

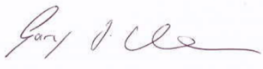


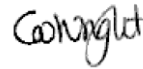
# Desk Based Geo Environmental Site Assessment to Inform Design

Natural Resources Wales  
Erbistock

Project number: 60627686  
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May 2020

## Quality information

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## Revision History

Revision	Revision date	Details	Authorized	Name	Position
00	May 2020	1 <sup>st</sup> Issue		Gill Wright	Project Manager

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# 1. Project Information

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**AECOM Project Number:** 60627686

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**Site Name:** 0005 Erbistock

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**Client:** Natural Resources Wales

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**Appointment:** The works carried out here are part of a larger project in which National Resources Wales (NRW) are carrying out river restoration works along the River Dee to assist the passage of fish.

For Erbistock, this may involve partial removal, down to bed level, of 50% of the width of the weir structure (or to the failed section of the weir, following discussion with landowner).

To undertake the works access will be required. If the northern portion of the weir is removed, access from the northern back can be from the existing access road/ track. From the south there does not appear to be a clear access route. For the purpose of this assessment it is assumed access will be from the north.

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**Objective:** The primary objective is to review pertinent third-party ground and environmental information to inform the design of the partial removal of the weir structure and to inform the design and construction.

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**Data Sources:** The following data sources have been used in the compilation of this report:

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1. Groundsure Enviro + Geo Insight Report (Reference: GS-6746439) (Annex I)

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2. Groundsure Historic Ordnance Survey Mapping (Reference: GS-6746438) (Annex II)

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3. British Geological Survey - 1:50,000 BGS Sheet 121 – Wrexham Solid and Drift Geology Map

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4. British Geological Survey website (<http://www.bgs.ac.uk/>)

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5. UK Radon website (<http://www.ukradon.org/>)

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6. National Resources Wales Lle Geo-Portal Map (<http://lle.gov.wales/map>)

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7. MAGIC website (<http://magic.defra.gov.uk/>)

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8. Coal Authority Website (<http://coal.decc.gov.uk/>)

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9. Zetica Unexploded Ordnance Risk Map (Online - [http://www.zetica.com/uxb\\_downloads.htm](http://www.zetica.com/uxb_downloads.htm))

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10. Google Maps (<https://www.google.com/maps/>)

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11. Bing Maps (<https://www.bing.com/maps>)

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12. Google Earth Pro ([earth.google.com/web/](http://earth.google.com/web/))

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13. Water Watch Wales Map Gallery (<https://waterwatchwales.naturalresourceswales.gov.uk/en/>)

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14. Appendix 1 - Dee LIFE pre construct survey information

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## 2. Site Location & Description

<b>Site Location</b>	<p>The site is situated on the River Dee in north-east Wales, approximately 700m north of Erbistock on the east side of a road running south off the A528 from Overton Bridge. The weir is centred on National Grid Reference (NGR) 335446 E 342164 N.</p>
	<p>The red line boundary for the site is presented in Figure 1a. It should be noted that the larger study area presented in Figure 1b has been used for the purpose of maximising information provided by Groundsure only. This report will focus on the smaller study area (Figure 1a), hereby after named 'the site'.</p>
	<p>Within the smaller study area (Figure 1a) is the weir that is proposed to undergo partial removal across the full width of the River Dee. The weir should be viewed as the smaller element of the site.</p>
<b>Site Description</b> (Ref's. 10, 11, 12 & 14)	<p>The site consists of a weir on the River Dee, which meanders from east to west and then north, and the surrounding riparian environment. The weir is associated with a historical mill, currently used for holiday lets, to which the weir still provides a supply of water for the water wheel. The weir is a steep stone-faced weir, approximately 2.5m high and 70m wide, placed at an angle to the flow as it exits at a bend in the river. There is a breach in the downstream face of the weir that has occurred within the last year. There is a baulk fish pass and modified concrete slope on the eastern side of the weir. The elevation increases by approximately 15m from the eastern bank of the River to the centre of the woodland area in the south-east of the site. The site is located within the Afon Dyfrdwy / River Dee Site of Special Scientific Interest (SSSI) and the River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (Wales) Special Area of Conservation (SAC). Strips of Ancient Woodland bound the River on both sides and an area of agricultural land lies to the east of the weir.</p>
<b>Current surrounding land use</b> (immediately adjacent to site) (Ref's. 10, 11 & 12)	<p>North: The site is bounded to the north by Ancient Woodland, open fields and the downstream River Dee. The village of Overton Bridge is located approximately 300m north, where the A528 crosses the River Dee and continues in a south-eastern direction. A Grade II Listed building, Min-Yr-Afon, is located approximately 180m north.</p> <p>East: The site is bounded to the east by predominantly open fields, areas of Ancient Woodland and the upstream River Dee.</p> <p>South: The site is bounded immediately to the south by a strip Ancient Woodland and predominantly open fields. A Grade II Listed building, Mill House, lies approximately 80m to the south-west.</p> <p>West: The site is bounded immediately to the west by Ancient Woodland, with predominantly open fields beyond. A small road connects the historical mill to a road running parallel to the western boundary, that continues north to the A528 at Overton Bridge.</p>

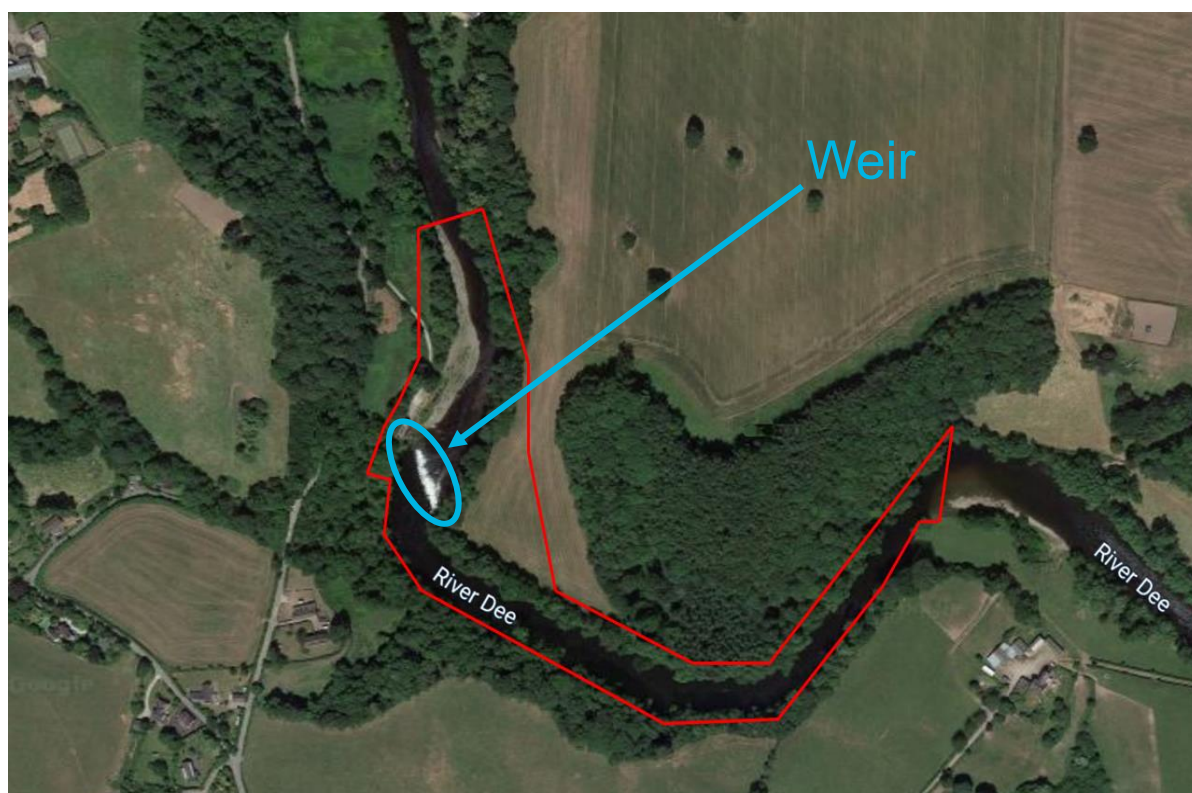


Figure 1a. Red Line Boundary (The Site)



Figure 1b. Larger Study Area (used for obtaining information only)

### 3. Previous Investigation Data

Upon award, AECOM requested any previous site investigation data that NRW may have for the site. At the time of writing, AECOM are not in receipt of any previous site investigation information.

## 4. Site Setting

### Geology

**Geological Strata**  
(Ref's. 1, 3, & 4)

Made Ground: Review of geological maps presented in the Groundsure report indicate that no made ground is covering the site area beyond the weir or in areas where potential access routes may be defined. BGS mapping also shows no area of made ground on the site. There are no BGS borehole logs from within 250m of the site, and the nearest available BGS borehole log, located approximately 400m north and at an elevation of approximately 42.6m AOD, also does not show any evidence of made ground.

Natural Superficial Geology: Geological maps presented in the Groundsure report and BGS maps for the area suggest there are no superficial deposits across most of the site, with alluvium present in the north west corner of the site, formed of clay, silt, sand and gravel. It is notable that within the river channel there are likely to be bed deposits comprised of silts, sands and gravels.

Solid Geology: The Groundsure report and BGS Geology of Britain viewer indicates that the bedrock across the site is Salop Formation mudstone, sandstone and conglomerate.

According to the Groundsure report and the BritPits Database (BGS), surface ground workings are present on site and nearby. A disused sandstone quarry is located on site near the eastern boundary (north side of the river), within an area of Ancient Woodland. Another disused sandstone quarry is located approximately 50m to the west. A disused sand and gravel pit is also located approximately 150m to the north-east.

**Radon**  
(Ref's. 1 & 5)

The Groundsure report indicates that the site lies within Radon affected areas where between 1 and 3%, 3 and 5% and 5 and 10% of properties are above the UK 'Action Level', as defined by the Health Protection Agency (HPA). It is of note however, that the proposed development will not include constructing buildings, hence radon is not seen as a potential risk.

### Hydrogeology

**Underlying Aquifer Classes**  
(Secondary A, Unproductive)  
(Ref. 1)

Maps within the Groundsure Report and DEFRA MAGIC Map website indicate the majority of the site is not underlain by Superficial Deposits. The alluvium in the north west corner of the site is classed as a Secondary A Aquifer. This aquifer is characterised by permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as 'minor aquifers'. The underlying solid geology is also classed as a Secondary A Aquifer.

**Groundwater Vulnerability / Soil Classification**  
(Ref. 1)

The Groundsure report indicates a superficial vulnerability classification of Secondary superficial aquifer, high vulnerability in the north west corner of the site, and a Bedrock vulnerability classification of Secondary bedrock aquifer, high vulnerability across the site. These are soils that readily transmit liquid discharges because they are either shallow or susceptible to rapid flow. The surface of the site is given an infiltration valuation of >70%.

**Groundwater Quality**  
(Ref. 1)

The Groundsure report and Water Watch Wales Map Gallery indicates that the Dee Carboniferous Coal Measures groundwater body (GB41102G204800) was reported as having Poor Overall and Chemical Rating and Good Quantitative Rating, with the poor status due to discharge of contaminated mine water into nearby surface waters.

**Groundwater Source Protection Zone Status**  
(Ref. 1)

The Groundsure report indicates that the site is not within a source protection zone.

### Hydrology

<b>Surface Water Receptors</b> (Ref. 1)	The weir is located in the River Dee, which is the primary surface water receptor, flowing in a northerly direction towards the Dee Estuary, approximately 43 km to the north-west.
Surface Water Quality (Ref. 1)	The Groundsure report and Water Watch Wales Map Gallery indicates that the Dee – Chester Weir to Ceiriog surface water body (GB111067057080) was reported as having a Moderate Overall and Ecological Rating and Chemical Rating is failing due to contamination with PAHs.
Flooding (Ref. 1)	<p>The potential risk of flooding is commented on here relating to potential offsite infrastructure which might be designed and constructed in the future.</p> <p>Based on the Natural Resources Wales Flood Risk Maps and the Groundsure report, the site is within an area with a high risk of flooding, i.e. a chance of flooding of greater than or equal to 1 in 30 (3.3%).</p> <p>The indicative floodplain map for the area, published by the Environment Agency (EA) and NRW, shows that the site is located within a Flood Zone 2 and Flood Zone 3 and is considered to be at risk of fluvial flooding. According to the EA: Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.01%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.01%) and 1 in 200 (0.5%) from the sea, and Zone 3 floodplains estimate the annual probability of flooding as 1 in 100 (1%) or greater chance from rivers and a 1 in 200 (0.5%) or greater chance from the sea.</p> <p>Based on the Groundsure Report, small sections of the site are at risk of surface water flooding, with greater than 1m for a 1 in 30-year rainfall event, and moderate risk of groundwater flooding.</p> <p>According to the Groundsure report, the site has been subject to two historic flooding events; in January 1964 and November 2009.</p>
<b>Other Observations</b> (Ref's. 1 & 7)	Based on the Groundsure report and review of the Environment Agency website, the scheme is not located within a nitrate vulnerable zone. The site is situated in a SSSI Impact Zone and the River Dee is a SSSI, as well as a SAC.
<b>UXO Risk</b>	
(Ref. 9)	A review of Zetica's online unexploded ordnance risk maps indicates that the site is within a 'low risk' area for presence of sub-surface unexploded ordnance (UXO).



## 5. Site History

Date	Scale	On-site	Off-site (<250 m and any other significant; distances/orientations relate to the site unless stated)
1873	1:10,560	<p>A weir is present on site in the same location as the present day, spanning the River Dee, which meanders around the site along the southern, western and north western side. The river is identified as a boundary. Erbistock Mill is recorded on the western bank of the river near the western site boundary, adjacent to the weir, that impounds water to power the flour mill. Two small streams flow into the south-west corner of the river and a well is noted approximately 40m to the south-west of the site. An unspecified quarry is marked near the eastern boundary, located within an area of woodland running parallel to the river, with strips of woodland continuing along the river on both sides. A plantation lies to the east of the quarry. A track runs parallel to the river, through the plantation, woodland and past the quarry. The woodland and agricultural land to the east of the weir are identified as Palace Farm. A small road links Erbistock Mill with a road to the west of the site that runs parallel to the western boundary.</p>	<p>Farmland surrounds the site and the farmland immediately to the north is identified as Palace Farm, with small farmland buildings to the north east. Areas of woodland extend north from the centre and north-west boundaries of the site on the east side of the river, with a path leading from the river to Overton Bridge running parallel to the woodland. Another area of woodland is located to the north-west on the west side of the river and Erbistock Hall is located approximately 330m north-west. A large building recorded as Min-yr-afon is located approximately 180m north with the Overton Bridge crossing the River Dee a further 150m north. To the west a road runs parallel to the western boundary which continues north to Overton Bridge and south towards Erbistock. An unspecified quarry is located approximately 50m west. An area of woodland bounds the site to the south, with farmland and Erbistock village beyond. A well is noted approximately 40m south west. The buildings recorded as Mill House are located approximately 80m to the south-west and the buildings recorded as The Groves are located approximately 125m south-east. A school is noted approximately 200m south-west and a small unspecified structure is located approximately 200m to the south. A plantation with associated structures labelled 'Dee Bank' is located approximately 230m east.</p>
1874	1:2,500	<p>The weir is marked as a slope and small structures associated with Erbistock Mill are noted on the eastern side of the mill. The unspecified quarry is now labelled 'Quarry'.</p>	<p>No significant changes shown.</p>
1898-1899	1:2,500	<p>The weir is now marked with sloping masonry, a sluice is noted on the east side of Erbistock Mill and a slope is noted on the eastern river bank beside the weir. The quarry on the eastern side of the site appears to have been expanded. A path follows the river from the mill south and east towards the Groves. Woodland in the east of the site is now labelled 'Morris Wood'. Woodland in the north-east of the site is</p>	<p>An unspecified tank is noted adjacent to Mill House approximately 70m south-west of the site.</p>

Date	Scale	On-site	Off-site (<250 m and any other significant; distances/orientations relate to the site unless stated)
		now labelled 'Min-yr-afon Wood'. Woodland that bounds the site to the south is now labelled 'Boltha Wood'.	
1898 - 1900	1:10,560	No significant changes shown.	The woodland to the north-west is now labelled 'Palla Wood' and the plantation to the east is labelled 'Deebank Plantation'.
1912	1:2,500	The riverbank has been widened to the east of the small road linking Erbistock Mill to the road to the west of the site.	A sewage tank is noted approximately 150m to the west. A small unspecified structure is noted in Min-yr-afon Wood approximately 10m from the site boundary.
1909 - 1914	1:10,560	No significant changes shown.	A Gravel Pit is noted approximately 150m to the north-east. The quarry to the west is now labelled 'Old Quarry'.
1949 - 1954	1:10,560	No significant changes shown.	No significant changes shown.
1960-1963	1:2,500	The Quarry is now marked as disused and Morris Wood has been extended to the east.	Morris Wood has been extended to the east. Additional structures associated with The Groves.
1965 - 1968	1:10,560	The Quarry appears to be in use again.	No significant changes shown.
1980	1:10,000	The Quarry is once again labelled as disused.	Gravel Pit to the east is no longer noted. Drains are noted approximately 130m to the east and 190m to the south-east. The small unspecified building to the south is now labelled 'The Cottage', with additional cottages to the south-west.
1992	1:2,500	No significant changes shown.	No significant changes shown.
1992 - 1993	1:10,000	No significant changes shown.	'The Cottage' to the south is now labelled 'Dee Vale Cottage' and an additional cottage to the south labelled 'Coed Derwen'.
1994	1:2,500	The widened bank on the western side of the river is now labelled 'Shingle'.	The Groves is now labelled 'Groves Farm'.
2001-2020	1:10,000	No significant changes shown.	No significant changes shown.



## 6. Environmental Setting

Landfill Sites (Ref. 1)	The Groundsure report indicates there are no active local authority landfill sites, or refuse tips, within 250m of the site. The report does not identify any recorded historic Environment Agency landfill sites within 250m.
Pollution (Ref. 1)	There are no records of pollution incidents within 500m of the site.
Air Pollution (Ref. 1)	There are no records of air pollution within 500m of the site.
Other Observations including Sensitive Sites (Ref. 1)	<p>The site is located within the Afon Dyfrdwy / River Dee SSSI and the River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (Wales) SAC, which is designated for multiple features of interest including Atlantic salmon, <i>Salmo salar</i>. There are also 3 areas of Designated Ancient Woodland recorded on site, and a further 4 areas of Designated Ancient Woodland within 500m (1m north and 45m - 289m north-west).</p> <p>According to the Groundsure report, three Grade II Listed buildings lie within 250m from the site: Mill House lies approximately 80m to the south-west; Min-Yr-Afon lies approximately 180m north, and; The Groves lies approximately 125m south-east. Registered parks and gardens of particular interest and special historic interest are also located within 250m from the site: Erbistock Hall lies approximately 50m north-west and Rosehill lies approximately 260m north.</p> <p>The agricultural land on site, adjacent to the weir to the east, is classified as Grade 1 Excellent Quality Agricultural Land.</p> <p>It should be noted from the Groundsure report that various potentially contaminative land use features are present on or within 500m of the site, and include:</p> <ul style="list-style-type: none"> <li>Disused sandstone quarries: on site, near the eastern boundary and approximately 50m to the west;</li> <li>Flour mill: on site, on the western boundary;</li> <li>Licensed discharge consent for treated sewage discharge to the River Dee: on site, near the south-west boundary, effective 1987 – no revocation date;</li> <li>Unspecified tank: approximately 70m south-west;</li> <li>Sewage tank: approximately 150m to the west;</li> <li>Disused sand and gravel pit: approximately 150m to the north-east;</li> <li>Licensed discharge consent for treated sewage discharge to the River Dee: approximately 300m north, effective 2002 – no revocation date;</li> <li>Licensed discharge consent for treated sewage discharge to the River Dee: approximately 300m north, effective 2014 – no revocation date;</li> <li>Licensed discharge consent for treated sewage discharge to the River Dee: approximately 320m north, effective 1996 – no revocation date;</li> <li>Smithy: approximately 350m north;</li> <li>Unspecified ground workings / pit: approximately 370m-440m north-west;</li> <li>Tanks or troughs: approximately 160m-450m north-east and 330m north-west.</li> </ul>

## 7. Conceptual Model

Sources	<p>Onsite:</p> <ul style="list-style-type: none"> <li>Historic land use, including a former flour mill and sandstone quarry (S1): the historic Erbistock Mill is located adjacent to the weir and historic quarrying has also taken place on site, with a disused sandstone quarry located upstream of the weir near the eastern boundary. The disused quarry may have been partially or fully infilled, with fill materials likely to comprise the natural overburden and general quarry waste, such as fragments of sandstone. Contaminants of potential concern (CoPCs) associated with these historic land uses may have become bound to fine sediments in the river, particularly in the impounded area behind the weir. Since made ground is likely to be present upstream of the weir near the eastern boundary the potential also exists for hazardous ground gas generation and migration to outdoor air at the site. However, this is not considered a risk to the works due to the anticipated composition of fill material, proximity and since the works will not include constructing buildings;</li> <li>Licensed discharge consent for treated sewage discharge to the River Dee upstream of the weir: The discharge consent is for final/treated effluent and is unlikely to harm receptors, therefore, no viable linkage is considered for the discharge consent.</li> </ul> <p>Offsite:</p> <ul style="list-style-type: none"> <li>Historic land uses (S2): the area has been used for surface ground workings, with a disused sandstone quarry located 50m to the west and a sand and gravel pit located approximately 150m to the north-east. These workings may have been partially or fully infilled, with the potential for associated CoPCs and ground gas generation;</li> <li>Historic tanks: a sewage tank and several unspecified tanks or troughs have been identified in the Groundsure report. Due to the distance of these tanks, these are not considered as a risk to the site.</li> </ul>
Pathways	<ul style="list-style-type: none"> <li>Dermal/direct contact (P1);</li> <li>Inhalation (P2);</li> <li>Ingestion (P3);</li> <li>Leaching of contaminants (P4);</li> <li>Lateral groundwater flow to surface waters (P5);</li> <li>Vertical groundwater flow through made ground and superficial deposits to underlying aquifers (P6).</li> </ul>
Viable Receptors	<p>Human Health:</p> <ul style="list-style-type: none"> <li>Current site users: None – not public access;</li> <li>Future construction workers (R1);</li> <li>Future site users: None – not public access.</li> </ul> <p>Controlled Surface Waters:</p> <ul style="list-style-type: none"> <li>The River Dee (R2).</li> </ul> <p>Controlled Groundwater:</p> <ul style="list-style-type: none"> <li>The underlying Secondary A aquifers of superficial deposits and the Salop Formation (R3).</li> </ul>

## 8. Preliminary Risk Assessment

Source	Pathway	Receptor	Potential Severity	Likelihood of Occurrence	Potential Risk	Linkage Reference	Justification
<b>On site: Historic land uses (S1)</b>	Dermal / Direct Contact (P1)		Medium	Low	Moderate / Low	L1	During the partial weir removal works within the river channel, there is the potential for encountering contaminated sediments upstream of the weir, with short-term exposure risks for construction workers. An intrusive ground investigation may be necessary to quantify and characterise possible contamination including chemical analysis of sediment. Prior to work commencing, a health and safety risk assessment should be carried out by the appointed Principal Contractor / developed in accordance with current health and safety regulations (CDM 2015). This assessment should cover potential risks to construction staff and the local population. Based on the findings of this risk assessment, appropriate mitigation measures should be implemented during the construction period.
	Inhalation (P2)	Future construction Workers (acute) (R1)	Medium	Low	Moderate / Low	L2	
	Ingestion (P3)		Medium	Low	Moderate / Low	L3	

Source	Pathway	Receptor	Potential Severity	Likelihood of Occurrence	Potential Risk	Linkage Reference	Justification
Leaching of contaminants (P4)	Vertical groundwater flow through Made Ground and superficial deposits to underlying aquifers (P6)	The underlying Secondary A aquifer of the alluvium and the Salop Formation (R3)	Medium	Low	Moderate / Low	L4	Any CoPCs associated with the disused quarry and former mill have the potential to leach to the surrounding sub strata. As the majority of the site is not underlain by Superficial deposits, it is considered likely that there are pollutant linkages to the underlying Secondary A aquifer of the Salop Formation bedrock. Vertical migration of impacted groundwater is also likely in the alluvium, present in the north-west of the site, as a result of its intergranular composition and very low to very high permeability. Although these linkages may exist, the proposed weir removal works are unlikely to alter the risk.
			Medium	Low	Moderate / Low	L5	
Lateral groundwater flow to surface waters (P5)		River Dee (R2)	Mild	Low	Low	L6	The composition of the alluvium in the north-west of the site and the underlying Salop formation would allow groundwater flow. If impacted ground is present on site then there is risk that lateral migration to the River Dee may occur. However, it is considered unlikely that the proposed weir removal works would alter the risk.

Source	Pathway	Receptor	Potential Severity	Likelihood of Occurrence	Potential Risk	Linkage Reference	Justification
Off site: historic land uses (S2)	Leaching of contaminants (P4)	The underlying Secondary A aquifers of the glaciofluvial deposits to the west and the river terrace deposits, alluvium and glaciofluvial deposits to the west, and the Salop Formation (R5)	Medium	Likely	Moderate	L7	Any CoPCs associated with the disused sandstone quarry located to the west and the sand and gravel pit to the north-east have the potential to leach to the surrounding sub strata and undergo further vertical migration to deeper groundwater deposits. Although the linkage is present, the proposed works are not anticipated to contribute to any additional impacts to groundwater that may already be present.
	Vertical groundwater flow through made ground and superficial deposits to underlying aquifers (P6)		Medium	Likely	Moderate	L8	
	Lateral groundwater flow to surface waters (P5)	River Dee (R4)	Mild	Likely	Moderate / Low	L9	Should impacted groundwater occur off site, there is potential that groundwater may laterally migrate and feed into the River Dee. This is however dependant on both groundwater flow direction and whether groundwater is in connectivity with the river. Although the linkage is present, the proposed works are not anticipated to contribute to any additional impacts to groundwater that may already be present.

## 9. Geotechnical Considerations

### Mining

(Based on information from the Groundsure report)

According to the Groundsure report and the BritPits Database, surface ground workings are present on site and nearby. A disused sandstone quarry is located on site near the eastern boundary, within an area of Ancient Woodland. Another disused sandstone quarry is located approximately 50m to the west. A disused sand and gravel pit is also located approximately 150m to the north-east. The potential for difficult ground conditions from this are unlikely or localised and are at a level where they need not be considered.

The Groundsure report indicates the scheme is classified as follows with respect to potential natural hazards:

- Shrink swell – Very Low.
- Landslides – Predominately Very Low, and Low for small areas of the north-west, south-west and east of the site and Moderate for an area in the north-west of the site.
- Soluble rocks – Negligible.
- Compressible ground – Predominantly Negligible, and Moderate for an area in the north-west of the site.
- Collapsible rocks – Predominantly Very Low, and Negligible for an area in the north-west of the site.
- Running sand – Predominantly Negligible, and Low for an area in the north-west of the site.

Without mitigation, the right bank of the river may be susceptible to bank slips due to a rapid drawdown and increased velocities when the impoundment is removed. Therefore, temporary bank reinforcements may be required during the works. Road bridges located further downstream could be impacted by fallen trees within the drawdown reach, therefore, coppicing may be required prior to undertaking the works.

Given the historic significance of the mill and weir, a heritage assessment may be required to assess the likely impact of the proposed works on that cultural significance. Archaeological mitigation may also be required, which could include a full pre-intervention record of the weir structure prior to partial removal. During the works, care should be taken so as not to damage the remaining sections of the weir or the adjacent mill. Monitoring may be required to ensure the historic fabric of the weir is preserved by record and provision should be made for public engagement.

# 10. Conclusion, Design Implications & Recommendations

Conclusion	Design Implications	Recommendations
<p>The site consists of a weir on the River Dee, which is associated with an historical mill (on the western bank adjacent to the weir, currently used for holiday lets) to which the weir still provides a supply of water for the water wheel.</p> <p>Published Geology of the site and the Groundsure reports indicate that the majority of the site is not underlain by Superficial deposits, with Alluvium present in the north west corner of the site which is classed as a Secondary A Aquifer. Bedrock deposits are formed of the Salop Formation and are classed as a Secondary A Aquifer. It is noted that there are likely to be bed sediments up and down stream of the weir.</p> <p>On site ground setting is unknown due to the absence of exploratory locations in the area.</p> <p>On site soils are described as having high leachability.</p> <p>The site is in an area subject to high risk of flooding.</p> <p>Historic land use on and surrounding the site could contribute to environmental impacts.</p>	<p>On site ground setting is unknown and therefore conditions for working access are not known especially if access is required from the south east.</p> <p>State of surface water quality is not known and therefore the impacts of sediment release on the downstream environment cannot be assessed.</p> <p>The chemical status of the sediment is not known and hence the possible waste classification is unclear which my present cost implications if sediments need to be removed from site.</p>	<p>Sediment sampling and analysis should be carried out from locations within the vicinity of the proposed works. Samples should be assessed for particle size distribution and, assuming fine material is present, chemically tested to determine the presence and concentrations of CoPCs associated with these historic land uses. Due to historic flooding events recorded on the site, it is possible that fine sediment has been moved, which may have reduced the risk of mobilising contaminated sediment during the works. The information obtained here will aid the reassessment of pollutant linkages: L1, L2, L3, L4, L5, L6, L7, L8 &amp; L9.</p> <p>Surface water samples should be taken on the River Dee running through the site. Surface water should be collected at one to two locations on site. This will enable a baseline to be established, as well as giving insight to presence and concentrations of CoPCs. Upon completion of the works and bed regrading, samples should be taken from the new interface between the sediment and the overlying water column to verify that levels of contamination are within the range detected during the baseline assessment.</p> <p>The presence of potentially contaminated sediments behind the weir may not under current circumstances present a risk to human health and the aquatic environment. This risk status could change due to the partial weir removal works. Depending on the results of the ground investigation, mitigation measures may be required to manage these risks, which could include excavating and removing sediments, with waste classification and appropriate treatment / disposal, or capping sediments during the works. Due to the sensitive nature of the site, which is located within a SSSI and SAC, a conservative approach may be recommended to mitigate any potential long-term impacts, such as those associated with transport and deposition and / or increased erosion, which can be difficult to predict.</p> <p>It is recommended that appropriate geotechnical assessment is carried out prior to any works in order to access the suitability of access for plant and the stability of the weir.</p> <p>Sediment samples should also be classified for waste disposal designation and the potential costs associated with the this. There is the potential to explore the deposition of sediments in the vicinity of the weir subject to regulatory agreement.</p> <p>Appropriate heritage assessments should be carried out before any intrusive works are conducted, if not already conducted.</p>

An appropriate flood risk assessment is recommended to be carried out prior to any works commencing.



