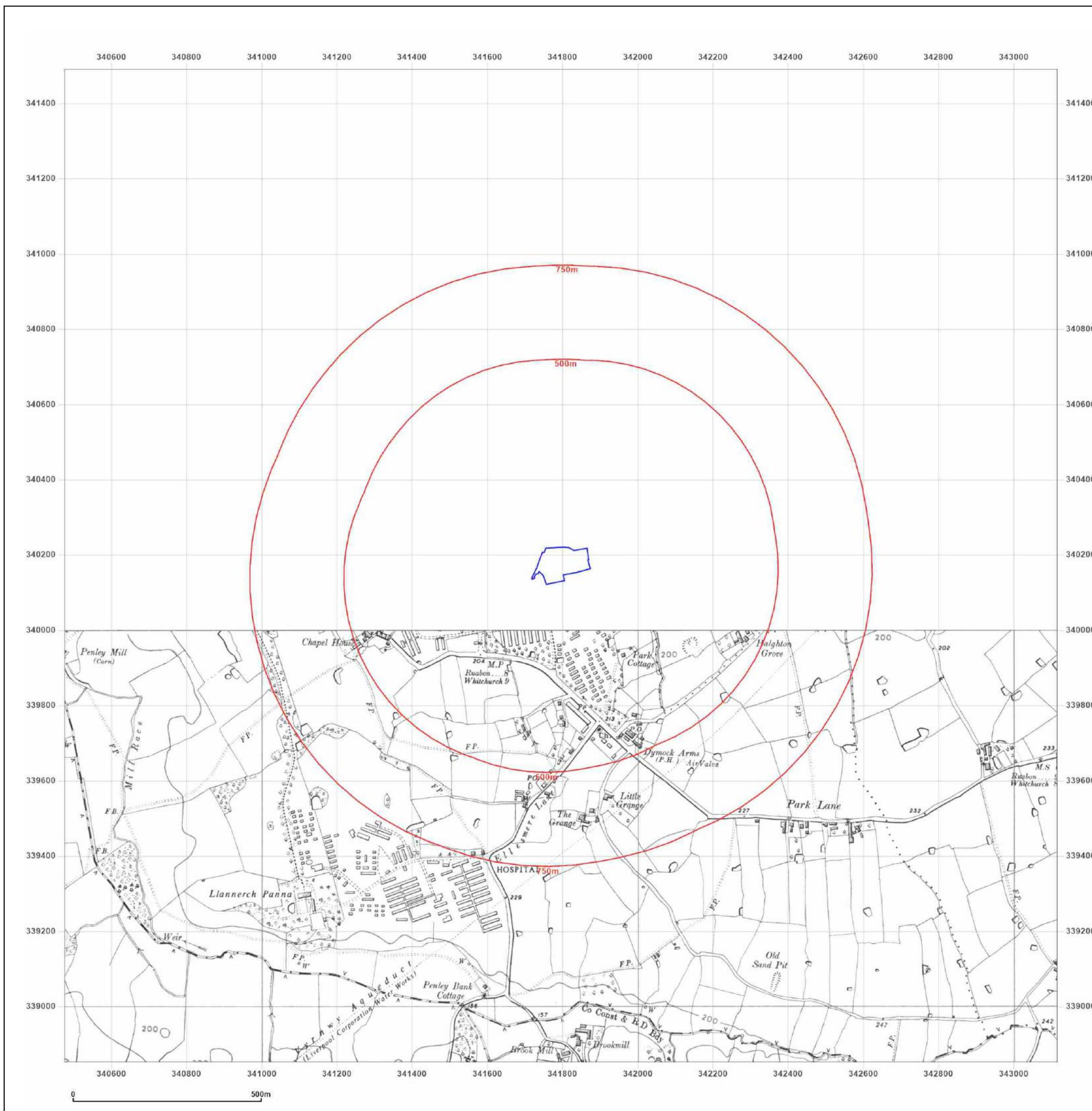


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Report Ref: GS-8OP-CEB-JQ2-5WT
Grid Ref: 341795, 340171

Map Name: National Grid

Map date: 1979-1980

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1974
Revised 1979
Edition N/A
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Levelled 1973

Surveyed 1974
Revised 1980
Edition N/A
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Levelled 1973

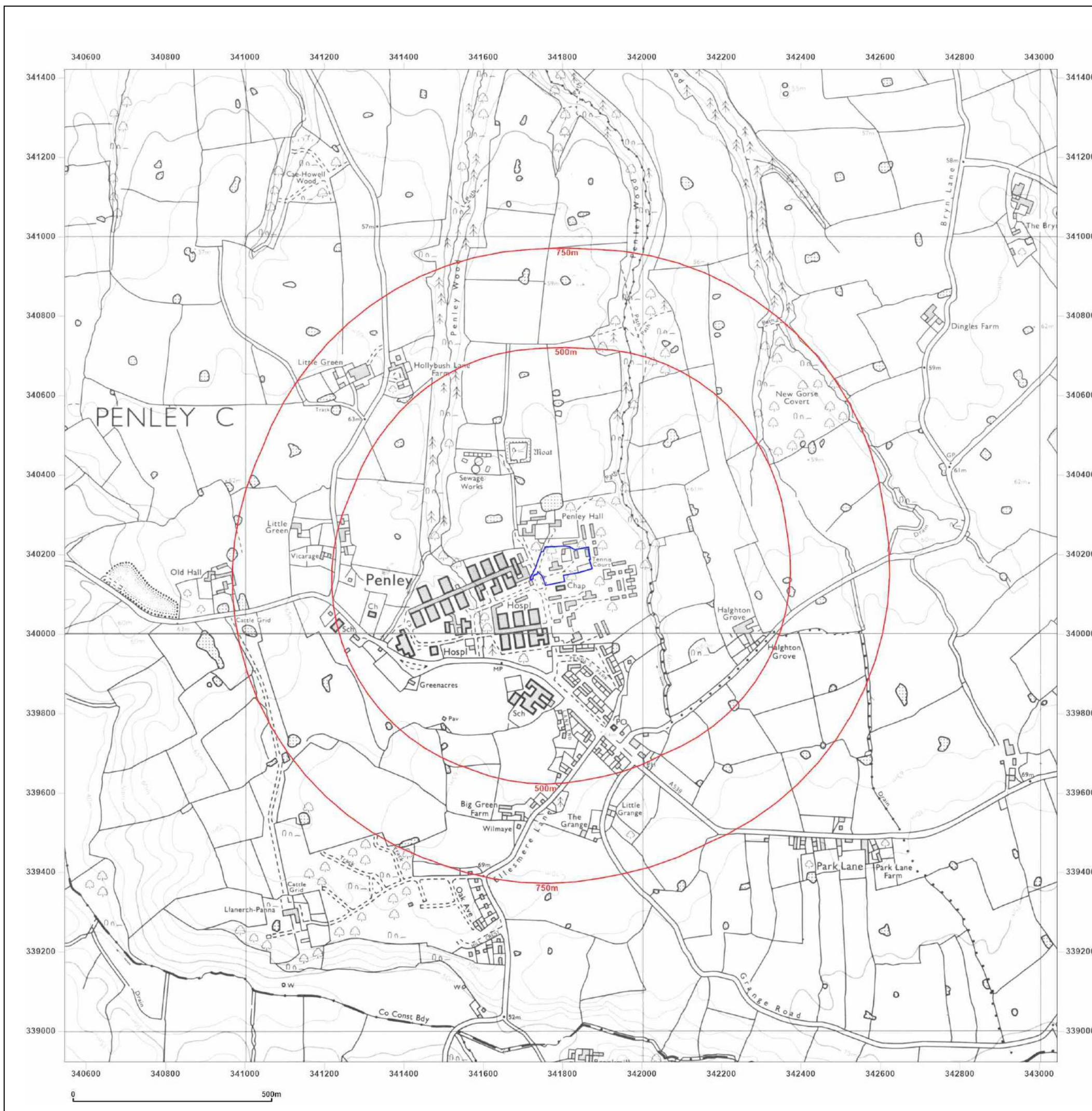


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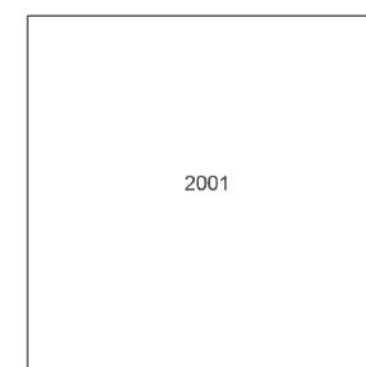
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Report Ref: GS-8OP-CEB-JQ2-5WT
Grid Ref: 341795, 340171

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000

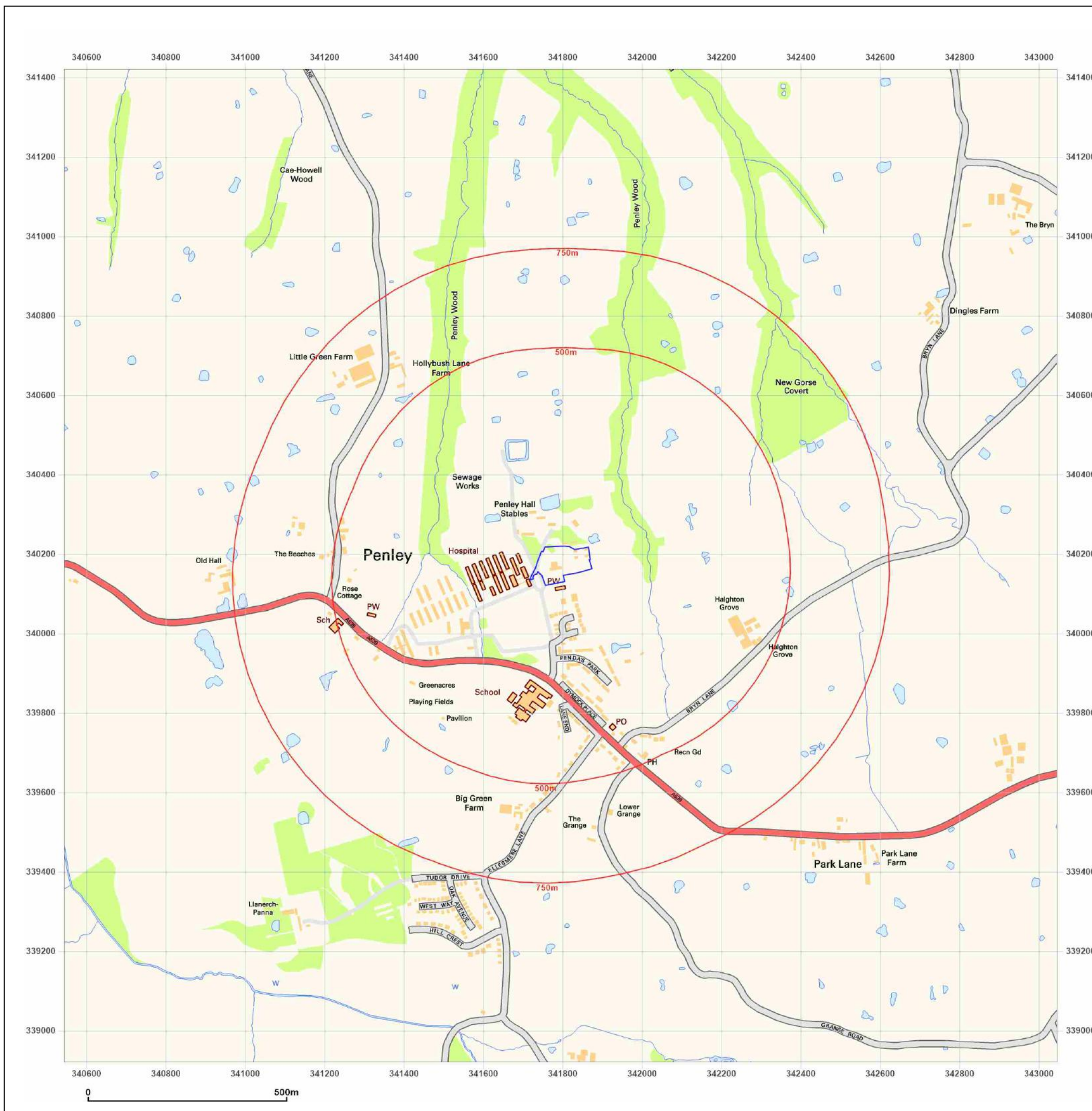


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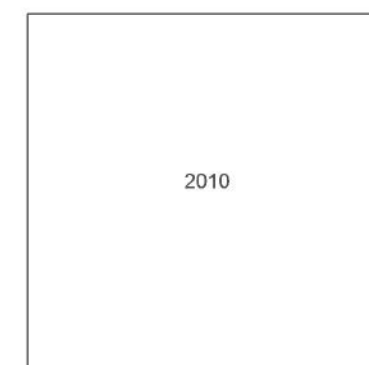
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Report Ref: GS-8OP-CEB-JQ2-5WT
Grid Ref: 341795, 340171

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000

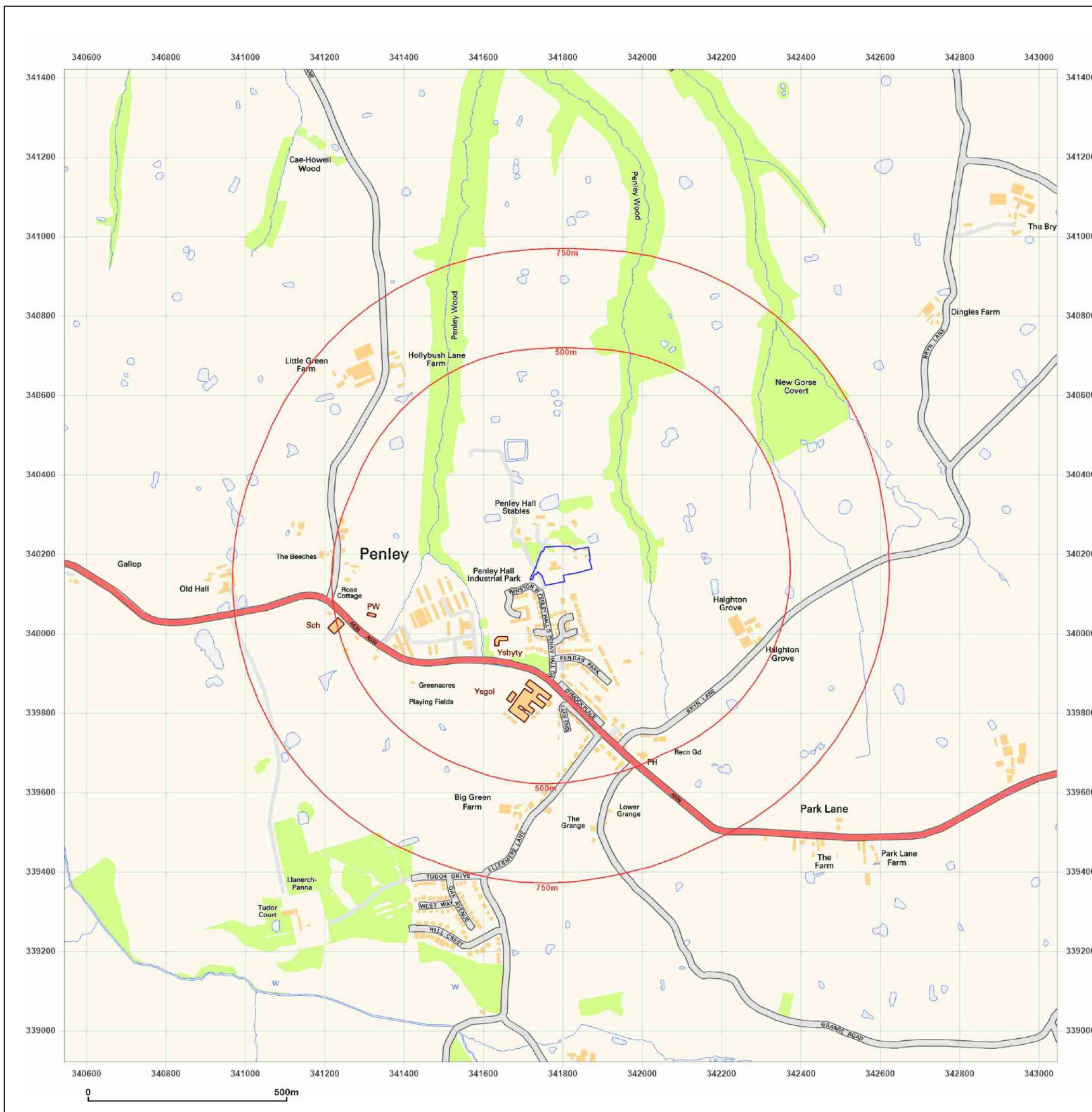


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Report Ref: GS-8OP-CEB-JQ2-5WT
Grid Ref: 341795, 340171

Map Name: National Grid

Map date: 2024

Scale: 1:10,000

Printed at: 1:10,000



2024

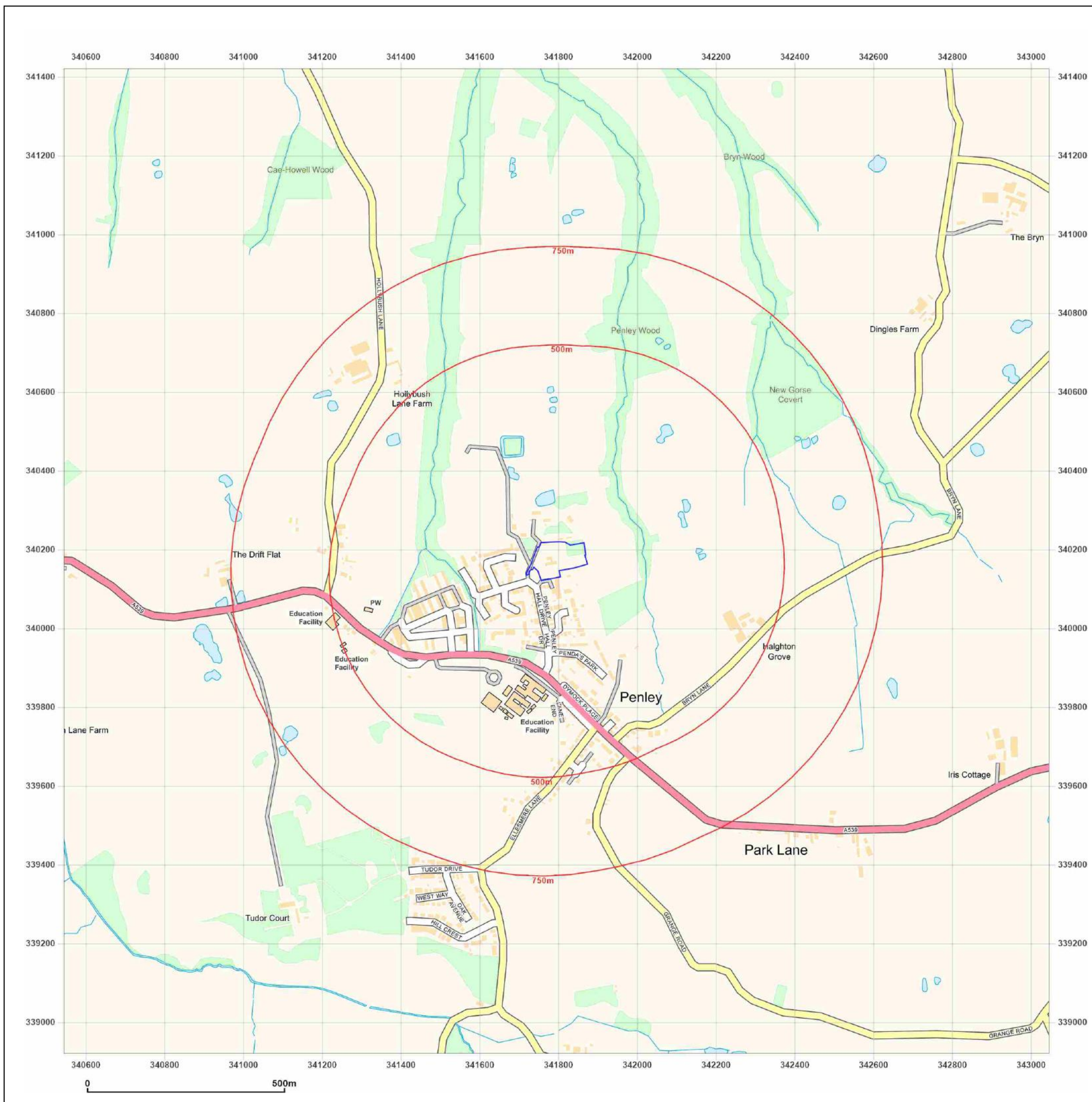


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Penley, Wrexham

Order Details

Date: 27/02/2024
Your ref: 007526
Our Ref: GS-DLG-KY1-95Y-DLT

Site Details

Location: 341796 340177
Area: 0.99 ha
Authority: [Wrexham - Wrexham County Borough Council](#) ↗



Summary of findings

[p. 2 >](#)

Aerial image

[p. 9 >](#)

OS MasterMap site plan

[p.14 >](#)

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01273 257 755

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
15 >	1.1 >	Historical industrial land uses >	1	1	2	9	-
16 >	1.2 >	Historical tanks >	0	1	3	2	-
17 >	1.3 >	Historical energy features >	0	0	2	2	-
17	1.4	Historical petrol stations	0	0	0	0	-
17 >	1.5 >	Historical garages >	0	0	0	2	-
18	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
19 >	2.1 >	Historical industrial land uses >	1	1	2	12	-
20 >	2.2 >	Historical tanks >	0	2	3	4	-
21 >	2.3 >	Historical energy features >	0	0	3	3	-
21	2.4	Historical petrol stations	0	0	0	0	-
22 >	2.5 >	Historical garages >	0	0	0	2	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
23	3.1	Active or recent landfill	0	0	0	0	-
23	3.2	Historical landfill (BGS records)	0	0	0	0	-
24	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
24	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
24	3.5	Historical waste sites	0	0	0	0	-
24	3.6	Licensed waste sites	0	0	0	0	-
24 >	3.7 >	Waste exemptions >	0	0	1	2	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
26 >	4.1 >	Recent industrial land uses >	0	0	9	-	-
27	4.2	Current or recent petrol stations	0	0	0	0	-
27	4.3	Electricity cables	0	0	0	0	-
27	4.4	Gas pipelines	0	0	0	0	-
28	4.5	Sites determined as Contaminated Land	0	0	0	0	-



28	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
28	4.7	Regulated explosive sites	0	0	0	0	-
28	4.8	Hazardous substance storage/usage	0	0	0	0	-
28	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
29	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
29	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
29	4.12	Radioactive Substance Authorisations	0	0	0	0	-
29 >	4.13 >	Licensed Discharges to controlled waters >	0	0	5	5	-
31	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
31	4.15	Pollutant release to public sewer	0	0	0	0	-
31	4.16	List 1 Dangerous Substances	0	0	0	0	-
32	4.17	List 2 Dangerous Substances	0	0	0	0	-
32 >	4.18 >	Pollution Incidents (EA/NRW) >	0	0	4	1	-
33	4.19	Pollution inventory substances	0	0	0	0	-
33	4.20	Pollution inventory waste transfers	0	0	0	0	-
33	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology >	On site	0-50m	50-250m	250-500m	500-2000m
34 >	5.1 >	Superficial aquifer >	Identified (within 500m)				
36 >	5.2 >	Bedrock aquifer >	Identified (within 500m)				
38 >	5.3 >	Groundwater vulnerability >	Identified (within 50m)				
39	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
39	5.5	Groundwater vulnerability- local information	None (within 0m)				
40 >	5.6 >	Groundwater abstractions >	0	0	0	0	3
41 >	5.7 >	Surface water abstractions >	0	0	0	0	4
43	5.8	Potable abstractions	0	0	0	0	0
43	5.9	Source Protection Zones	0	0	0	0	-
43	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology >	On site	0-50m	50-250m	250-500m	500-2000m
44 >	6.1 >	Water Network (OS MasterMap) >	0	0	2	-	-



45 >	6.2 >	Surface water features >	0	0	8	-	-
45 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
45 >	6.4 >	WFD Surface water bodies >	0	0	0	-	-
46 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-

Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
47	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
47	7.2	Historical Flood Events	0	0	0	-	-
47	7.3	Flood Defences	0	0	0	-	-
48	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
48	7.5	Flood Storage Areas	0	0	0	-	-
49	7.6	Flood Zone 2	None (within 50m)				
49	7.7	Flood Zone 3	None (within 50m)				

Page	Section	Surface water flooding >					
50 >	8.1 >	Surface water flooding >	1 in 250 year, 0.1m - 0.3m (within 50m)				

Page	Section	Groundwater flooding >					
52 >	9.1 >	Groundwater flooding >	Moderate-High (within 50m)				

Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
53	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
54	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
54	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
54	10.4	Special Protection Areas (SPA)	0	0	0	0	0
54	10.5	National Nature Reserves (NNR)	0	0	0	0	0
55	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
55 >	10.7 >	Designated Ancient Woodland >	0	0	4	2	29
56	10.8	Biosphere Reserves	0	0	0	0	0
57	10.9	Forest Parks	0	0	0	0	0
57	10.10	Marine Conservation Zones	0	0	0	0	0
57	10.11	Green Belt	0	0	0	0	0
57	10.12	Proposed Ramsar sites	0	0	0	0	0



57	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
58	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
58	10.15	Nitrate Sensitive Areas	0	0	0	0	0
58	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
59 >	10.17 >	SSSI Impact Risk Zones >	1	-	-	-	-
60	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
61	11.1	World Heritage Sites	0	0	0	-	-
62	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
62	11.3	National Parks	0	0	0	-	-
62	11.4	Listed Buildings	0	0	0	-	-
62	11.5	Conservation Areas	0	0	0	-	-
63 >	11.6 >	Scheduled Ancient Monuments >	0	0	1	-	-
63	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
64 >	12.1 >	Agricultural Land Classification >	Grade 3a (within 250m)				
65	12.2	Open Access Land	0	0	0	-	-
65	12.3	Tree Felling Licences	0	0	0	-	-
65	12.4	Environmental Stewardship Schemes	0	0	0	-	-
65	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
66	13.1	Priority Habitat Inventory	0	0	0	-	-
66	13.2	Habitat Networks	0	0	0	-	-
66	13.3	Open Mosaic Habitat	0	0	0	-	-
66	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
67 >	14.1 >	10k Availability >	Identified (within 500m)				
68	14.2	Artificial and made ground (10k)	0	0	0	0	-
69	14.3	Superficial geology (10k)	0	0	0	0	-



69	14.4	Landslip (10k)	0	0	0	0	-
70	14.5	Bedrock geology (10k)	0	0	0	0	-
70	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
71 >	15.1 >	50k Availability >	Identified (within 500m)				
72	15.2	Artificial and made ground (50k)	0	0	0	0	-
72	15.3	Artificial ground permeability (50k)	0	0	-	-	-
73 >	15.4 >	Superficial geology (50k) >	1	0	0	0	-
74 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
74	15.6	Landslip (50k)	0	0	0	0	-
74	15.7	Landslip permeability (50k)	None (within 50m)				
75 >	15.8 >	Bedrock geology (50k) >	1	0	1	0	-
76 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
76	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes >	On site	0-50m	50-250m	250-500m	500-2000m
77 >	16.1 >	BGS Boreholes >	0	0	12	-	-
Page	Section	Natural ground subsidence >					
79 >	17.1 >	Shrink swell clays >	Very low (within 50m)				
80 >	17.2 >	Running sands >	Very low (within 50m)				
81 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
82 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
83 >	17.5 >	Landslides >	Very low (within 50m)				
84 >	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
86 >	18.1 >	BritPits >	0	0	0	1	-
87 >	18.2 >	Surface ground workings >	5	6	28	-	-
89	18.3	Underground workings	0	0	0	0	0
89	18.4	Underground mining extents	0	0	0	0	-
89	18.5	Historical Mineral Planning Areas	0	0	0	0	-



89	18.6	Non-coal mining	0	0	0	0	0
89	18.7	JPB mining areas	None (within 0m)				
90	18.8	The Coal Authority non-coal mining	0	0	0	0	-
90	18.9	Researched mining	0	0	0	0	-
90	18.10	Mining record office plans	0	0	0	0	-
90	18.11	BGS mine plans	0	0	0	0	-
91	18.12	Coal mining	None (within 0m)				
91	18.13	Brine areas	None (within 0m)				
91	18.14	Gypsum areas	None (within 0m)				
91	18.15	Tin mining	None (within 0m)				
91	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
92	19.1	Natural cavities	0	0	0	0	-
92	19.2	Mining cavities	0	0	0	0	0
92	19.3	Reported recent incidents	0	0	0	0	-
92	19.4	Historical incidents	0	0	0	0	-
93	19.5	National karst database	0	0	0	0	-
Page	Section	Radon >					
94 >	20.1 >	Radon >	Less than 1% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
96 >	21.1 >	BGS Estimated Background Soil Chemistry >	1	0	-	-	-
96	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
96	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
97	22.1	Underground railways (London)	0	0	0	-	-
97	22.2	Underground railways (Non-London)	0	0	0	-	-
97	22.3	Railway tunnels	0	0	0	-	-
97	22.4	Historical railway and tunnel features	0	0	0	-	-
97	22.5	Royal Mail tunnels	0	0	0	-	-



98	22.6	Historical railways	0	0	0	-	-
98	22.7	Railways	0	0	0	-	-
98	22.8	Crossrail 1	0	0	0	0	-
98	22.9	Crossrail 2	0	0	0	0	-
98	22.10	HS2	0	0	0	0	-



Recent aerial photograph



Capture Date: 10/04/2020

Site Area: 0.99ha



Contact us with any questions at:

info@groundsure.com

01273 257 755

Date: 27 February 2024

Recent site history - 2017 aerial photograph



Capture Date: 07/05/2017

Site Area: 0.99ha



Contact us with any questions at:

info@groundsure.com

01273 257 755

Date: 27 February 2024

Recent site history - 2013 aerial photograph



Capture Date: 14/07/2013

Site Area: 0.99ha



Contact us with any questions at:

info@groundsure.com

01273 257 755

Date: 27 February 2024

Recent site history - 2009 aerial photograph



Capture Date: 01/06/2009

Site Area: 0.99ha



Contact us with any questions at:

info@groundsure.com

01273 257 755

Date: 27 February 2024

Recent site history - 2000 aerial photograph



Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2024. All Rights Reserved

Capture Date: 25/08/2000

Site Area: 0.99ha



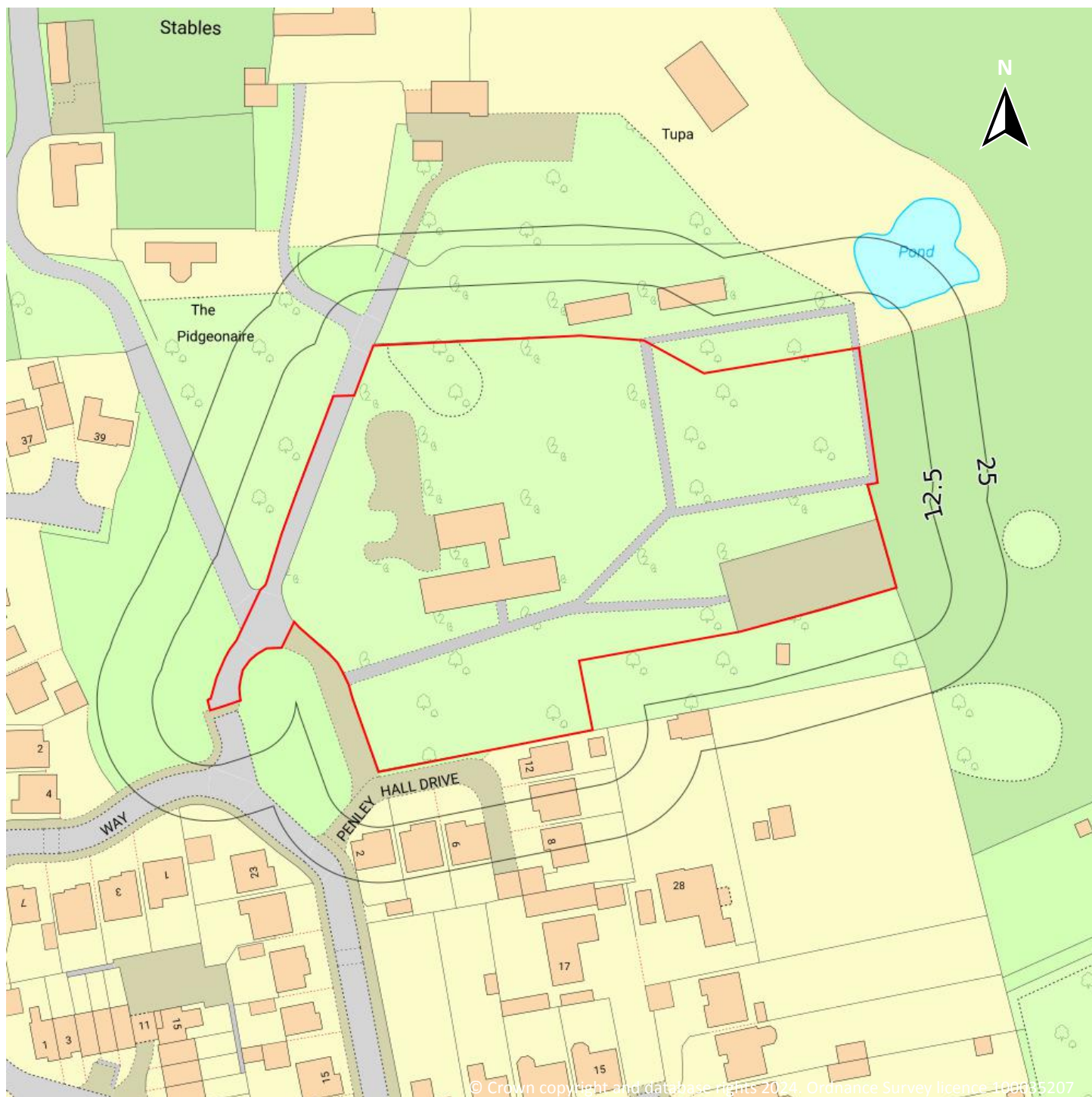
Contact us with any questions at:

info@groundsure.com

01273 257 755

Date: 27 February 2024

OS MasterMap site plan



Site Area: 0.99ha



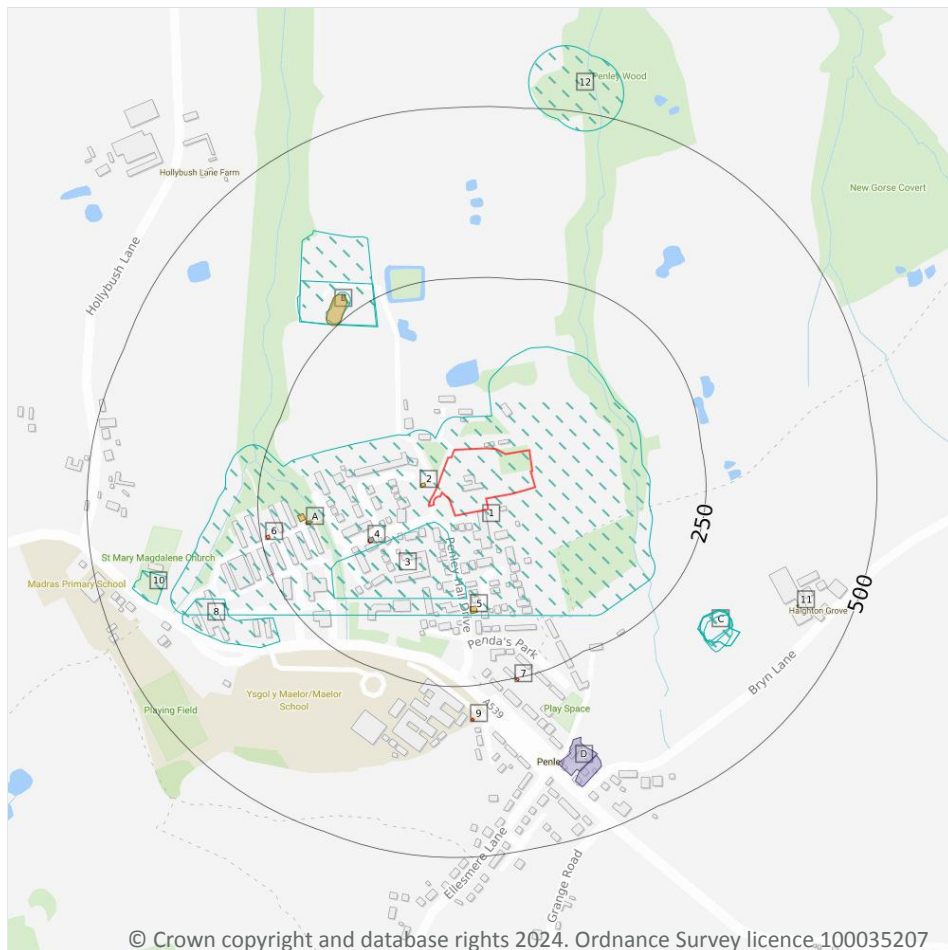
Contact us with any questions at:

info@groundsure.com

01273 257 755

Date: 27 February 2024

1 Past land use



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

1.1 Historical industrial land uses

Records within 500m

13

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 15](#) >

ID	Location	Land use	Dates present	Group ID
1	On site	Hospital	1949	934211



ID	Location	Land use	Dates present	Group ID
3	24m SW	Hospital	1977	928005
B	212m NW	Sewage Works	1977	811736
B	214m NW	Sewage Farm	1949	834857
B	251m NW	Unspecified Tanks	1949 - 1977	990693
8	281m SW	Hospital	1978	890469
C	311m SE	Unspecified Pit	1949	838834
C	311m SE	Sand Pit	1873	797221
C	311m SE	Old Gravel Pit	1898	951409
C	311m SE	Old Gravel Pit	1899 - 1914	884714
C	320m SE	Old Gravel Pit	1930	949538
10	398m W	Grave Yard	1873	817176
12	473m N	Sand Pit	1914 - 1930	948219

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

6

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

Features are displayed on the Past land use map on [page 15 >](#)

ID	Location	Land use	Dates present	Group ID
2	16m W	Unspecified Tank	1974 - 1996	143579
5	135m S	Unspecified Tank	1974	110652
A	172m W	Unspecified Tank	1996	110654
A	181m W	Unspecified Tank	1974	110655
B	250m NW	Tanks	1974 - 1996	138496
11	420m E	Unspecified Tank	1995	132353



This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m

4

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

Features are displayed on the Past land use map on [page 15 >](#)

ID	Location	Land use	Dates present	Group ID
4	94m SW	Electricity Substation	1974 - 1996	68460
6	237m W	Electricity Substation	1996	60168
7	251m S	Electricity Substation	1995	60167
9	297m S	Electricity Substation	1974 - 1995	69072

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m

0

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

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m

2

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

Features are displayed on the Past land use map on [page 15 >](#)



ID	Location	Land use	Dates present	Group ID
D	359m S	Garage	1995	20008
D	393m S	Garage	1974	20009

This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

Records within 500m

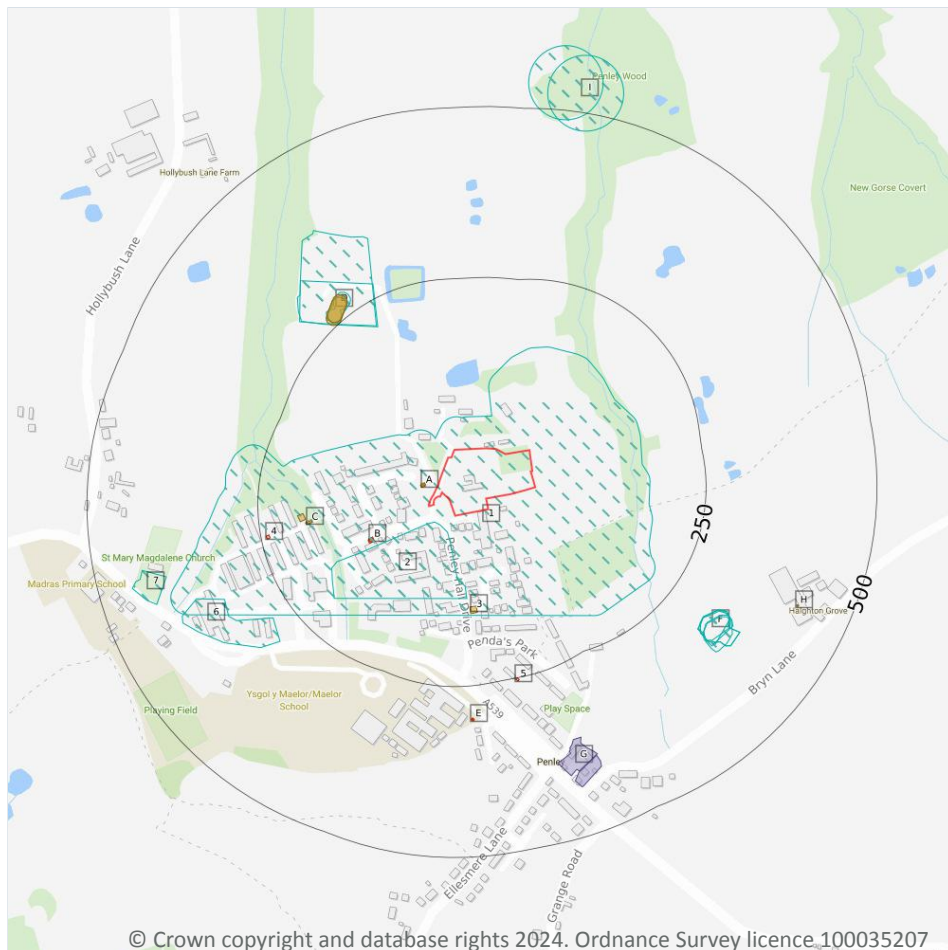
0

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
- Historical energy features
- Historical garages

2.1 Historical industrial land uses

Records within 500m

16

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 19](#) >

ID	Location	Land Use	Date	Group ID
1	On site	Hospital	1949	934211
2	24m SW	Hospital	1977	928005
D	212m NW	Sewage Works	1977	811736



ID	Location	Land Use	Date	Group ID
D	214m NW	Sewage Farm	1949	834857
D	251m NW	Unspecified Tanks	1977	990693
D	253m NW	Unspecified Tanks	1949	990693
6	281m SW	Hospital	1978	890469
F	311m SE	Unspecified Pit	1949	838834
F	311m SE	Sand Pit	1873	797221
F	311m SE	Old Gravel Pit	1898	951409
F	311m SE	Old Gravel Pit	1914	884714
F	320m SE	Old Gravel Pit	1899	884714
F	320m SE	Old Gravel Pit	1930	949538
7	398m W	Grave Yard	1873	817176
I	473m N	Sand Pit	1930	948219
I	486m N	Sand Pit	1914	948219

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m

9

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 19 >](#)

ID	Location	Land Use	Date	Group ID
A	16m W	Unspecified Tank	1996	143579
A	17m W	Unspecified Tank	1974	143579
3	135m S	Unspecified Tank	1974	110652
C	172m W	Unspecified Tank	1996	110654
C	181m W	Unspecified Tank	1974	110655
D	250m NW	Tanks	1996	138496
D	253m NW	Tanks	1974	138496



ID	Location	Land Use	Date	Group ID
H	420m E	Unspecified Tank	1995	132353
H	420m E	Unspecified Tank	1995	132353

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m

6

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

Features are displayed on the Past land use - un-grouped map on [page 19](#) >

ID	Location	Land Use	Date	Group ID
B	94m SW	Electricity Substation	1974	68460
B	95m SW	Electricity Substation	1996	68460
4	237m W	Electricity Substation	1996	60168
5	251m S	Electricity Substation	1995	60167
E	297m S	Electricity Substation	1995	69072
E	298m S	Electricity Substation	1974	69072

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

2

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'.

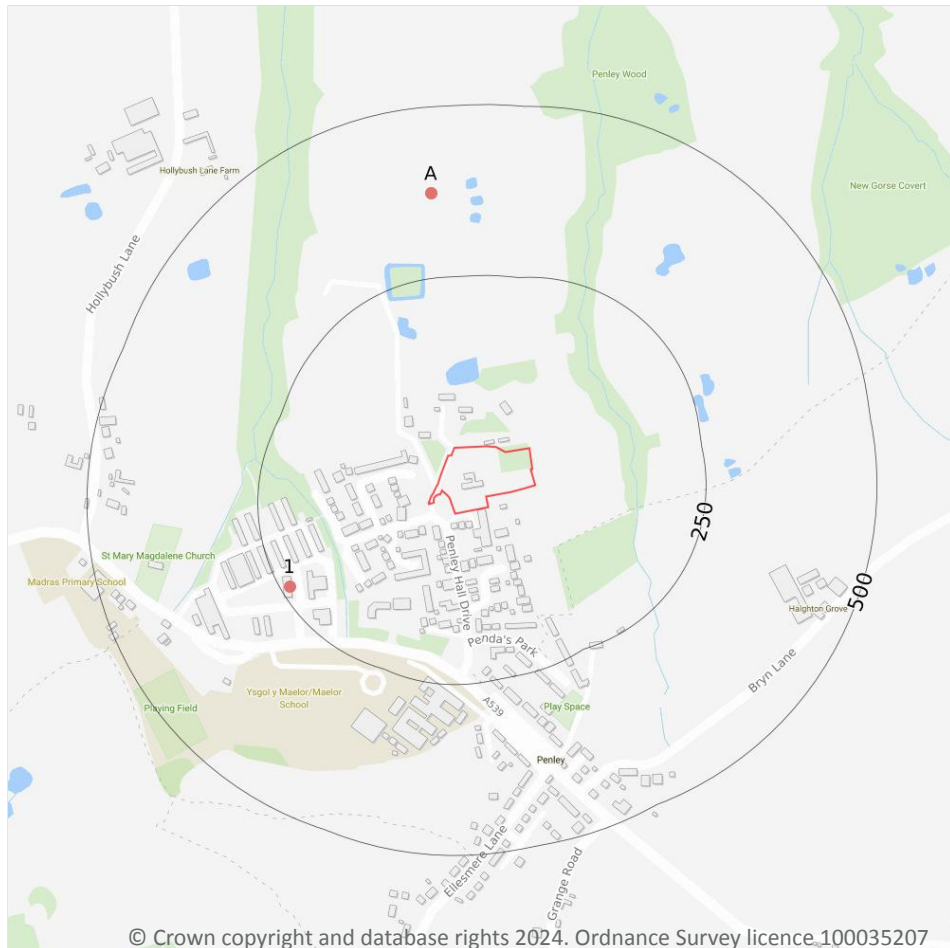
Features are displayed on the Past land use - un-grouped map on [page 19](#) >

ID	Location	Land Use	Date	Group ID
G	359m S	Garage	1995	20008
G	393m S	Garage	1974	20009

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**3**

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.

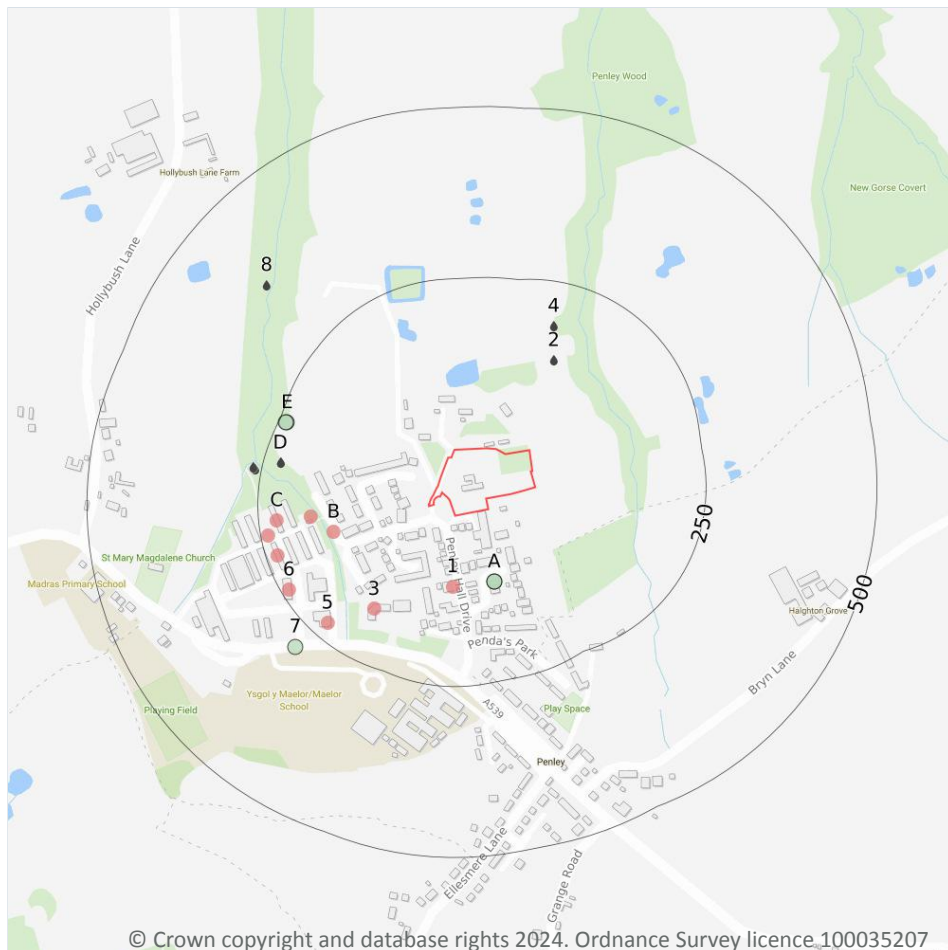
Features are displayed on the Waste and landfill map on [page 23](#) >

ID	Location	Site	Reference	Category	Sub-Category	Description
1	238m SW	M G Harvesting Limited, Penley Business Park, Penley Industrial Estate, Penley, Wrexham, LL13 0LQ	NRW- WME042459	Using waste exemption	Waste Exemption - Agricultural and Non- Agricultural	Use of waste in construction
A	373m N	-	WEX319390	Storing waste exemption	On a farm	Storage of sludge
A	373m N	United Utilities PLC, Lingley Green Avenue, Lingley Mere Business Park, Great Sankey, Warrington, WA5 3LP	NRW- WME075126	Storing waste exemption	Not on a farm	Storage of sludge

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



4 Current industrial land use



- Site Outline
- Search buffers in metres (m)
- Recent industrial land uses
- Licensed Discharges to controlled waters
- Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m

9

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on [page 26](#) >

ID	Location	Company	Address	Activity	Category
1	104m S	Control Escape Computing	2, Polska Street, Penley, Wrexham, Clwyd, LL13 OJS	Electrical Equipment Repair and Servicing	Repair and Servicing
B	145m W	Electricity Sub Station	Clwyd, LL13	Electrical Features	Infrastructure and Facilities



ID	Location	Company	Address	Activity	Category
3	171m SW	Penley Hospital	-, Whitchurch Road, Penley, Wrexham, Clwyd, LL13 0LH	Hospitals	Health Practitioners and Establishments
B	173m W	Tank	Clwyd, LL13	Tanks (Generic)	Industrial Features
C	224m W	Agafix Spares Ltd	Unit 21a, Penley Industrial Estate, Penley, Wrexham, Clwyd, LL13 0LQ	Cookers and Stoves - Non Electrical	Consumer Products
5	226m SW	Immony Kitchens & Furniture	Unit 39 Penley Industrial Estate, Penley, Wrexham, Clwyd, LL13 0LQ	Carpets, Flooring, Rugs and Soft Furnishings	Consumer Products
C	233m W	David Smith Joinery Ltd	Unit 22a, Penley Industrial Estate, Penley, Wrexham, Clwyd, LL13 0LQ	General Construction Supplies	Industrial Products
C	239m W	Electricity Sub Station	Clwyd, LL13	Electrical Features	Infrastructure and Facilities
6	239m SW	Regency Timber Buildings	Unit 34, Penley Industrial Estate, Penley, Wrexham, Clwyd, LL13 0LQ	Garden Goods	Consumer Products

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m

0

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m

0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m

0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.