# Annex I Groundsure Enviro and Geo Insight Report

GARDEN HOUSE, LANE FROM A528 CROSS FOXES PH TO ST HILARYS CHURCH, ERBISTOCK, WREXHAM, LL13 0DL

## Order Details

**Date:** 23/04/2020  
**Your ref:** Erbistock\_Insights\_-\_PO\_1412675\_  
**Our Ref:** GS-6746439  
**Client:** Aecom Infrastructure and Environment UK Ltd

## Site Details

**Location:** 335442 342161  
**Area:** 9.9 ha  
**Authority:** [Wrexham - Wrexham County Borough Council](#)



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**Summary of findings**

p. 2 **Aerial image**

p. 8

**OS MasterMap site plan**

p.13 [groundsure.com/insightuserguide](https://groundsure.com/insightuserguide)

## Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
<b>14</b>	<b>1.1</b>	<b><u>Historical industrial land uses</u></b>	15	3	3	8	-
<b>16</b>	<b>1.2</b>	<b><u>Historical tanks</u></b>	0	1	2	3	-
16	1.3	Historical energy features	0	0	0	0	-
16	1.4	Historical petrol stations	0	0	0	0	-
17	1.5	Historical garages	0	0	0	0	-
17	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
<b>18</b>	<b>2.1</b>	<b><u>Historical industrial land uses</u></b>	16	4	3	8	-
<b>20</b>	<b>2.2</b>	<b><u>Historical tanks</u></b>	0	1	2	4	-
20	2.3	Historical energy features	0	0	0	0	-
20	2.4	Historical petrol stations	0	0	0	0	-
21	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
22	3.1	Active or recent landfill	0	0	0	0	-
22	3.2	Historical landfill (BGS records)	0	0	0	0	-
23	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
23	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
23	3.5	Historical waste sites	0	0	0	0	-
23	3.6	Licensed waste sites	0	0	0	0	-
<b>23</b>	<b>3.7</b>	<b><u>Waste exemptions</u></b>	0	0	0	7	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
<b>25</b>	<b>4.1</b>	<b><u>Recent industrial land uses</u></b>	1	0	0	-	-
26	4.2	Current or recent petrol stations	0	0	0	0	-
26	4.3	Electricity cables	0	0	0	0	-
26	4.4	Gas pipelines	0	0	0	0	-
26	4.5	Sites determined as Contaminated Land	0	0	0	0	-



26	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
27	4.7	Regulated explosive sites	0	0	0	0	-
27	4.8	Hazardous substance storage/usage	0	0	0	0	-
27	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
27	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
27	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
28	4.12	Radioactive Substance Authorisations	0	0	0	0	-
<b>28</b>	<b>4.13</b>	<b><u>Licensed Discharges to controlled waters</u></b>	0	1	0	3	-
29	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
29	4.15	Pollutant release to public sewer	0	0	0	0	-
29	4.16	List 1 Dangerous Substances	0	0	0	0	-
29	4.17	List 2 Dangerous Substances	0	0	0	0	-
29	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
30	4.19	Pollution inventory substances	0	0	0	0	-
30	4.20	Pollution inventory waste transfers	0	0	0	0	-
30	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
<b>31</b>	<b>5.1</b>	<b><u>Superficial aquifer</u></b>	Identified (within 500m)				
<b>33</b>	<b>5.2</b>	<b><u>Bedrock aquifer</u></b>	Identified (within 500m)				
<b>35</b>	<b>5.3</b>	<b><u>Groundwater vulnerability</u></b>	Identified (within 50m)				
37	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
37	5.5	Groundwater vulnerability- local information	None (within 0m)				
<b>38</b>	<b>5.6</b>	<b><u>Groundwater abstractions</u></b>	0	0	0	0	13
<b>41</b>	<b>5.7</b>	<b><u>Surface water abstractions</u></b>	0	0	0	0	2
42	5.8	Potable abstractions	0	0	0	0	0
42	5.9	Source Protection Zones	0	0	0	0	-
42	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
<b>43</b>	<b>6.1</b>	<b><u>Water Network (OS MasterMap)</u></b>	10	1	16	-	-

46	6.2	<u>Surface water features</u>	1	0	7	-	-
46	6.3	<u>WFD Surface water body catchments</u>	1	-	-	-	-
46	6.4	<u>WFD Surface water bodies</u>	1	0	0	-	-
47	6.5	<u>WFD Groundwater bodies</u>	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
48	7.1	<u>Risk of Flooding from Rivers and Sea (RoFRaS)</u>	High (within 50m)				
49	7.2	<u>Historical Flood Events</u>	2	0	0	-	-
49	7.3	Flood Defences	0	0	0	-	-
49	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
50	7.5	Flood Storage Areas	0	0	0	-	-
51	7.6	<u>Flood Zone 2</u>	Identified (within 50m)				
52	7.7	<u>Flood Zone 3</u>	Identified (within 50m)				
Page	Section	Surface water flooding					
53	8.1	<u>Surface water flooding</u>	1 in 30 year, Greater than 1.0m (within 50m)				
Page	Section	Groundwater flooding					
55	9.1	<u>Groundwater flooding</u>	Moderate (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
56	10.1	<u>Sites of Special Scientific Interest (SSSI)</u>	2	0	0	0	2
57	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
57	10.3	<u>Special Areas of Conservation (SAC)</u>	1	0	0	0	3
58	10.4	Special Protection Areas (SPA)	0	0	0	0	0
59	10.5	National Nature Reserves (NNR)	0	0	0	0	0
59	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
59	10.7	<u>Designated Ancient Woodland</u>	3	2	1	1	65
62	10.8	Biosphere Reserves	0	0	0	0	0
62	10.9	Forest Parks	0	0	0	0	0
62	10.10	Marine Conservation Zones	0	0	0	0	0
63	10.11	Green Belt	0	0	0	0	0
63	10.12	Proposed Ramsar sites	0	0	0	0	0

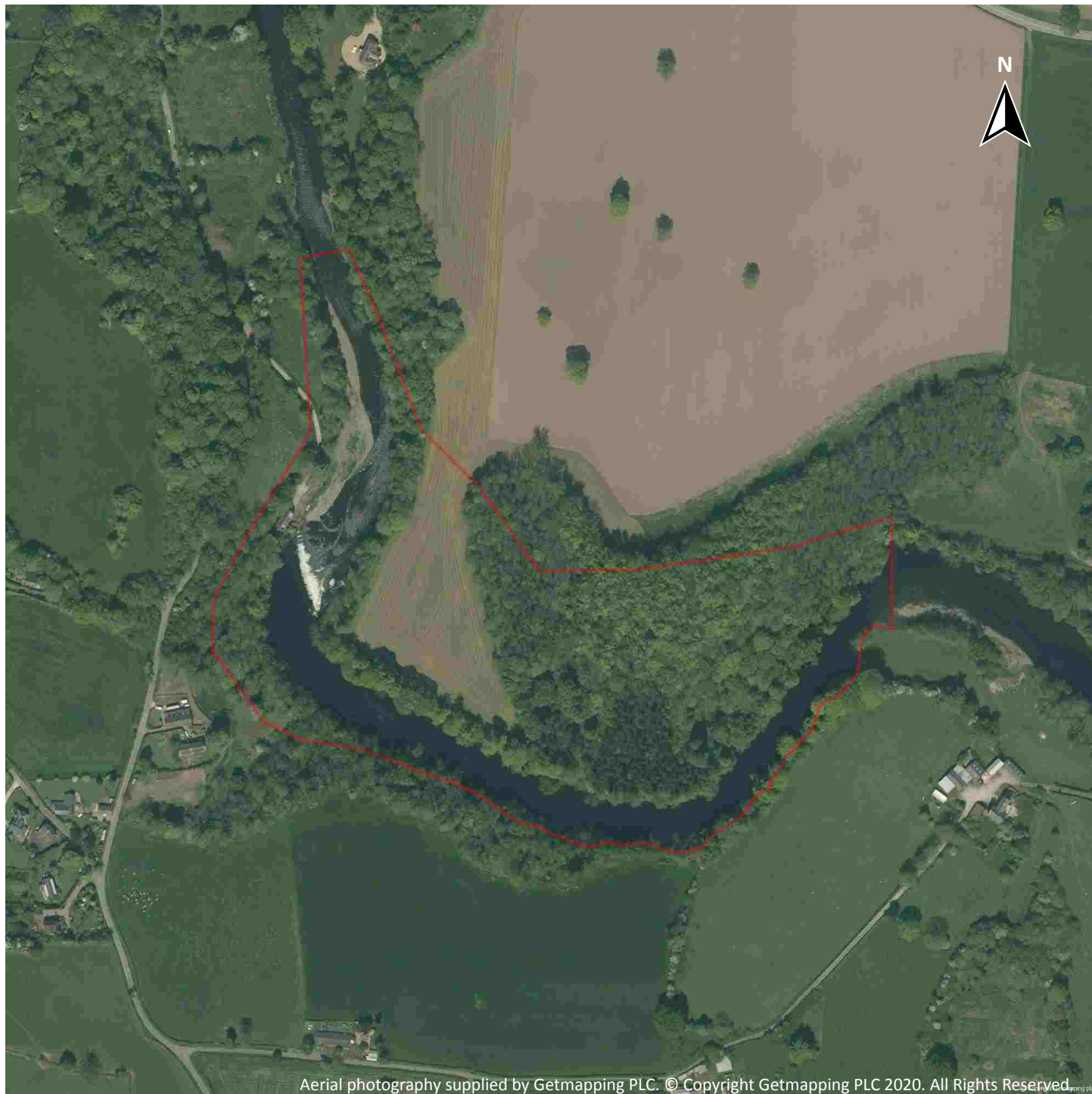
63	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
63	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
63	10.15	Nitrate Sensitive Areas	0	0	0	0	0
64	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
<b>65</b>	<b><u>10.17</u></b>	<b><u>SSSI Impact Risk Zones</u></b>	2	-	-	-	-
<b>66</b>	<b><u>10.18</u></b>	<b><u>SSSI Units</u></b>	0	0	0	0	1
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
68	11.1	World Heritage Sites	0	0	0	-	-
69	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
69	11.3	National Parks	0	0	0	-	-
<b>69</b>	<b><u>11.4</u></b>	<b><u>Listed Buildings</u></b>	0	0	3	-	-
70	11.5	Conservation Areas	0	0	0	-	-
70	11.6	Scheduled Ancient Monuments	0	0	0	-	-
<b>70</b>	<b><u>11.7</u></b>	<b><u>Registered Parks and Gardens</u></b>	0	1	2	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
<b>71</b>	<b><u>12.1</u></b>	<b><u>Agricultural Land Classification</u></b>	Grade 4 (within 250m)				
72	12.2	Open Access Land	0	0	0	-	-
73	12.3	Tree Felling Licences	0	0	0	-	-
73	12.4	Environmental Stewardship Schemes	0	0	0	-	-
73	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
74	13.1	Priority Habitat Inventory	0	0	0	-	-
74	13.2	Habitat Networks	0	0	0	-	-
74	13.3	Open Mosaic Habitat	0	0	0	-	-
74	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
<b>75</b>	<b><u>14.1</u></b>	<b><u>10k Availability</u></b>	Identified (within 500m)				
76	14.2	Artificial and made ground (10k)	0	0	0	0	-
77	14.3	Superficial geology (10k)	0	0	0	0	-

77	14.4	Landslip (10k)	0	0	0	0	-
78	14.5	Bedrock geology (10k)	0	0	0	0	-
78	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
<b>79</b>	<b>15.1</b>	<b><u>50k Availability</u></b>	Identified (within 500m)				
80	15.2	Artificial and made ground (50k)	0	0	0	0	-
80	15.3	Artificial ground permeability (50k)	0	0	-	-	-
<b>81</b>	<b>15.4</b>	<b><u>Superficial geology (50k)</u></b>	2	5	2	2	-
<b>82</b>	<b>15.5</b>	<b><u>Superficial permeability (50k)</u></b>	Identified (within 50m)				
82	15.6	Landslip (50k)	0	0	0	0	-
83	15.7	Landslip permeability (50k)	None (within 50m)				
<b>84</b>	<b>15.8</b>	<b><u>Bedrock geology (50k)</u></b>	1	0	0	1	-
<b>85</b>	<b>15.9</b>	<b><u>Bedrock permeability (50k)</u></b>	Identified (within 50m)				
85	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
86	16.1	BGS Boreholes	0	0	0	-	-
Page	Section	Natural ground subsidence					
<b>87</b>	<b>17.1</b>	<b><u>Shrink swell clays</u></b>	Very low (within 50m)				
<b>88</b>	<b>17.2</b>	<b><u>Running sands</u></b>	Low (within 50m)				
<b>90</b>	<b>17.3</b>	<b><u>Compressible deposits</u></b>	Moderate (within 50m)				
<b>92</b>	<b>17.4</b>	<b><u>Collapsible deposits</u></b>	Very low (within 50m)				
<b>94</b>	<b>17.5</b>	<b><u>Landslides</u></b>	Moderate (within 50m)				
<b>96</b>	<b>17.6</b>	<b><u>Ground dissolution of soluble rocks</u></b>	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
97	18.1	Natural cavities	0	0	0	0	-
<b>98</b>	<b>18.2</b>	<b><u>BritPits</u></b>	1	1	1	0	-
<b>98</b>	<b>18.3</b>	<b><u>Surface ground workings</u></b>	9	4	5	-	-
99	18.4	Underground workings	0	0	0	0	0
99	18.5	Historical Mineral Planning Areas	0	0	0	0	-

100	18.6	Non-coal mining	0	0	0	0	0
100	18.7	Mining cavities	0	0	0	0	0
100	18.8	JPB mining areas	None (within 0m)				
<b>100</b>	<b>18.9</b>	<b><u>Coal mining</u></b>	<b>Identified (within 0m)</b>				
101	18.10	Brine areas	None (within 0m)				
101	18.11	Gypsum areas	None (within 0m)				
101	18.12	Tin mining	None (within 0m)				
101	18.13	Clay mining	None (within 0m)				
Page	Section	Radon					
<b>102</b>	<b>19.1</b>	<b><u>Radon</u></b>	<b>Between 5% and 10% (within 0m)</b>				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
<b>104</b>	<b>20.1</b>	<b><u>BGS Estimated Background Soil Chemistry</u></b>	6	8	-	-	-
105	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
105	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
106	21.1	Underground railways (London)	0	0	0	-	-
106	21.2	Underground railways (Non-London)	0	0	0	-	-
106	21.3	Railway tunnels	0	0	0	-	-
106	21.4	Historical railway and tunnel features	0	0	0	-	-
106	21.5	Royal Mail tunnels	0	0	0	-	-
107	21.6	Historical railways	0	0	0	-	-
107	21.7	Railways	0	0	0	-	-
107	21.8	Crossrail 1	0	0	0	0	-
107	21.9	Crossrail 2	0	0	0	0	-
107	21.10	HS2	0	0	0	0	-



## Recent aerial photograph



Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2020. All Rights Reserved.

Capture Date: 07/05/2017

Site Area: 9.9ha



## Recent site history - 2015 aerial photograph



Capture Date: 23/04/2015

Site Area: 9.9ha





## Recent site history - 2013 aerial photograph



Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2020. All Rights Reserved.

Capture Date: 14/07/2013

Site Area: 9.9ha



## Recent site history - 2009 aerial photograph



Capture Date: 01/06/2009

Site Area: 9.9ha



## Recent site history - 2000 aerial photograph

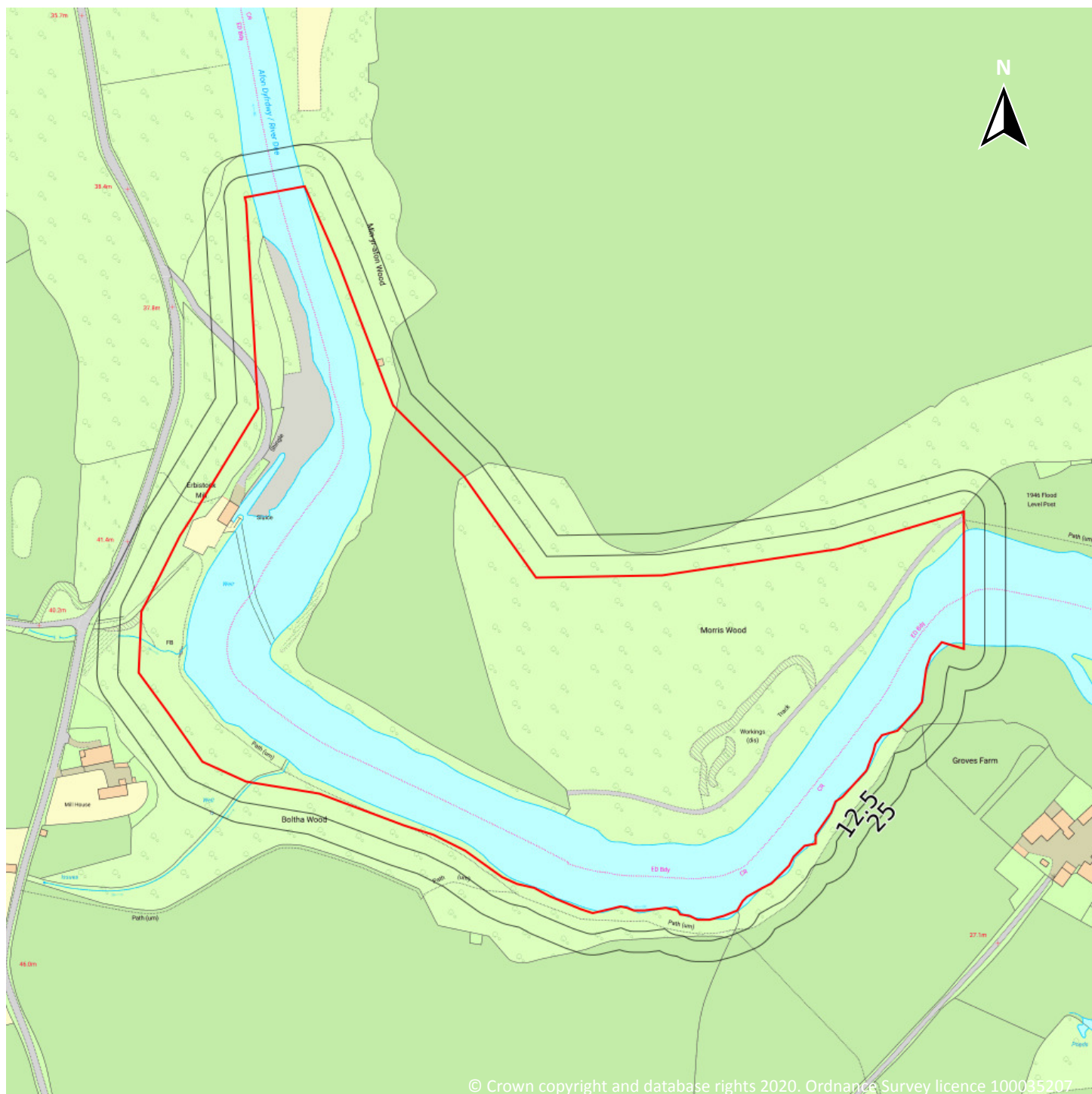


Capture Date: 04/09/2000

Site Area: 9.9ha



## OS MasterMap site plan



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Site Area: 9.9ha





## 1 Past land use



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

### 1.1 Historical industrial land uses

#### Records within 500m

29

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

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

ID	Location	Land use	Dates present	Group ID
A	On site	Unspecified Old Quarry	1965	833096

ID	Location	Land use	Dates present	Group ID
A	On site	Unspecified Quarry	1899	933969
A	On site	Unspecified Quarry	1914	949992
B	On site	Flour Mill	1873	822651
B	On site	Unspecified Mill	1965 - 1978	860006
B	On site	Unspecified Mill	1914	883597
B	On site	Unspecified Mill	1900	900754
B	On site	Unspecified Mill	1992	959554
B	On site	Unspecified Mill	1899	988547
C	On site	Unspecified Quarry	1924	844978
C	On site	Unspecified Quarry	1898	846556
C	On site	Unspecified Disused Quarry	1978	852690
C	On site	Unspecified Quarry	1914	913075
C	On site	Unspecified Disused Quarry	1992	950001
C	On site	Unspecified Quarry	1965	976095
A	30m W	Unspecified Quarry	1965 - 1978	989323
A	34m W	Unspecified Quarry	1992	980806
A	35m W	Unspecified Old Quarry	1914	833094
D	87m NW	Sewage Tank	1914	810400
E	124m NE	Gravel Pit	1965	863866
E	128m NE	Gravel Pit	1914	974052
3	294m NE	Smithy	1873	843047
F	320m NW	Unspecified Ground Workings	1914	882961
F	347m W	Unspecified Ground Workings	1978	855871
F	347m W	Unspecified Ground Workings	1992	973503
G	421m W	Unspecified Pit	1965	981829
G	422m W	Unspecified Pit	1909	923244
G	424m W	Unspecified Pit	1914	948592
G	440m W	Unspecified Pit	1949	881238

*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 ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

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

ID	Location	Land use	Dates present	Group ID
1	39m SW	Unspecified Tank	1901	109635
D	87m NW	Sewage Tank	1912	108757
2	153m E	Tank or Trough	1874	120847
4	317m W	Unspecified Tank	1899 - 1960	140256
5	429m E	Tank or Trough	1874	120849
6	452m NE	Tank or Trough	1874	120844

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

## 1.3 Historical energy features

### Records within 500m

**0**

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

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

## 1.4 Historical petrol stations

### Records within 500m

**0**

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



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

## 1.5 Historical garages

**Records within 500m**

**0**

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

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

## 1.6 Historical military land

**Records within 500m**

**0**

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

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

## 2 Past land use - un-grouped



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

### 2.1 Historical industrial land uses

Records within 500m

31

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 18**

ID	Location	Land Use	Date	Group ID
A	On site	Unspecified Quarry	1924	844978
A	On site	Unspecified Quarry	1914	913075
A	On site	Unspecified Disused Quarry	1992	950001

ID	Location	Land Use	Date	Group ID
A	On site	Unspecified Disused Quarry	1978	852690
A	On site	Unspecified Quarry	1965	976095
A	On site	Unspecified Quarry	1898	846556
B	On site	Unspecified Mill	1899	988547
B	On site	Unspecified Mill	1914	883597
B	On site	Unspecified Mill	1900	900754
B	On site	Unspecified Mill	1992	959554
B	On site	Unspecified Mill	1978	860006
B	On site	Unspecified Mill	1965	860006
B	On site	Flour Mill	1873	822651
C	On site	Unspecified Quarry	1899	933969
C	On site	Unspecified Quarry	1914	949992
C	On site	Unspecified Old Quarry	1965	833096
C	30m W	Unspecified Quarry	1965	989323
C	34m W	Unspecified Quarry	1992	980806
C	34m W	Unspecified Quarry	1978	989323
C	35m W	Unspecified Old Quarry	1914	833094
D	87m NW	Sewage Tank	1914	810400
E	124m NE	Gravel Pit	1965	863866
E	128m NE	Gravel Pit	1914	974052
3	294m NE	Smithy	1873	843047
G	320m NW	Unspecified Ground Workings	1914	882961
G	347m W	Unspecified Ground Workings	1992	973503
G	347m W	Unspecified Ground Workings	1978	855871
H	421m W	Unspecified Pit	1965	981829
H	422m W	Unspecified Pit	1909	923244
H	424m W	Unspecified Pit	1914	948592
H	440m W	Unspecified Pit	1949	881238

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



## 2.2 Historical tanks

### Records within 500m

**7**

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 18**

ID	Location	Land Use	Date	Group ID
1	39m SW	Unspecified Tank	1901	109635
D	87m NW	Sewage Tank	1912	108757
2	153m E	Tank or Trough	1874	120847
F	317m W	Unspecified Tank	1899	140256
F	317m W	Unspecified Tank	1960	140256
4	429m E	Tank or Trough	1874	120849
5	452m NE	Tank or Trough	1874	120844

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

## 2.3 Historical energy features

### Records within 500m

**0**

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

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

## 2.4 Historical petrol stations

### Records within 500m

**0**

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

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



## 2.5 Historical garages

Records within 500m

0

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

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



## 3 Waste and landfill



— Site Outline  
Search buffers in metres (m)  
● Waste exemptions

### 3.1 Active or recent landfill

Records within 500m

0

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

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

### 3.2 Historical landfill (BGS records)

Records within 500m

0

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

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

### 3.3 Historical landfill (LA/mapping records)

**Records within 500m****0**

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

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

### 3.4 Historical landfill (EA/NRW records)

**Records within 500m****0**

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

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

### 3.5 Historical waste sites

**Records within 500m****0**

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

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

### 3.6 Licensed waste sites

**Records within 500m****0**

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

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

### 3.7 Waste exemptions

**Records within 500m****7**

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 22**



ID	Location	Site	Reference	Category	Sub-Category	Description
1	398m S	DCWW, Manor Farm, Eyton, Wrexham, Wreccsam, LL13 OSN	NRW-WME047450	Storing waste exemption	Not on a farm	Storage of sludge
2	468m NE	Asney Park Farm, Erbistock, Wrexham, Wreccsam, LL13 ODS	NRW-WME043301	Using waste exemption	On a farm	Use of waste for a specified purpose
A	498m NE	Dwr Cymru Victoria Road, Bryn Y Pys, Wrexham Road, Overton, Wrexham, Wreccsam, LL130HG	NRW-WME006714	Using waste exemption	On a farm	Use of waste derived biodiesel as fuel
A	498m NE	Dwr Cymru Victoria Road, Bryn Y Pys, Wrexham Road, Overton, Wrexham, Wreccsam, LL130HG	NRW-WME006714	Storing waste exemption	Not on a farm	Storage of sludge
A	498m NE	Bryn-Y-Pys Home Farm Partnership, Bryn Y Pys Home Farm, Wrexham Road, Overton, Wrexham, Wreccsam, LL130HG	NRW-WME033338	Using waste exemption	On a farm	Use of waste in construction
A	498m NE	Bryn-Y-Pys Home Farm Partnership, Bryn Y Pys Home Farm, Wrexham Road, Overton, Wrexham, Wreccsam, LL130HG	NRW-WME033338	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
A	498m NE	Bryn-Y-Pys Home Farm Partnership, Bryn Y Pys Home Farm, Wrexham Road, Overton, Wrexham, Wreccsam, LL130HG	NRW-WME033338	Treating waste exemption	On a farm	Aerobic composting and associated prior treatment

*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

### 4.1 Recent industrial land uses

#### Records within 250m

1

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 25**

ID	Location	Company	Address	Activity	Category
1	On site	Quarry (Disused)	Clwyd, LL13	Unspecified Quarries Or Mines	Extractive Industries

*This data is sourced from Ordnance Survey.*

## 4.2 Current or recent petrol stations

Records within 500m

0

Open, closed, under development and obsolete petrol stations.

*This data is sourced from Experian.*

## 4.3 Electricity cables

Records within 500m

0

High voltage underground electricity transmission cables.

*This data is sourced from National Grid.*

## 4.4 Gas pipelines

Records within 500m

0

High pressure underground gas transmission pipelines.

*This data is sourced from National Grid.*

## 4.5 Sites determined as Contaminated Land

Records within 500m

0

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

*This data is sourced from Local Authority records.*

## 4.6 Control of Major Accident Hazards (COMAH)

Records within 500m

0

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

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

## 4.7 Regulated explosive sites

**Records within 500m****0**

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

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

## 4.8 Hazardous substance storage/usage

**Records within 500m****0**

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

*This data is sourced from Local Authority records.*

## 4.9 Historical licensed industrial activities (IPC)

**Records within 500m****0**

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

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

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

**Records within 500m****0**

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

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

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

**Records within 500m****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

4

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 25**

ID	Location	Address	Details	
2	13m S	ERBISTOCK STW	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: CM0112101 Permit Version: 2 Receiving Water: DEE	Status: Effective Issue date: 16/11/1987 Effective Date: 16/11/1987 Revocation Date: -
A	272m N	MIN YR AFON ERBISTOCK NR WREXHAM, MIN YR AFON, ERBISTOCK, NR WREXHAM, WREXHAM, LL13 ODS	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CG0399501 Permit Version: 1 Receiving Water: THE RIVER DEE	Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY Issue date: 21/05/2002 Effective Date: 21/05/2002 Revocation Date: -
A	278m N	THE CROSS FOXES OVERTON BRIDGE ERBI, THE CROSS FOXES OVERTON BRIDGE E, OVERTON BRIDGE ERBISTOCK WREXHAM, ERBISTOCK WREXHAM, WREXHAM,	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: HB3193HK Permit Version: 1 Receiving Water: UN-NAMED TRIB OF RIVER DEE	Status: Effective Issue date: 31/07/2014 Effective Date: 31/07/2014 Revocation Date: -
A	300m N	THE CROSS FOXES OVERTON BRIDGE ERBI, THE CROSS FOXES OVERTON BRIDGE E, OVERTON BRIDGE ERBISTOCK WREXHAM, ERBISTOCK WREXHAM, WREXHAM,	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CG0368401 Permit Version: 1 Receiving Water: River Dee	Status: Effective Issue date: 05/09/1996 Effective Date: 05/09/1996 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****0**

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

*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

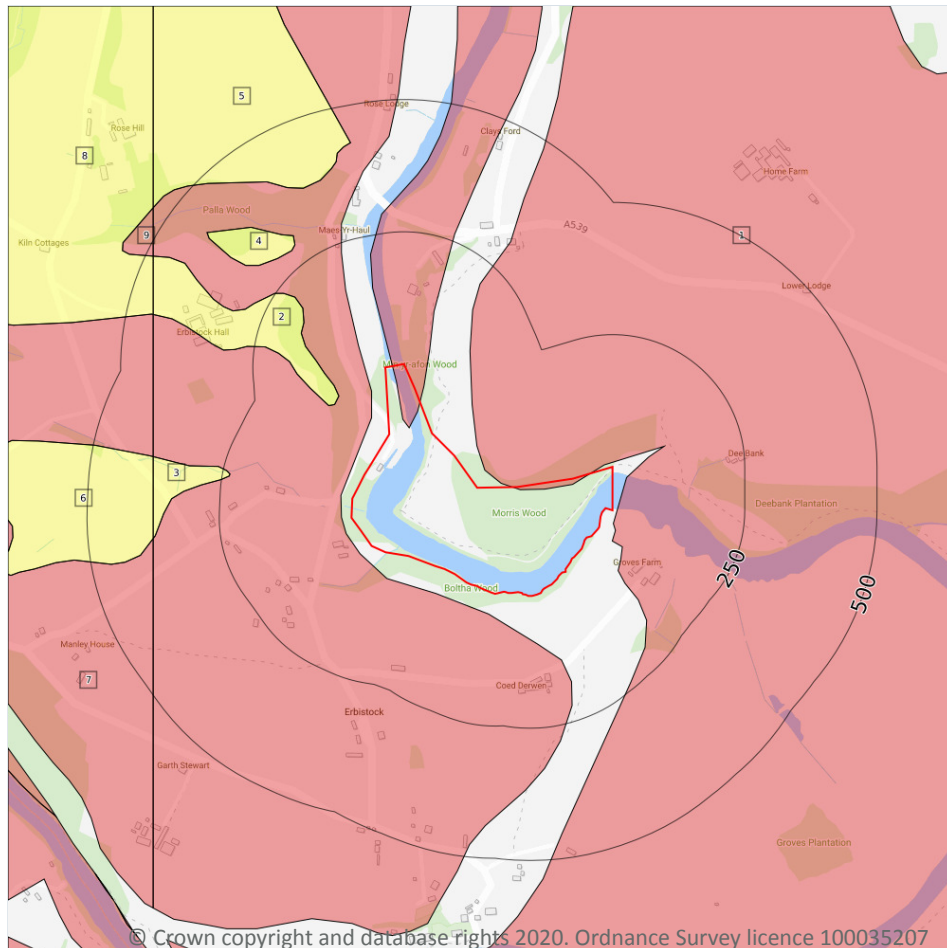
Records within 500m

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

9

Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 31**

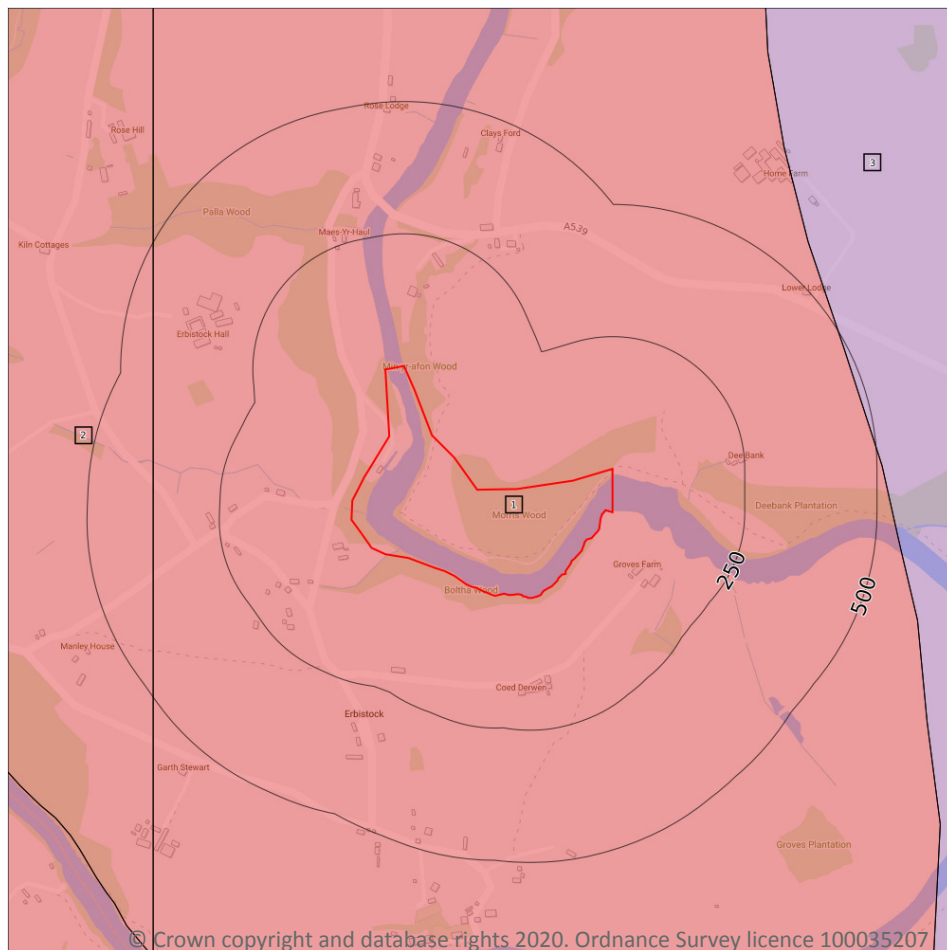
ID	Location	Designation	Description
1	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	91m W	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type



ID	Location	Designation	Description
3	236m W	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
4	283m NW	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
5	373m NW	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
6	375m W	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
7	377m W	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
8	450m W	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
9	486m NW	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

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

## Bedrock aquifer



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

## 5.2 Bedrock aquifer

### Records within 500m

3

Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 33**

ID	Location	Designation	Description
1	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	375m W	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