4.5 Sites determined as Contaminated Land

Records within 500m

0

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

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m

0

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

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m

0

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

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m

0

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

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m

0

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

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



4.10 Licensed industrial activities (Part A(1))

Records within 500m**0**

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

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

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

Records within 500m**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**10**

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 26 >](#)

ID	Location	Address	Details	
2	136m NE	TUPA PENLEY HALL PENLEY WREXHAM, PENLEY HALL PENLEY WREXHAM, PENLEY WREXHAM, WREXHAM	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CM0153701 Permit Version: 2 Receiving Water: SOAKAWAY	Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 15/05/1992 Effective Date: 15/05/1992 Revocation Date: -



ID	Location	Address	Details	
4	185m NE	PENLEY PENLEY HALL STABLES, PENLEY PENLEY HALL STABLES, PENLEY HALL STABLES	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CM0154501 Permit Version: 0 Receiving Water: Groundwater via infiltration system	Status: Effective Issue date: 15/05/1992 Effective Date: 15/05/1992 Revocation Date: -
D	225m W	PENLEY PS, WREXHAM	Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: CM0177201 Permit Version: 3 Receiving Water: EMRAL BROOK	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 21/11/2007 Effective Date: 21/11/2007 Revocation Date: 30/03/2010
D	225m W	PENLEY PS, WREXHAM	Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: CM0177201 Permit Version: 1 Receiving Water: EMRAL BROOK	Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 19/10/1989 Effective Date: 19/10/1989 Revocation Date: 30/03/2009
D	225m W	PENLEY PS, WREXHAM	Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: CM0177201 Permit Version: 2 Receiving Water: EMRAL BROOK	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 08/03/2005 Effective Date: 31/03/2009 Revocation Date: 13/02/2008
D	259m W	PENLEY PS, Wrexham	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: CM0177201 Permit Version: 4 Receiving Water: EMRAL BROOK	Status: Effective Issue date: 16/03/2009 Effective Date: 31/03/2010 Revocation Date: -
D	259m W	PENLEY PS, Wrexham	Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: CM0177201 Permit Version: 4 Receiving Water: EMRAL BROOK	Status: Effective Issue date: 16/03/2009 Effective Date: 31/03/2010 Revocation Date: -
D	262m W	Penley Hospital SPS, Penley Hospital, Penley, Wrexham, LL13 OLH	Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: CM0177201 Permit Version: 0 Receiving Water: Emral Brook	Status: Effective Issue date: 17/12/2019 Effective Date: 17/12/2019 Revocation Date: -



ID	Location	Address	Details	
D	262m W	Penley Hospital SPS, Penley Hospital, Penley, Wrexham, LL13 0LH	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: CM0177201 Permit Version: 0 Receiving Water: Emral Brook	Status: Effective Issue date: 17/12/2019 Effective Date: 17/12/2019 Revocation Date: -
8	365m NW	PENLEY STW, PENLEY STW	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: CM0118501 Permit Version: 0 Receiving Water: UN-NAMED TRIB. OF EMRAL BROOK	Status: Effective Issue date: 24/09/2009 Effective Date: 01/01/2010 Revocation Date: -

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

4.14 Pollutant release to surface waters (Red List)

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

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

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

4.15 Pollutant release to public sewer

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

Discharges of Special Category Effluents to the public sewer.

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

4.16 List 1 Dangerous Substances

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

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

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

4.17 List 2 Dangerous Substances

Records within 500m

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

5

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 26 >](#)

ID	Location	Details	
A	105m S	Incident Date: 10/06/2016 Incident Identification: 1603558 Pollutant: - Pollutant Description: -	Water Impact: No Details Land Impact: Category 3 (Minor) Air Impact: No Details
A	105m S	Incident Date: 10/06/2016 Incident Identification: 1603558 Pollutant: Oils and Fuels Pollutant Description: Gas and Fuel Oils	Water Impact: No Details Land Impact: Category 3 (Minor) Air Impact: No Details
E	238m W	Incident Date: 09/07/2018 Incident Identification: 1804110 Pollutant: Sewage Material Pollutant Description: Crude Sewage	Water Impact: Category 2 (Significant) Land Impact: Category 2 (Significant) Air Impact: No Details
E	240m W	Incident Date: 10/07/2018 Incident Identification: 1807972 Pollutant: Sewage Material Pollutant Description: Crude Sewage	Water Impact: Category 2 (Significant) Land Impact: Category 2 (Significant) Air Impact: No Details
7	283m SW	Incident Date: 25/02/2014 Incident Identification: 1211765 Pollutant: Multiple Pollutants Pollutant Description: 2 Pollutants Including Smoke	Water Impact: - Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)

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



4.19 Pollution inventory substances

Records within 500m

0

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

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

4.20 Pollution inventory waste transfers

Records within 500m

0

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

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

4.21 Pollution inventory radioactive waste

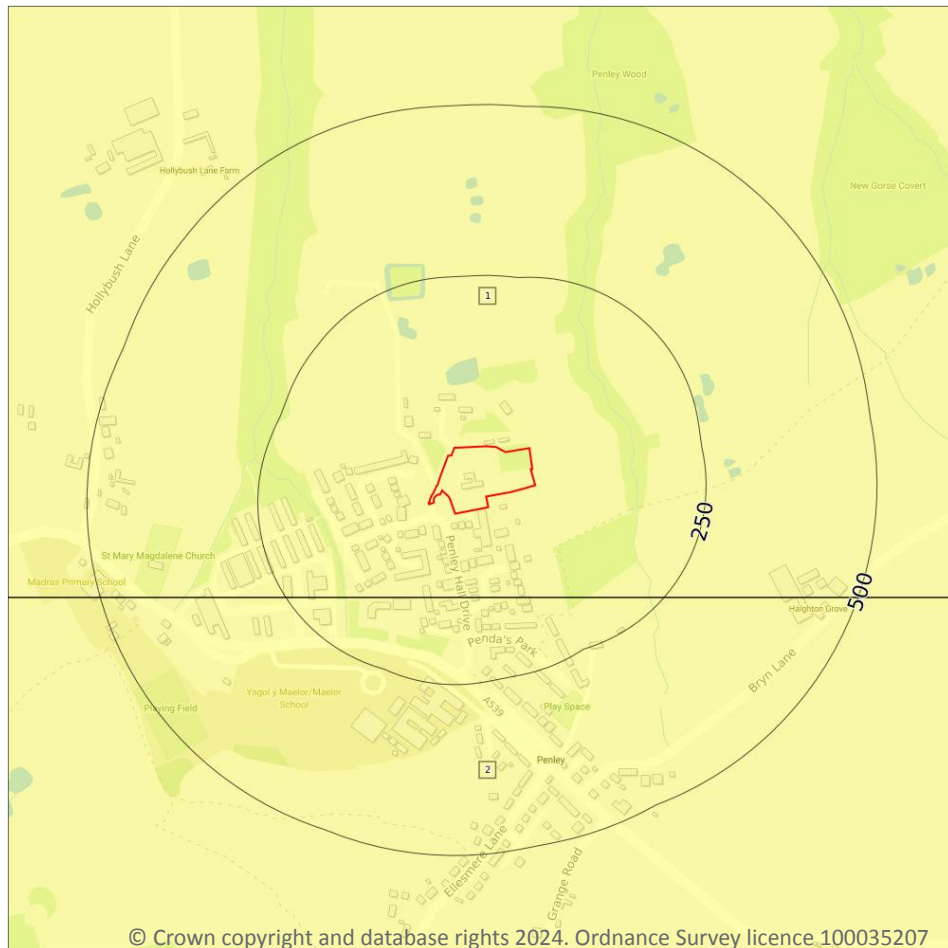
Records within 500m

0

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

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

5 Hydrogeology - Superficial aquifer



- Site Outline**
- Search buffers in metres (m)**
- Principal
 - Secondary A
 - Secondary B
 - Secondary Undifferentiated
 - Unproductive
 - Unknown

5.1 Superficial aquifer

Records within 500m

2

Aquifer status of groundwater held within superficial geology.

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

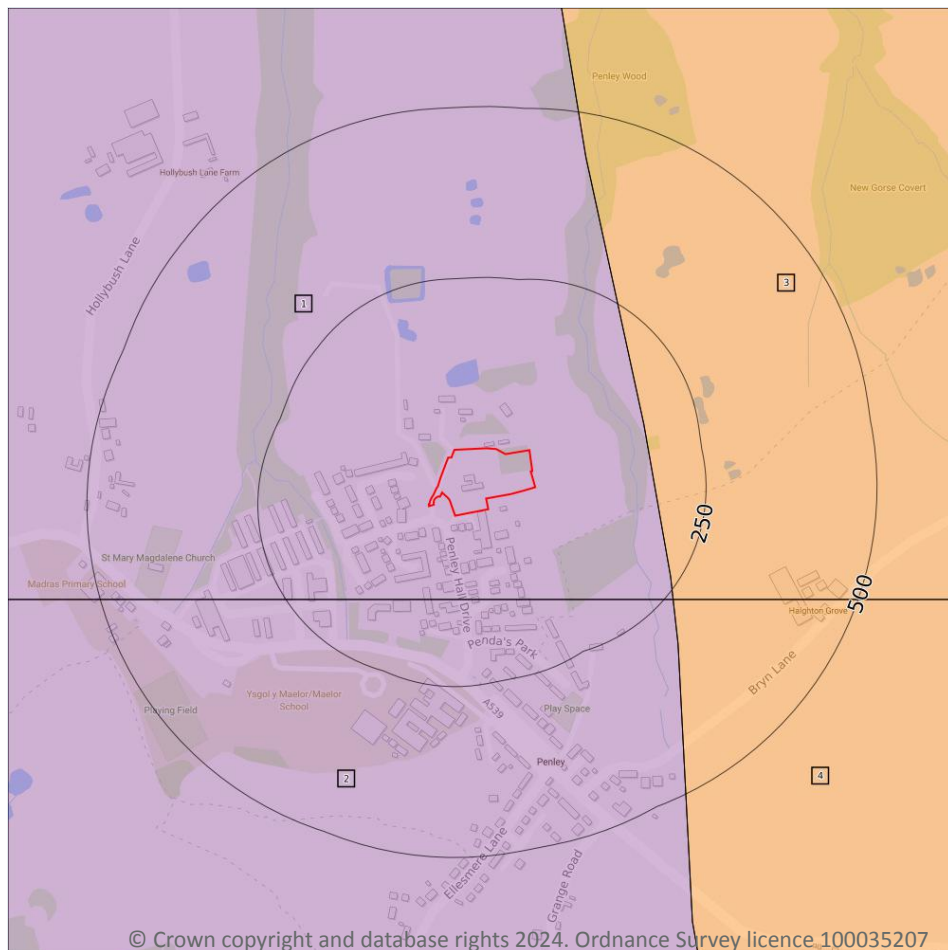
ID	Location	Designation	Description
1	On site	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
2	123m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type



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



Bedrock aquifer



- Site Outline**
- Search buffers in metres (m)**
- Principal
 - Secondary A
 - Secondary B
 - Secondary Undifferentiated
 - Unproductive

5.2 Bedrock aquifer

Records within 500m

4

Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on [page 36](#) >

ID	Location	Designation	Description
1	On site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
2	123m S	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers

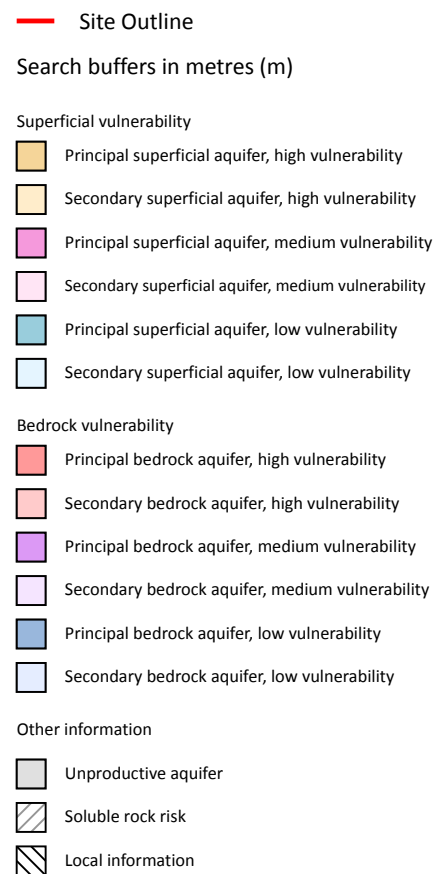
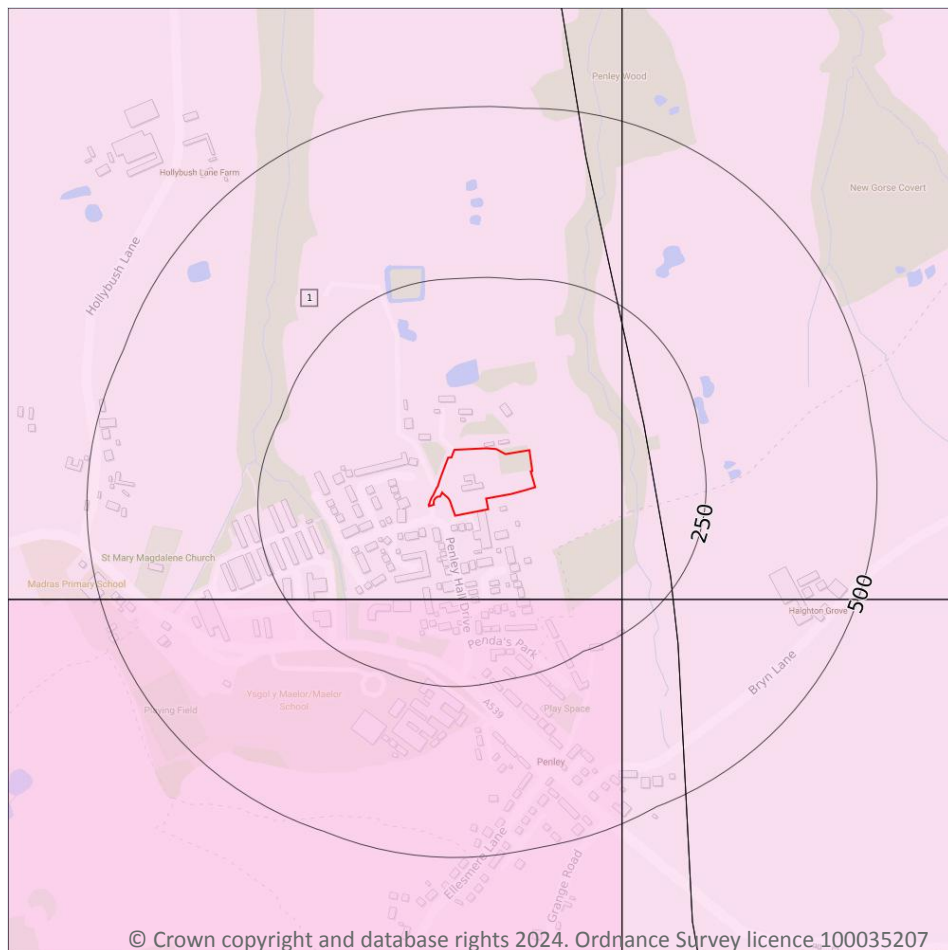


ID	Location	Designation	Description
3	172m E	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers
4	260m SE	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-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

1

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 38](#) >



ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: <300mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: Low	Vulnerability: Low Aquifer type: Principal Flow mechanism: Well connected fractures

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

5.4 Groundwater vulnerability- soluble rock risk

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

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

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

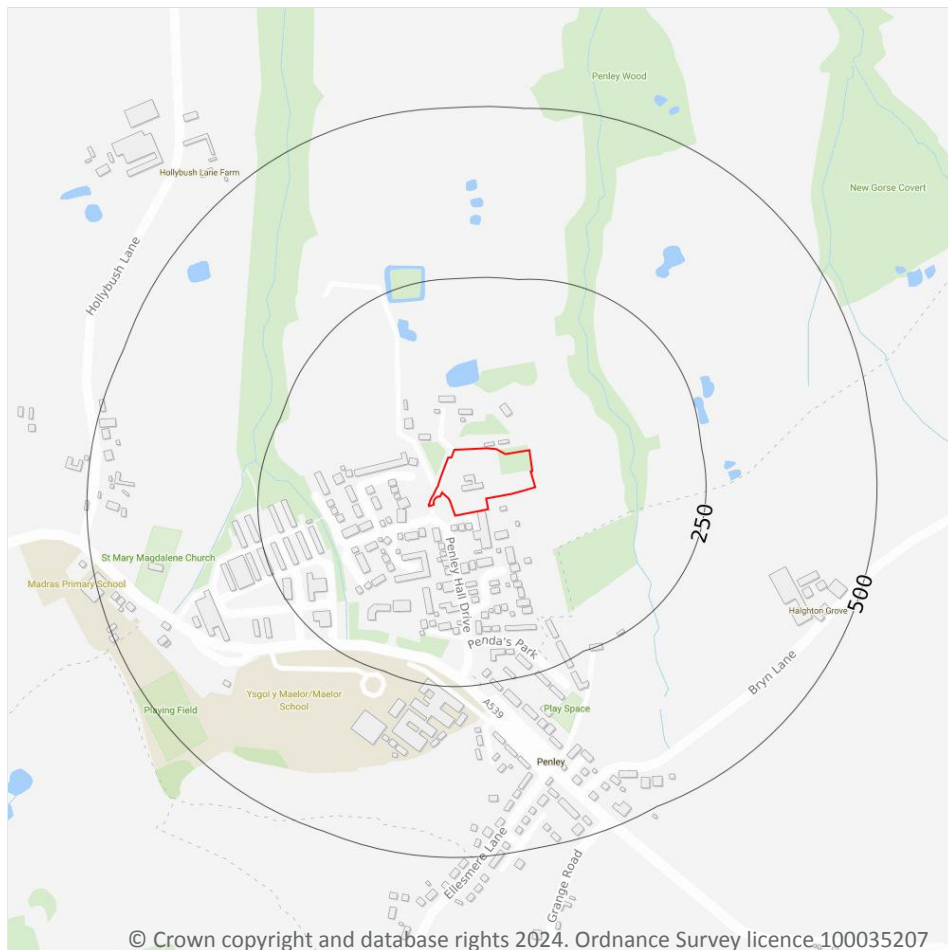
5.5 Groundwater vulnerability- local information

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

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

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

Abstractions and Source Protection Zones



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

5.6 Groundwater abstractions

Records within 2000m

3

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 40](#) >



ID	Location	Details	
-	1442m S	Status: Historical Licence No: 24/67/7/0101 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: WELL Data Type: Point Name: Rodenhurst Easting: 341730 Northing: 338680	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 25/10/1966 Expiry Date: - Issue No: 100 Version Start Date: 25/10/1966 Version End Date: -
-	1755m S	Status: Historical Licence No: 24/67/7/0099 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: WELL Data Type: Point Name: Lane Easting: 342450 Northing: 338500	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 25/10/1966 Expiry Date: - Issue No: 100 Version Start Date: 03/03/1978 Version End Date: -
-	1935m S	Status: Historical Licence No: 24/67/7/0097 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: WELL Data Type: Point Name: Allmond Easting: 341650 Northing: 338190	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 25/10/1966 Expiry Date: - Issue No: 100 Version Start Date: 25/10/1966 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m

4

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 40 >](#)



ID	Location	Details	
-	1650m NE	Status: Active Licence No: WA/067/0007/010 Details: Fish Farm / Cress pond Throughflow - Very Low Direct Source: - Point: - Data Type: Point Name: - Easting: 343133 Northing: 341275	Annual Volume (m ³): 207083.5 Max Daily Volume (m ³): 567.4 Original Application No: - Original Start Date: 26/06/2014 Expiry Date: 31/03/2027 Issue No: - Version Start Date: - Version End Date: -
-	1650m NE	Status: Historical Licence No: WA/067/0007/010 Details: Fish Farm/Cress Pond Throughflow Direct Source: EAW Surface Water Point: EMRAL BROOK AT HANMER Data Type: Point Name: Taylor Easting: 343133 Northing: 341275	Annual Volume (m ³): 207084 Max Daily Volume (m ³): 567.4 Original Application No: - Original Start Date: 26/06/2014 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 26/06/2014 Version End Date: -
-	1650m NE	Status: Historical Licence No: WA/067/0007/010 Details: Fish Farm / Cress pond Throughflow - Very Low Direct Source: - Point: - Data Type: Point Name: - Easting: 343133 Northing: 341275	Annual Volume (m ³): 207083.5 Max Daily Volume (m ³): 566.4 Original Application No: - Original Start Date: 26/06/2014 Expiry Date: 31/03/2027 Issue No: - Version Start Date: - Version End Date: -
-	1667m NE	Status: Historical Licence No: 24/67/7/0188 Details: Fish Farm/Cress Pond Throughflow Direct Source: EAW Surface Water Point: EMRAL BROOK Data Type: Point Name: Taylor Easting: 343150 Northing: 341280	Annual Volume (m ³): 207079 Max Daily Volume (m ³): 567.341 Original Application No: - Original Start Date: 05/10/1977 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2008 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

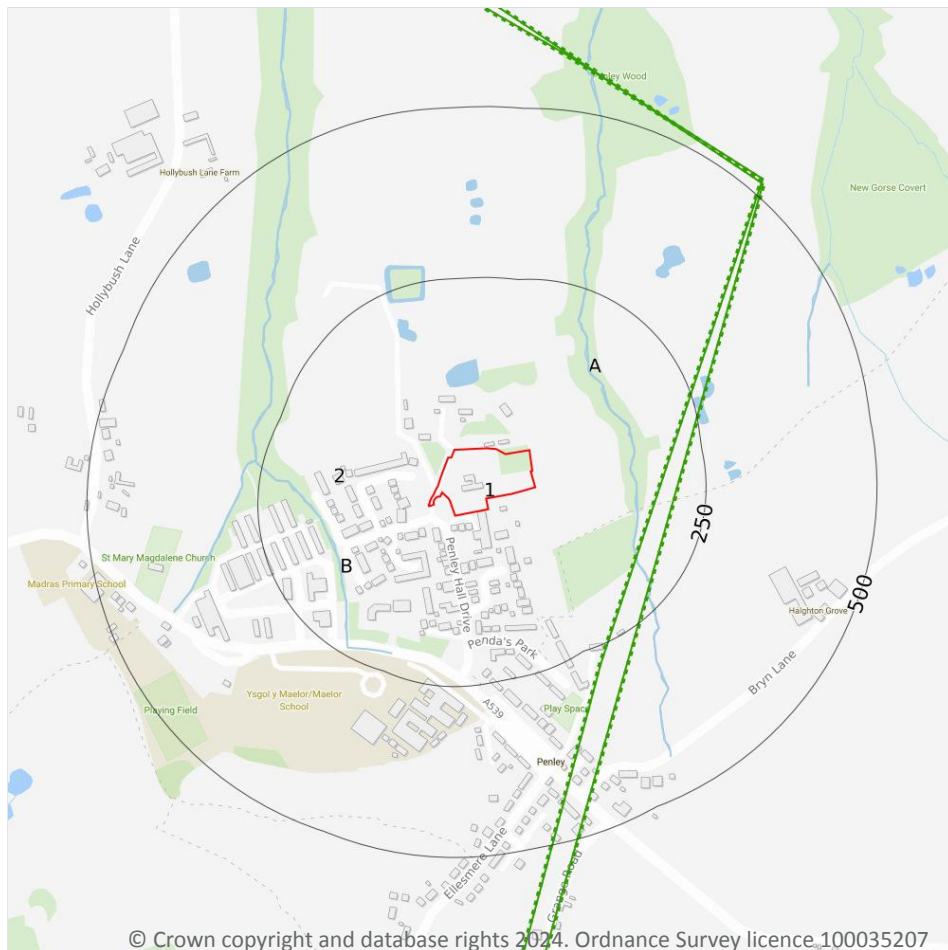
0

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



- Site Outline
- Search buffers in metres (m)
- Water Network (OS MasterMap)
- Surface water features (wider than 5m)
- Surface water features (narrower than 5m)
- ⋯ WFD River, canal and surface water transfer water bodies
- WFD Lake water bodies
- WFD Transitional and coastal water bodies
- WFD Surface water body catchments boundaries
- WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m

2

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 44](#) >

ID	Location	Type of water feature	Ground level	Permanence	Name
A	131m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-



ID	Location	Type of water feature	Ground level	Permanence	Name
B	148m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	8
----------------------------	----------

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 44 >](#)

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

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

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

Features are displayed on the Hydrology map on [page 44 >](#)

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	On site	River WB catchment	Emral Brook	GB111067052211	Worthenbury	Dee

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 44](#) >

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	1135m S	River	Emral Brook	GB111067052211	Moderate	Good	Moderate	2016

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

6.5 WFD Groundwater bodies

Records on site

1

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

Features are displayed on the Hydrology map on [page 44](#) >

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
2	On site	Dee Permo-Triassic Sandstone	GB41101G202400	Poor	Poor	Good	2019

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



7 River and coastal flooding

7.1 Risk of flooding from rivers and the sea

Records within 50m

0

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

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

7.2 Historical Flood Events

Records within 250m

0

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

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

7.3 Flood Defences

Records within 250m

0

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

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



7.4 Areas Benefiting from Flood Defences

Records within 250m

0

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

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

7.5 Flood Storage Areas

Records within 250m

0

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

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



River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m

0

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

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

7.7 Flood Zone 3

Records within 50m

0

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

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



8 Surface water flooding



— Site Outline

Search buffers in metres (m)

1 in 1000 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site

Negligible

Highest risk within 50m

1 in 250 year, 0.1m - 0.3m

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 50](#) >

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

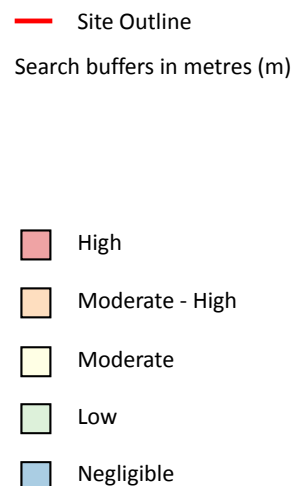
a site. The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Between 0.1m and 0.3m
1 in 250 year	Negligible
1 in 100 year	Negligible
1 in 30 year	Negligible

This data is sourced from Ambiantal Risk Analytics.



9 Groundwater flooding



9.1 Groundwater flooding

Highest risk on site

Moderate-High

Highest risk within 50m

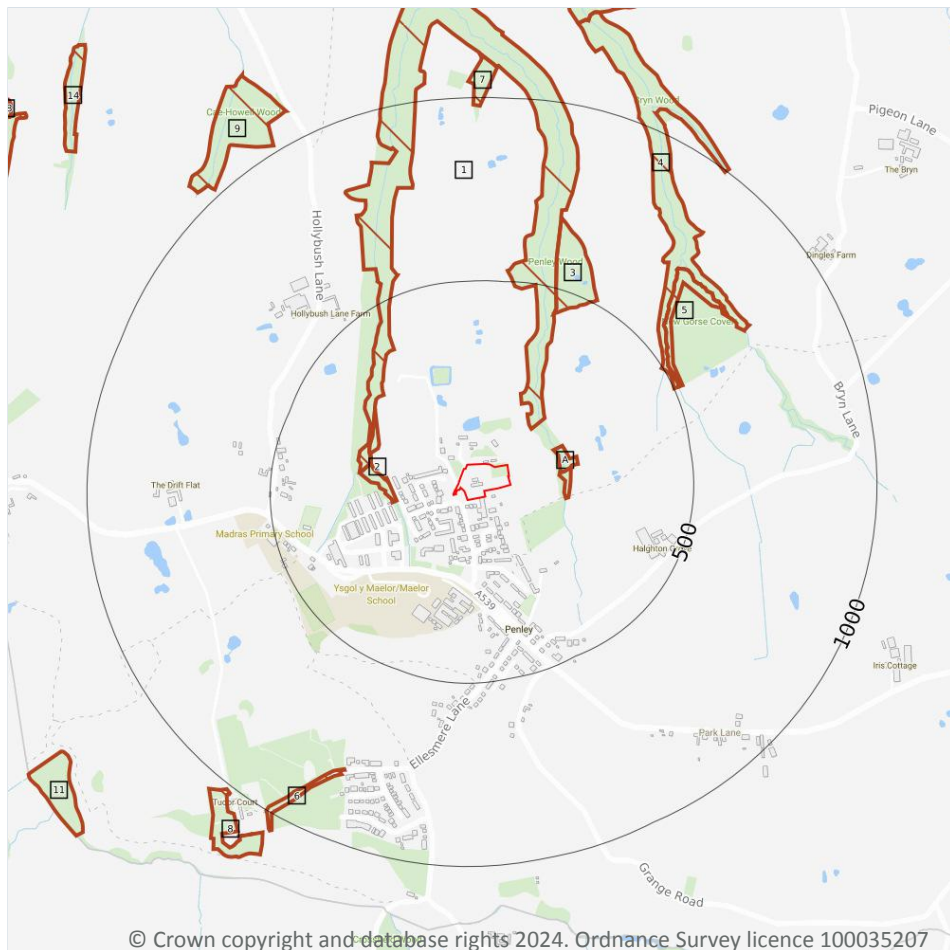
Moderate-High

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 52 >](#)

This data is sourced from Ambiantal Risk Analytics.