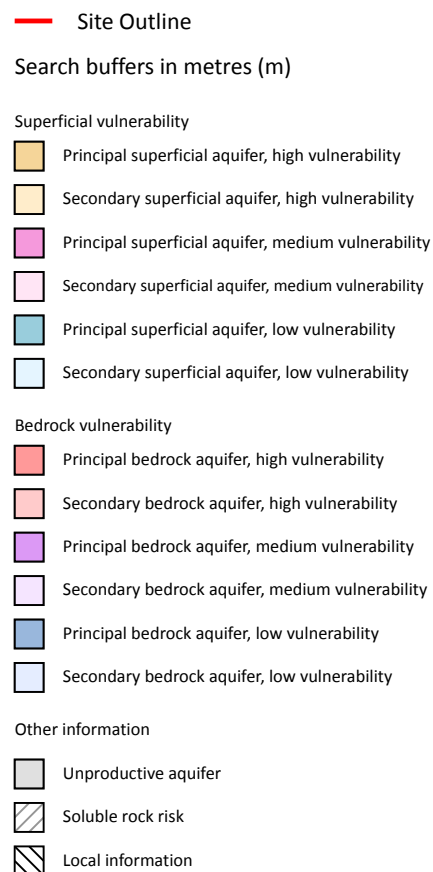
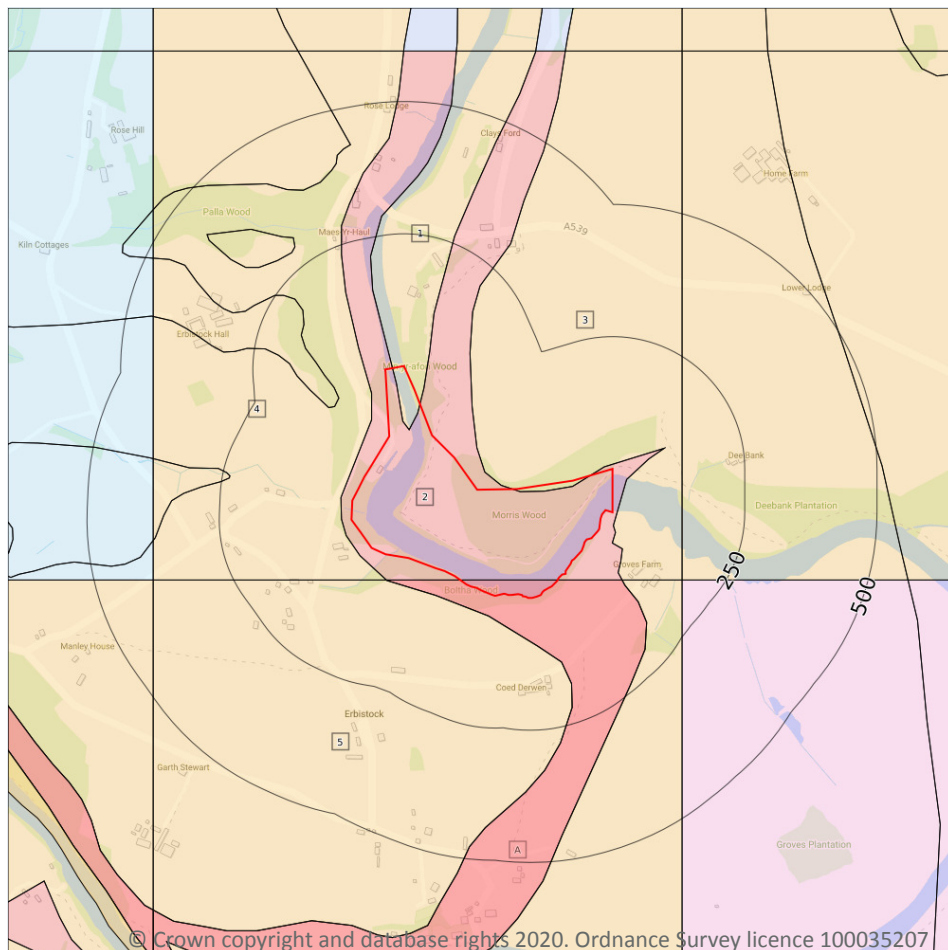


ID	Location	Designation	Description
3	487m E	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers

*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

7

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 35**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300- 550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: >10m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
2	On site	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300- 550mm/year	Vulnerability: - Aquifer type: - Thickness: >10m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
3	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300- 550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: >10m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
A	On site	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300- 550mm/year	Vulnerability: - Aquifer type: - Thickness: 3-10m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
A	On site	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300- 550mm/year	Vulnerability: - Aquifer type: - Thickness: 3-10m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
4	17m W	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300- 550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: >10m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
5	39m S	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300- 550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures



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

## 5.4 Groundwater vulnerability- soluble rock risk

Records on site

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

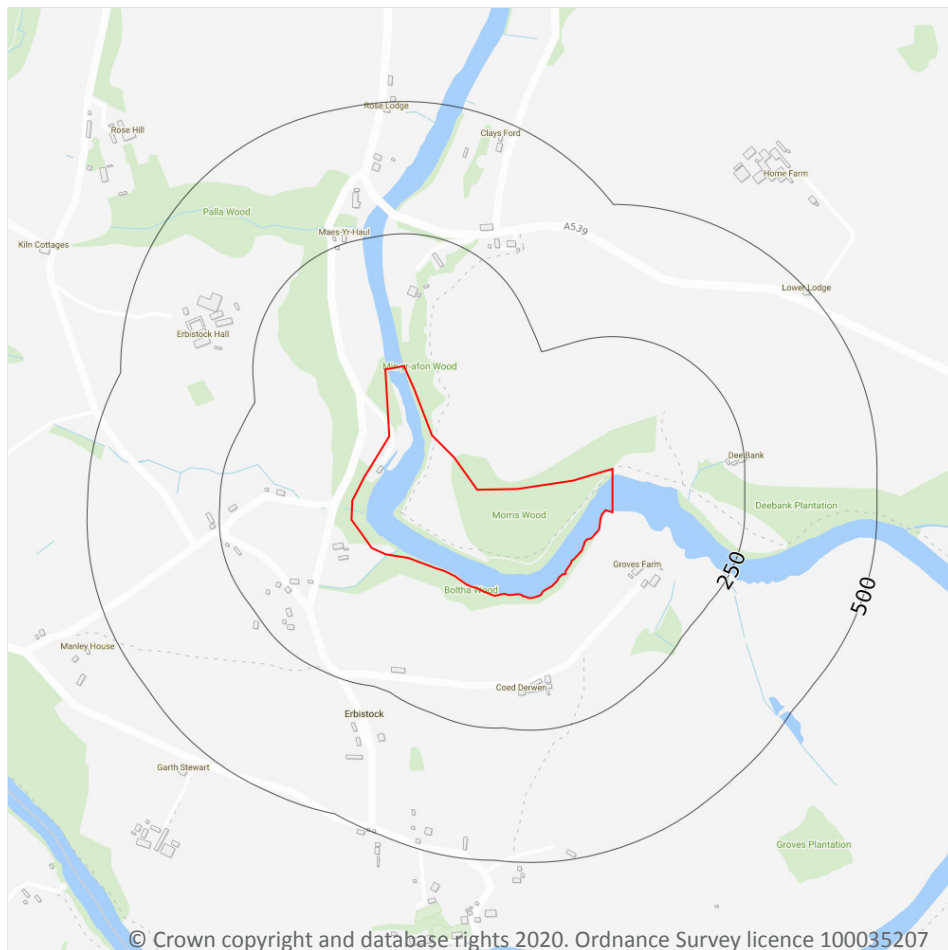
Records on site

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](mailto:enquiries@environment-agency.gov.uk).

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

## Abstractions and Source Protection Zones



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

### 5.6 Groundwater abstractions

Records within 2000m

13

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 38**



ID	Location	Details	
-	940m SW	Status: Historical Licence No: 24/67/7/0026 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: BOREHOLE Data Type: Point Name: Mottram Easting: 334920 Northing: 341260	Annual Volume (m <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - Original Application No: - Original Start Date: 05/07/1966 Expiry Date: - Issue No: 100 Version Start Date: 05/07/1966 Version End Date: -
-	1233m NE	Status: Historical Licence No: 24/67/7/0119 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: WELL Data Type: Point Name: Trustees Of The Peel Estate Easting: 336910 Northing: 342870	Annual Volume (m <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - Original Application No: - Original Start Date: 25/10/1966 Expiry Date: - Issue No: 100 Version Start Date: 26/01/1971 Version End Date: -
-	1349m SE	Status: Historical Licence No: 24/67/7/0215 Details: Non-Evaporative Cooling Direct Source: EAW Groundwater Point: BOREHOLE A Data Type: Point Name: Knolton Farmhouse Cheese Ltd Easting: 336420 Northing: 340810	Annual Volume (m <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - Original Application No: - Original Start Date: 13/01/2000 Expiry Date: 13/01/2005 Issue No: 2 Version Start Date: 01/09/2003 Version End Date: -
-	1379m SE	Status: Active Licence No: WA/067/0007/0014 Details: Process Water - Medium Direct Source: Underground Strata (Kinnerton Sandstone) Point: - Data Type: Point Name: - Easting: 336420 Northing: 340775	Annual Volume (m <sup>3</sup> ): 262,800 Max Daily Volume (m <sup>3</sup> ): 720 Original Application No: - Original Start Date: Jun 30 2017 12:00AM Expiry Date: Mar 31 2027 12:00AM Issue No: - Version Start Date: - Version End Date: -
-	1382m SE	Status: Active Licence No: WA/067/0007/0014 Details: Process Water - Medium Direct Source: Underground Strata (Kinnerton Sandstone) Point: - Data Type: Point Name: - Easting: 336438 Northing: 340783	Annual Volume (m <sup>3</sup> ): 262,800 Max Daily Volume (m <sup>3</sup> ): 720 Original Application No: - Original Start Date: Jun 30 2017 12:00AM Expiry Date: Mar 31 2027 12:00AM Issue No: - Version Start Date: - Version End Date: -





ID	Location	Details	
-	1383m SE	Status: Historical Licence No: 24/67/7/0230 Details: Process Water Direct Source: EAW Groundwater Point: BOREHOLE A AT KNOLTON CHEESE Data Type: Point Name: Knolton Farmhouse Cheese Ltd Easting: 336438 Northing: 340782	Annual Volume (m <sup>3</sup> ): 70000 Max Daily Volume (m <sup>3</sup> ): 300 Original Application No: - Original Start Date: 13/01/2005 Expiry Date: 31/03/2008 Issue No: 1 Version Start Date: 13/01/2005 Version End Date: -
-	1383m SE	Status: Historical Licence No: 24/67/7/0235 Details: Process Water Direct Source: EAW Groundwater Point: BOREHOLE A AT KNOLTON CHEESE Data Type: Point Name: Knolton Farmhouse Cheese Ltd Easting: 336438 Northing: 340782	Annual Volume (m <sup>3</sup> ): 118260 Max Daily Volume (m <sup>3</sup> ): 324 Original Application No: - Original Start Date: 01/04/2008 Expiry Date: 31/03/2015 Issue No: 2 Version Start Date: 27/06/2013 Version End Date: -
-	1383m SE	Status: Historical Licence No: WA/067/0007/013 Details: Process Water Direct Source: EAW Groundwater Point: BOREHOLE A AT KNOLTON CHEESE Data Type: Point Name: Knolton Farmhouse Cheese Ltd Easting: 336438 Northing: 340782	Annual Volume (m <sup>3</sup> ): 118260 Max Daily Volume (m <sup>3</sup> ): 324 Original Application No: - Original Start Date: 14/09/2015 Expiry Date: 14/09/2016 Issue No: 1 Version Start Date: 14/09/2015 Version End Date: -
-	1383m SE	Status: Historical Licence No: WA/067/0007/013 Details: Process Water - Medium Direct Source: - Point: - Data Type: Point Name: - Easting: 336438 Northing: 340782	Annual Volume (m <sup>3</sup> ): 118260 Max Daily Volume (m <sup>3</sup> ): - Original Application No: - Original Start Date: Sep 14 2015 12:00AM Expiry Date: Sep 14 2016 12:00AM Issue No: - Version Start Date: - Version End Date: -
-	1606m NE	Status: Historical Licence No: 24/67/7/0228 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: BOREHOLE AT ASNEY PARK FARM, ERBISTOCK Data Type: Point Name: Done Easting: 336110 Northing: 343880	Annual Volume (m <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - Original Application No: - Original Start Date: 04/10/2004 Expiry Date: 31/03/2008 Issue No: 1 Version Start Date: 04/10/2004 Version End Date: -



ID	Location	Details	
-	1711m E	Status: Historical Licence No: 24/67/7/0118 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: WELL Data Type: Point Name: Owen Easting: 337580 Northing: 342110	Annual Volume (m <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - Original Application No: - Original Start Date: 25/10/1966 Expiry Date: - Issue No: 100 Version Start Date: 25/10/1966 Version End Date: -
-	1841m E	Status: Historical Licence No: 24/67/7/0120 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: WELL Data Type: Point Name: Lewis Easting: 337680 Northing: 342540	Annual Volume (m <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - Original Application No: - Original Start Date: 25/10/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/1993 Version End Date: -
-	1961m SW	Status: Historical Licence No: 24/67/7/0096 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: WELL Data Type: Point Name: Scott Easting: 334510 Northing: 340320	Annual Volume (m <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - Original Application No: - Original Start Date: 25/10/1966 Expiry Date: - Issue No: 100 Version Start Date: 13/07/1979 Version End Date: -

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

## 5.7 Surface water abstractions

### Records within 2000m

2

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

Features are displayed on the Abstractions and Source Protection Zones map on **page 38**

ID	Location	Details	
-	1981m NE	Status: Historical Licence No: 24/67/7/0117 Details: Spray Irrigation - Direct Direct Source: EAW Surface Water Point: RIVER DEE Data Type: Line Name: W H Jones And Sons Easting: 337230 Northing: 344581	Annual Volume (m <sup>3</sup> ): 4546 Max Daily Volume (m <sup>3</sup> ): 227.3 Original Application No: - Original Start Date: 25/10/1966 Expiry Date: - Issue No: 100 Version Start Date: 04/12/1978 Version End Date: -
-	1981m NE	Status: Active Licence No: 24/67/7/0117 Details: Spray Irrigation - Direct - High Direct Source: - Point: - Data Type: Line Name: - Easting: 337230 Northing: 344581	Annual Volume (m <sup>3</sup> ): 4,546 Max Daily Volume (m <sup>3</sup> ): - Original Application No: - Original Start Date: Dec 4 1978 12:00AM Expiry Date: - Issue No: - Version Start Date: - Version End Date: -

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

## 5.8 Potable abstractions

<b>Records within 2000m</b>	<b>0</b>
-----------------------------	----------

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

<b>Records within 500m</b>	<b>0</b>
----------------------------	----------

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)

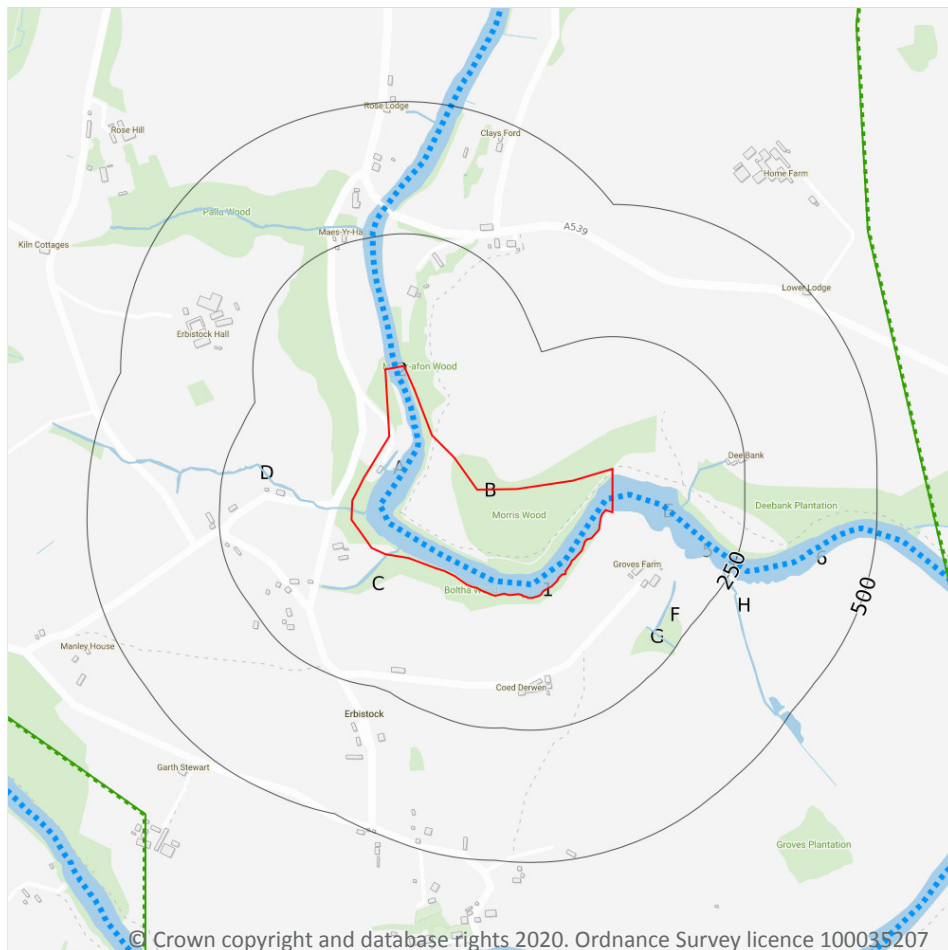
<b>Records within 500m</b>	<b>0</b>
----------------------------	----------

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

27

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 43**

ID	Location	Type of water feature	Ground level	Permanence	Name
1	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Afon Dyfrdwy

ID	Location	Type of water feature	Ground level	Permanence	Name
2	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Afon Dyfrdwy
A	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Afon Dyfrdwy
A	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Afon Dyfrdwy
A	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	48m W	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
D	51m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
E	58m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Afon Dyfrdwy
E	58m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Afon Dyfrdwy



ID	Location	Type of water feature	Ground level	Permanence	Name
5	114m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Afon Dyfrdwy
E	114m E	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
E	143m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
E	146m E	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
E	148m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	173m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	182m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	190m SE	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	198m SE	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	198m SE	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	201m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	237m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
6	242m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Afon Dyfrdwy

*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 43**

*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 43**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
B	On site	River WB catchment	Dee - Chester Weir to Ceiriog	GB111067057080	Dee Lower Chester Weir to Ceiriog	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 43**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
3	On site	River	Dee - Chester Weir to Ceiriog	GB111067057080	Moderate	Fail	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.

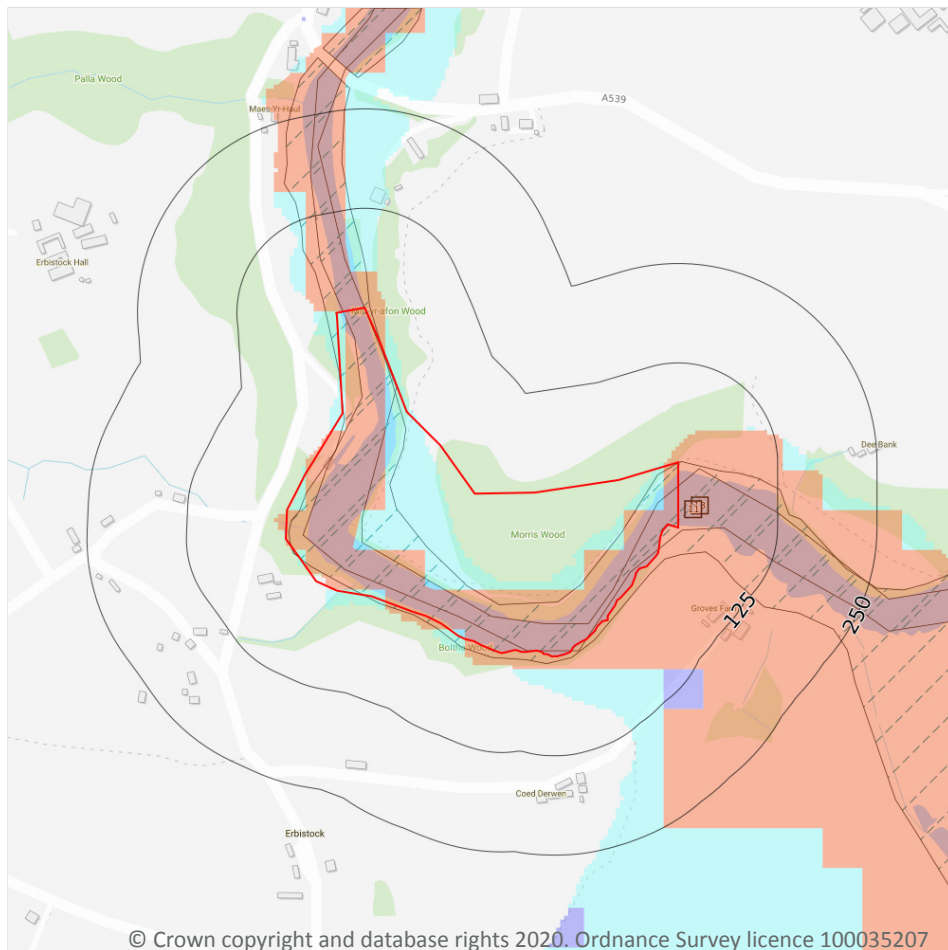
Features are displayed on the Hydrology map on **page 43**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
B	On site	Dee Carboniferous Coal Measures	GB41102G204800	Poor	Poor	Good	2016

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



## 7 River and coastal flooding



- Site Outline
- Search buffers in metres (m)
- Environment Agency river and coastal flooding:
  - High
  - Medium
  - Low
  - Very Low
- Historical Flood Events
- Areas Used for Flood Storage
- Areas Benefiting from Flood Defences
- Flood Defences

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

#### Records within 50m

15

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

Features are displayed on the River and coastal flooding map on **page 48**

Distance	RoFRaS flood risk
<b>On site</b>	<b>High</b>
0 - 50m	High



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

## 7.2 Historical Flood Events

<b>Records within 250m</b>	<b>2</b>
----------------------------	----------

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.

Features are displayed on the River and coastal flooding map on **page 48**

ID	Location	Event name	Date of flood	Flood source	Flood cause	Type of flood
11	On site	Erbistock 1964 01	1964-01-01 1964-01-01	Main river	Channel capacity exceeded (no raised defences)	Fluvial
13	On site	Lower Dee November 2009 001	2009-11-24 2009-11-26	Main river	Channel capacity exceeded (no raised defences)	Fluvial

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

## 7.3 Flood Defences

<b>Records within 250m</b>	<b>0</b>
----------------------------	----------

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

<b>Records within 250m</b>	<b>0</b>
----------------------------	----------

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

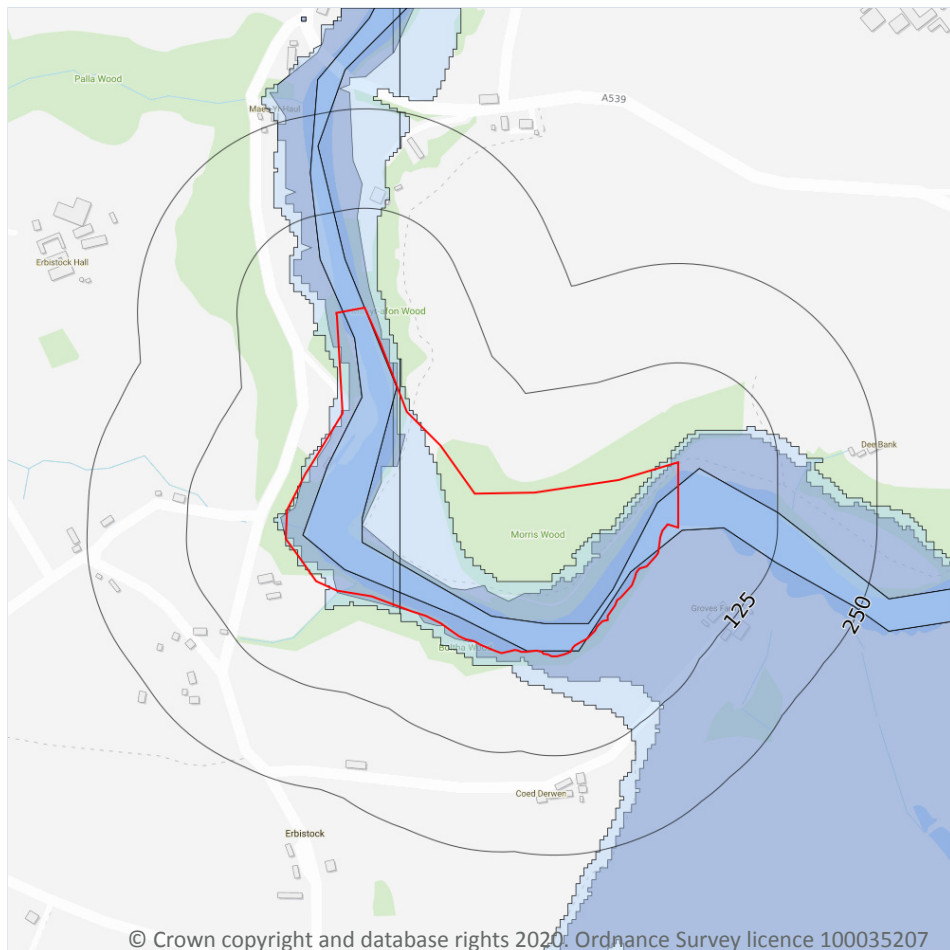
0

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



- Site Outline
- Search buffers in metres (m)
- Flood zone 2
- Flood zone 3

### 7.6 Flood Zone 2

#### Records within 50m

1

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.

Features are displayed on the River and coastal flooding map on **page 48**

Location	Type
On site	Zone 2 - (Fluvial /Tidal Models)

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

## 7.7 Flood Zone 3

### Records within 50m

**1**

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.

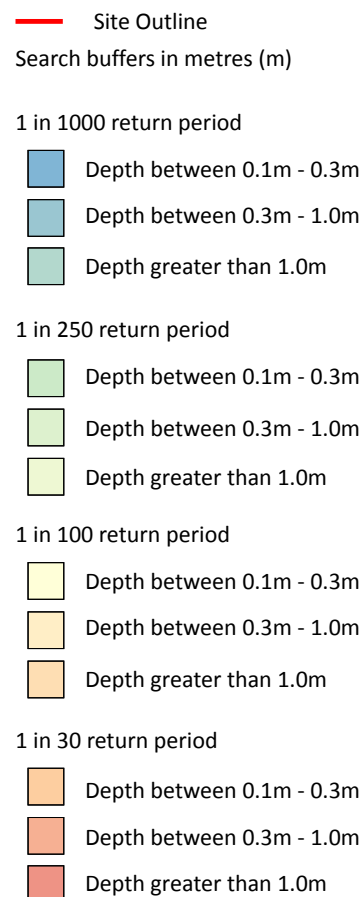
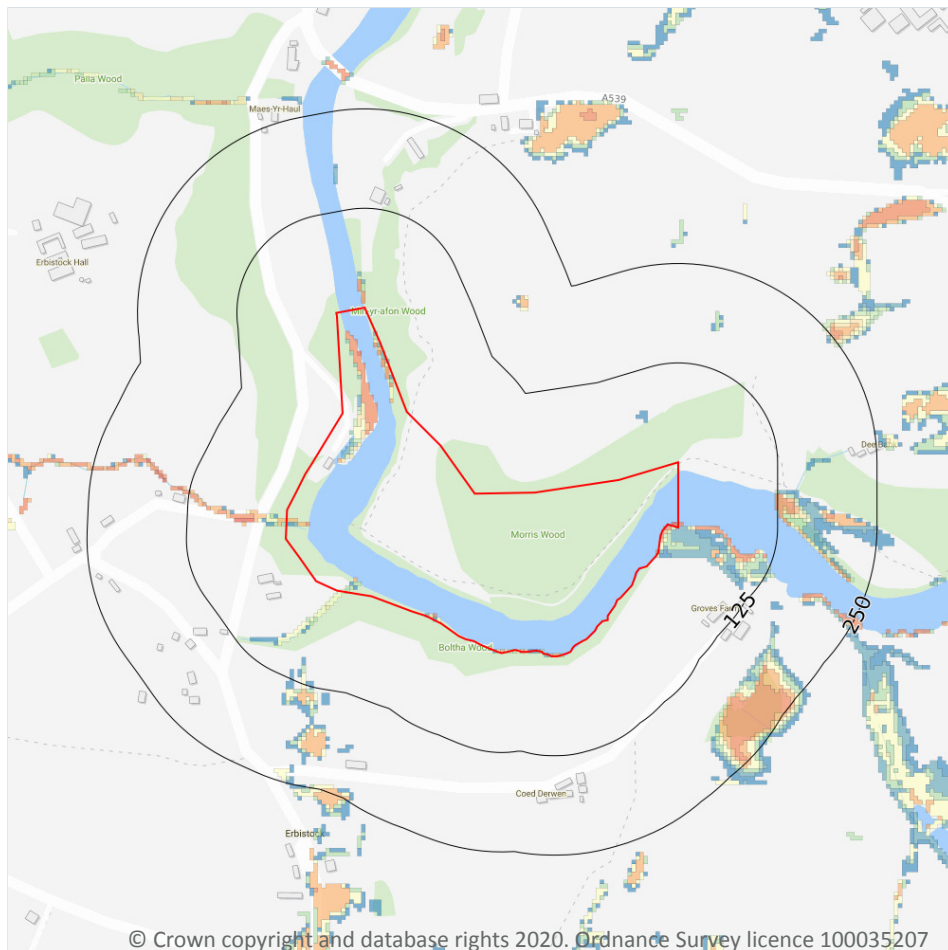
Features are displayed on the River and coastal flooding map on **page 48**

Location	Type
On site	Zone 3 - (Fluvial Models)

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



## 8 Surface water flooding



### 8.1 Surface water flooding

**Highest risk on site**

**1 in 30 year, Greater than 1.0m**

**Highest risk within 50m**

**1 in 30 year, Greater than 1.0m**

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

Features are displayed on the Surface water flooding map on **page 53**

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



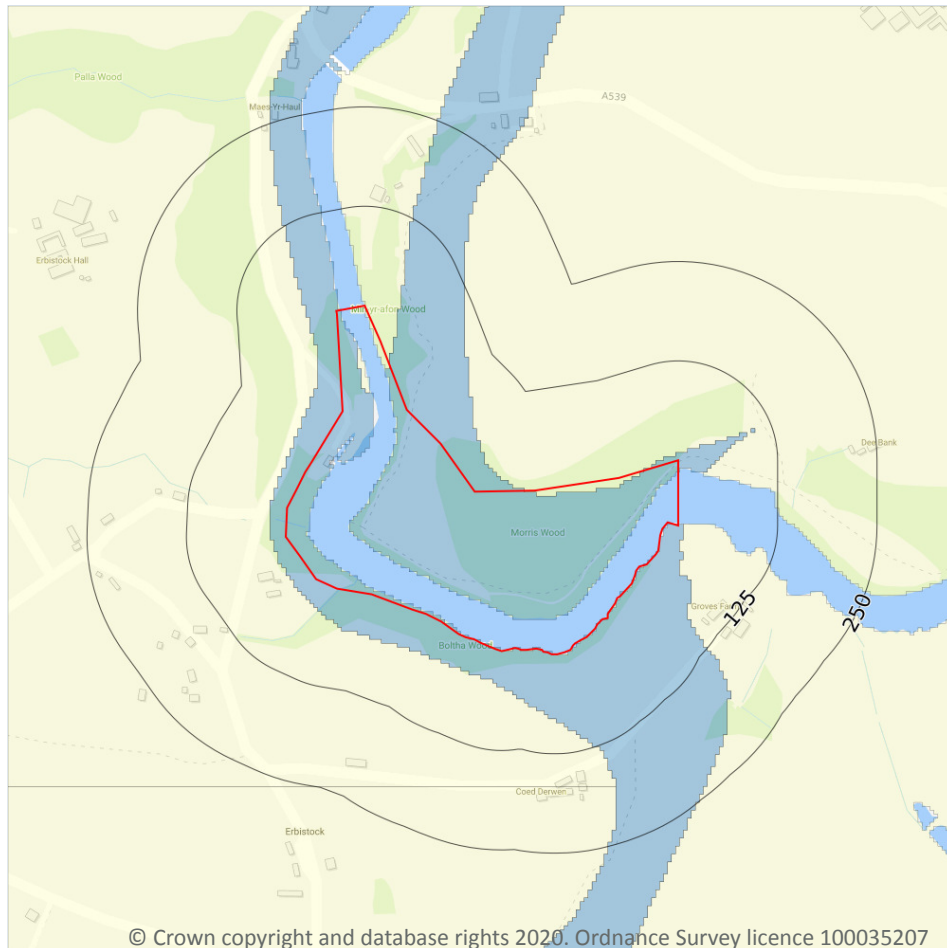
The table below shows the maximum flood depths for a range of return periods for the site.

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

*This data is sourced from Ambiantal Risk Analytics.*



## 9 Groundwater flooding



— Site Outline  
Search buffers in metres (m)

- High
- Moderate - High
- Moderate
- Low
- Negligible

### 9.1 Groundwater flooding

**Highest risk on site**

**Moderate**

**Highest risk within 50m**

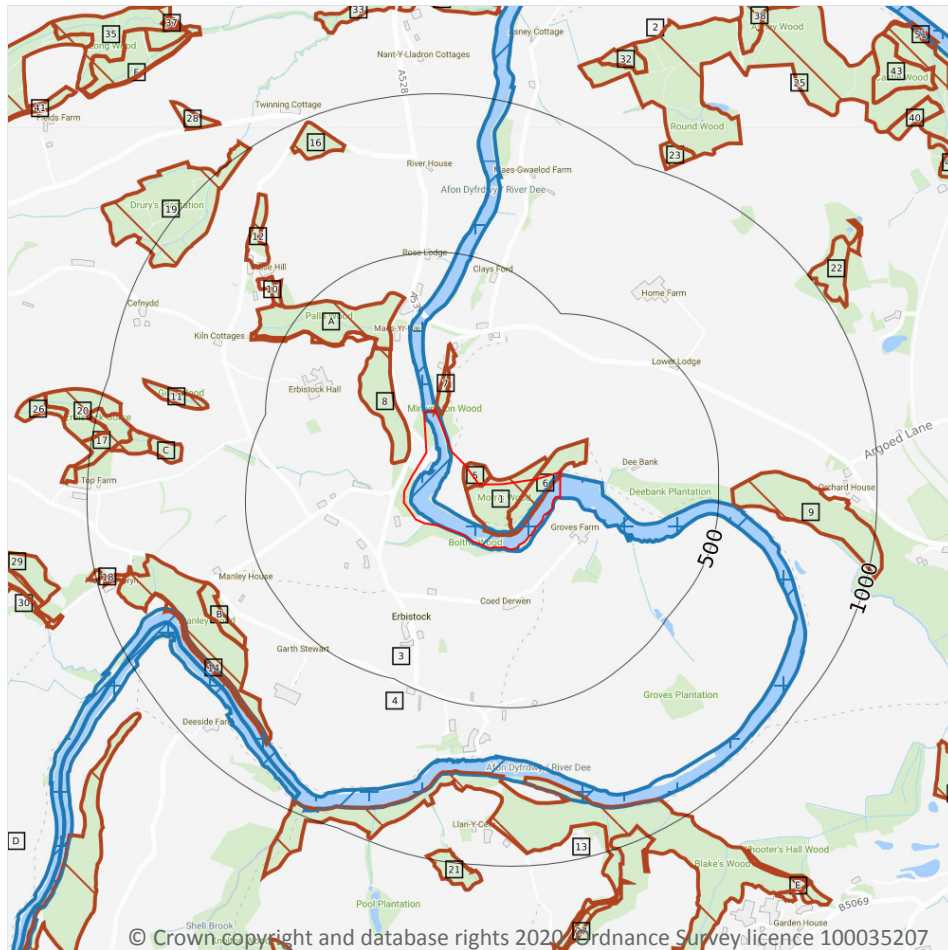
**Moderate**

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 55**

*This data is sourced from Ambiantal Risk Analytics.*

## 10 Environmental designations



- Site Outline
- Search buffers in metres (m)
- Sites of Special Scientific Interest (SSSI)
- + Special Areas of Conservation (SAC)
- Designated Ancient Woodland

### 10.1 Sites of Special Scientific Interest (SSSI)

#### Records within 2000m

4

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

Features are displayed on the Environmental designations map on **page 56**

ID	Location	Name	Data source
2	On site	Afon Dyfrdwy (River Dee)	Natural Resources Wales



ID	Location	Name	Data source
4	On site	Afon Dyfrdwy (River Dee)	Natural Resources Wales
D	810m SW	River Dee (England)	Natural England
-	1891m NE	Afon Dyfrdwy (River Dee)	Natural Resources Wales

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

## 10.2 Conserved wetland sites (Ramsar sites)

<b>Records within 2000m</b>	<b>0</b>
-----------------------------	----------

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)

<b>Records within 2000m</b>	<b>4</b>
-----------------------------	----------

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

Features are displayed on the Environmental designations map on **page 56**

ID	Location	Name	Features of interest	Habitat description	Data source
3	On site	River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (Wales)	Rivers with floating vegetation often dominated by water-crowfoot; Mixed woodland on base-rich soils associated with rocky slopes; Western acidic oak woodland; Alder woodland on floodplains; Sea lamprey; Brook lamprey; River lamprey; Twaite shad; Atlantic salmon; Bullhead; Freshwater pearl mussel; Otter; Floating water-plantain.	Broad-leaved deciduous woodland; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Improved grassland; Inland water bodies (Standing water, Running water); Salt marshes, Salt pastures, Salt steppes	Natural Resources Wales

ID	Location	Name	Features of interest	Habitat description	Data source
15	801m N	River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (Wales)	Rivers with floating vegetation often dominated by water-crowfoot; Mixed woodland on base-rich soils associated with rocky slopes; Western acidic oak woodland; Alder woodland on floodplains; Sea lamprey; Brook lamprey; River lamprey; Twaite shad; Atlantic salmon; Bullhead; Freshwater pearl mussel; Otter; Floating water-plantain.	Broad-leaved deciduous woodland; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Improved grassland; Inland water bodies (Standing water, Running water); Salt marshes, Salt pastures, Salt steppes	Natural Resources Wales
D	810m SW	River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (England)	Rivers with floating vegetation often dominated by water-crowfoot; Mixed woodland on base-rich soils associated with rocky slopes; Western acidic oak woodland; Alder woodland on floodplains; Sea lamprey; Brook lamprey; River lamprey; Twaite shad; Atlantic salmon; Bullhead; Freshwater pearl mussel; Otter; Floating water-plantain.	Broad-leaved deciduous woodland; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Improved grassland; Inland water bodies (Standing water, Running water); Salt marshes, Salt pastures, Salt steppes	Natural Resources Wales
D	810m SW	River Dee and Bala Lake	Rivers with floating vegetation often dominated by water-crowfoot; Mixed woodland on base-rich soils associated with rocky slopes; Western acidic oak woodland; Alder woodland on floodplains; Sea lamprey; Brook lamprey; River lamprey; Twaite shad; Atlantic salmon; Bullhead; Freshwater pearl mussel; Otter; Floating water-plantain.	Broad-leaved deciduous woodland; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Improved grassland; Inland water bodies (Standing water, Running water); Salt marshes, Salt pastures, Salt steppes	Natural England

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

## 10.4 Special Protection Areas (SPA)

<b>Records within 2000m</b>	<b>0</b>
-----------------------------	----------

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

72

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 56**

ID	Location	Name	Woodland Type
1	On site	Unknown	Plantation on Ancient Woodland Site
5	On site	Unknown	Restored Ancient Woodland Site
6	On site	Unknown	Restored Ancient Woodland Site
7	1m N	Unknown	Ancient Semi Natural Woodland
8	45m NW	Unknown	Restored Ancient Woodland Site
A	225m NW	Unknown	Ancient Semi Natural Woodland
A	289m NW	Unknown	Ancient Semi Natural Woodland
9	543m E	Unknown	Restored Ancient Woodland Site
10	556m NW	Unknown	Ancient Semi Natural Woodland
B	651m SW	Unknown	Plantation on Ancient Woodland Site



ID	Location	Name	Woodland Type
B	673m W	Unknown	Restored Ancient Woodland Site
11	675m NW	Unknown	Restored Ancient Woodland Site
12	682m NW	Unknown	Restored Ancient Woodland Site
13	712m S	Unknown	Ancient Semi Natural Woodland
C	713m W	Unknown	Plantation on Ancient Woodland Site
14	781m SW	Unknown	Restored Ancient Woodland Site
C	812m W	Unknown	Restored Ancient Woodland Site
16	866m N	Unknown	Ancient Semi Natural Woodland
17	878m W	Unknown	Plantation on Ancient Woodland Site
18	887m W	Unknown	Restored Ancient Woodland Site
19	891m NW	Unknown	Restored Ancient Woodland Site
20	927m W	Unknown	Restored Ancient Woodland Site
21	961m S	Unknown	Ancient Semi Natural Woodland
22	1002m NE	Unknown	Ancient Semi Natural Woodland
23	1013m N	Unknown	Plantation on Ancient Woodland Site
24	1068m SW	SODYLT WOOD	Ancient & Semi-Natural Woodland
25	1083m NE	Unknown	Restored Ancient Woodland Site
26	1094m W	Unknown	Plantation on Ancient Woodland Site
27	1096m S	Unknown	Ancient Semi Natural Woodland
28	1116m NW	Unknown	Restored Ancient Woodland Site
29	1122m W	Unknown	Plantation on Ancient Woodland Site
30	1136m W	Unknown	Restored Ancient Woodland Site
31	1181m W	Unknown	Restored Ancient Woodland Site
E	1196m SE	Unknown	Ancient Semi Natural Woodland
32	1213m NE	Unknown	Plantation on Ancient Woodland Site
33	1232m N	Unknown	Ancient Semi Natural Woodland
34	1258m N	Unknown	Ancient Semi Natural Woodland
E	1367m SE	Unknown	Ancient Semi Natural Woodland



ID	Location	Name	Woodland Type
F	1382m NW	Unknown	Restored Ancient Woodland Site
F	1385m NW	Unknown	Restored Ancient Woodland Site
G	1393m S	Unknown	Ancient Semi Natural Woodland
35	1424m NW	Unknown	Plantation on Ancient Woodland Site
36	1425m SE	Unknown	Restored Ancient Woodland Site
37	1439m NW	Unknown	Plantation on Ancient Woodland Site
38	1443m NE	Unknown	Plantation on Ancient Woodland Site
-	1475m SW	Unknown	Ancient Semi Natural Woodland
-	1489m SW	Unknown	Ancient Semi Natural Woodland
40	1491m NE	Unknown	Plantation on Ancient Woodland Site
41	1493m NW	Unknown	Restored Ancient Woodland Site
42	1522m NE	Unknown	Restored Ancient Woodland Site
43	1530m NE	Unknown	Plantation on Ancient Woodland Site
-	1542m NE	Unknown	Plantation on Ancient Woodland Site
-	1564m S	Unknown	Ancient Semi Natural Woodland
46	1565m NW	Unknown	Restored Ancient Woodland Site
-	1587m SW	Unknown	Ancient Semi Natural Woodland
-	1609m SW	Unknown	Ancient Semi Natural Woodland
-	1639m SW	Unknown	Plantation on Ancient Woodland Site
-	1658m N	Unknown	Ancient Semi Natural Woodland
-	1664m SW	Unknown	Restored Ancient Woodland Site
-	1688m N	Unknown	Ancient Semi Natural Woodland
-	1711m S	Unknown	Ancient Semi Natural Woodland
-	1724m E	Unknown	Restored Ancient Woodland Site
51	1737m NE	Unknown	Restored Ancient Woodland Site
-	1807m E	Unknown	Restored Ancient Woodland Site
-	1825m N	Unknown	Restored Ancient Woodland Site
-	1835m W	Unknown	Restored Ancient Woodland Site

ID	Location	Name	Woodland Type
-	1855m NW	Unknown	Restored Ancient Woodland Site
-	1864m NW	Unknown	Plantation on Ancient Woodland Site
-	1988m S	Unknown	Ancient Semi Natural Woodland
-	1988m NE	Unknown	Ancient Semi Natural Woodland
-	1995m S	Unknown	Ancient & Semi-Natural Woodland
-	1996m NW	Unknown	Restored Ancient Woodland Site

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

## 10.8 Biosphere Reserves

**Records within 2000m**

**0**

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

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

## 10.9 Forest Parks

**Records within 2000m**

**0**

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

*This data is sourced from the Forestry Commission.*

## 10.10 Marine Conservation Zones

**Records within 2000m**

**0**

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

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

## 10.11 Green Belt

Records within 2000m

0

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

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

## 10.12 Proposed Ramsar sites

Records within 2000m

0

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

*This data is sourced from Natural England.*

## 10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m

0

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

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

## 10.14 Potential Special Protection Areas (pSPA)

Records within 2000m

0

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

*This data is sourced from Natural England.*

## 10.15 Nitrate Sensitive Areas

Records within 2000m

0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was

closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

*This data is sourced from Natural England.*

## 10.16 Nitrate Vulnerable Zones

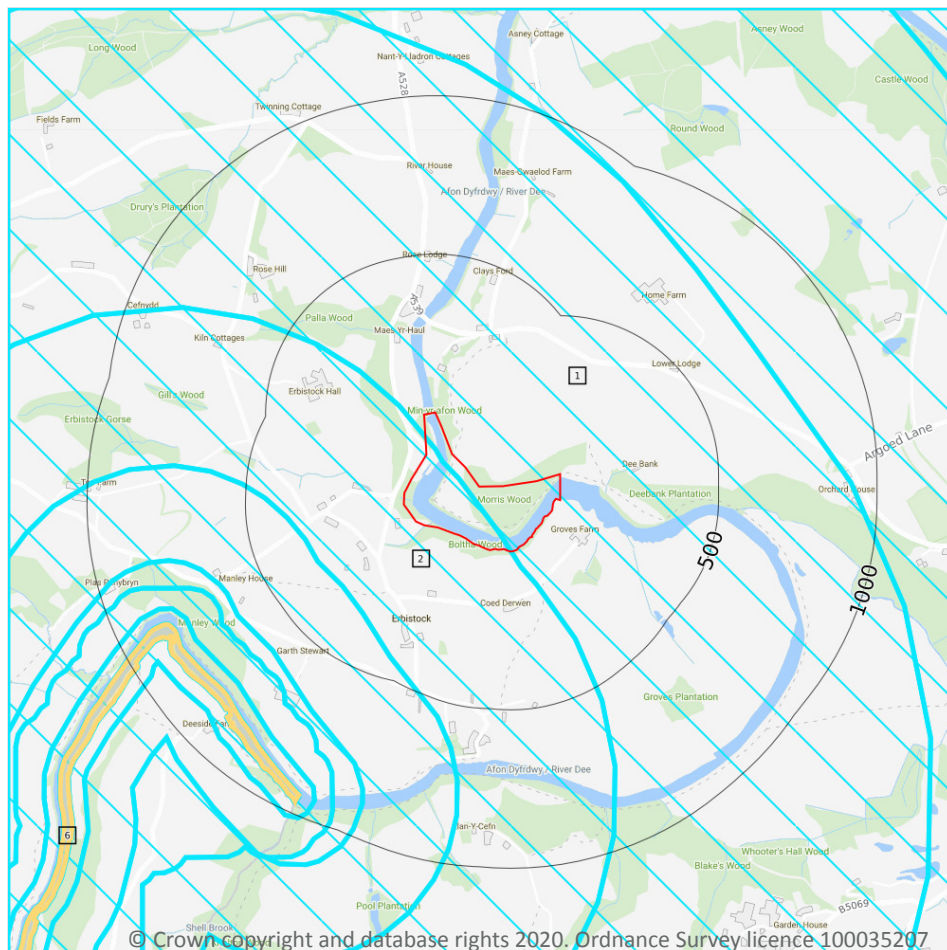
Records within 2000m

0

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

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

## SSSI Impact Zones and Units



- 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

2

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 65**

ID	Location	Type of developments requiring consultation
1	On site	<p>Infrastructure - Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals.</p> <p>Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil &amp; gas exploration/extraction.</p> <p>Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock &amp; poultry units with floorspace &gt; 500m<sup>2</sup>, slurry lagoons &gt; 200m<sup>2</sup> &amp; manure stores &gt; 250t).</p> <p>Combustion - General combustion processes &gt;20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.</p> <p>Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill.</p> <p>Composting - Any composting proposal with more than 75000 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management.</p> <p>Water supply - Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m<sup>2</sup> or more.</p>
2	On site	<p>Infrastructure - Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals.</p> <p>Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil &amp; gas exploration/extraction.</p> <p>Residential - Residential development of 100 units or more.</p> <p>Rural residential - Any residential development of 50 or more houses outside existing settlements/urban areas.</p> <p>Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock &amp; poultry units with floorspace &gt; 500m<sup>2</sup>, slurry lagoons &gt; 200m<sup>2</sup> &amp; manure stores &gt; 250t).</p> <p>Combustion - General combustion processes &gt;20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.</p> <p>Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill.</p> <p>Composting - Any composting proposal with more than 500 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management.</p> <p>Water supply - Large infrastructure such as warehousing / industry where net additional gross internal floorspace is &gt; 1,000m<sup>2</sup> or any development needing its own water supply .</p>

*This data is sourced from Natural England.*

## 10.18 SSSI Units

### Records within 2000m

1

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.

Features are displayed on the SSSI Impact Zones and Units map on **page 65**



ID: 6  
Location: 810m SW  
SSSI name: River Dee (England)  
Unit name: River Ceiriog Tributary  
Broad habitat: Rivers And Streams  
Condition: Unfavourable - No change  
Reportable features:

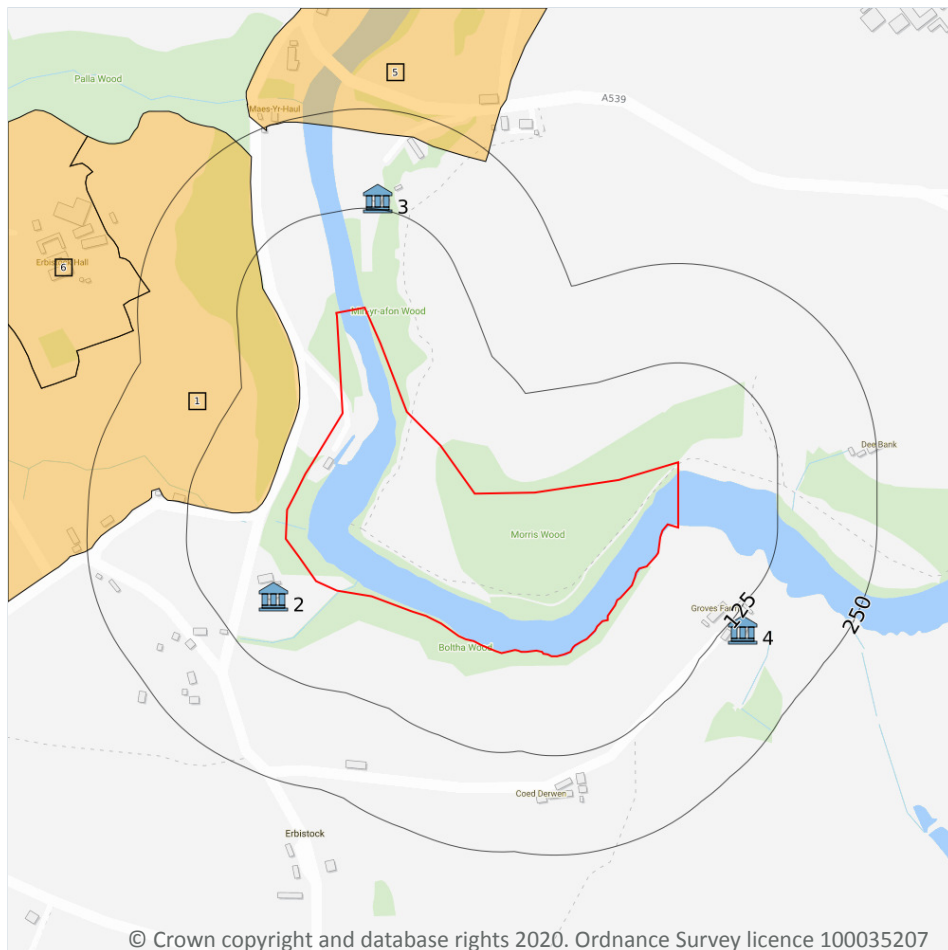
Feature name	Feature condition	Date of assessment
Atlantic salmon, <i>Salmo salar</i>	Unfavourable - No change	25/08/2010
Nationally rare and scarce dragonfly species - <i>Gomphus vulgatissimus</i> , Club-tailed Dragonfly	Favourable	25/08/2010
Otter, <i>Lutra lutra</i>	Favourable	25/08/2010
River supporting habitat	Unfavourable - No change	25/08/2010
Rivers and Streams	Unfavourable - No change	25/08/2010
S1106 Atlantic salmon, <i>Salmo salar</i>	Unfavourable - No change	25/08/2010

*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

3

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

Features are displayed on the Visual and cultural designations map on **page 68**

ID	Location	Name	Grade	Reference Number	Listed date
2	55m SW	Mill House, Situated 800M N Of Erbistock On The E Side Of A Road Running S Off The A528 From Overton Bridge	II	15169	13/02/1995
3	138m N	Min-Yr-Afon, Close To Overton Bridge, Alongside The River Dee	II	14486	15/03/1994
4	144m SE	The Groves (Also Known As Grove Farm), Situated At The End Of A Track Running E Off A By-Road Which Runs S Off The A528 To Erbistock	II*	1580	07/06/1963

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

## 11.6 Scheduled Ancient Monuments

### Records within 250m

**0**

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

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

## 11.7 Registered Parks and Gardens

### Records within 250m

**3**

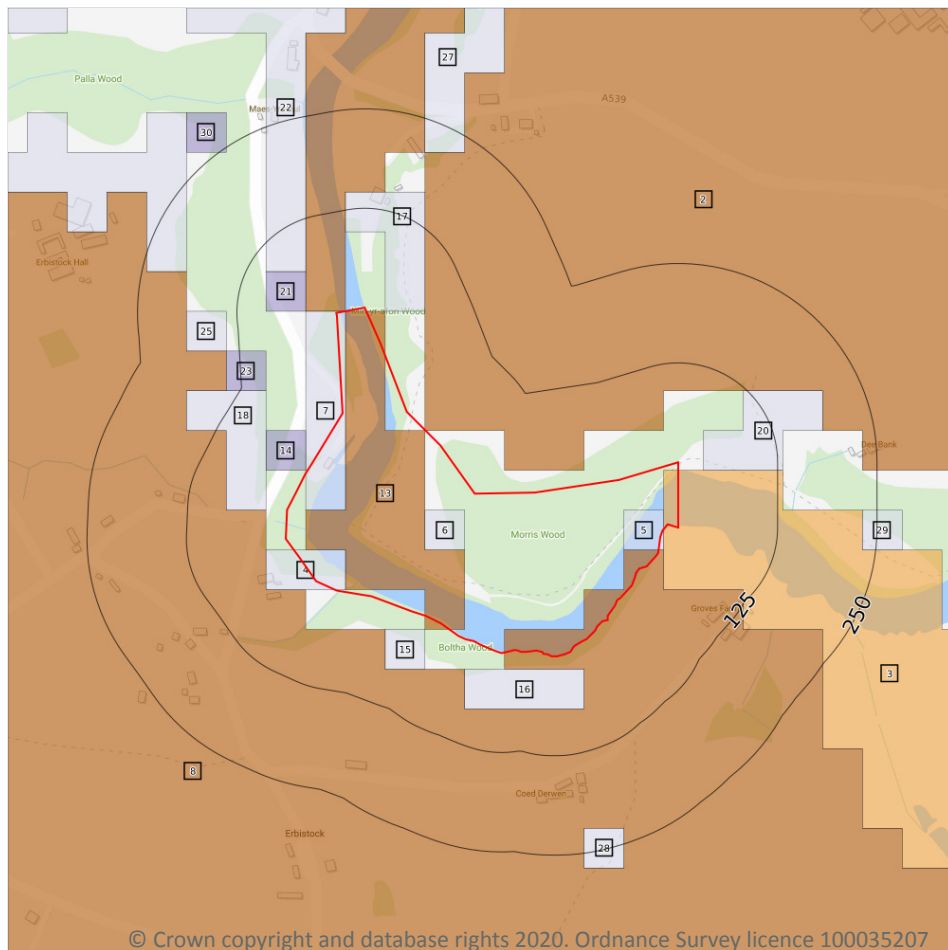
Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the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

Features are displayed on the Visual and cultural designations map on **page 68**

ID	Location	Name	Grade
1	31m NW	Erbistock Hall	Essential Setting
5	220m N	Rosehill	Essential Setting
6	236m W	Erbistock Hall	II

*This data is sourced from English Heritage, 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

22

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 71**

ID	Location	Classification	Description
2	On site	Grade 1	Excellent quality agricultural land
3	On site	Grade 2	Good quality agricultural land
4	On site	Grade 3b	Moderate quality agricultural land

ID	Location	Classification	Description
5	On site	Grade 3b	Moderate quality agricultural land
6	On site	Grade 3b	Moderate quality agricultural land
7	On site	Grade 3b	Moderate quality agricultural land
8	On site	Grade 1	Excellent quality agricultural land
13	On site	Grade 1	Excellent quality agricultural land
14	2m NW	Grade 4	Poor quality agricultural land
15	16m SW	Grade 3b	Moderate quality agricultural land
16	16m S	Grade 3b	Moderate quality agricultural land
17	22m NE	Grade 3b	Moderate quality agricultural land
18	27m W	Grade 3b	Moderate quality agricultural land
20	32m E	Grade 3b	Moderate quality agricultural land
21	39m W	Grade 4	Poor quality agricultural land
22	65m NW	Grade 3b	Moderate quality agricultural land
23	92m W	Grade 4	Poor quality agricultural land
25	139m W	Grade 3b	Moderate quality agricultural land
27	210m N	Grade 3b	Moderate quality agricultural land
28	219m S	Grade 3b	Moderate quality agricultural land
29	232m E	Grade 3b	Moderate quality agricultural land
30	245m NW	Grade 4	Poor 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.

*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

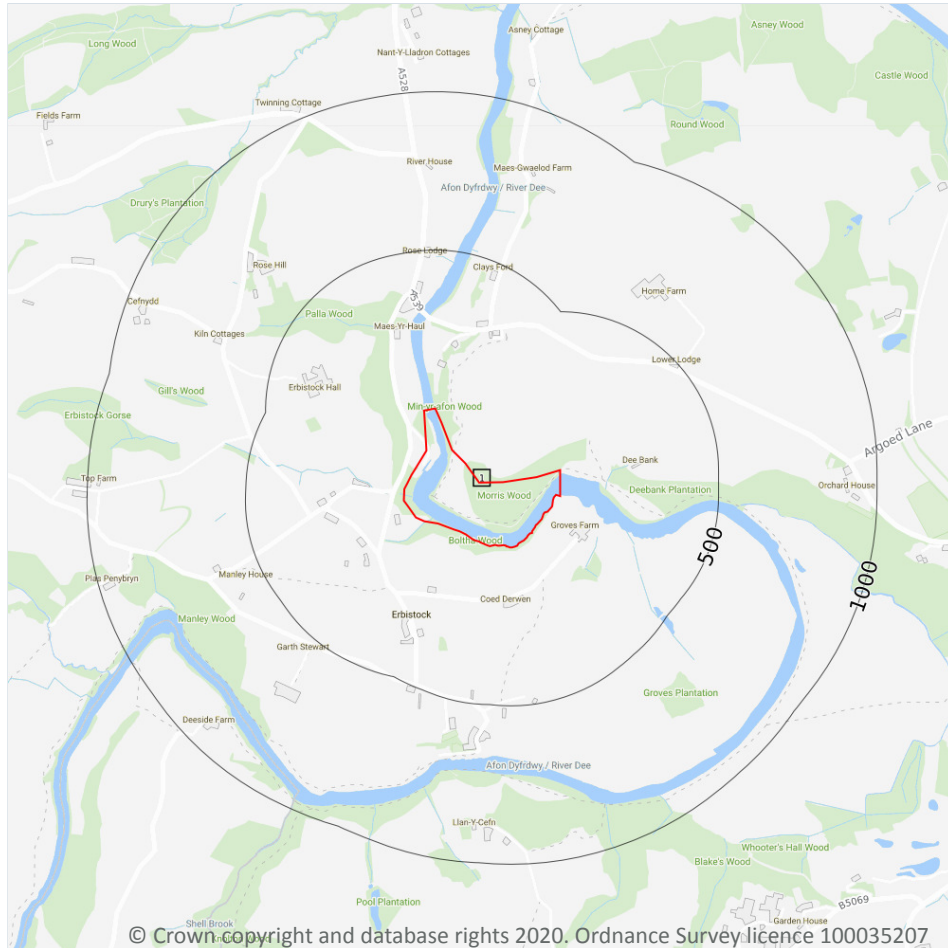
Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened 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 75**

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

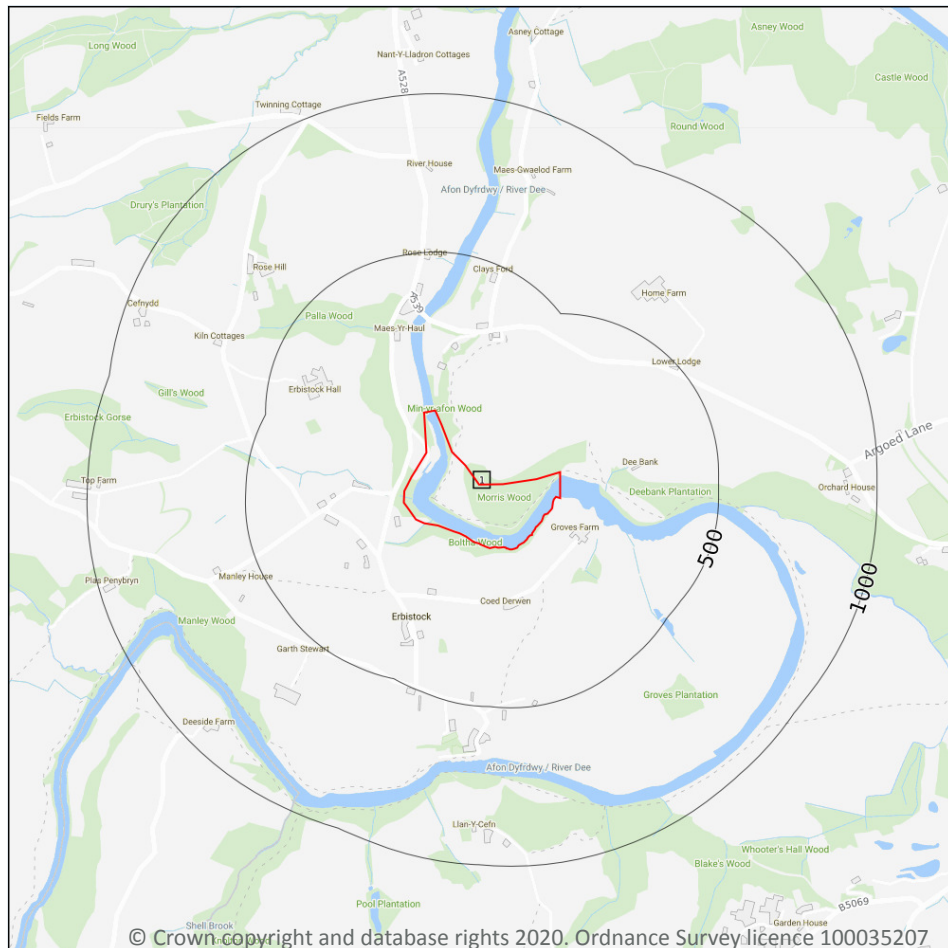
0

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 79**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	EW121_wrexham_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

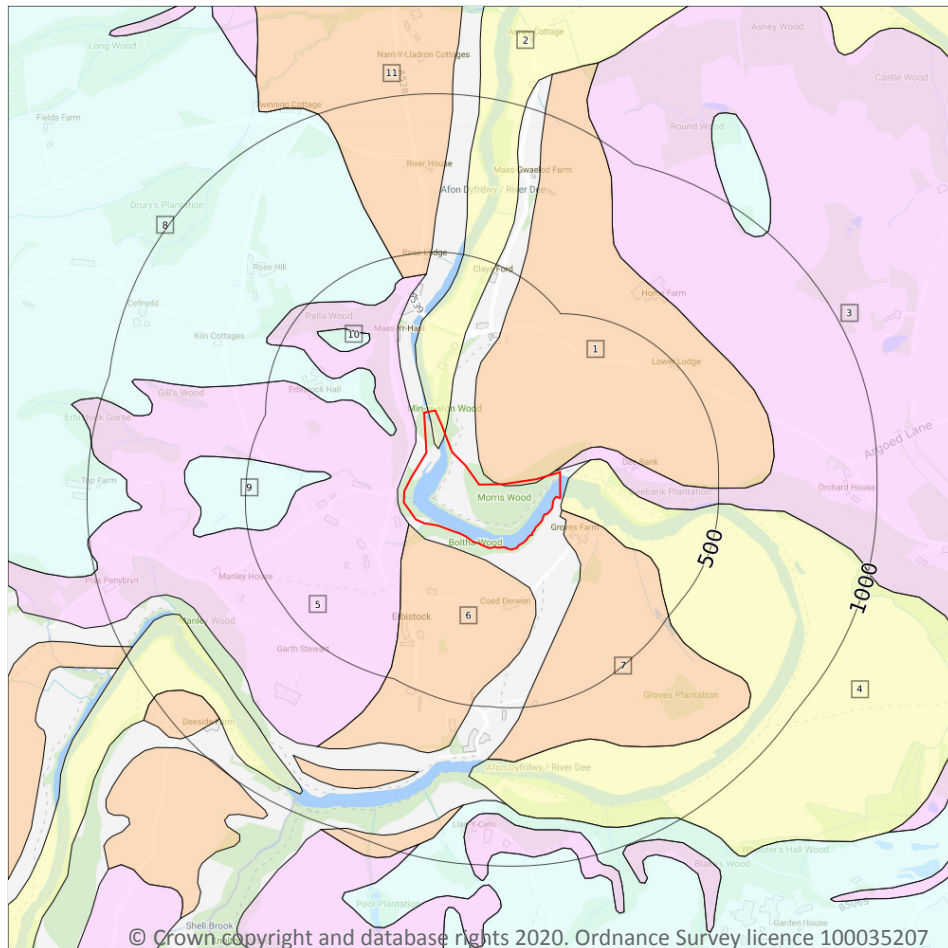
0

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

11

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 81**

ID	Location	LEX Code	Description	Rock description
1	On site	RTDU-XSV	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	SAND AND GRAVEL
2	On site	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
3	8m N	GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSAN	SAND AND GRAVEL
4	9m E	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL





ID	Location	LEX Code	Description	Rock description
5	18m W	GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL
6	26m SW	RTDU-XSV	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	SAND AND GRAVEL
7	31m E	RTDU-XSV	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	SAND AND GRAVEL
8	91m W	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
9	236m W	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
10	283m NW	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
11	429m N	RTDU-XSV	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	SAND AND GRAVEL

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

## 15.5 Superficial permeability (50k)

<b>Records within 50m</b>	<b>7</b>
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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
<b>On site</b>	<b>Intergranular</b>	<b>Very High</b>	<b>High</b>
<b>On site</b>	<b>Intergranular</b>	<b>High</b>	<b>Very Low</b>
8m SE	Intergranular	High	Very Low
8m E	Intergranular	Very High	High
18m W	Intergranular	Very High	High
26m S	Intergranular	Very High	High
31m SE	Intergranular	Very High	High

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

## 15.6 Landslip (50k)

<b>Records within 500m</b>	<b>0</b>
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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

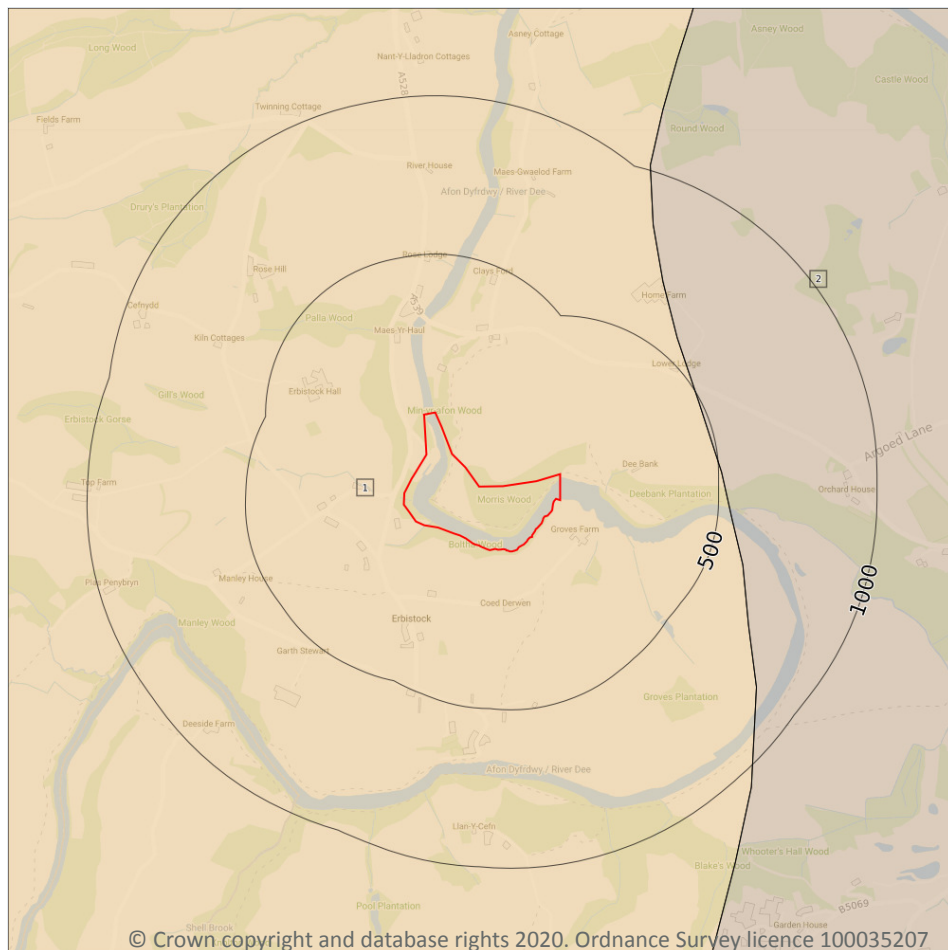
0

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 84**

ID	Location	LEX Code	Description	Rock age
1	On site	SAL-MDSC	SALOP FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE	WESTPHALIAN
2	487m E	KNSF-SDST	KINNERTON SANDSTONE FORMATION - SANDSTONE	-

*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	Fracture	Moderate	Low

*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

### 16.1 BGS Boreholes

Records within 250m

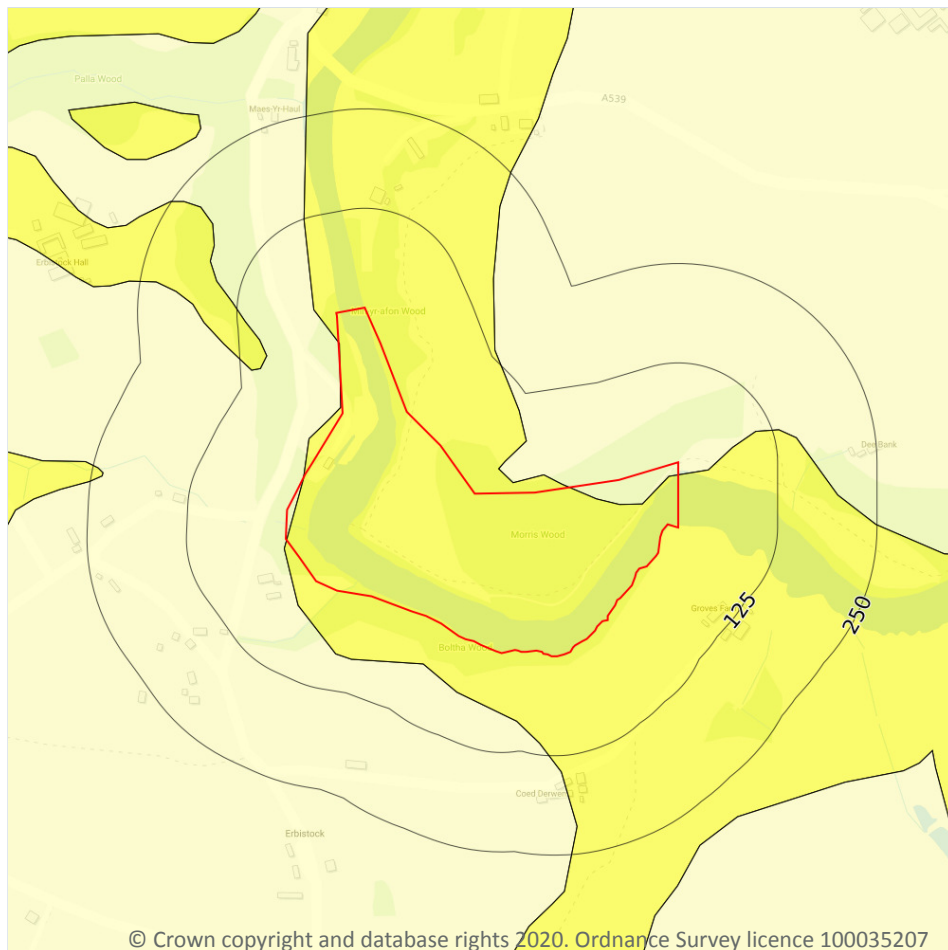
0

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

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



## 17 Natural ground subsidence - Shrink swell clays



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

### 17.1 Shrink swell clays

#### Records within 50m

2

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

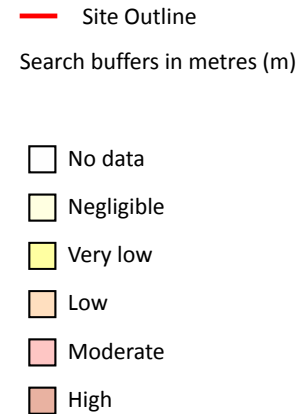
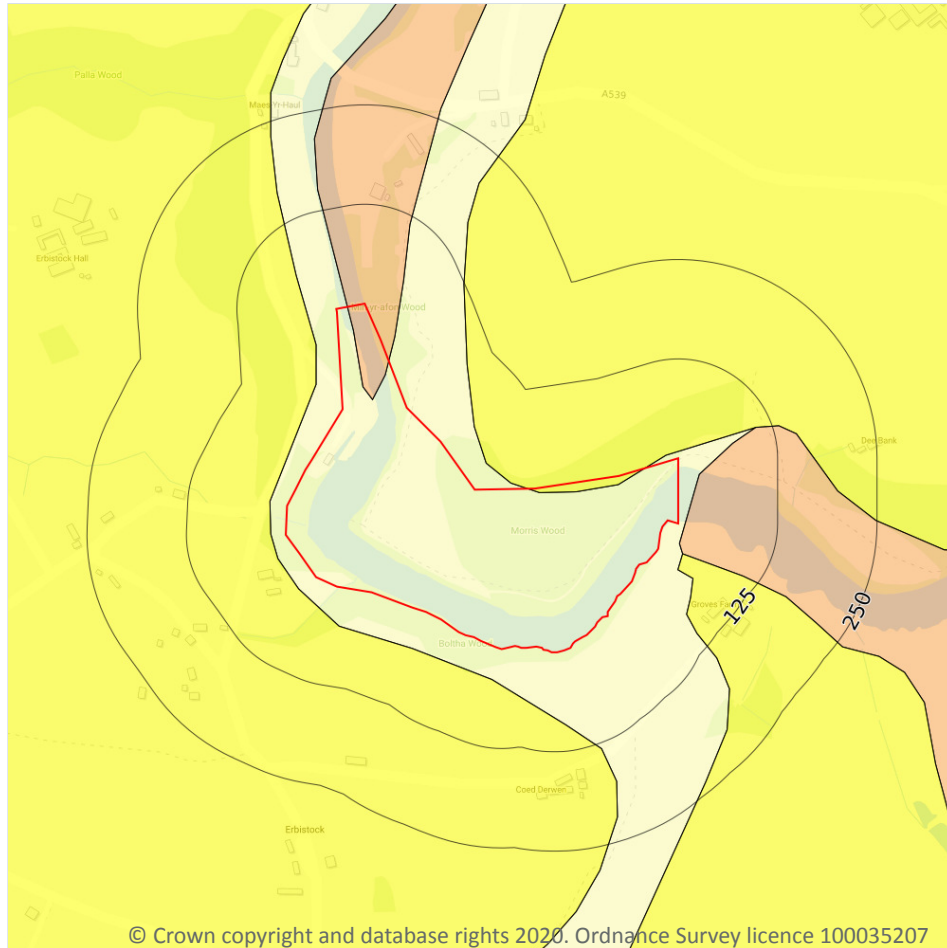
Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 87**

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

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



## Natural ground subsidence - Running sands



### 17.2 Running sands

#### Records within 50m

6

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 88**

Location	Hazard rating	Details
On site	Negligible	Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.



Location	Hazard rating	Details
On site	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.
On site	Low	Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.
9m E	Low	Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.
18m W	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.
31m E	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.*



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

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

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 90**

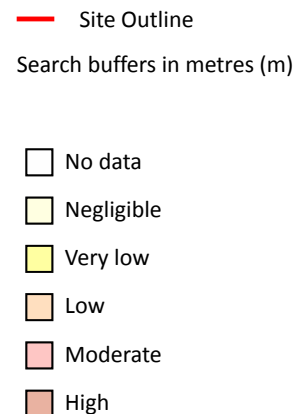
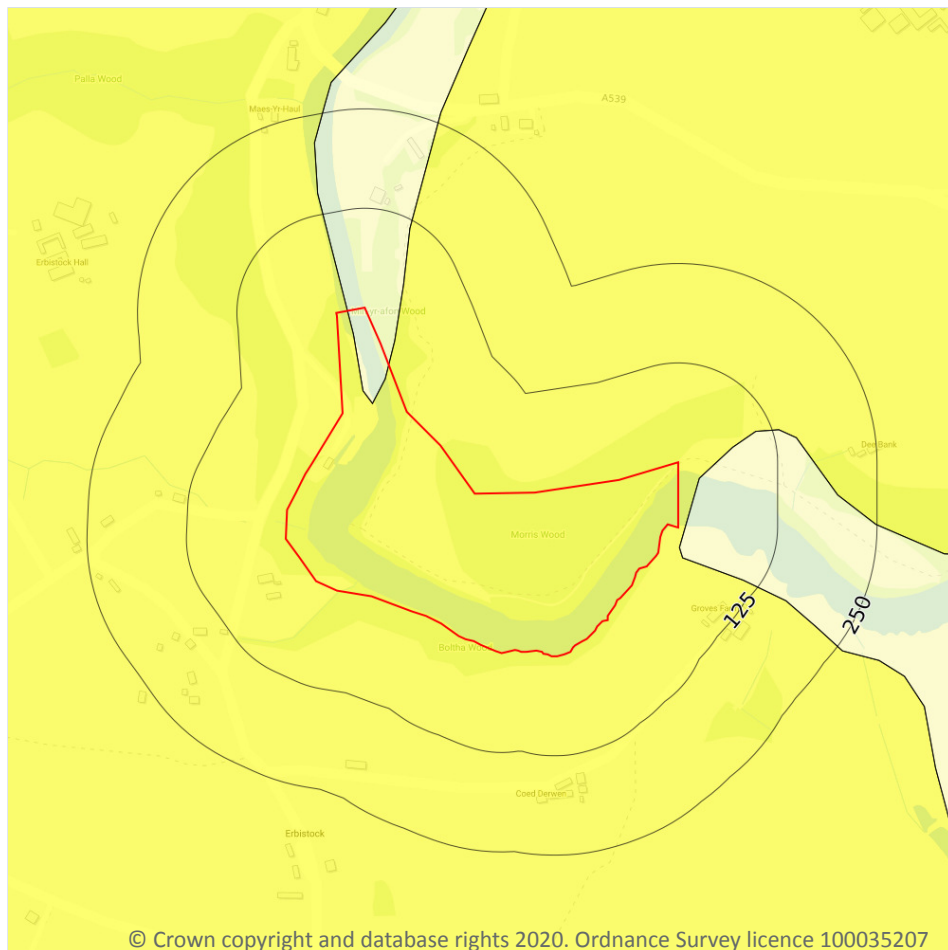
Location	Hazard rating	Details
On site	Negligible	Compressible strata are not thought to occur.
On site	Moderate	Compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site.

Location	Hazard rating	Details
9m E	Moderate	Compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site.

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



## Natural ground subsidence - Collapsible deposits



### 17.4 Collapsible deposits

#### Records within 50m

3

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.

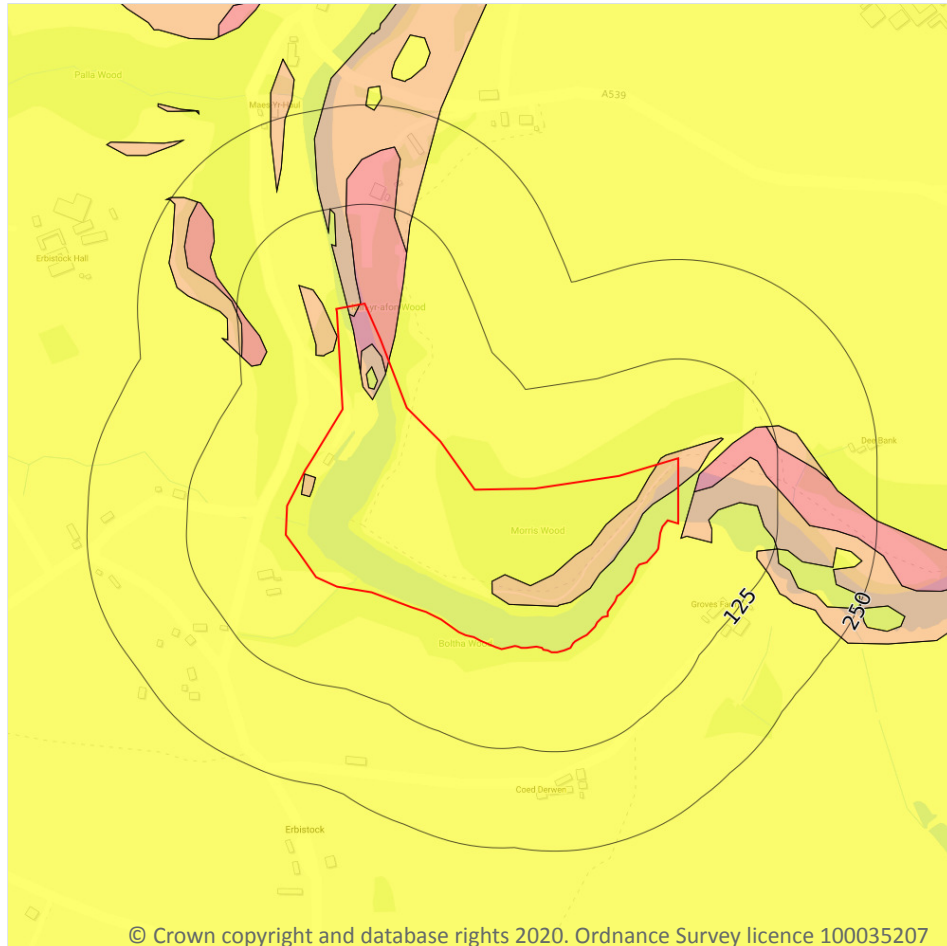
Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 92**

Location	Hazard rating	Details
On site	Negligible	Deposits with potential to collapse when loaded and saturated are believed not to be present.
On site	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.
9m E	Negligible	Deposits with potential to collapse when loaded and saturated are believed not 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

6

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 94**

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

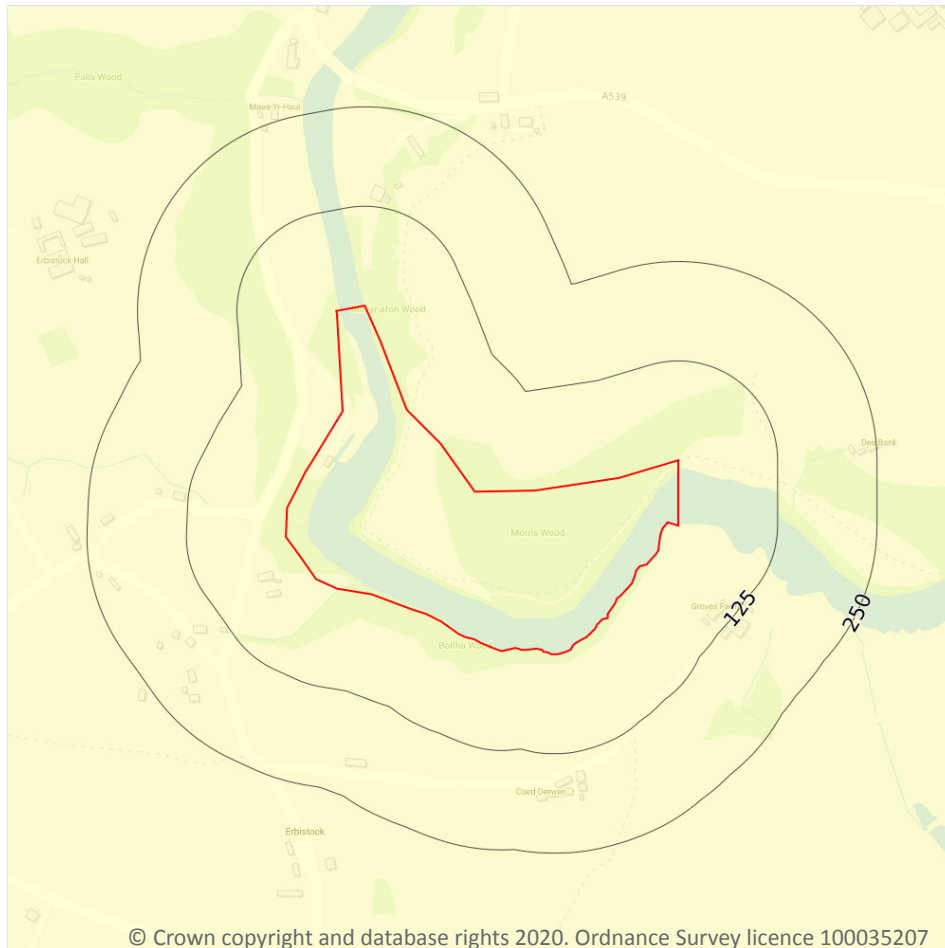
Location	Hazard rating	Details
On site	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.
On site	Moderate	Slope instability problems are probably present or have occurred in the past. Land use should consider specifically the stability of the site.
2m W	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.
9m E	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.
20m E	Moderate	Slope instability problems are probably present or have occurred in the past. Land use should consider specifically the stability of the site.

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





## Natural ground subsidence - Ground dissolution of soluble rocks



— Site Outline  
Search buffers in metres (m)

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

### 17.6 Ground dissolution of soluble rocks

#### Records within 50m

1

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

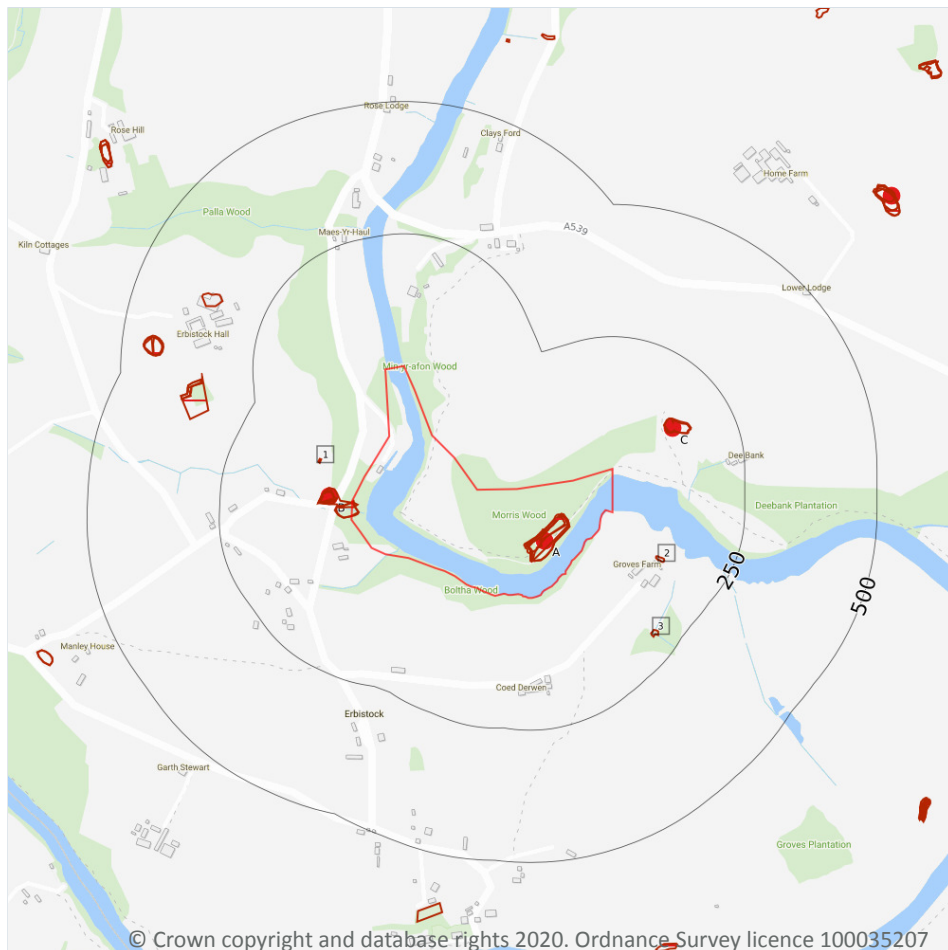
Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 96**

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

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



## 18 Mining, ground workings and natural cavities



- Site Outline
- Search buffers in metres (m)
- Natural cavities (Area)
- Natural cavities (Point)
- BritPits
- Surface ground workings
- Underground workings
- Historical Mineral Planning Areas
- Mining Cavities
- Non Coal Mining
- Sporadic underground mining of restricted extent possible
- Localised small scale underground mining possible
- Small scale mining possible
- Underground mining known or likely within or in close proximity
- Underground mining known within or in very close proximity

### 18.1 Natural cavities

Records within 500m

0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

*This data is sourced from Peter Brett Associates (PBA).*

## 18.2 BritPits

### Records within 500m

**3**

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

Features are displayed on the Mining, ground workings and natural cavities map on **page 97**

ID	Location	Details	Description
A	On site	<b>Name:</b> Erbistock <b>Address:</b> Erbistock, WREXHAM, Flintshire <b>Commodity:</b> Sandstone <b>Status:</b> A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	<b>Type:</b> Ceased <b>Status description:</b> Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
B	43m W	<b>Name:</b> Mill House <b>Address:</b> Erbistock, Rhosllanerchrugog, WREXHAM, Clwyd <b>Commodity:</b> Sandstone <b>Status:</b> A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	<b>Type:</b> Ceased <b>Status description:</b> Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
C	137m NE	<b>Name:</b> Dee Bank Gravel Pit <b>Address:</b> Overton Bridge, Rhosllanerchrugog, WREXHAM, Clwyd <b>Commodity:</b> Sand & Gravel <b>Status:</b> A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	<b>Type:</b> Ceased <b>Status description:</b> Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

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

## 18.3 Surface ground workings

### Records within 250m

**18**

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining, ground workings and natural cavities map on **page 97**

ID	Location	Land Use	Year of mapping	Mapping scale
A	On site	Unspecified Quarry	1924	1:10560
A	On site	Unspecified Quarry	1914	1:10560
A	On site	Unspecified Disused Quarry	1992	1:10000



ID	Location	Land Use	Year of mapping	Mapping scale
A	On site	Unspecified Disused Quarry	1978	1:10000
A	On site	Unspecified Quarry	1965	1:10560
A	On site	Unspecified Quarry	1898	1:10560
B	On site	Unspecified Quarry	1899	1:10560
B	On site	Unspecified Quarry	1914	1:10560
B	On site	Unspecified Old Quarry	1965	1:10560
B	30m W	Unspecified Quarry	1965	1:10560
B	34m W	Unspecified Quarry	1992	1:10000
B	34m W	Unspecified Quarry	1978	1:10000
B	35m W	Unspecified Old Quarry	1914	1:10560
1	87m NW	Sewage Tank	1914	1:10560
2	117m SE	Pond	1924	1:10560
C	124m NE	Gravel Pit	1965	1:10560
C	128m NE	Gravel Pit	1914	1:10560
3	197m SE	Pond	1924	1:10560

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

## 18.4 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.*

## 18.5 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 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 Peter Brett Associates (PBA).*

## 18.8 JPB mining areas

**Records on site****0**

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

*This data is sourced from Johnson Poole and Bloomer.*

## 18.9 Coal mining

**Records on site****1**

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

Location	Details
On site	The site is located within a coal mining area as defined by the Coal Authority. A Consultants Coal Mining Report is recommended to further assess coal mining issues at the site. This can be ordered directly through Groundsure or your preferred search provider.

*This data is sourced from the Coal Authority.*



## 18.10 Brine areas

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

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

*This data is sourced from the Cheshire Brine Subsidence Compensation Board.*

## 18.11 Gypsum areas

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

Generalised areas that may be affected by gypsum extraction.

*This data is sourced from British Gypsum.*

## 18.12 Tin mining

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

Generalised areas that may be affected by historical tin mining.

*This data is sourced from Mining Searches UK.*

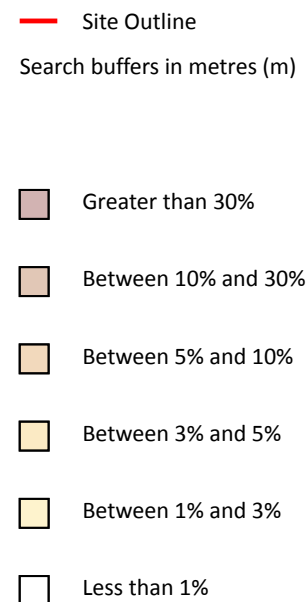
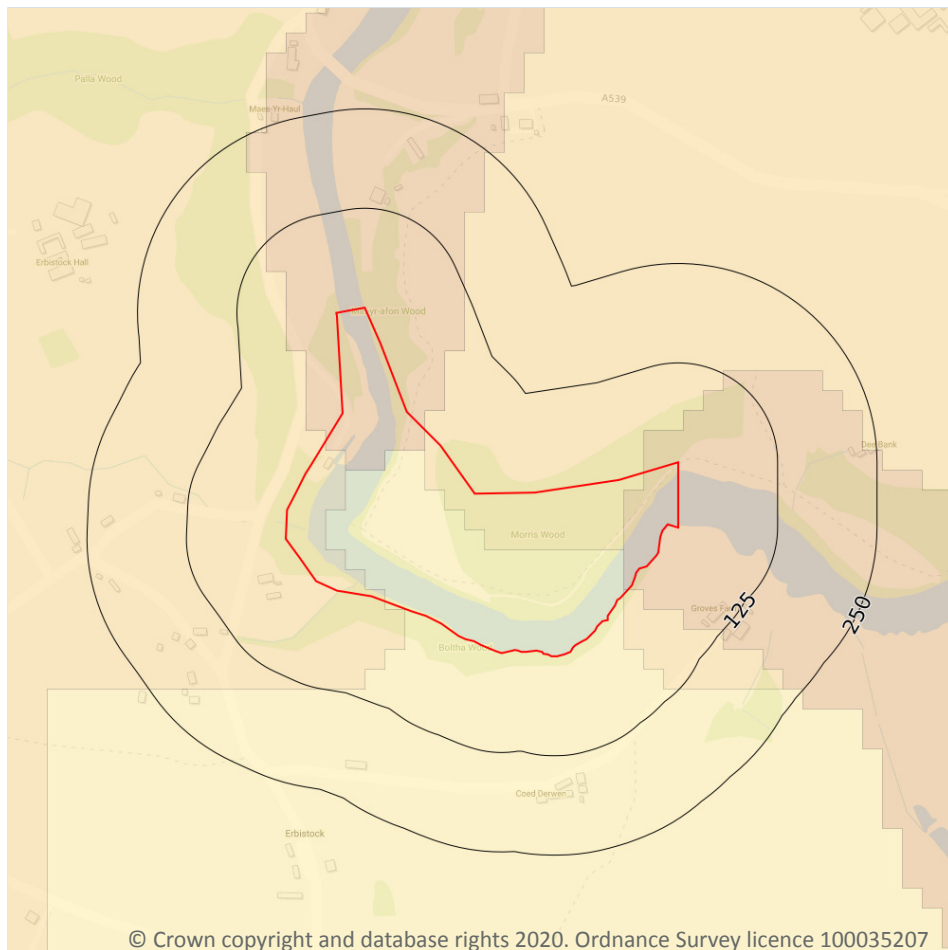
## 18.13 Clay mining

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

Generalised areas that may be affected by kaolin and ball clay extraction.

*This data is sourced from the Kaolin and Ball Clay Association (UK).*

## 19 Radon



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### 19.1 Radon

#### Records on site

3

Estimated percentage of dwellings exceeding the Radon Action Level. This data is the highest resolution radon dataset available for the UK and is produced to a 75m level of accuracy to allow for geological data accuracy and a 'residential property' buffer. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households.

Features are displayed on the Radon map on **page 102**

Location	Estimated properties affected	Radon Protection Measures required
On site	Between 5% and 10%	Basic
On site	Between 3% and 5%	Basic





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

*This data is sourced from the British Geological Survey and Public Health England.*



## 20 Soil chemistry

### 20.1 BGS Estimated Background Soil Chemistry

Records within 50m

14

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

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
8m E	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
8m E	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
18m W	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
26m SW	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
31m E	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
33m SW	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
40m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
48m SW	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.*



## 20.2 BGS Estimated Urban Soil Chemistry

Records within 50m

0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km<sup>2</sup>).

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

## 20.3 BGS Measured Urban Soil Chemistry

Records within 50m

0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km<sup>2</sup>.

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

## 21 Railway infrastructure and projects

### 21.1 Underground railways (London)

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

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

*This data is sourced from publicly available information by Groundsure.*

### 21.2 Underground railways (Non-London)

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

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

*This data is sourced from publicly available information by Groundsure.*

### 21.3 Railway tunnels

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

Railway tunnels taken from contemporary Ordnance Survey mapping.

*This data is sourced from the Ordnance Survey.*

### 21.4 Historical railway and tunnel features

Records within 250m	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.*

### 21.5 Royal Mail tunnels

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

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.



*This data is sourced from Groundsure/the Postal Museum.*

## 21.6 Historical railways

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

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

*This data is sourced from OpenStreetMap.*

## 21.7 Railways

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

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

*This data is sourced from Ordnance Survey and OpenStreetMap.*

## 21.8 Crossrail 1

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

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

*This data is sourced from publicly available information by Groundsure.*

## 21.9 Crossrail 2

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

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

*This data is sourced from publicly available information by Groundsure.*

## 21.10 HS2

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

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

*This data is sourced from HS2 Ltd.*



## Data providers

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

## Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: <https://www.groundsure.com/terms-and-conditions-jan-2020/>.