10 Environmental designations



- Site Outline
- Search buffers in metres (m)
- Designated Ancient Woodland

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

0

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

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m**0**

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

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m**0**

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

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

10.4 Special Protection Areas (SPA)

Records within 2000m**0**

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

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

10.5 National Nature Reserves (NNR)

Records within 2000m**0**

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

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



10.6 Local Nature Reserves (LNR)

Records within 2000m

0

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

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

10.7 Designated Ancient Woodland

Records within 2000m

35

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 53 >](#)

ID	Location	Name	Woodland Type
1	118m NE	Unknown	Ancient Semi Natural Woodland
A	132m NE	Unknown	Ancient Semi Natural Woodland
A	136m E	Unknown	Ancient Semi Natural Woodland
2	156m W	Unknown	Ancient Semi Natural Woodland
3	432m NE	Unknown	Ancient Semi Natural Woodland
4	497m NE	Unknown	Ancient Semi Natural Woodland
5	514m NE	Unknown	Ancient Semi Natural Woodland
6	805m SW	Unknown	Ancient Semi Natural Woodland
7	977m N	Unknown	Ancient Semi Natural Woodland
8	1013m SW	Unknown	Ancient Semi Natural Woodland
9	1018m NW	Unknown	Ancient Semi Natural Woodland
10	1220m N	Unknown	Plantation on Ancient Woodland Site
11	1270m SW	Unknown	Restored Ancient Woodland Site
-	1313m N	Unknown	Ancient Semi Natural Woodland
-	1354m N	Unknown	Ancient Semi Natural Woodland



ID	Location	Name	Woodland Type
14	1368m NW	Unknown	Ancient Semi Natural Woodland
B	1378m W	Unknown	Plantation on Ancient Woodland Site
-	1378m W	Unknown	Plantation on Ancient Woodland Site
-	1421m NW	Unknown	Ancient Semi Natural Woodland
-	1422m W	Unknown	Ancient Semi Natural Woodland
-	1436m NW	Unknown	Plantation on Ancient Woodland Site
-	1440m W	Unknown	Ancient Semi Natural Woodland
-	1466m NW	Unknown	Plantation on Ancient Woodland Site
-	1515m S	Mill Wood/old Coppices	Ancient & Semi-Natural Woodland
-	1526m S	Mill Wood/old Coppices	Ancient Replanted Woodland
18	1567m NW	Unknown	Plantation on Ancient Woodland Site
-	1568m SW	Lomax Wood	Ancient Replanted Woodland
-	1579m S	Bishops Wood	Ancient Replanted Woodland
-	1593m NE	Unknown	Ancient Semi Natural Woodland
-	1598m N	Unknown	Ancient Semi Natural Woodland
-	1824m N	Unknown	Ancient Semi Natural Woodland
-	1911m SW	Lionlane Wood	Ancient Replanted Woodland
-	1927m S	Mill Wood/old Coppices	Ancient & Semi-Natural Woodland
-	1955m NW	Unknown	Plantation on Ancient Woodland Site
-	1982m NW	Unknown	Plantation on Ancient Woodland Site

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

10.8 Biosphere Reserves

Records within 2000m

0

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

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



10.9 Forest Parks

Records within 2000m

0

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

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m

0

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

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

10.11 Green Belt

Records within 2000m

0

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

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

10.12 Proposed Ramsar sites

Records within 2000m

0

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

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m

0

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

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



10.14 Potential Special Protection Areas (pSPA)

Records within 2000m

0

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

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m

0

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

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

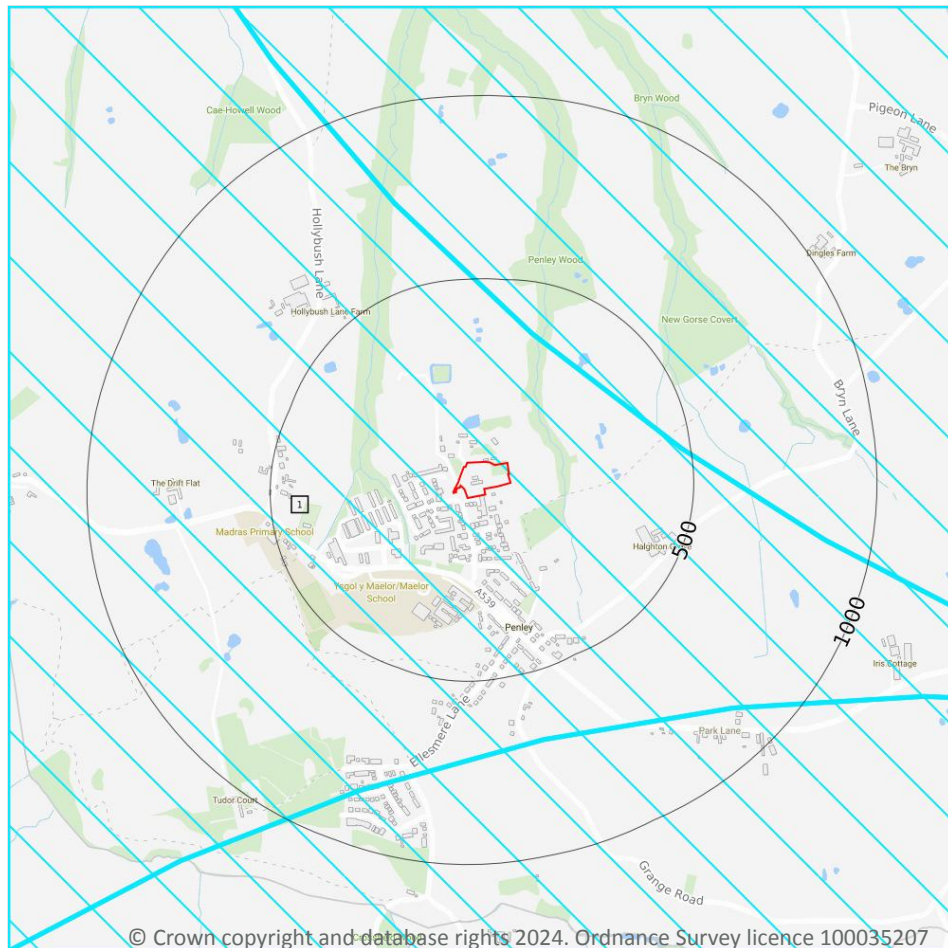
Records within 2000m

0

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

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

SSSI Impact Zones and Units



- Site Outline
- Search buffers in metres (m)
- ▨ SSSI Impact Risk Zones
- SSSI Units
- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

10.17 SSSI Impact Risk Zones

Records on site

1

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.

Features are displayed on the SSSI Impact Zones and Units map on [page 59 >](#)

ID	Location	Type of developments requiring consultation
1	On site	Infrastructure - Airports, helipads and other aviation proposals. Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 4000m². Combustion - General combustion processes > 50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.



This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m

0

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

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



11 Visual and cultural designations



- Site Outline
- Search buffers in metres (m)
- Listed buildings
- Conservation areas
- Conservation areas - no data
- National Parks
- Areas of Outstanding Natural Beauty
- Registered parks and gardens
- Scheduled Monuments
- World Heritage Sites

11.1 World Heritage Sites

Records within 250m

0

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

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

11.2 Area of Outstanding Natural Beauty

Records within 250m**0**

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

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

11.3 National Parks

Records within 250m**0**

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

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

11.4 Listed Buildings

Records within 250m**0**

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

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

11.5 Conservation Areas

Records within 250m**0**

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



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

11.6 Scheduled Ancient Monuments

Records within 250m

1

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

Features are displayed on the Visual and cultural designations map on [page 61 >](#)

ID	Location	Ancient monument name	Reference number
1	217m N	Penley Hall Moated Site	3093

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

11.7 Registered Parks and Gardens

Records within 250m

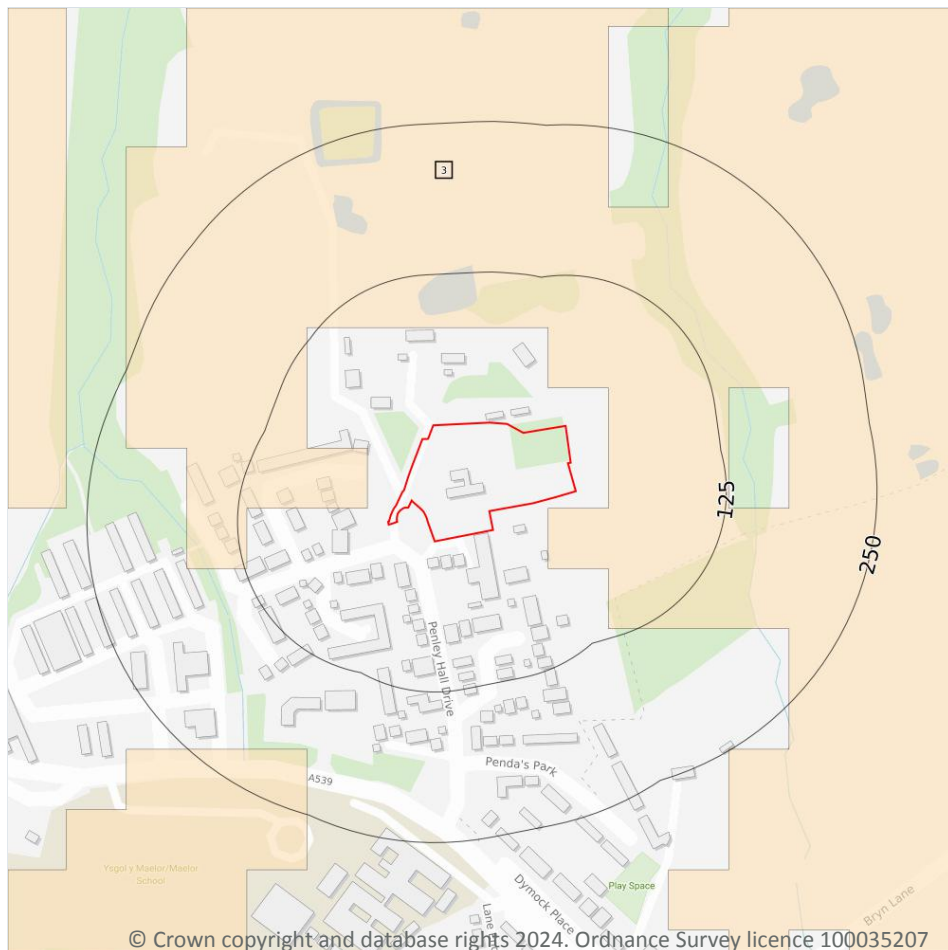
0

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

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



12 Agricultural designations



- Site Outline
- Search buffers in metres (m)
- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Timber felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m

1

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 64](#) >

ID	Location	Classification	Description
3	7m SE	Grade 3a	Good to 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

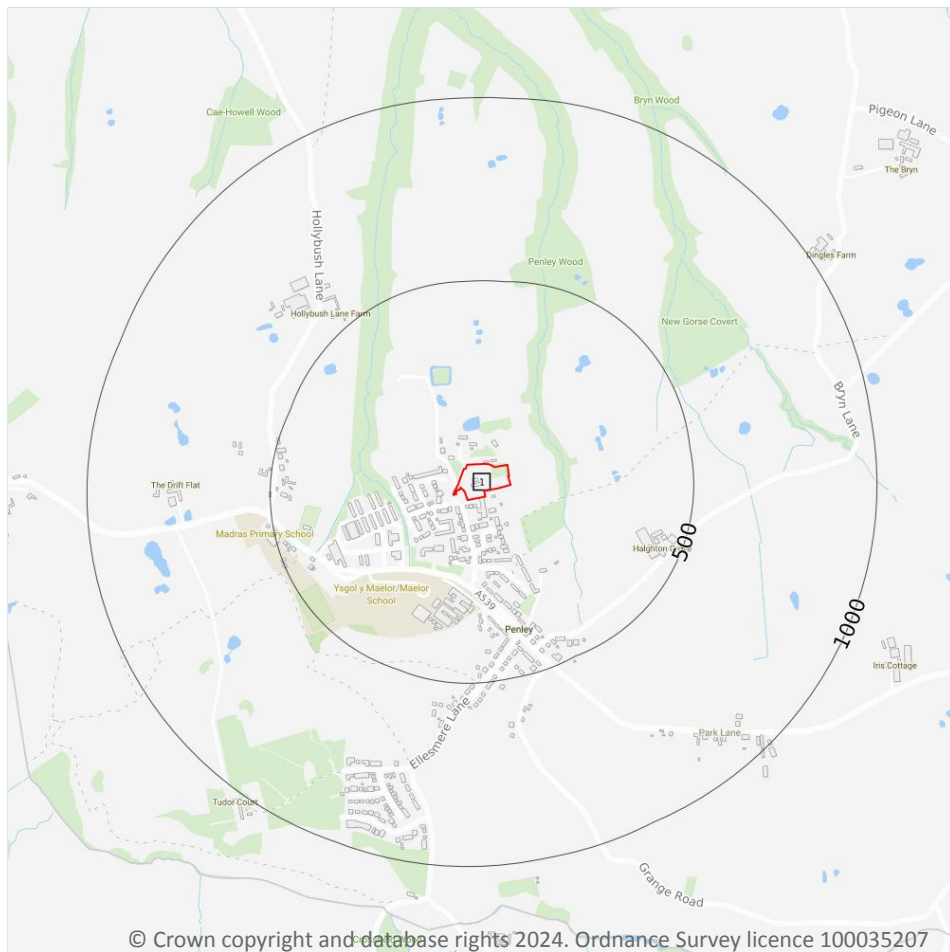
Records within 250m**0**

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



- Site Outline**
- Search buffers in metres (m)**
- Full coverage
 - Partial coverage
 - No coverage

14.1 10k Availability

Records within 500m

1

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme. Features are displayed on the Geology 1:10,000 scale - Availability map on [page 67](#) >

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

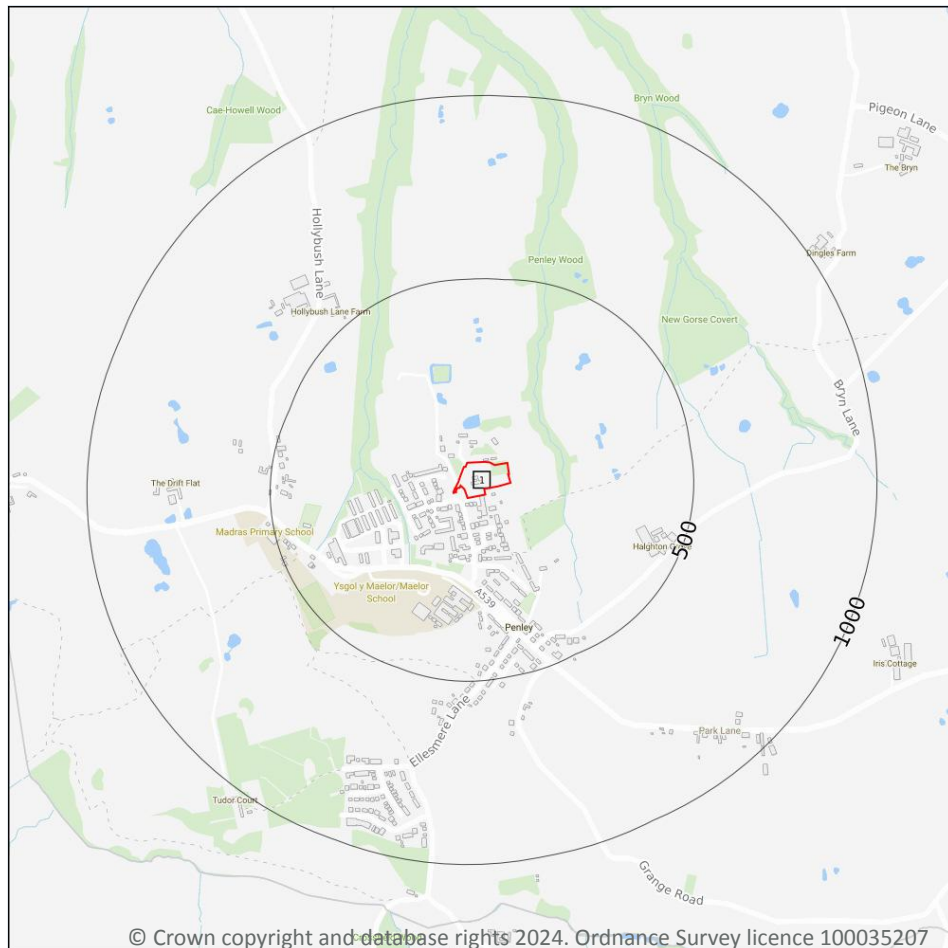
0

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 71](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	No coverage	Full	Full	Full	EW122_nantwich_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

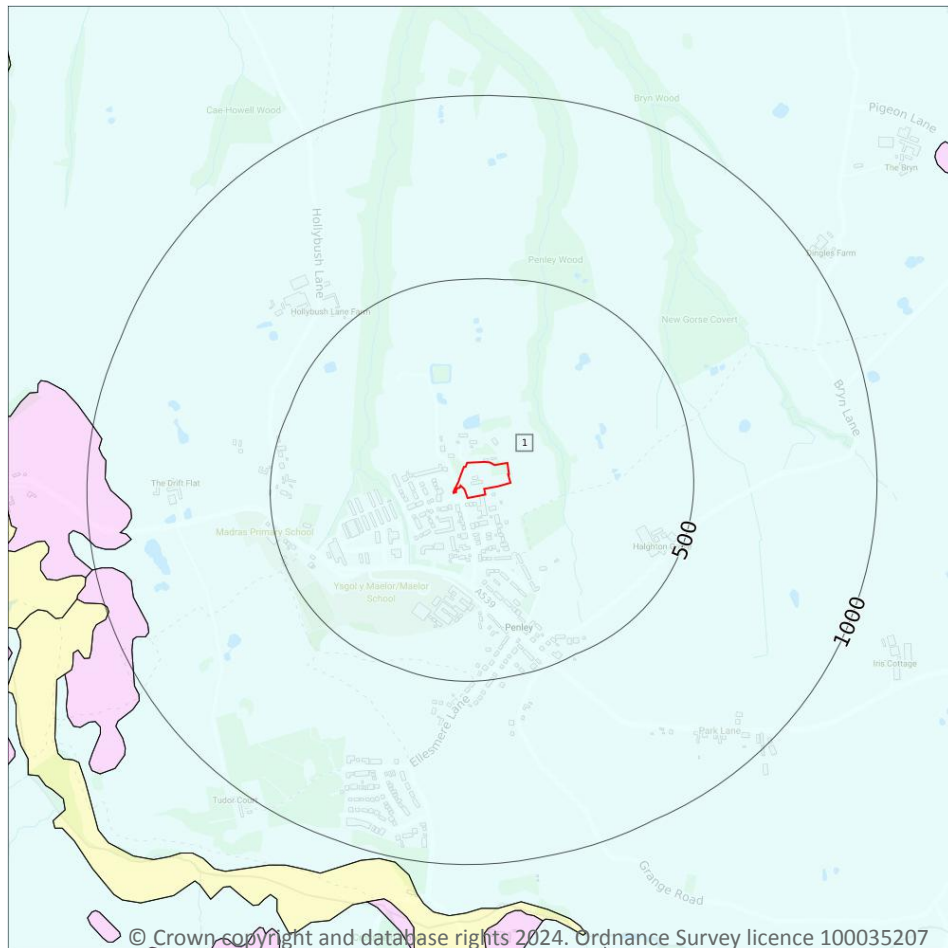
0

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

1

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 73](#) >

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

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)

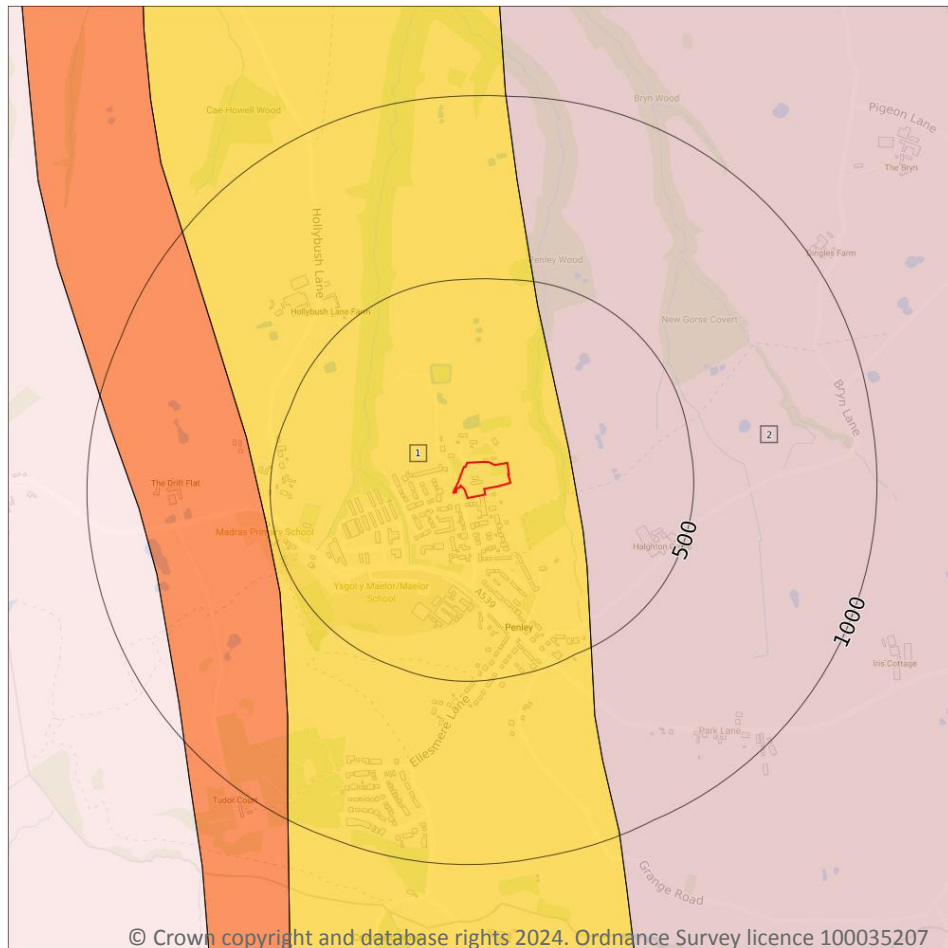
Records within 50m**0**

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

2

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 75 >](#)

ID	Location	LEX Code	Description	Rock age
1	On site	HEY-PESST	HELSEY SANDSTONE FORMATION - SANDSTONE, PEBBLY (GRAVELLY)	ANISIAN
2	172m E	TPSF-SIMS	TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE	OLENEKIAN

This data is sourced from the British Geological Survey.



15.9 Bedrock 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 bedrock (the zone between the land surface and the water table).

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

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m

0

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.

This data is sourced from the British Geological Survey.



16 Boreholes



— Site Outline
Search buffers in metres (m)

- Confidential
- 0 - 10m
- 10 - 30m
- 30m+
- Unknown

16.1 BGS Boreholes

Records within 250m

12

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

Features are displayed on the Boreholes map on [page 77 >](#)

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	237m S	341850 339900	HOUSING DEVELOPMENT PENLEY TP 9	1.0	N	635252 ↗
A	237m S	341850 339900	HOUSING DEVELOPMENT PENLEY TP 2	2.0	N	635247 ↗

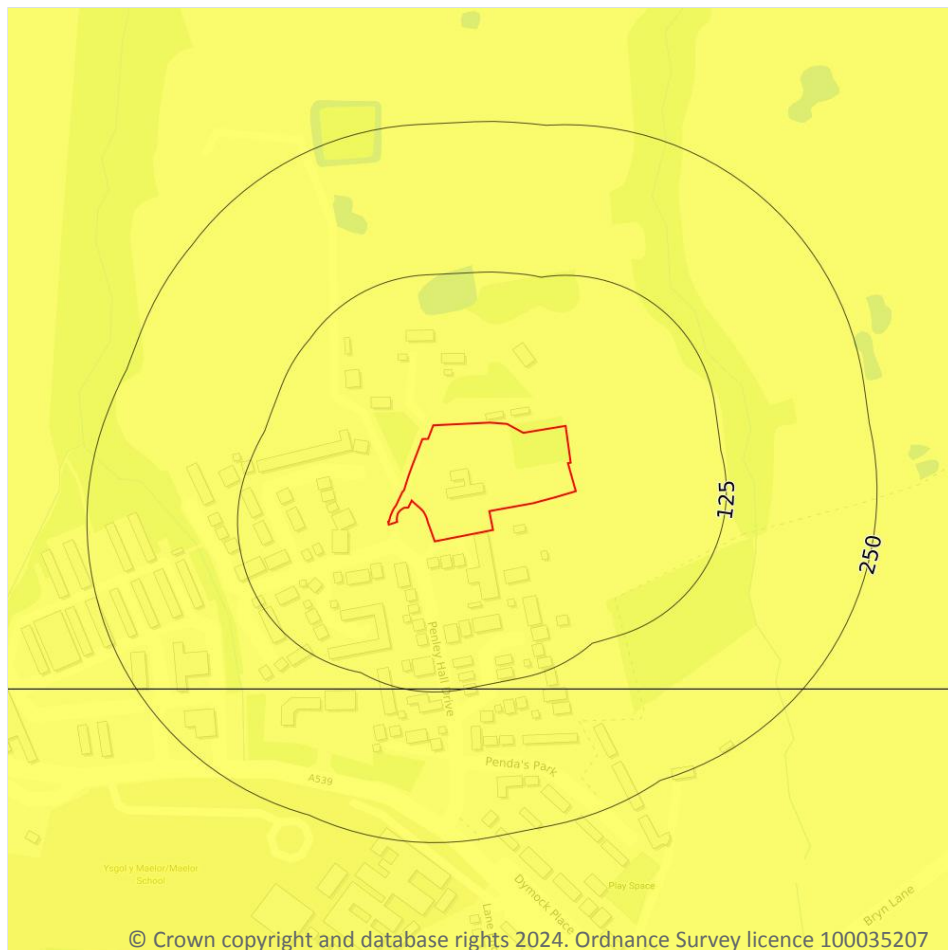


ID	Location	Grid reference	Name	Length	Confidential	Web link
A	237m S	341850 339900	HOUSING DEVELOPMENT PENLEY TP 12	1.0	N	635255 ↗
A	237m S	341850 339900	HOUSING DEVELOPMENT PENLEY TP 13	1.0	N	635256 ↗
A	237m S	341850 339900	HOUSING DEVELOPMENT PENLEY TP 6	2.0	N	635251 ↗
A	237m S	341850 339900	HOUSING DEVELOPMENT PENLEY TP 3	2.0	N	635248 ↗
A	237m S	341850 339900	HOUSING DEVELOPMENT PENLEY TP 4	2.0	N	635249 ↗
A	237m S	341850 339900	HOUSING DEVELOPMENT PENLEY TP 11	1.0	N	635254 ↗
A	237m S	341850 339900	HOUSING DEVELOPMENT PENLEY TP 14	1.0	N	635257 ↗
A	237m S	341850 339900	HOUSING DEVELOPMENT PENLEY TP 10	2.0	N	635253 ↗
A	237m S	341850 339900	HOUSING DEVELOPMENT PENLEY TP 1	2.0	N	635246 ↗
A	237m S	341850 339900	HOUSING DEVELOPMENT PENLEY TP 5	2.0	N	635250 ↗

This data is sourced from the British Geological Survey.



17 Natural ground subsidence - Shrink swell clays



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☒ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.1 Shrink swell clays

Records within 50m

1

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

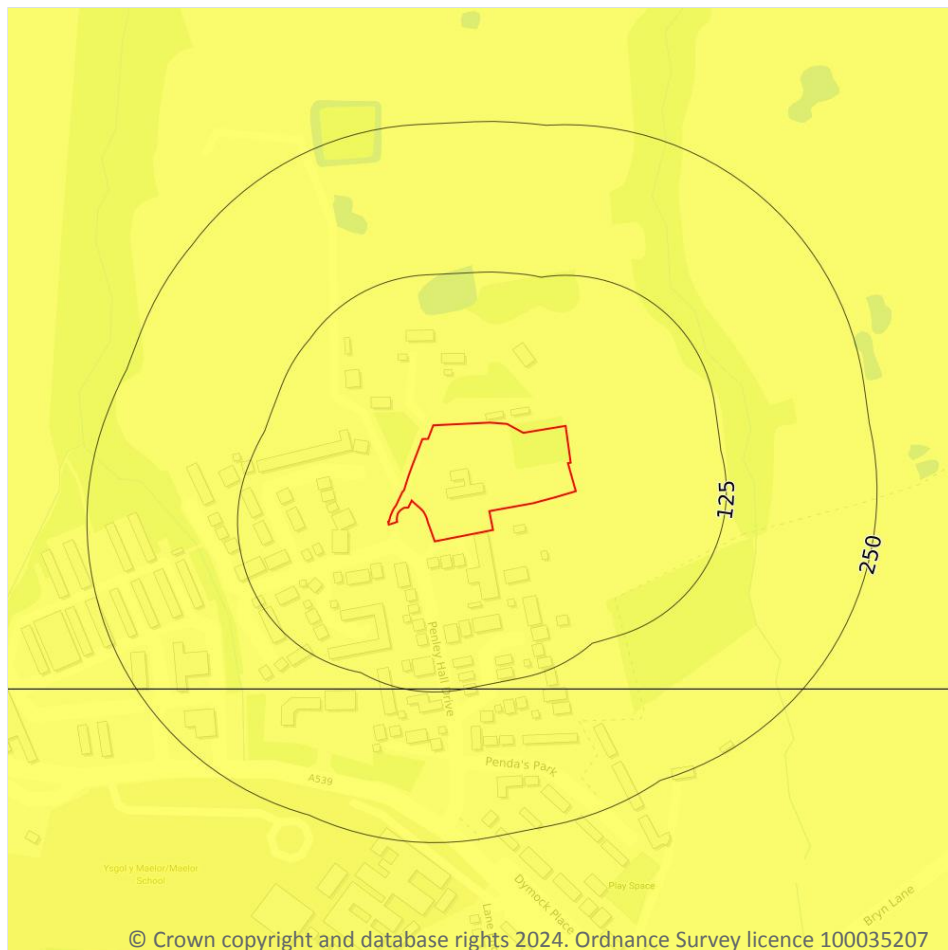
Features are displayed on the Natural ground subsidence - Shrink swell clays map on [page 79 >](#)

Location	Hazard rating	Details
On site	Very low	Ground conditions predominantly low plasticity.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Running sands



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.2 Running sands

Records within 50m

1

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.

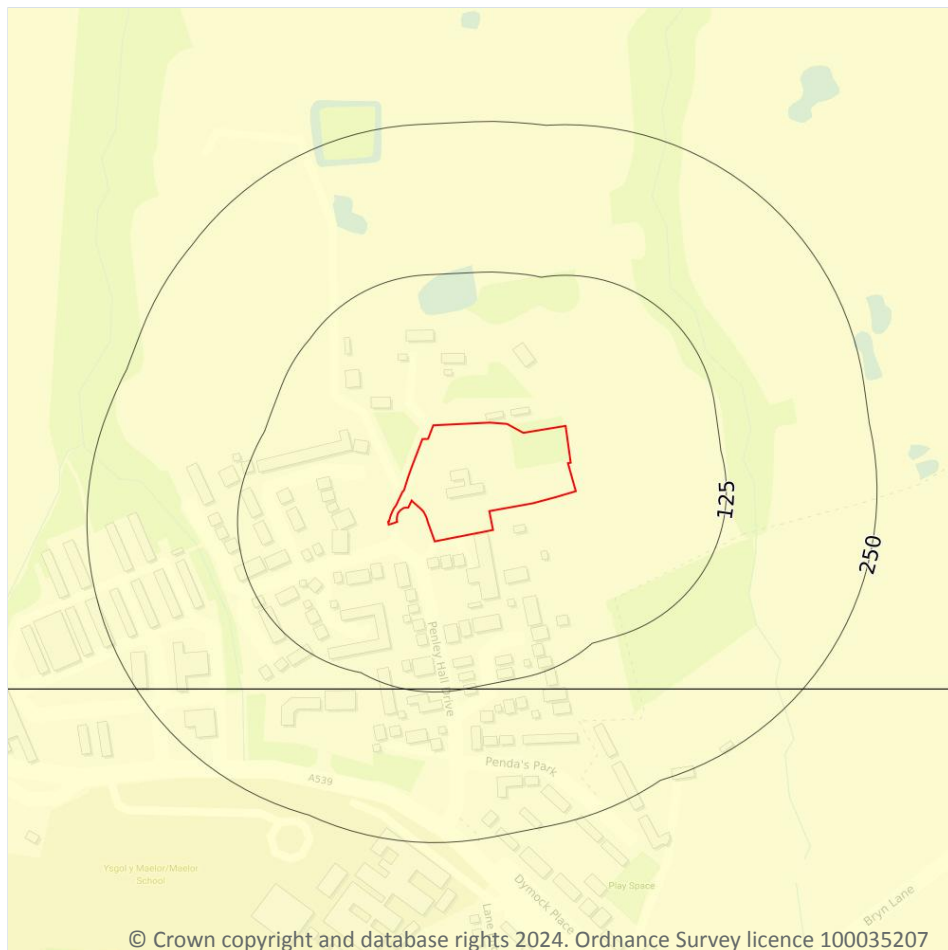
Features are displayed on the Natural ground subsidence - Running sands map on [page 80 >](#)

Location	Hazard rating	Details
On site	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Compressible deposits



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.3 Compressible deposits

Records within 50m

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.

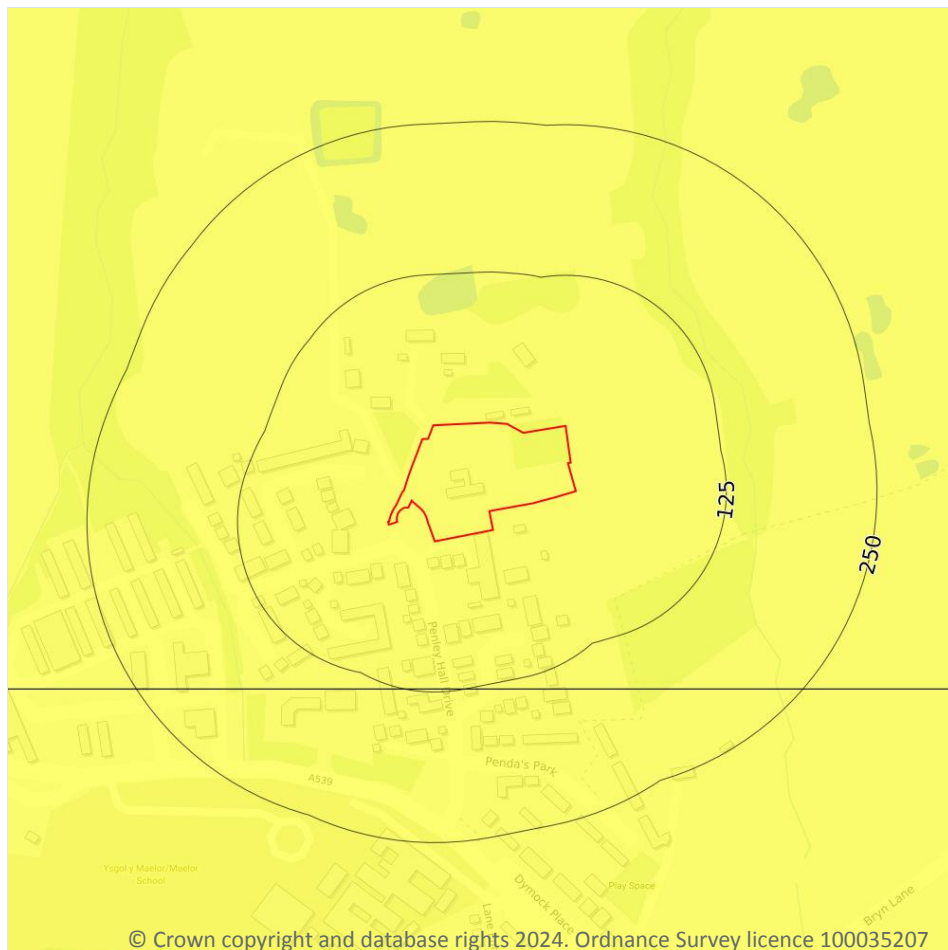
Features are displayed on the Natural ground subsidence - Compressible deposits map on [page 81](#) >

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.