# Annex II Groundsure Map Insight Report



#### Site Details:

GARDEN HOUSE, LANE FROM  
A528 CROSS FOXES PH TO ST  
HILARYS CHURCH, ERBISTOCK,  
WREXHAM, LL13 0DL

**Client Ref:** Erbistock\_Insights\_-\_PO\_1412675\_  
**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**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

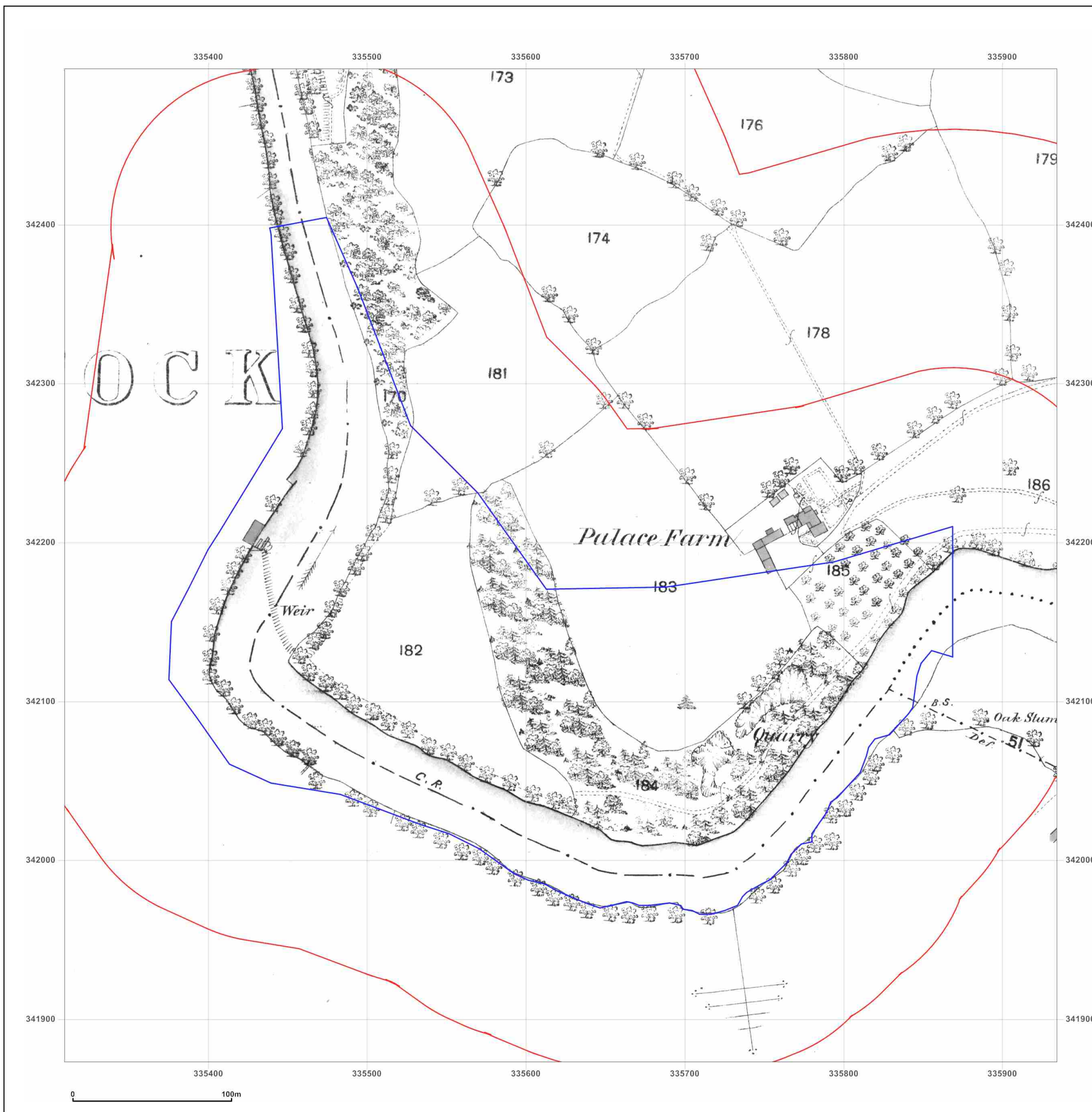


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Production date: 23 April 2020

Map legend available at:  
[www.groundsure.com/sites/default/files/groundsure\\_legend.pdf](http://www.groundsure.com/sites/default/files/groundsure_legend.pdf)



#### Site Details:

GARDEN HOUSE, LANE FROM  
A528 CROSS FOXES PH TO ST  
HILARYS CHURCH, ERBISTOCK,  
WREXHAM, LL13 0DL

**Client Ref:** Erbistock\_Insights\_-\_PO\_1412675\_  
**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**Map Name:** County Series

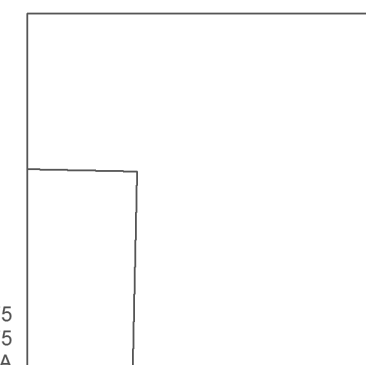
**Map date:** 1875

**Scale:** 1:2,500

**Printed at:** 1:2,500



Surveyed 1875  
Revised 1875  
Edition N/A  
Copyright N/A  
Levelled N/A

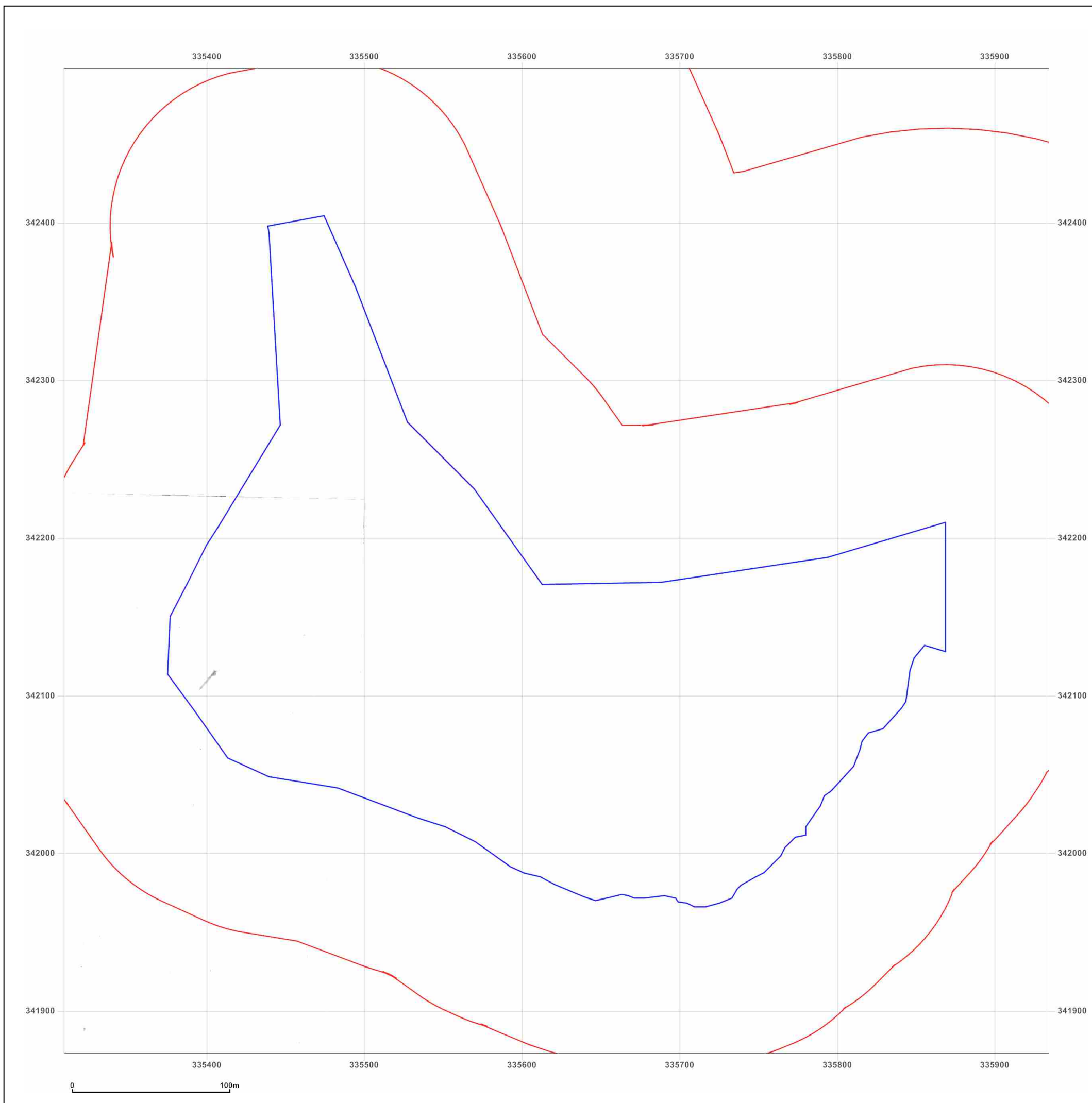


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Groundsure Insights  
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**Client Ref:** Erbistock\_Insights\_-\_PO\_1412675\_  
**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**Map Name:** County Series

**Map date:** 1898

**Scale:** 1:2,500

**Printed at:** 1:2,500



Surveyed 1898  
Revised 1898  
Edition N/A  
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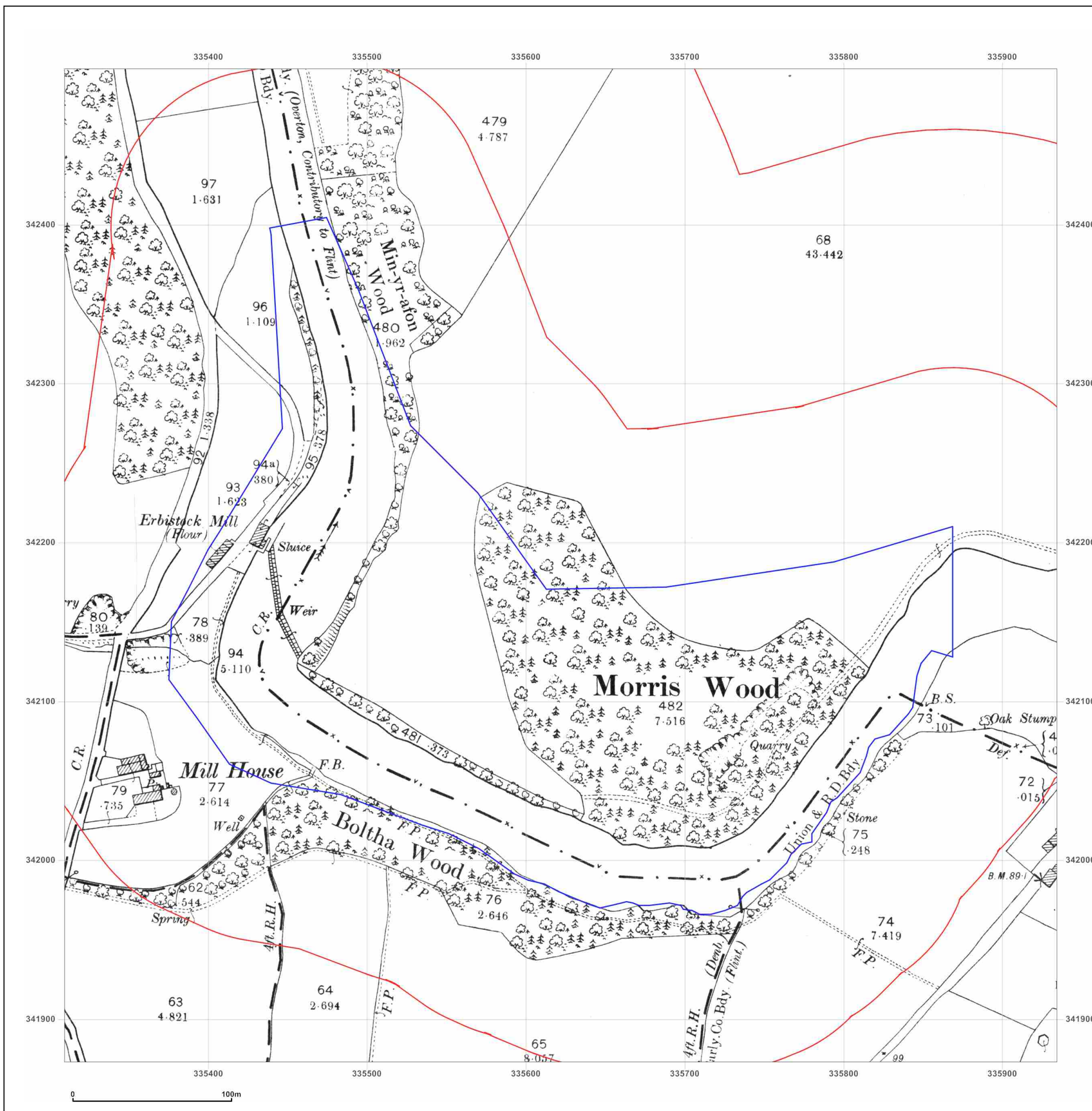


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**Client Ref:** Erbistock\_Insights\_-\_PO\_1412675\_  
**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**Map Name:** County Series

**Map date:** 1899

**Scale:** 1:2,500

**Printed at:** 1:2,500



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

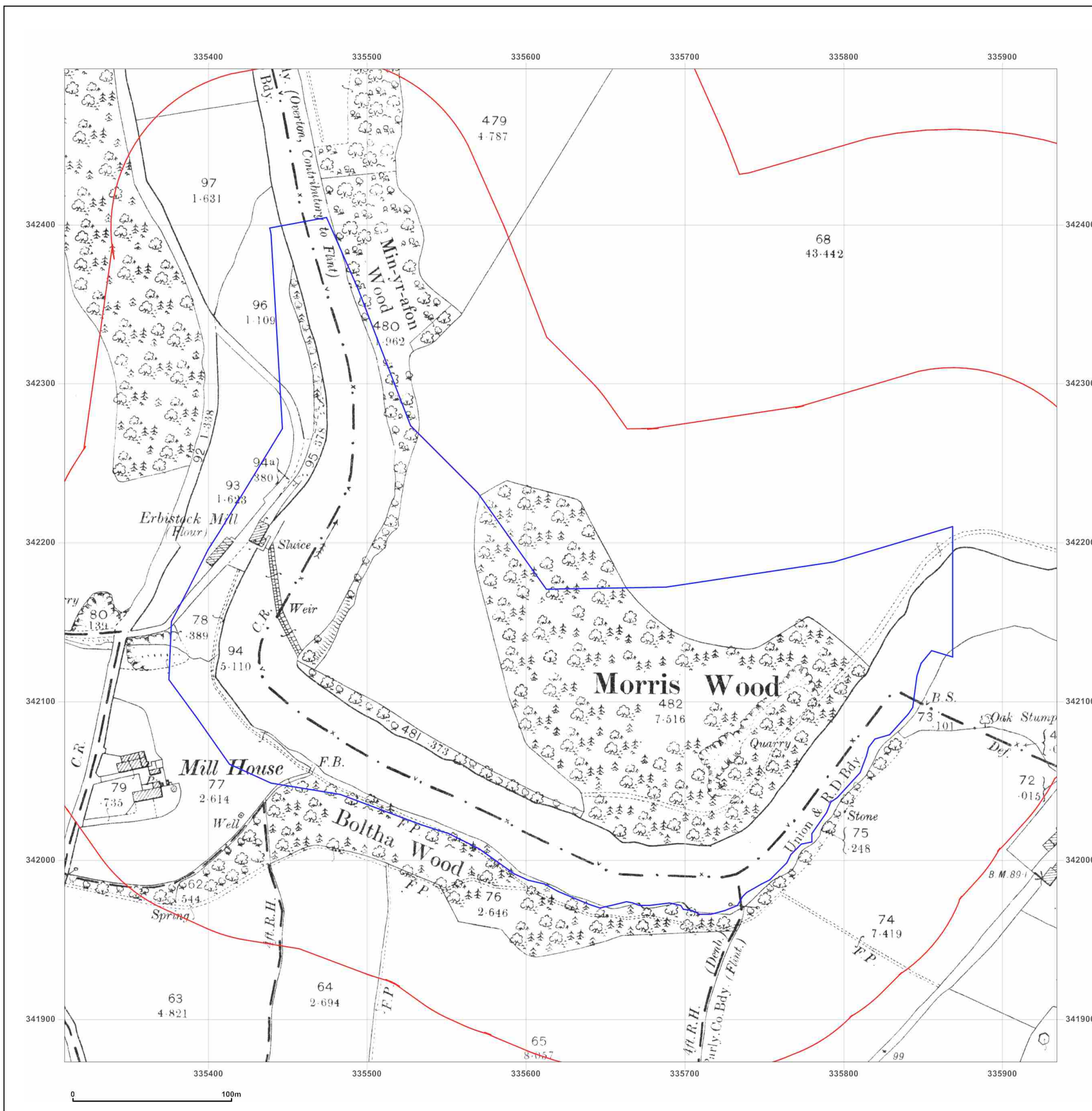


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**Client Ref:** Erbistock\_Insights\_-\_PO\_1412675\_  
**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**Map Name:** County Series

**Map date:** 1901

**Scale:** 1:2,500

**Printed at:** 1:2,500



Surveyed 1901  
Revised 1901  
Edition N/A  
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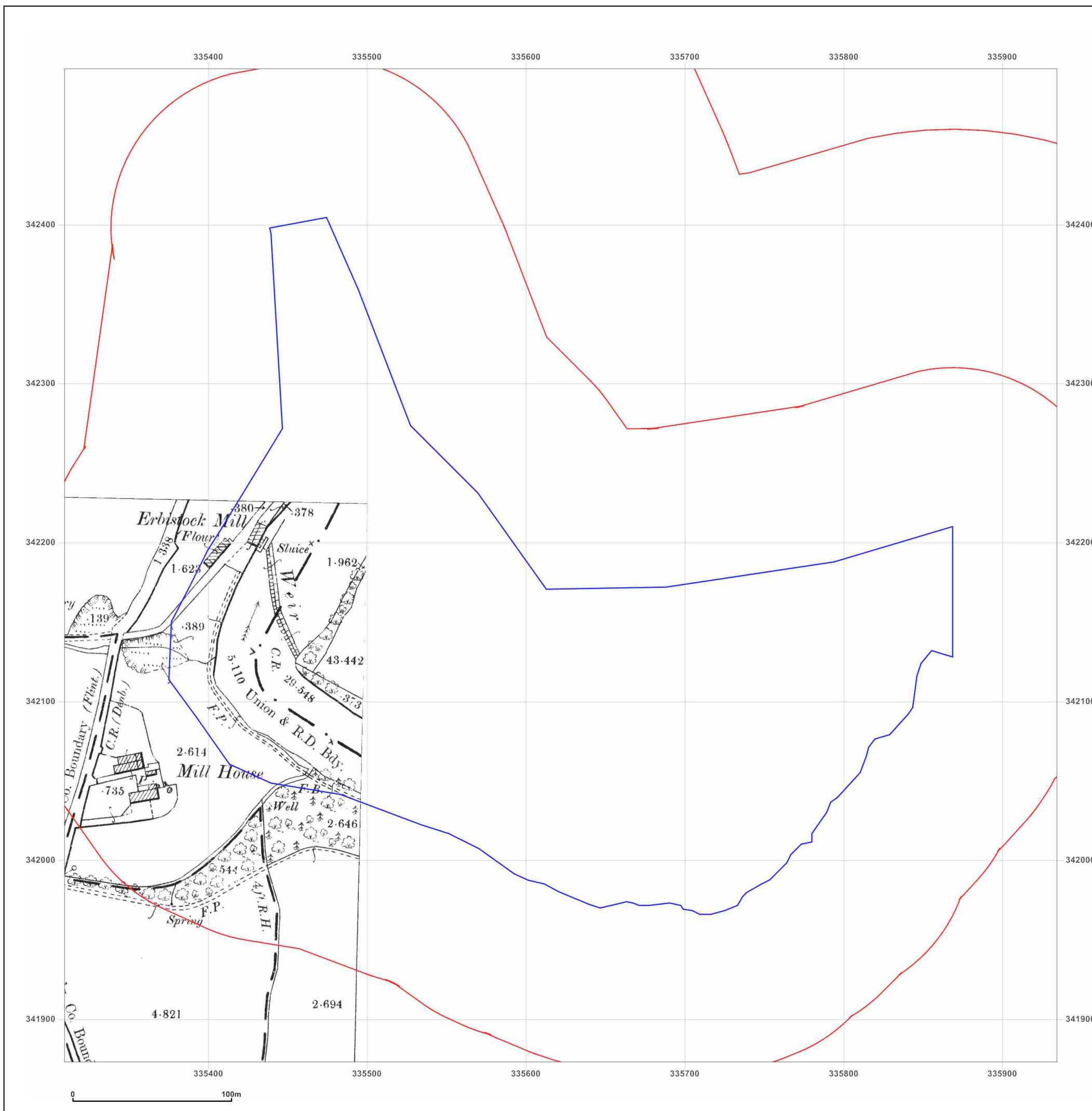


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**Client Ref:** Erbistock\_Insights\_-\_PO\_1412675\_  
**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**Map Name:** National Grid

**Map date:** 1960-1961

**Scale:** 1:2,500

**Printed at:** 1:2,500



Surveyed 1960  
Revised 1960  
Edition N/A  
Copyright 1963  
Levelled 1959

Surveyed 1961  
Revised 1961  
Edition N/A  
Copyright 1962  
Levelled 1959

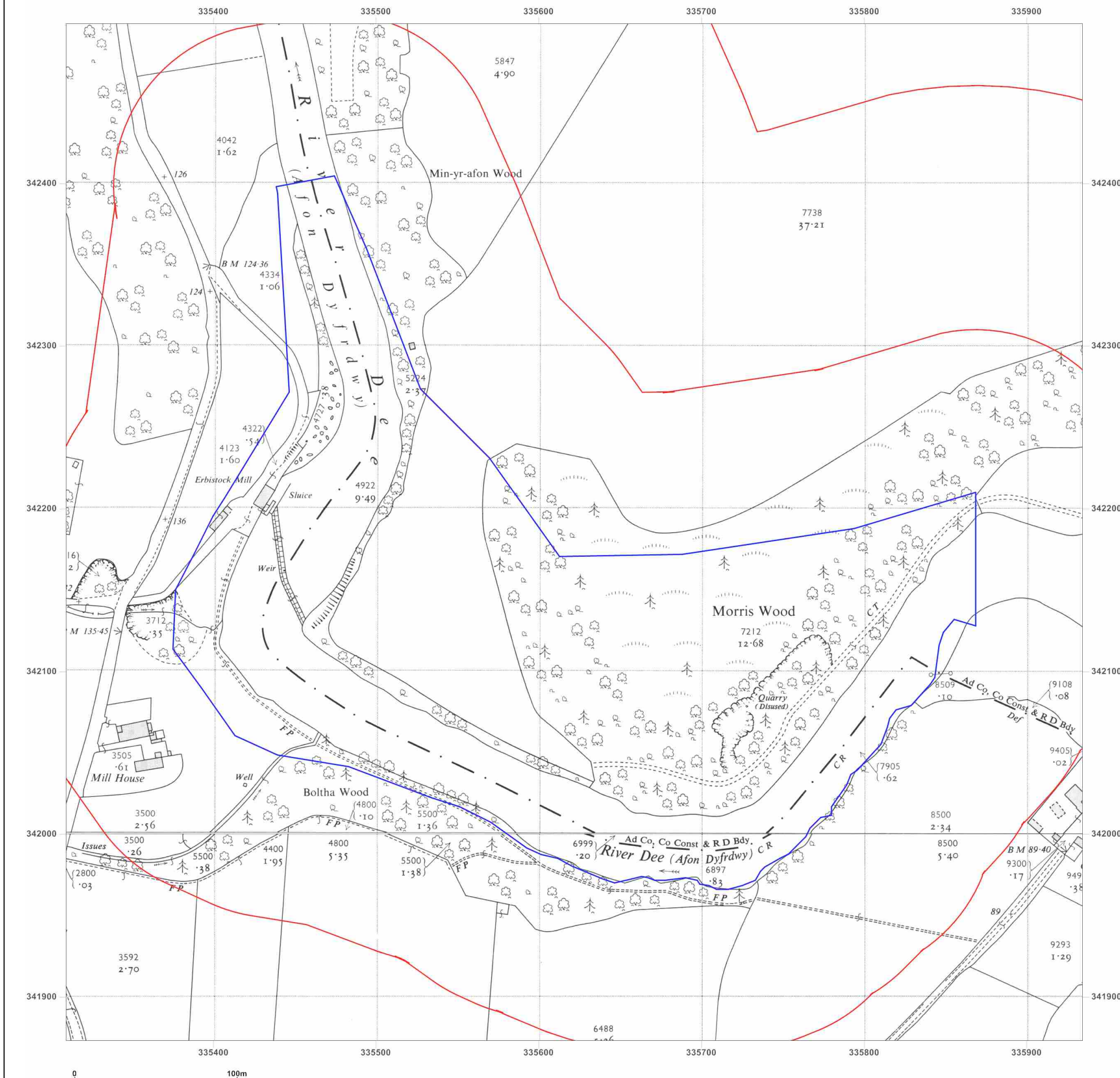


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**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**Map Name:** National Grid

**Map date:** 1962-1963

**Scale:** 1:2,500

**Printed at:** 1:2,500



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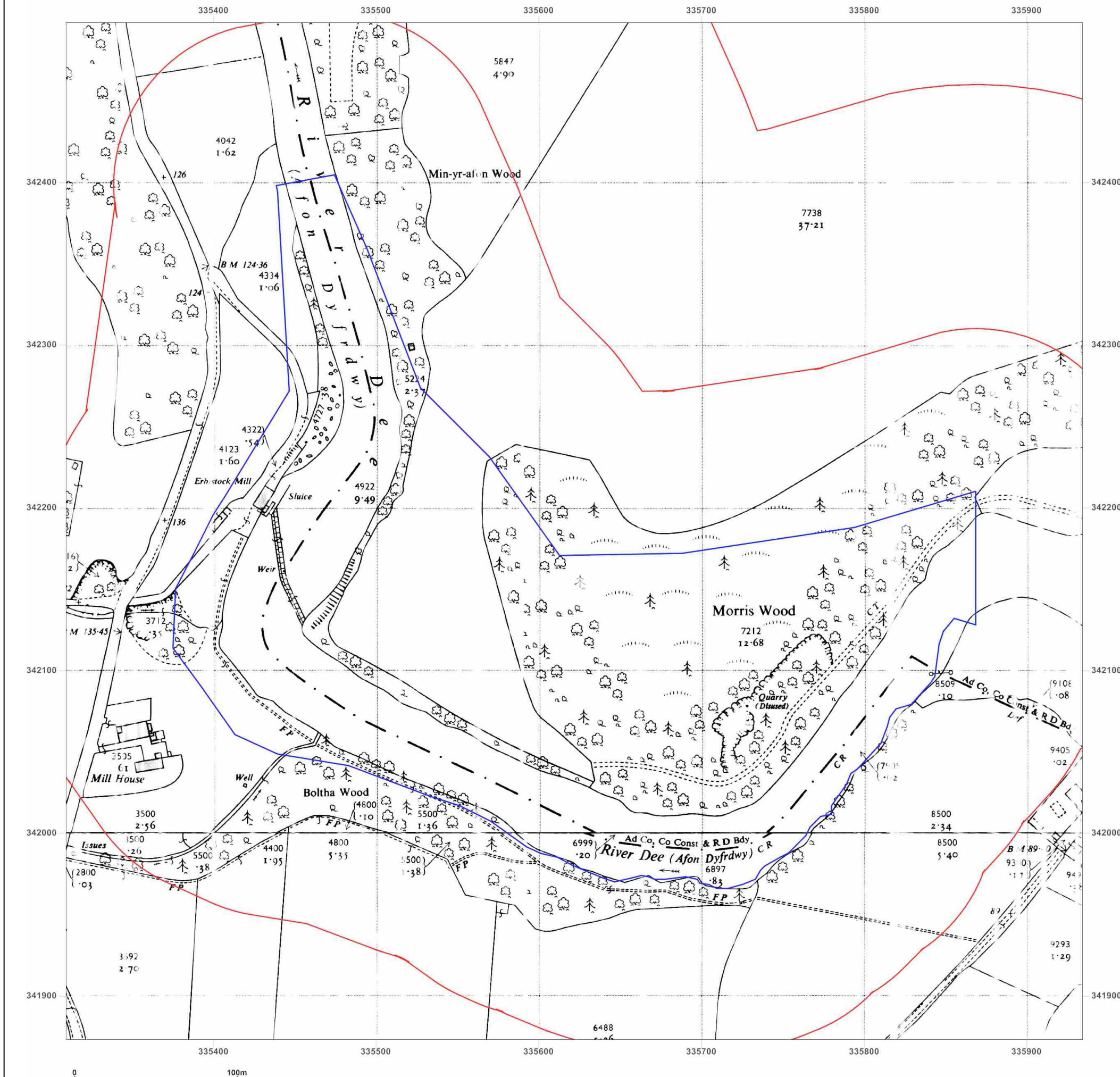


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**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**Map Name:** National Grid

**Map date:** 1992

**Scale:** 1:2,500

**Printed at:** 1:2,500



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

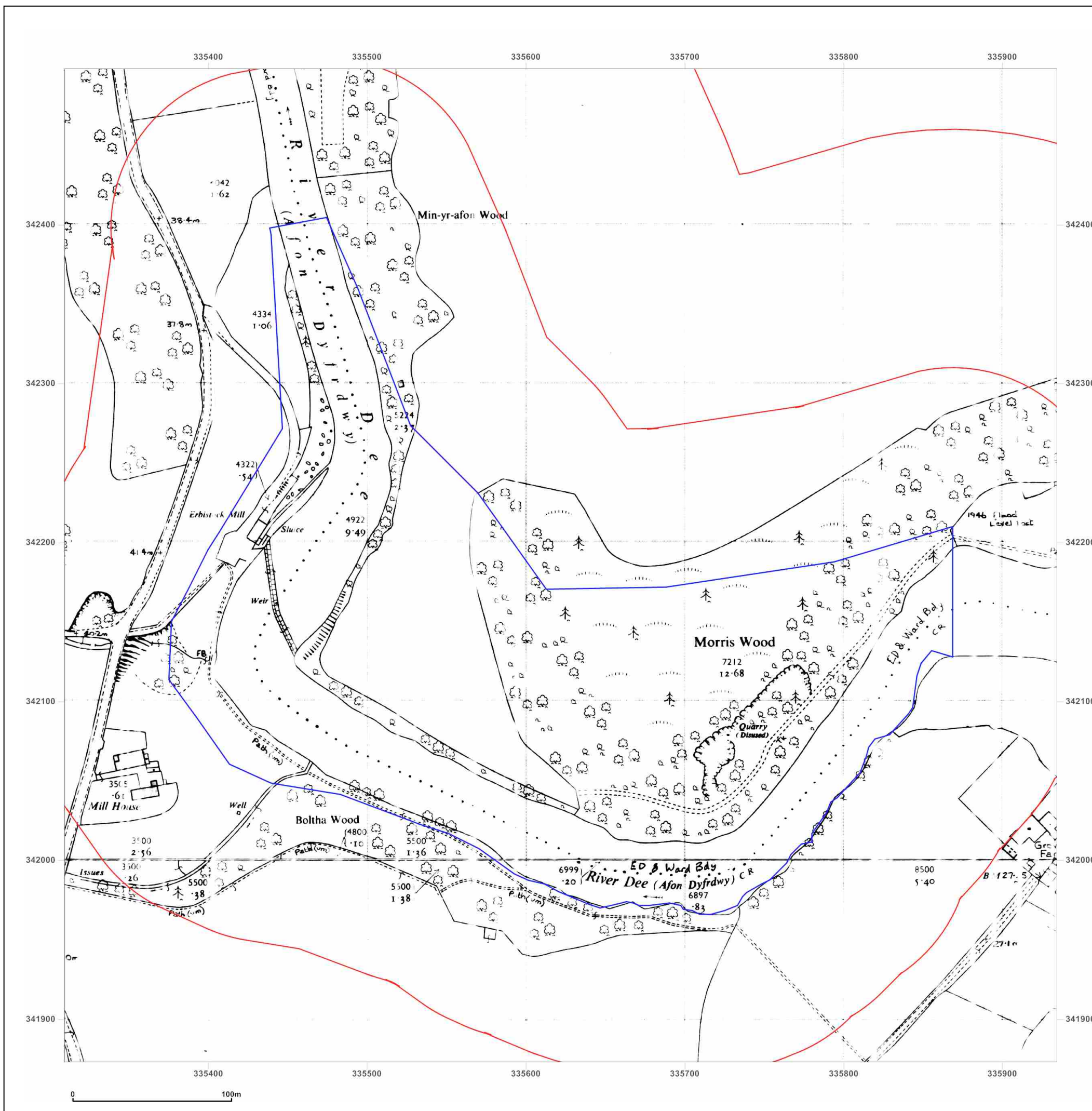


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**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**Map Name:** National Grid

**Map date:** 1994

**Scale:** 1:2,500

**Printed at:** 1:2,500



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Revised N/A  
Edition N/A  
Copyright 1994  
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Surveyed 1994  
Revised N/A  
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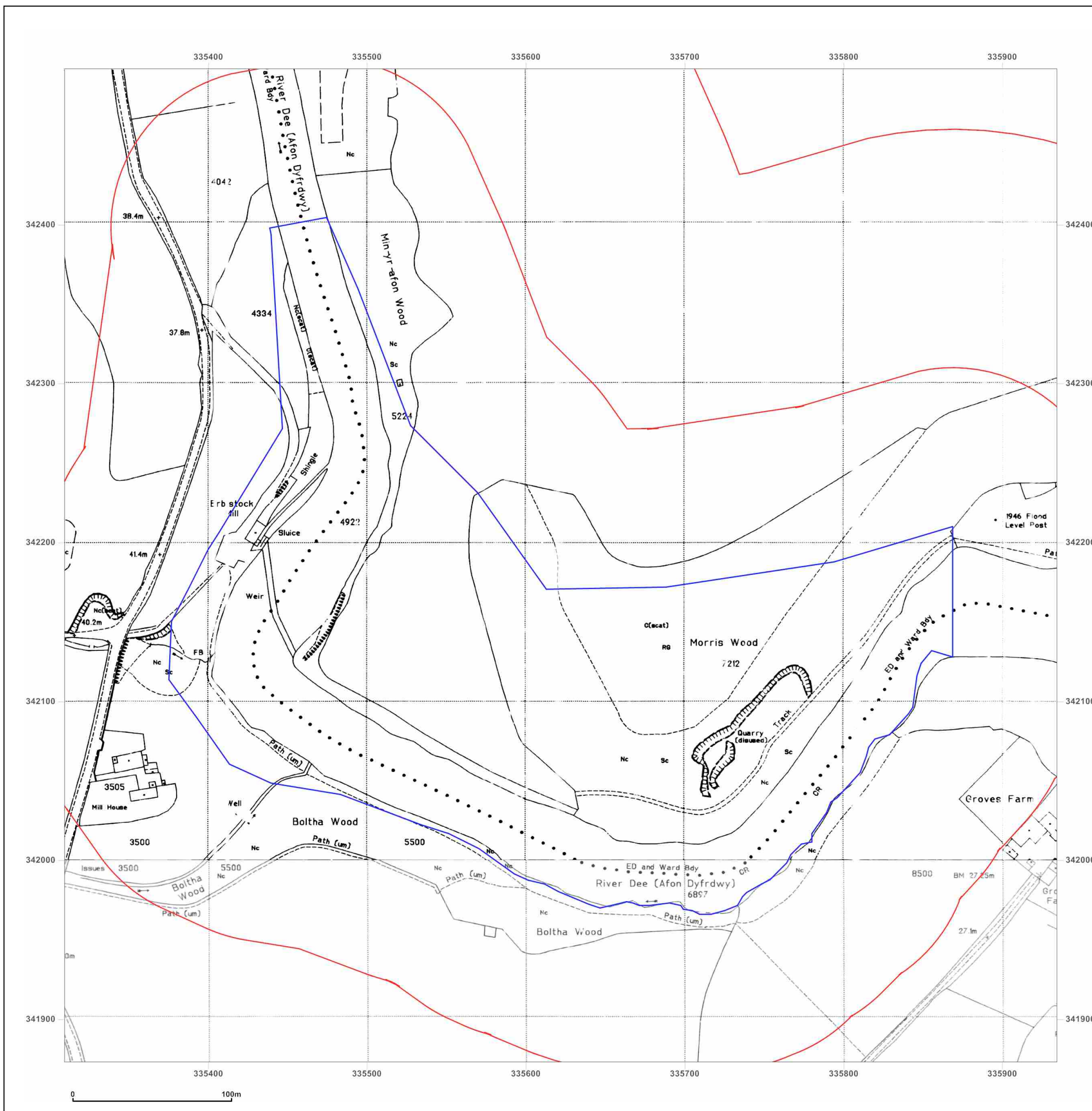


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**Client Ref:** Erbistock\_Insights\_-\_PO\_1412675\_  
**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**Map Name:** LandLine

**Map date:** 2003

**Scale:** 1:1,250

**Printed at:** 1:1,250



2003

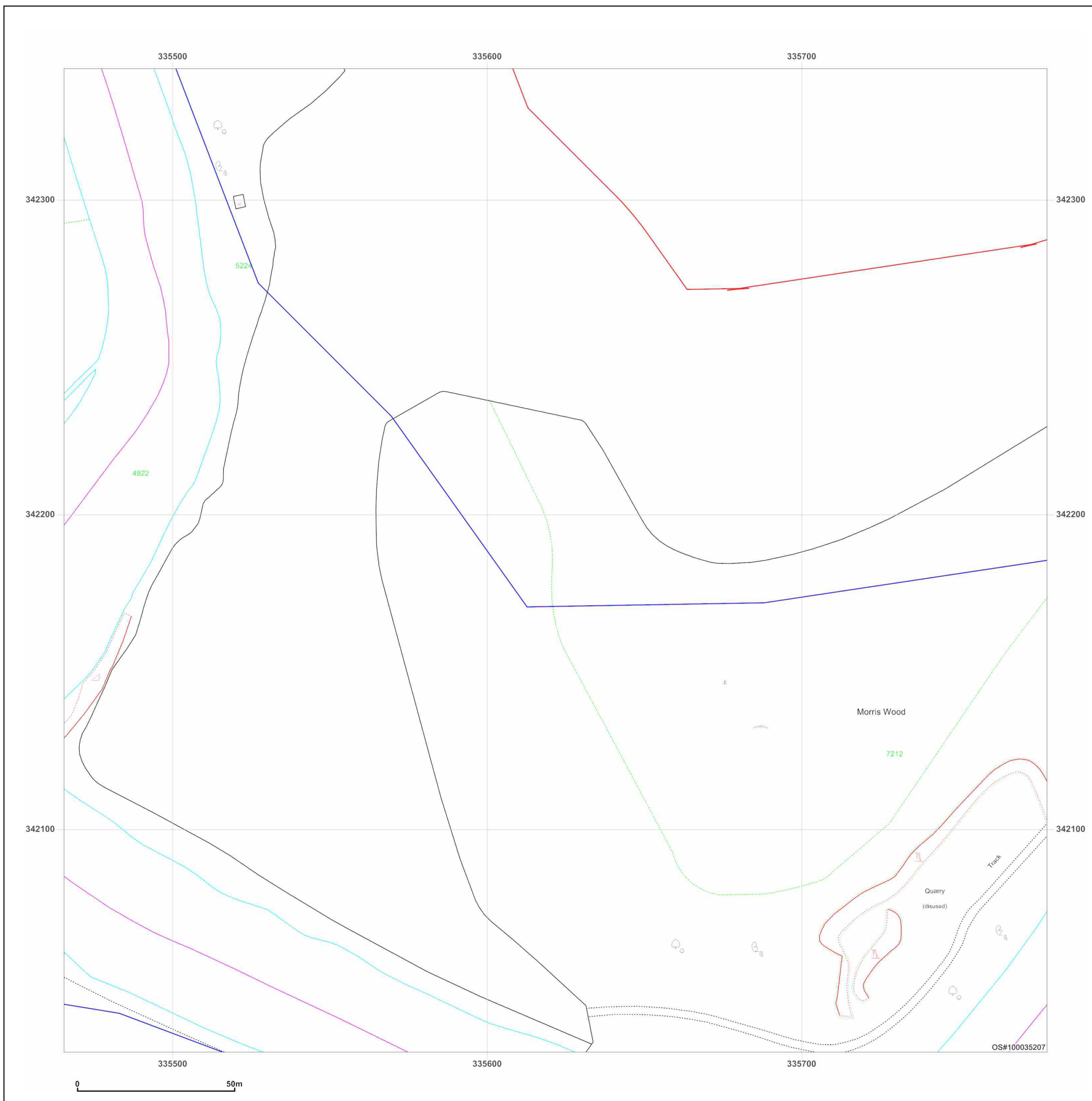


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**Client Ref:** Erbistock\_Insights\_-\_PO\_1412675\_  
**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**Map Name:** County Series

**Map date:** 1873

**Scale:** 1:10,560

**Printed at:** 1:10,560



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Revised 1873  
Edition N/A  
Copyright N/A  
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Revised 1873  
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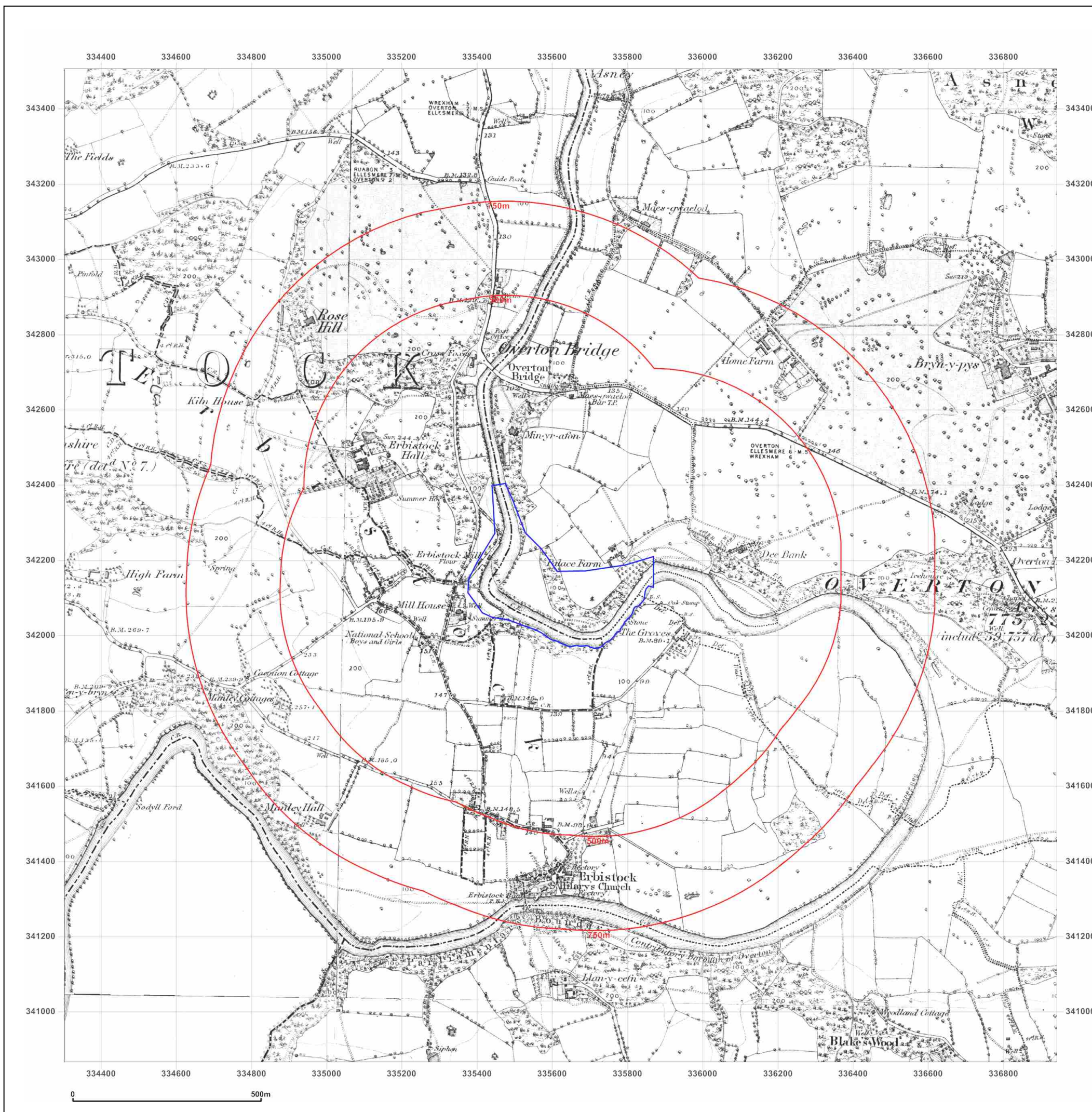


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**Client Ref:** Erbistock\_Insights\_-\_PO\_1412675\_  
**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**Map Name:** County Series

**Map date:** 1874

**Scale:** 1:10,560

**Printed at:** 1:10,560



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Edition N/A  
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Revised 1874  
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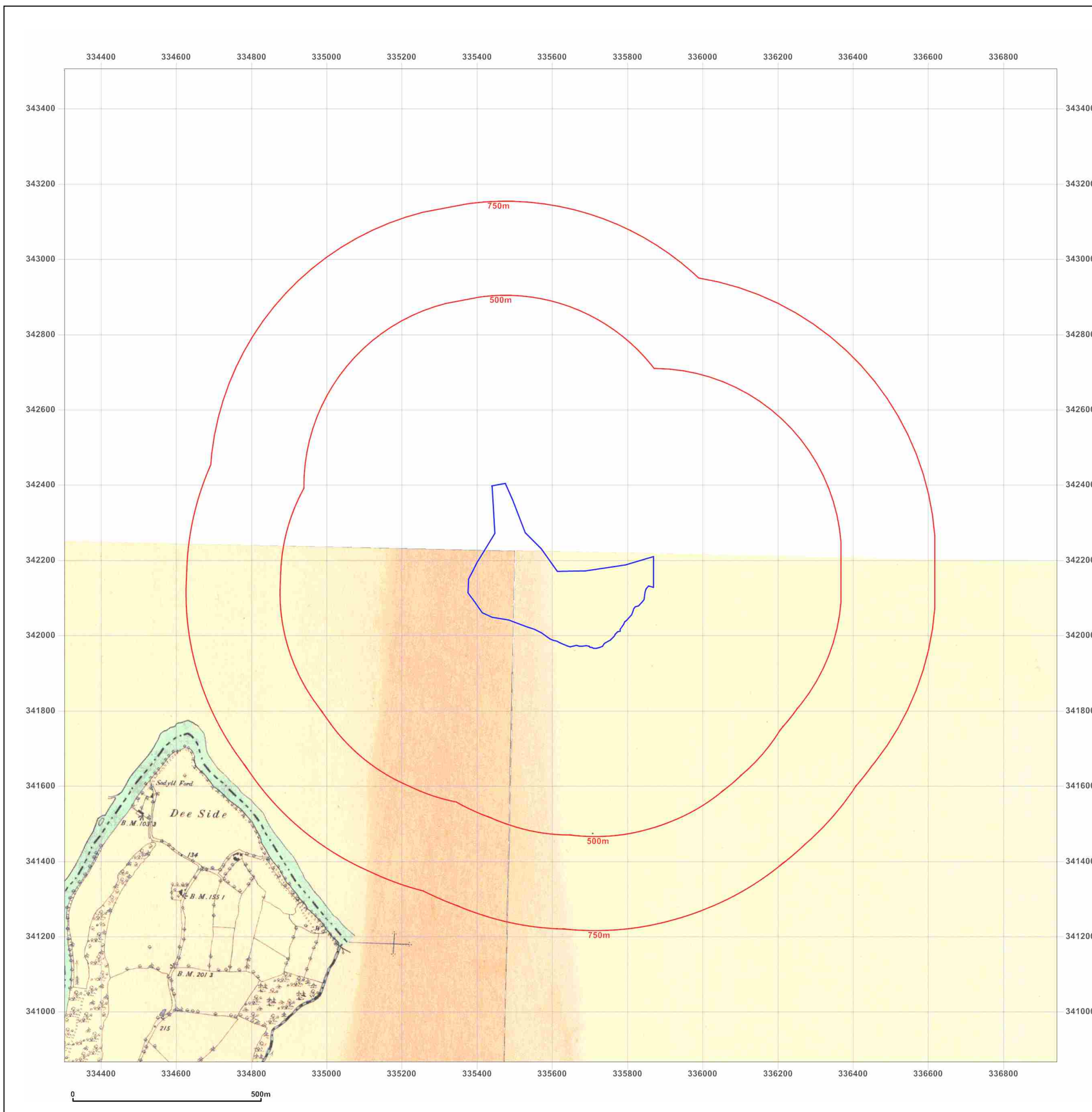


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**Client Ref:** Erbistock\_Insights\_-\_PO\_1412675\_  
**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**Map Name:** County Series

**Map date:** 1883-1884

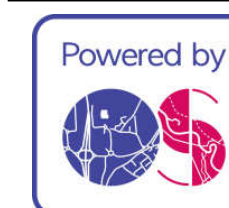
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Edition N/A  
Copyright N/A  
Levelled N/A

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

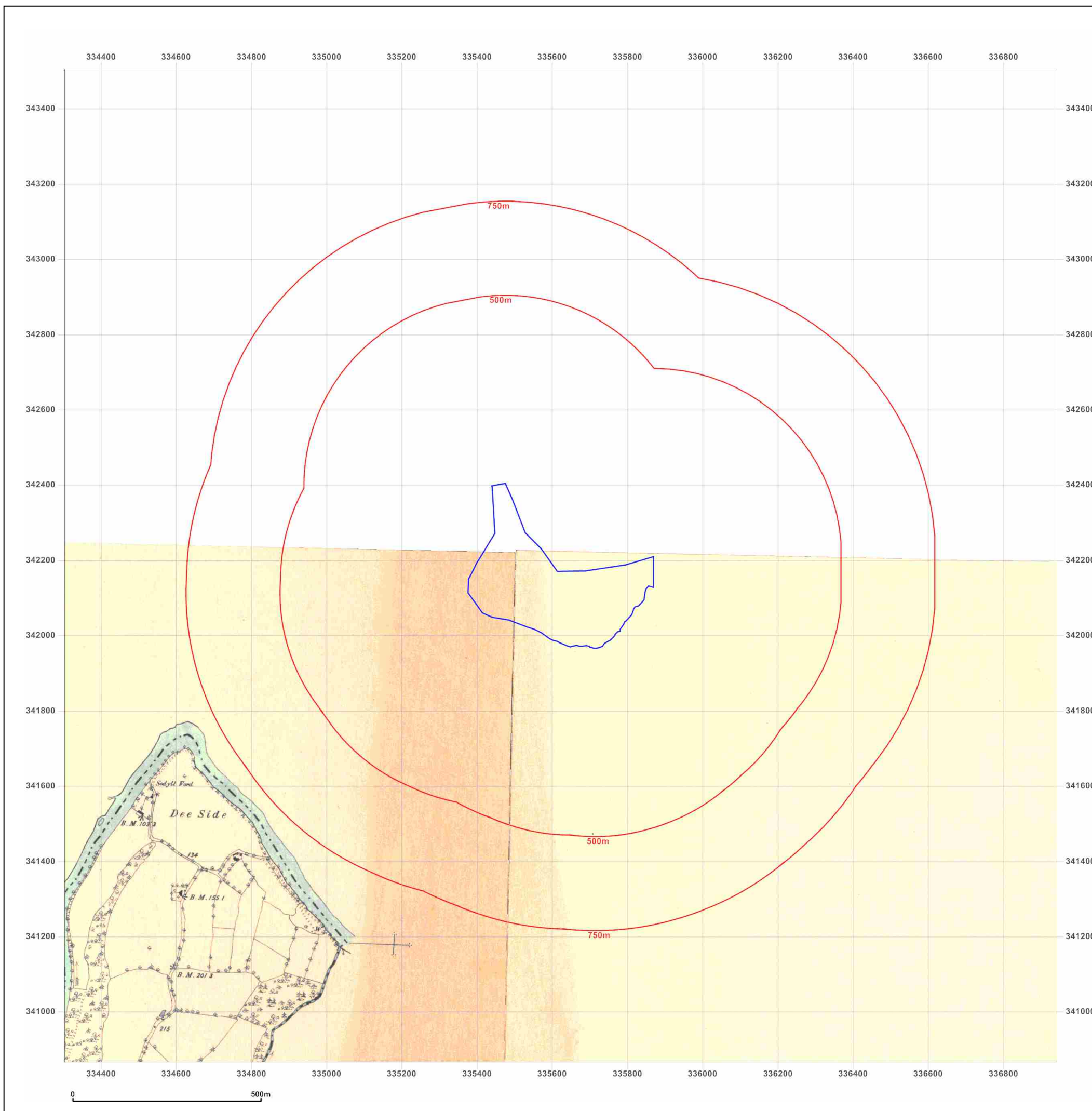


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**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**Map Name:** County Series

**Map date:** 1898-1900

**Scale:** 1:10,560

**Printed at:** 1:10,560



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Revised 1900  
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Surveyed 1873  
Revised 1900  
Edition N/A  
Copyright N/A  
Levelled N/A

Surveyed 1874  
Revised 1899  
Edition N/A  
Copyright N/A  
Levelled N/A

Surveyed 1873  
Revised 1898  
Edition N/A  
Copyright N/A  
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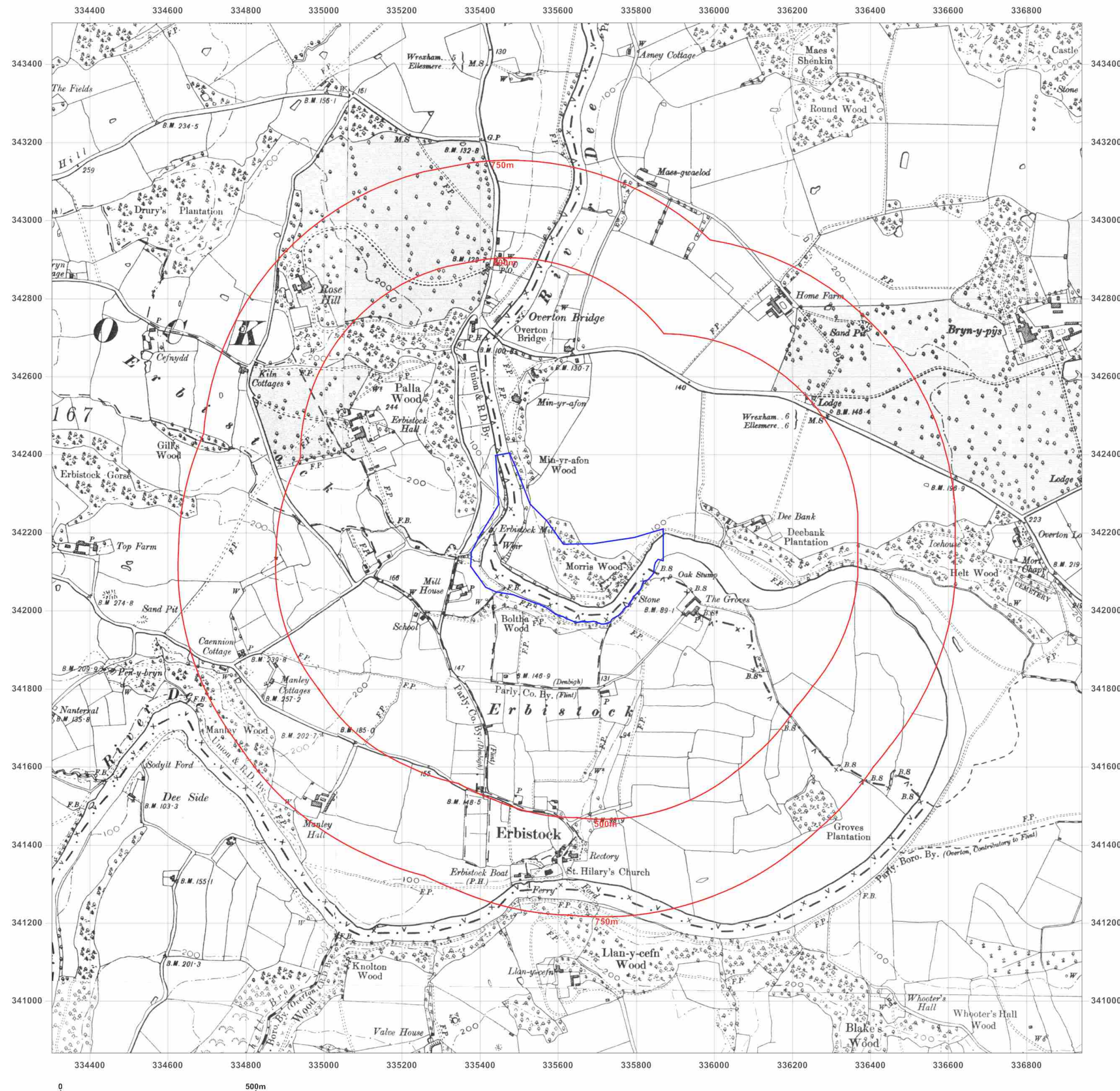


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**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**Map Name:** County Series

**Map date:** 1898-1900

**Scale:** 1:10,560

**Printed at:** 1:10,560



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Revised 1900  
Edition N/A  
Copyright N/A  
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Surveyed 1898  
Revised 1898  
Edition N/A  
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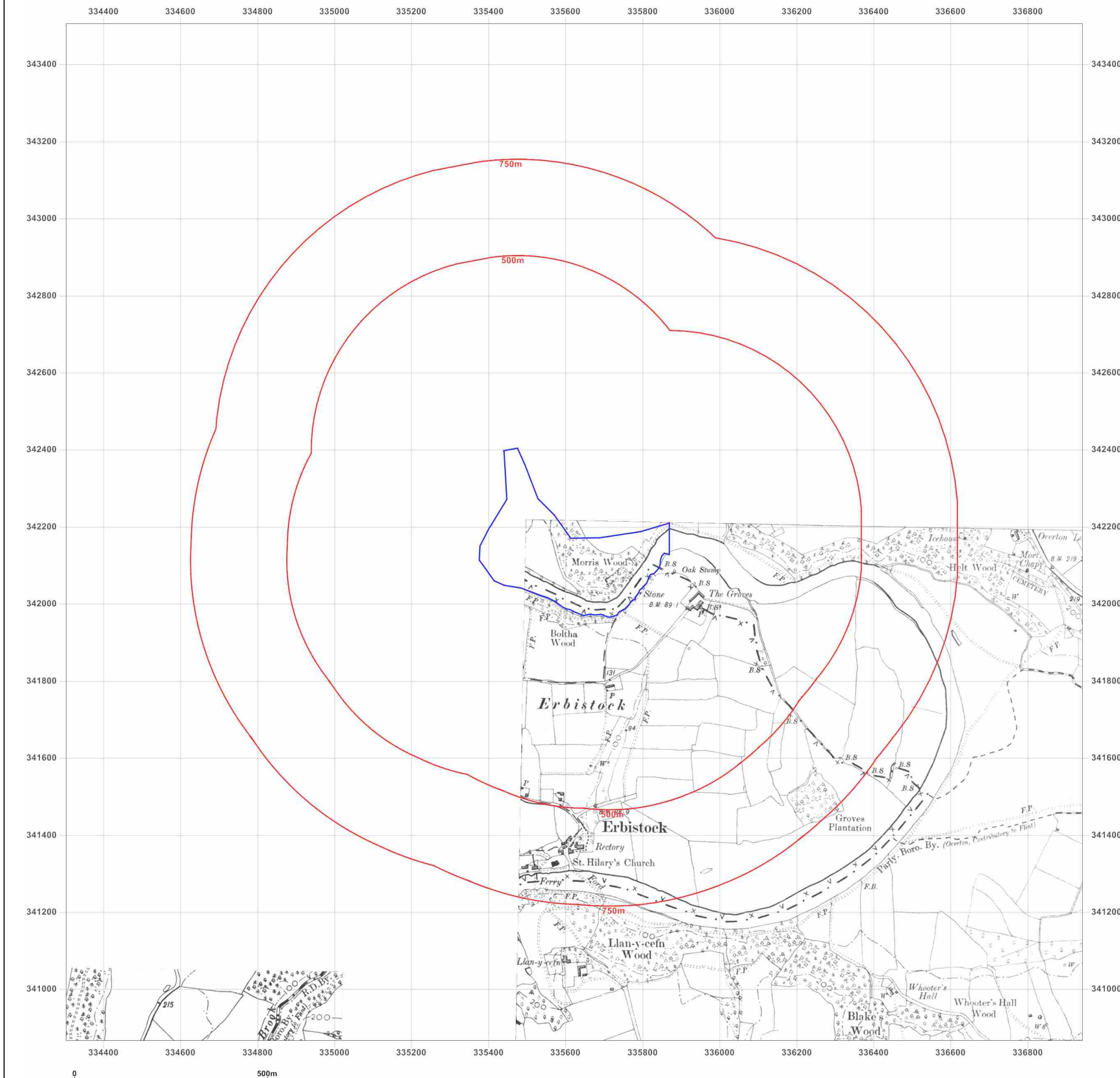


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**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**Map Name:** County Series

**Map date:** 1909-1914

**Scale:** 1:10,560

**Printed at:** 1:10,560



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Revised 1909  
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Edition N/A  
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Surveyed 1872  
Revised 1914  
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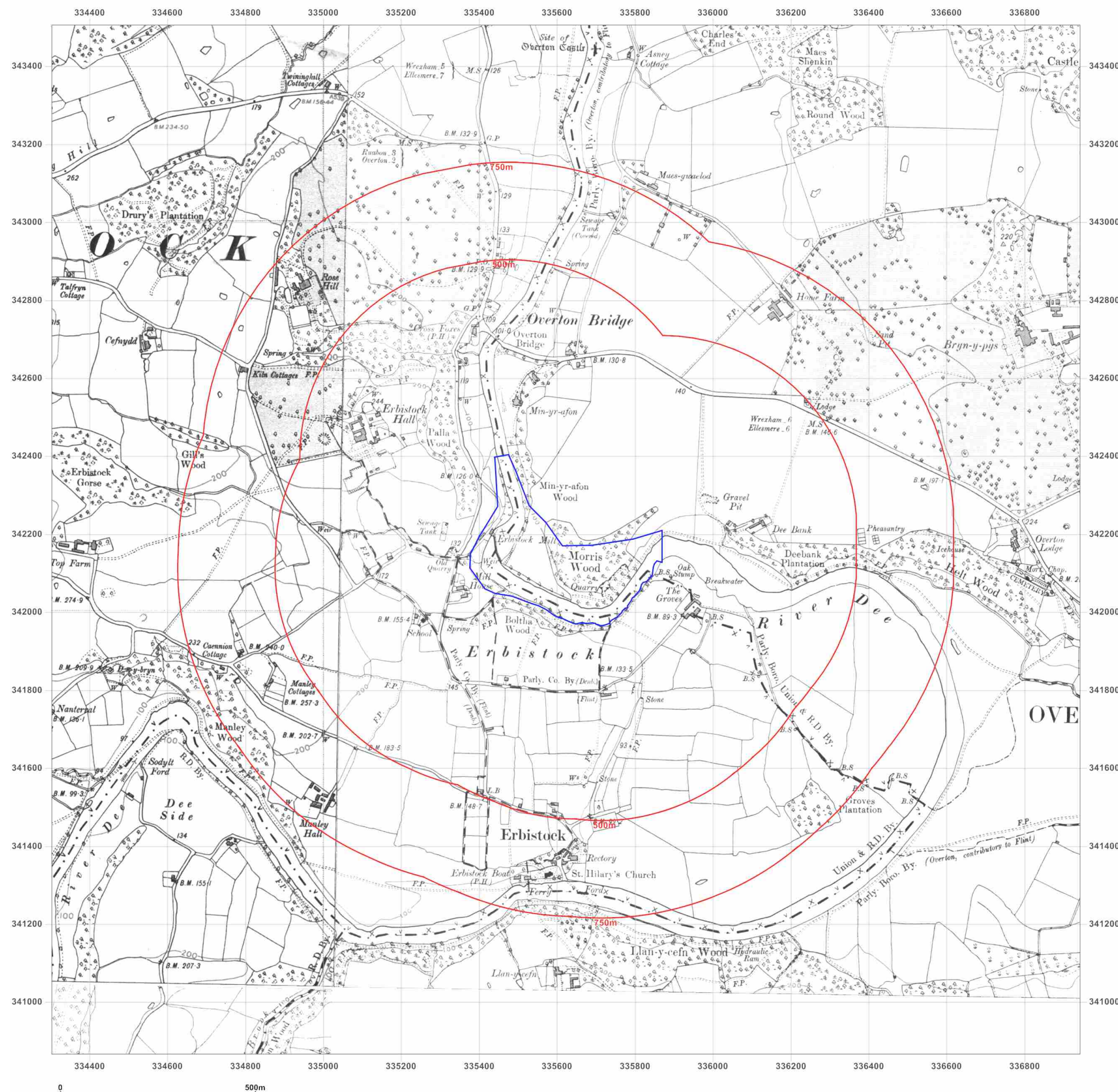


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**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**Map Name:** County Series