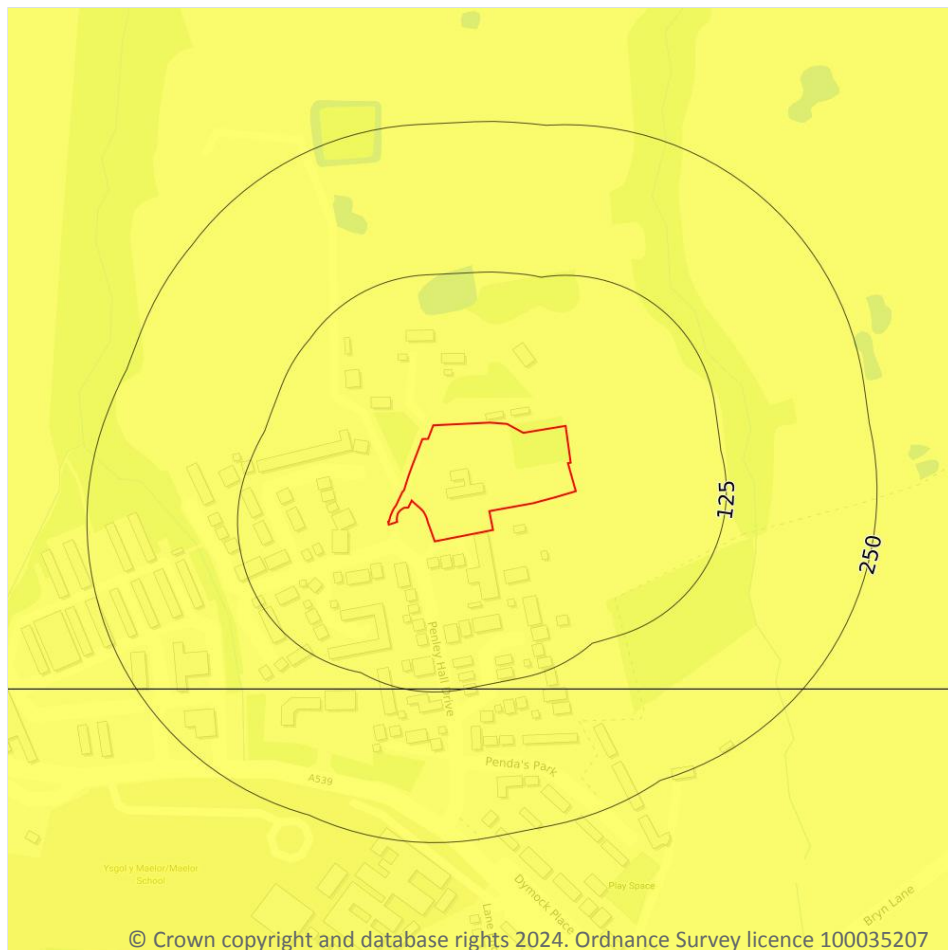
Features are displayed on the Natural ground subsidence - Collapsible deposits map on [page 82 >](#)

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

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17.5 Landslides

Records within 50m

1

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.

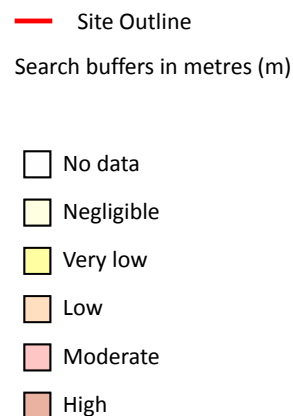
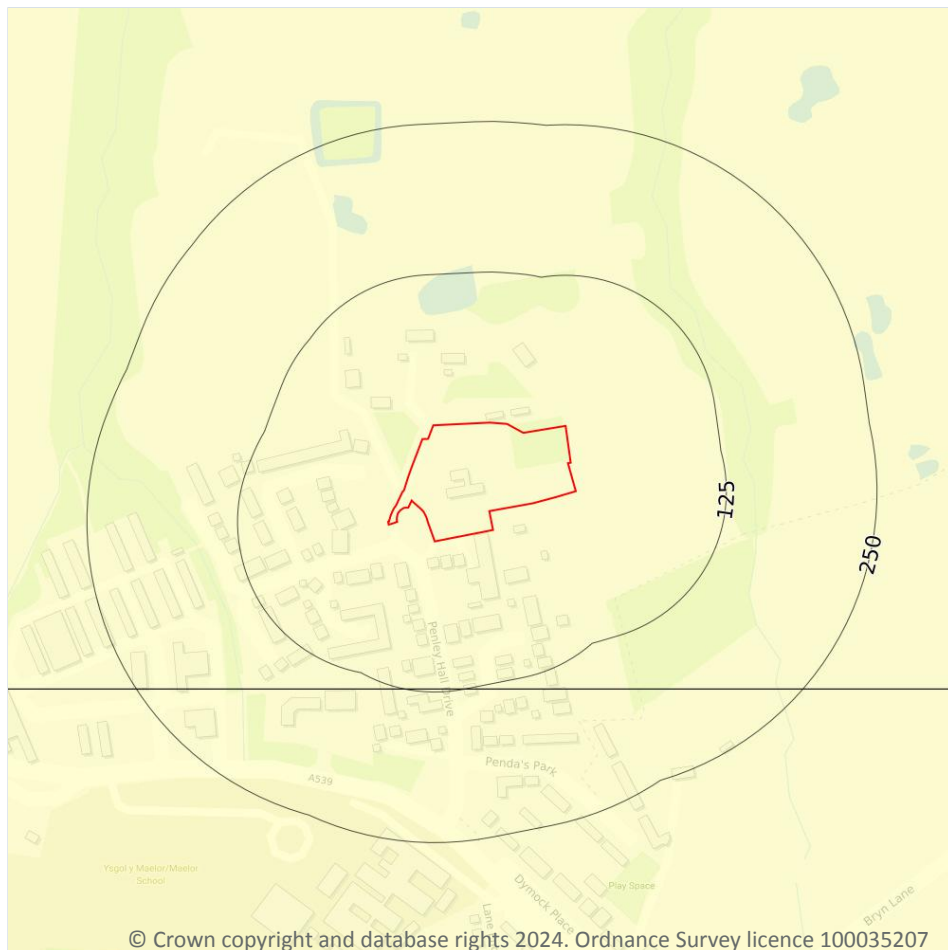
Features are displayed on the Natural ground subsidence - Landslides map on [page 83](#) >

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.

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 84](#) >

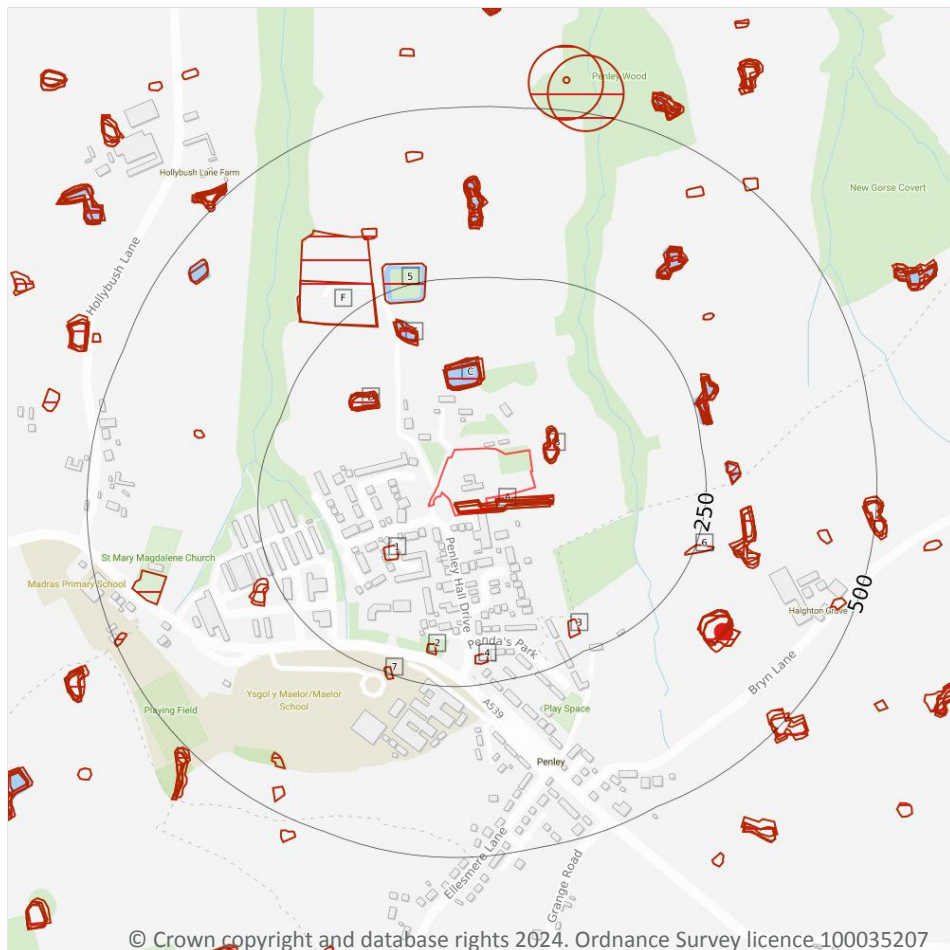
Location	Hazard rating	Details
On site	Negligible	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.



This data is sourced from the British Geological Survey.



18 Mining and ground workings



- Site Outline
- Search buffers in metres (m)
- BritPits
- Surface ground workings
- Underground workings
- Underground mining extents
- Historical mineral planning areas
- TCA non-coal mining
- Non Coal Mining
- Sporadic underground mining of restricted extent possible
- Localised small scale underground mining possible
- Small scale mining possible
- Underground mining known or likely within or in close proximity
- Underground mining known within or in very close proximity

18.1 BritPits

Records within 500m

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 86](#) >



ID	Location	Details	Description
K	346m SE	Name: Halghton Grove Address: Penley, Horseman's Green, WHITCHURCH, Clwyd Commodity: Sand & Gravel 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	39
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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 86](#) >

ID	Location	Land Use	Year of mapping	Mapping scale
A	On site	Pond	1873	1:10560
A	On site	Pond	1914	1:10560
A	On site	Pond	1898	1:10560
A	On site	Pond	1930	1:10560
A	On site	Pond	1899	1:10560
B	20m NE	Pond	1873	1:10560
B	21m NE	Ponds	1914	1:10560
B	21m NE	Ponds	1898	1:10560
B	21m NE	Ponds	1949	1:10560
B	22m E	Ponds	1930	1:10560
B	22m E	Ponds	1899	1:10560
1	75m SW	Pond	1899	1:10560
C	87m N	Pond	1930	1:10560
C	87m N	Pond	1899	1:10560
C	88m N	Pond	1914	1:10560
C	88m N	Pond	1898	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
C	89m N	Pond	1977	1:10000
C	91m N	Pond	1873	1:10560
C	92m N	Pond	1949	1:10560
D	125m NW	Pond	1930	1:10560
D	125m NW	Pond	1899	1:10560
D	129m NW	Pond	1914	1:10560
D	129m NW	Pond	1898	1:10560
D	129m NW	Pond	1977	1:10000
D	129m NW	Pond	1949	1:10560
D	129m NW	Pond	1873	1:10560
E	162m NW	Pond	1930	1:10560
E	162m NW	Pond	1899	1:10560
E	167m NW	Pond	1873	1:10560
E	168m NW	Pond	1914	1:10560
E	170m NW	Pond	1949	1:10560
2	190m S	Pond	1899	1:10560
3	201m SE	Pond	1899	1:10560
4	206m S	Pond	1899	1:10560
F	212m NW	Sewage Works	1977	1:10000
F	214m NW	Sewage Farm	1949	1:10560
5	223m N	Pond	1873	1:10560
6	240m E	Pond	1873	1:10560
7	241m SW	Pond	1899	1:10560

This is 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

0

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

This data is sourced from the British Geological Survey.

18.7 JPB mining areas

Records on site

0

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.



18.8 The Coal Authority non-coal mining

Records within 500m**0**

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

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m**0**

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

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m**0**

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

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m**0**

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

This data is sourced from Groundsure.



18.12 Coal mining

Records on site	0
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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
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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
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Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site	0
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Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 Clay mining

Records on site	0
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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.

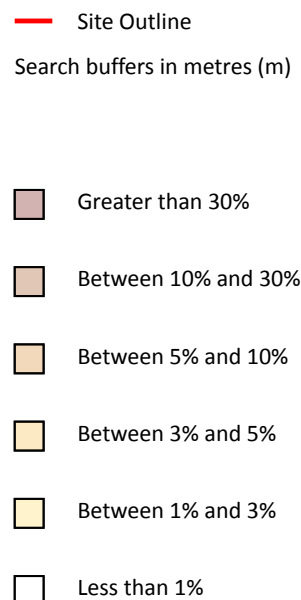
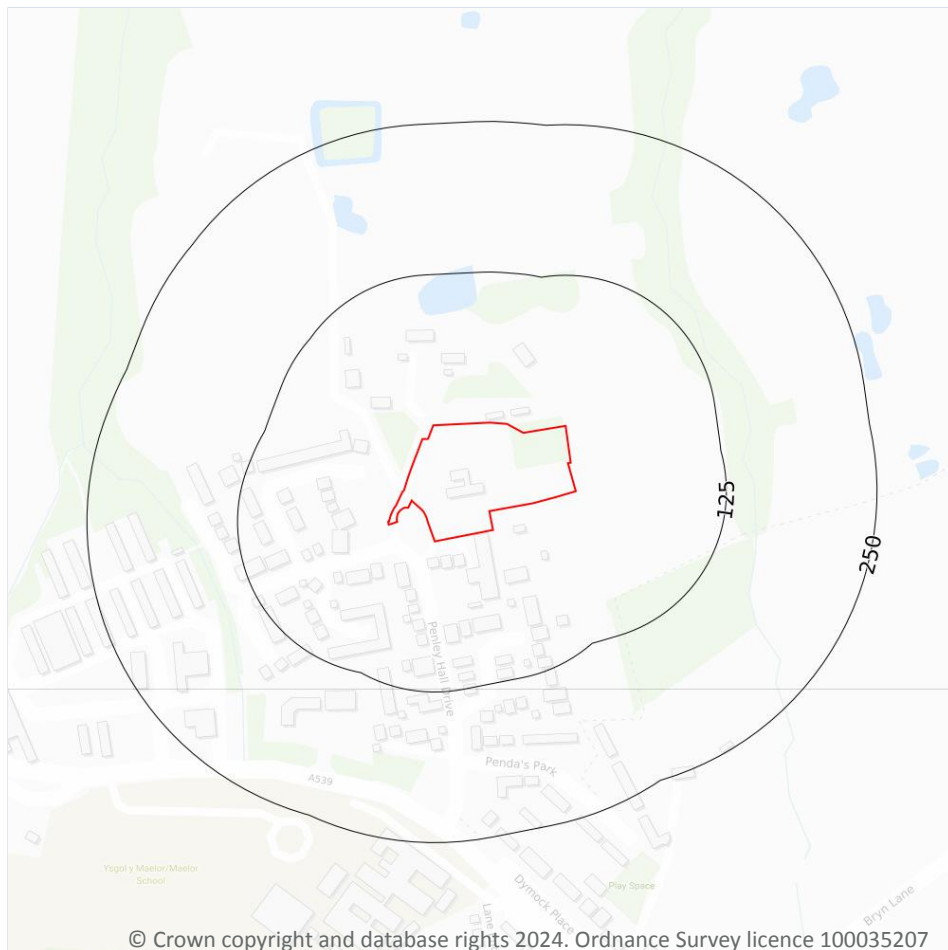
Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over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

1

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 94](#) >

Location	Estimated properties affected	Radon Protection Measures required
On site	Less than 1%	None



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



21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m**1**

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

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> ↗.

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