**Map date:** 1914-1915

**Scale:** 1:10,560

**Printed at:** 1:10,560



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Revised 1914  
Edition N/A  
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Surveyed 1872  
Revised 1915  
Edition N/A  
Copyright N/A  
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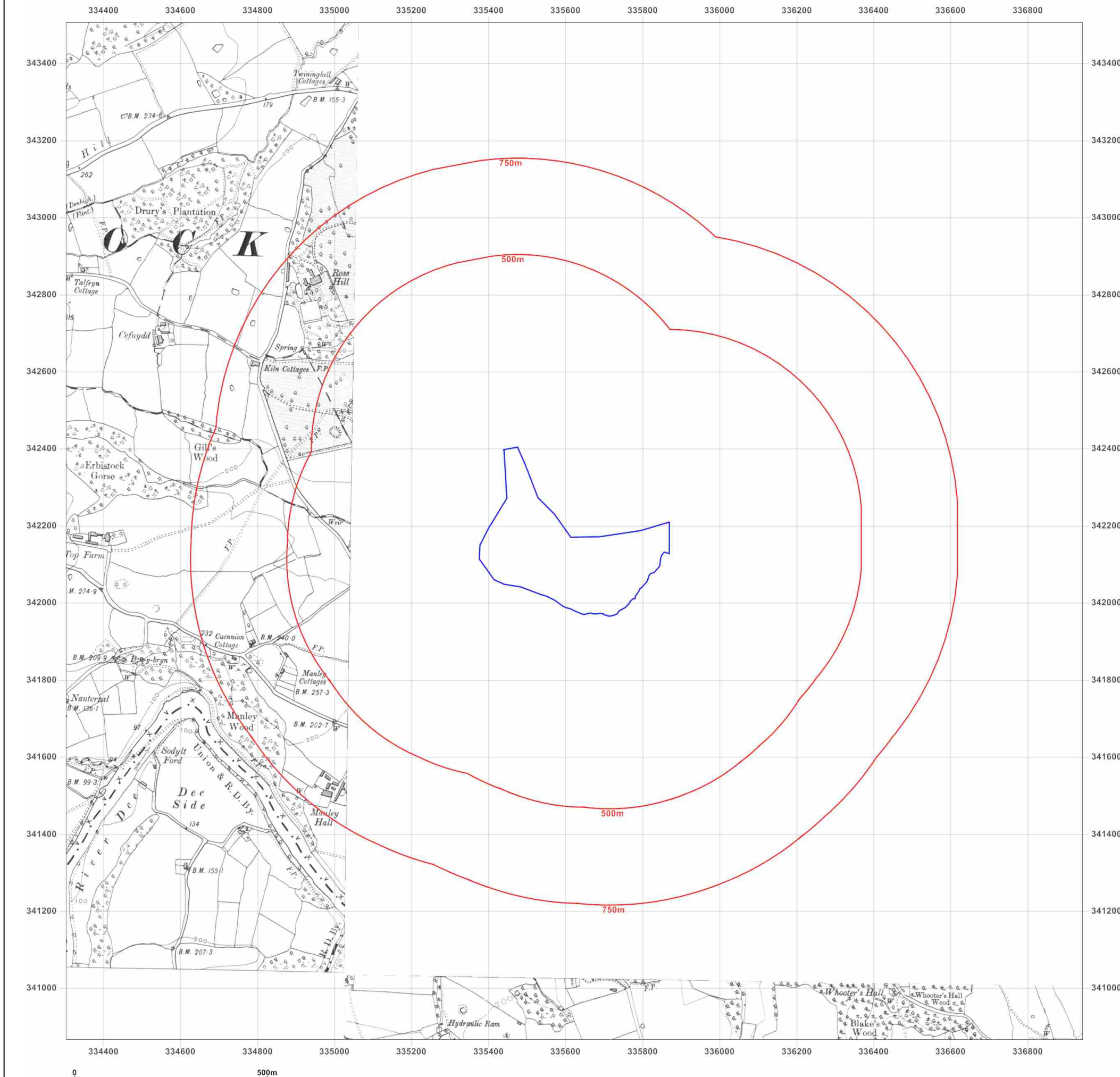


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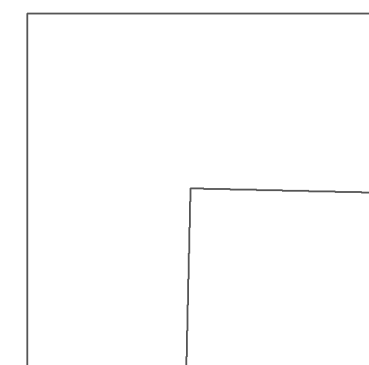
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**Grid Ref:** 335622, 342185

**Map Name:** County Series

**Map date:** 1924

**Scale:** 1:10,560

**Printed at:** 1:10,560



Surveyed 1873  
Revised 1924  
Edition N/A  
Copyright N/A  
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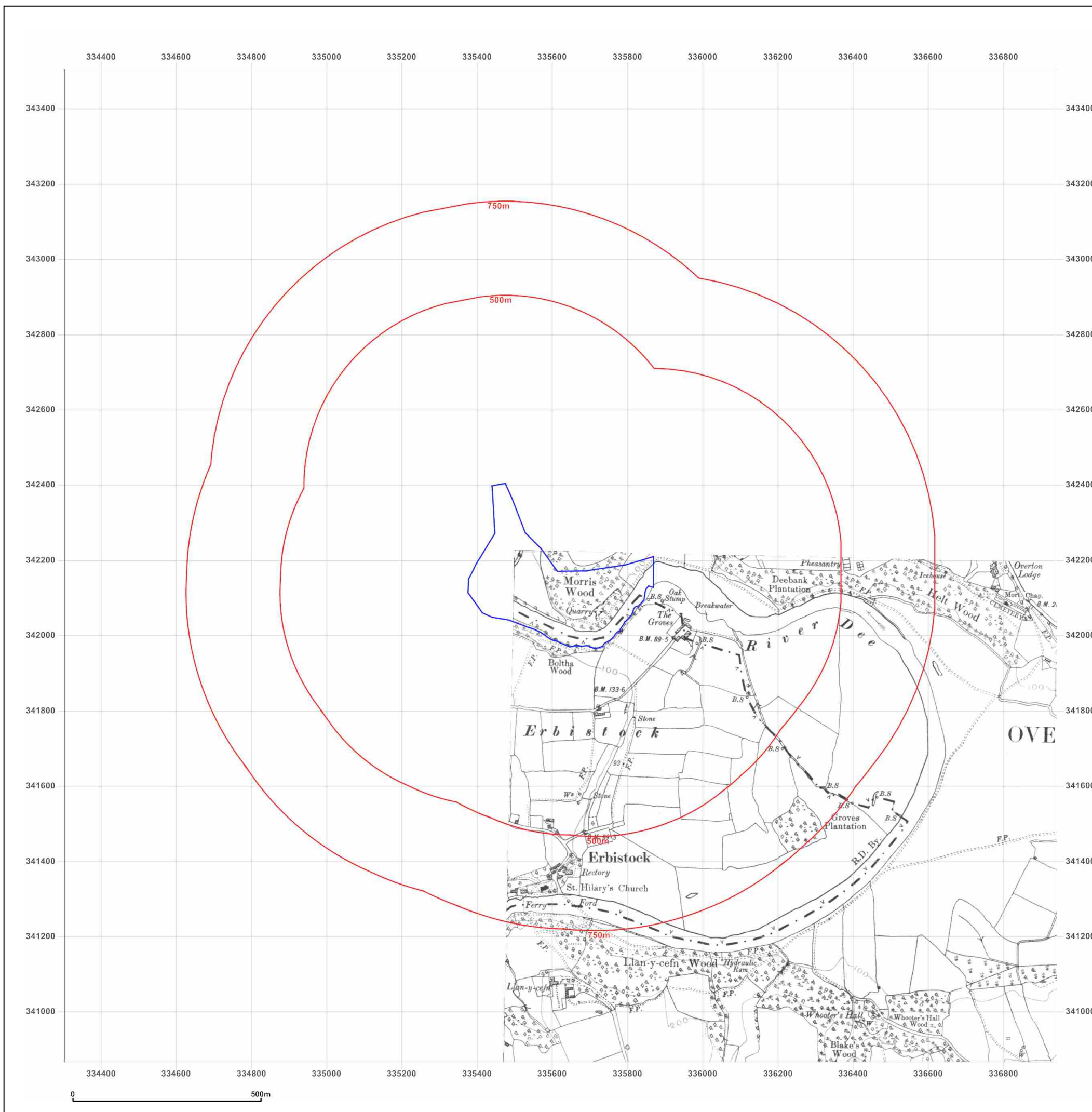


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**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**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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Levelled N/A

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

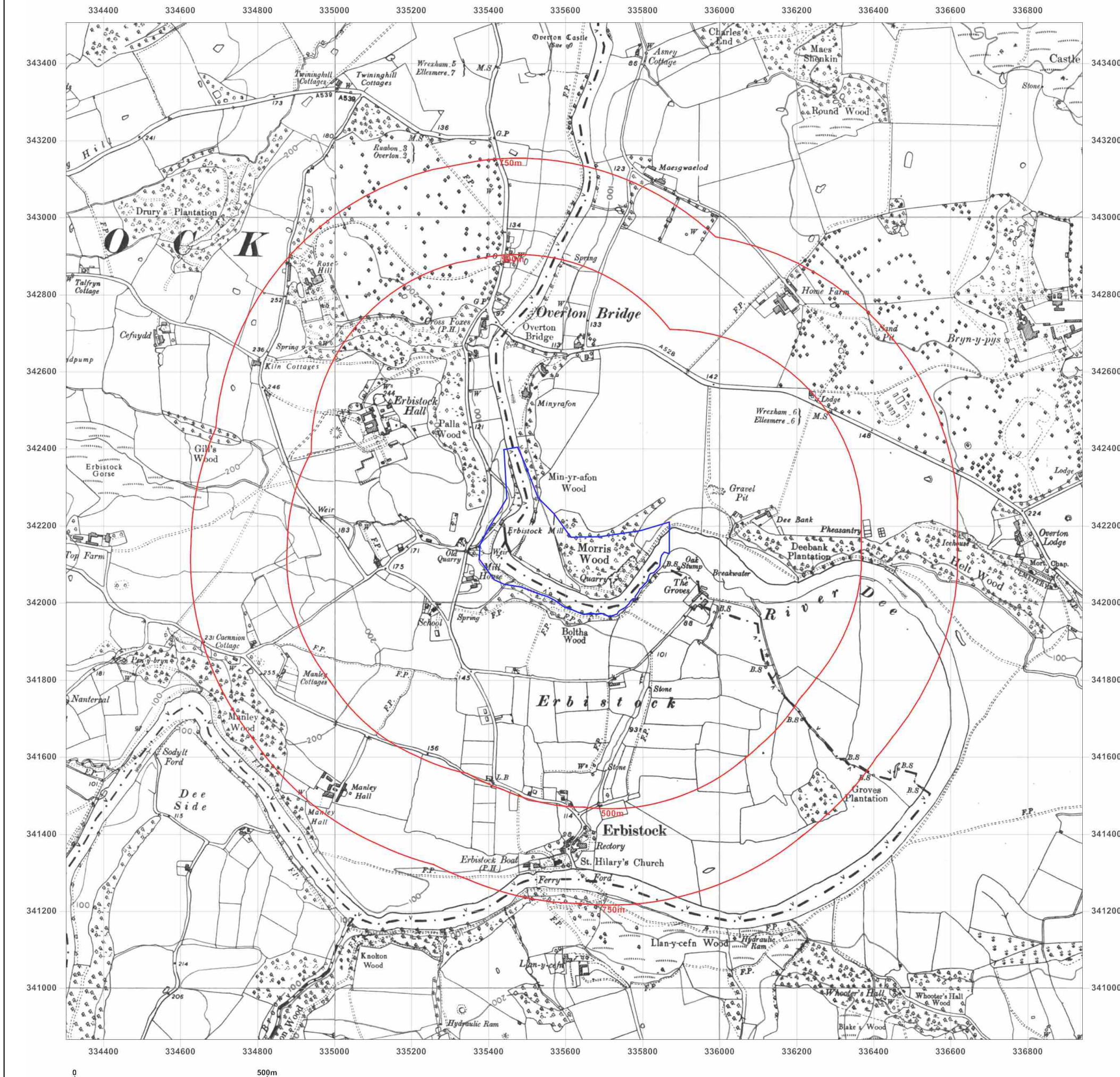


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**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**Map Name:** Provisional

**Map date:** 1965-1968

**Scale:** 1:10,560

**Printed at:** 1:10,560



Surveyed 1968  
Revised 1968  
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Levelled N/A

Surveyed N/A  
Revised 1965  
Edition N/A  
Copyright N/A  
Levelled N/A

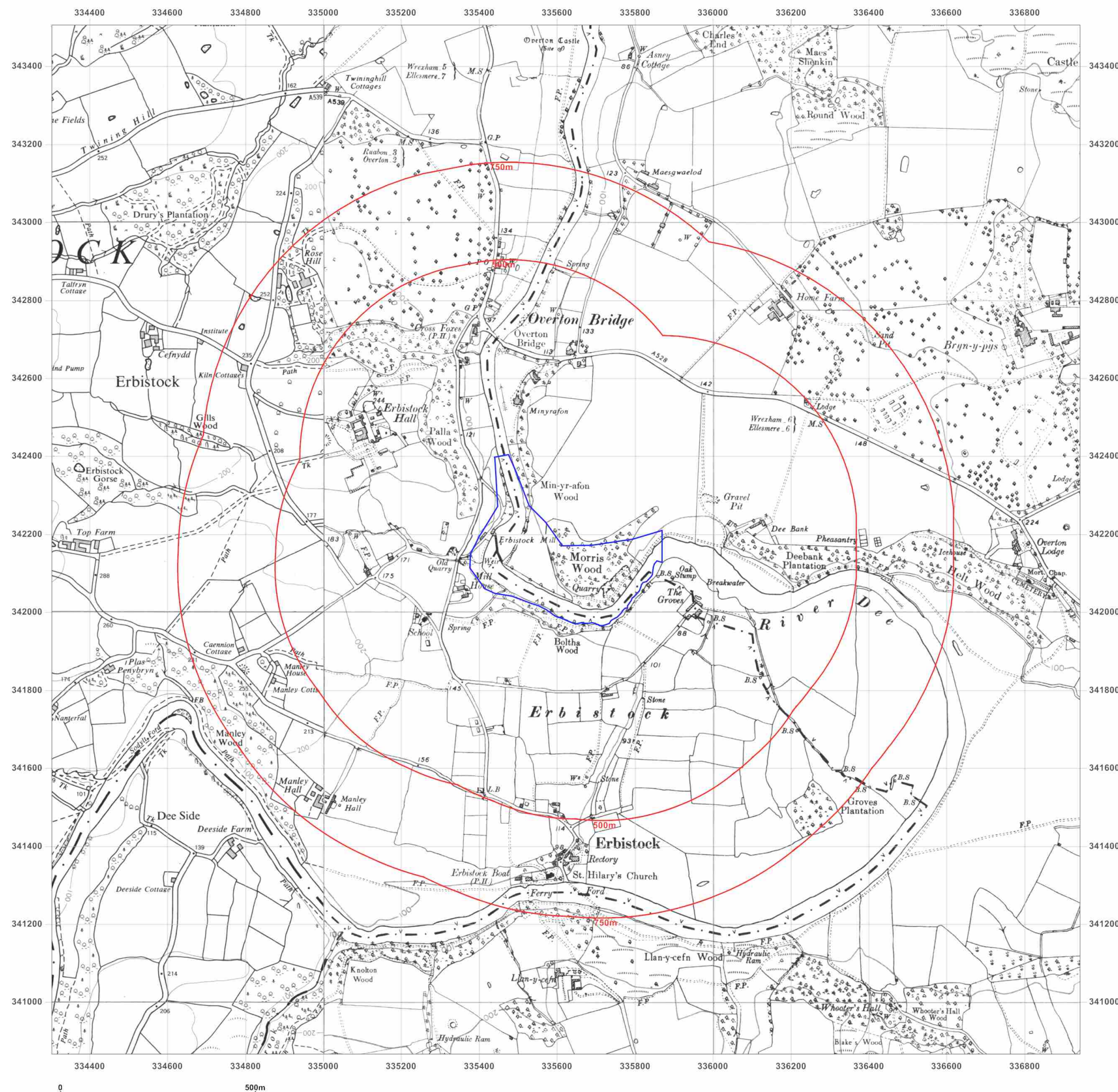


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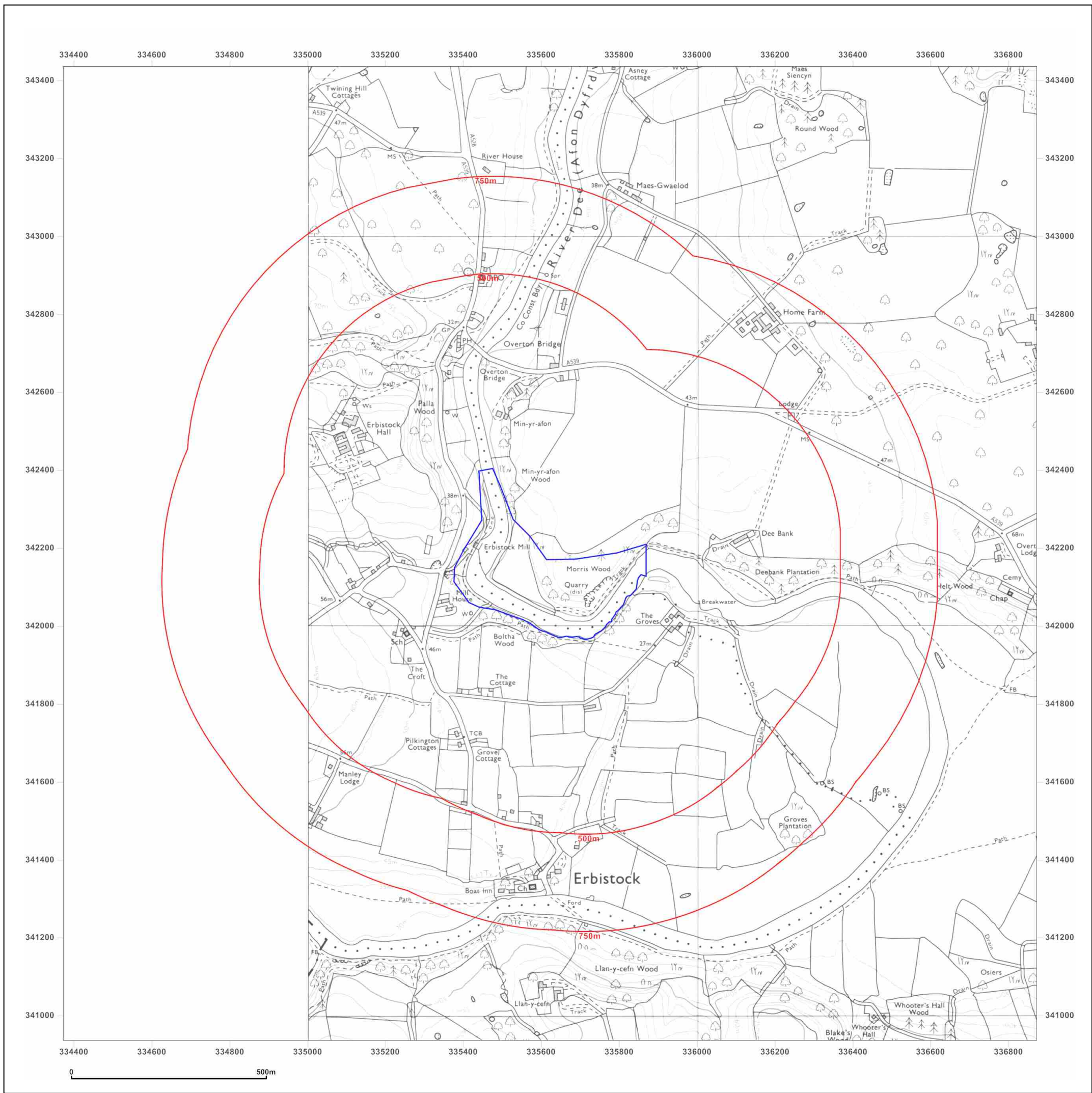
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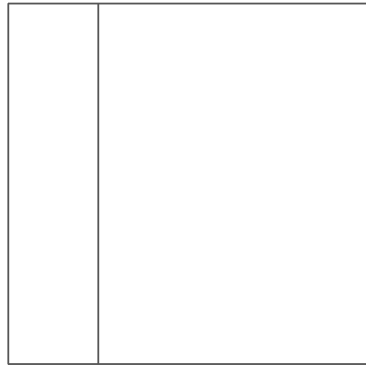




**Site Details:**  
  
GARDEN HOUSE, LANE FROM  
A528 CROSS FOXES PH TO ST  
HILARYS CHURCH, ERBISTOCK,  
WREXHAM, LL13 0DL

**Client Ref:** Erbistock\_Insights\_-\_PO\_1412675\_  
**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**Map Name:** National Grid  
**Map date:** 1980  
**Scale:** 1:10,000  
**Printed at:** 1:10,000



Surveyed 1974  
Revised 1980  
Edition N/A  
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WREXHAM, LL13 0DL

**Client Ref:** Erbistock\_Insights\_-\_PO\_1412675\_  
**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**Map Name:** National Grid

**Map date:** 1992-1993

**Scale:** 1:10,000

**Printed at:** 1:10,000



Surveyed 1991  
Revised 1993  
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Surveyed 1991  
Revised 1992  
Edition N/A  
Copyright N/A  
Levelled N/A

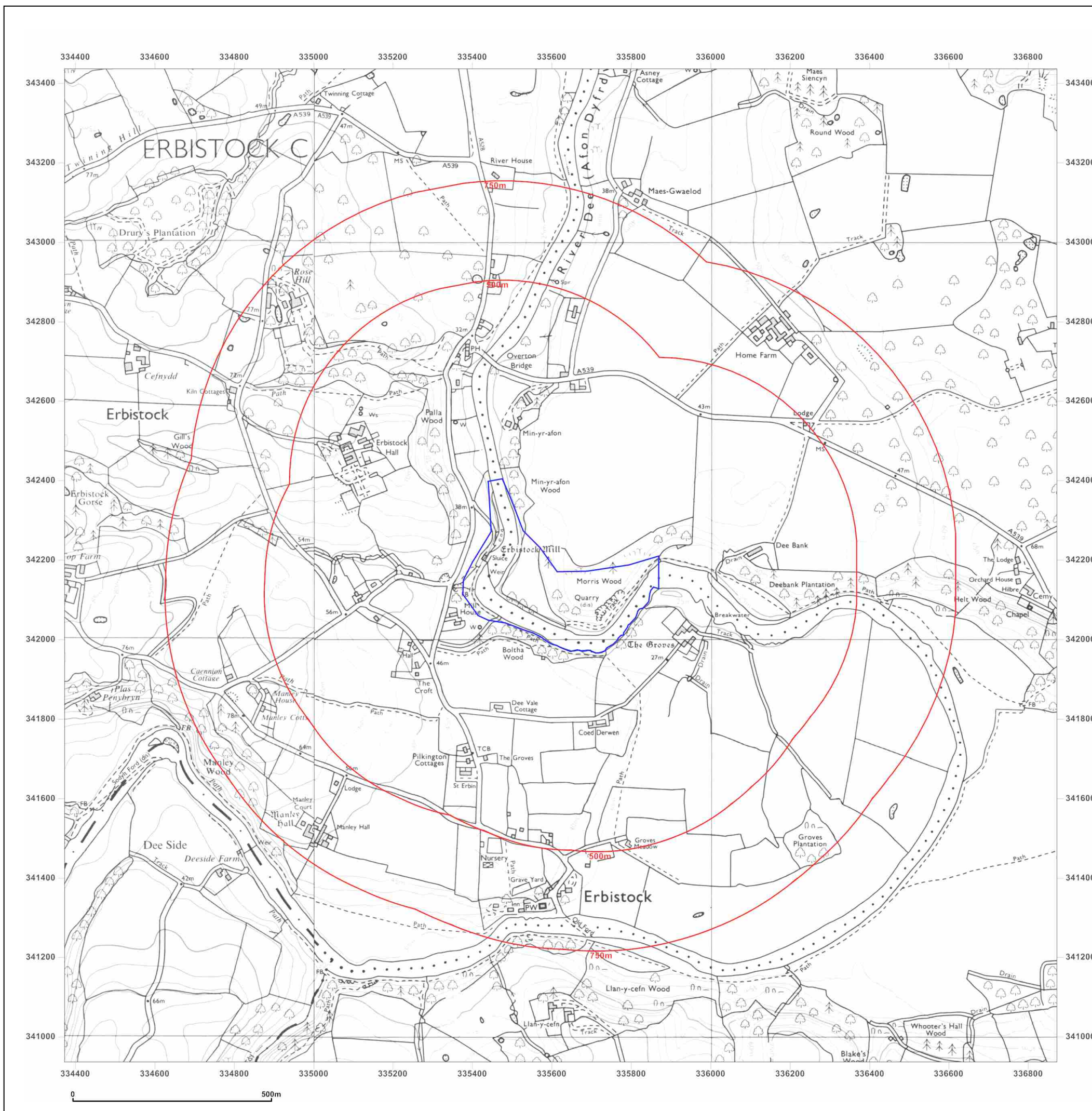


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WREXHAM, LL13 0DL

**Client Ref:** Erbistock\_Insights\_-\_PO\_1412675\_  
**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**Map Name:** National Grid

**Map date:** 2001

**Scale:** 1:10,000

**Printed at:** 1:10,000



2001

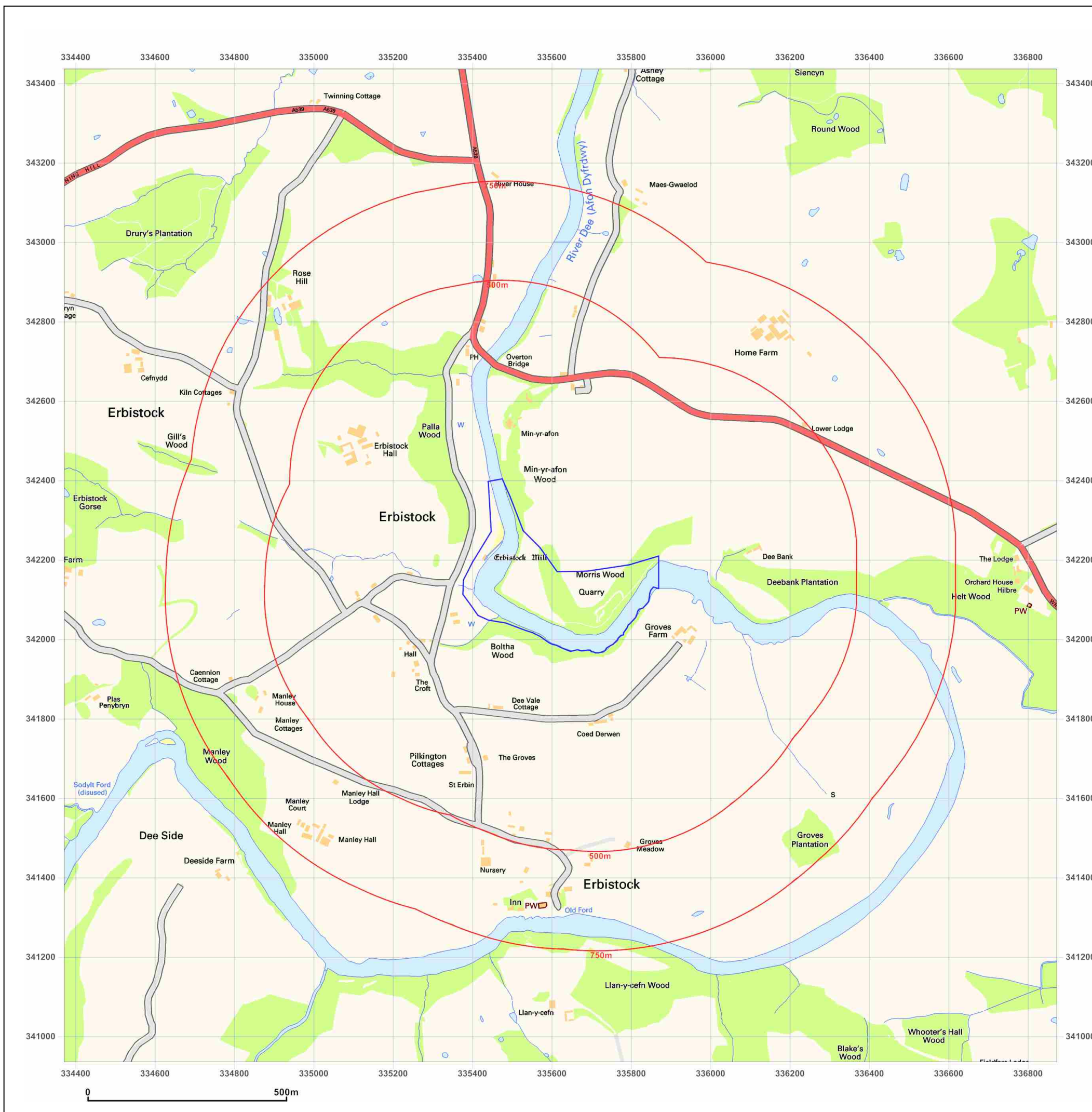


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**Client Ref:** Erbistock\_Insights\_-\_PO\_1412675\_  
**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**Map Name:** National Grid

**Map date:** 2010

**Scale:** 1:10,000

**Printed at:** 1:10,000



2010

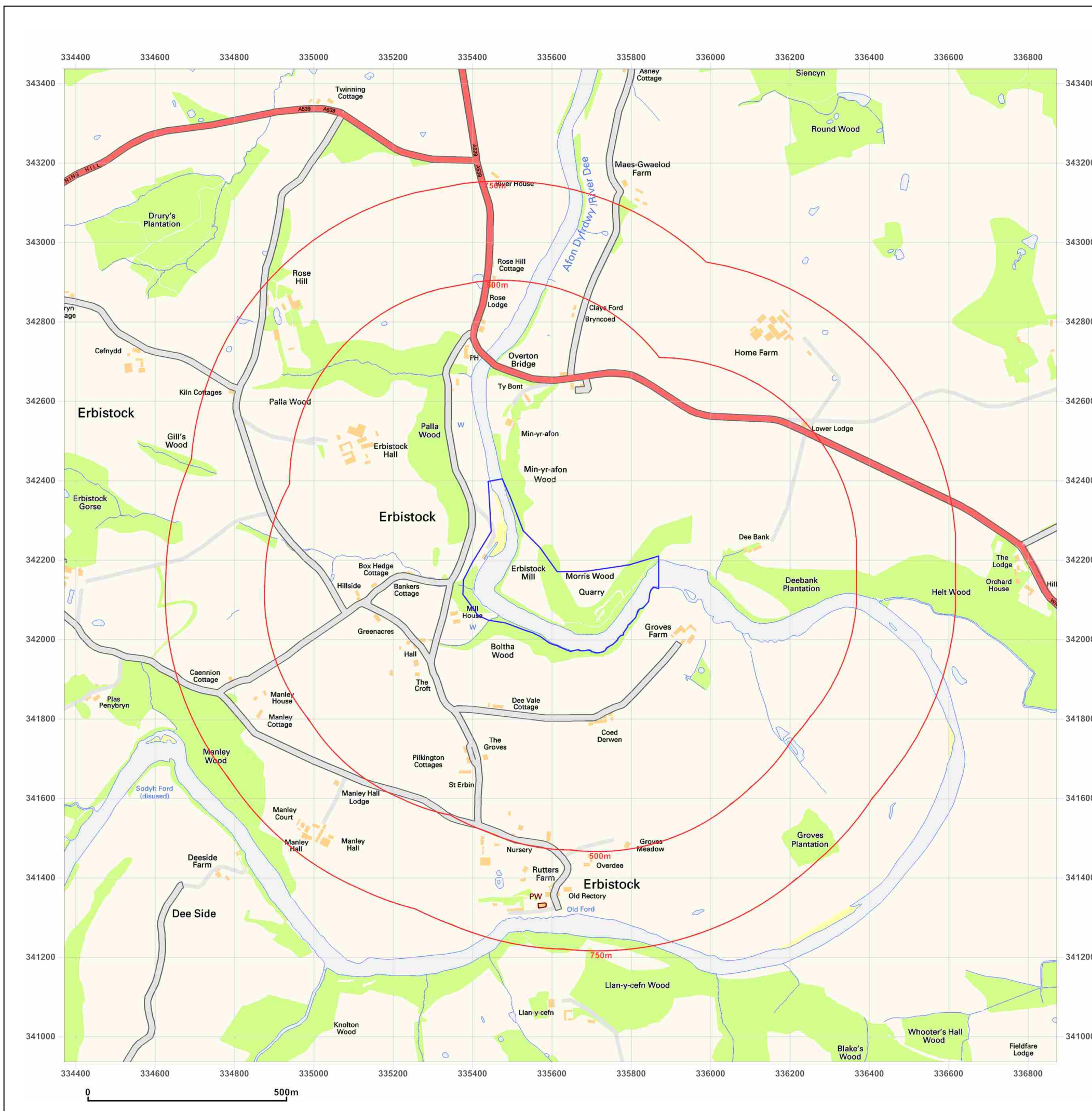


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**Client Ref:** Erbistock\_Insights\_-\_PO\_1412675\_  
**Report Ref:** GS-6746438  
**Grid Ref:** 335622, 342185

**Map Name:** National Grid

**Map date:** 2020

**Scale:** 1:10,000

**Printed at:** 1:10,000



2020



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