PRELIMINARY RISK ASSESSMENT REPORT FOR STRATEGIC ECOLOGICAL CORRIDOR: LAND OFF FRANCIS LANE, WREXHAM

TE1905-TE-00-XX-RP-GE-001-V02

25 FEBRUARY 2025

DRAFT

Prepared for:

Mauna Kea Limited

Prepared by: Jack Lloyd

Tier Environmental Ltd

DOCUMENT CONTROL

Report No. :	TE1905-TE-00-XX-RP-GE-001-V02
Report Status:	DRAFT
Project Engineer:	Jack Lloyd
Date of Issue:	25/02/2025

This report has been prepared by Tier with all reasonable skill, care and diligence, within the best practice and guidance current at the time of issue within the scope of works which have been agreed with the client. This report is confidential to the client and Tier accepts no responsibility whatsoever to third parties to whom this report, or any part thereof is made presented, unless this is formally agreed in writing by a Director of Tier Environmental Ltd before any reliance is made. Any such party relies upon the report at their own risk. Tier disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

Version No.	Description of Issue / Revision	Date of Issue	Author	Reviewed By	Approved By
1	DRAFT – awaiting regulatory responses	31/01/2025	Jack Lloyd	Stuart Milne	Sean Lee
2	Updated with client comments	25/02/2025	Stuart Milne	Sean Lee	Sean Lee

CONTENTS

1. INTRODUCTION 1
1.1. Proposed Development 1
1.2. Previous Reports 1
1.3. Objectives 1
1.4. Assumptions 1
2. SITE DETAILS AND DESCRIPTION 3
3. SITE HISTORY 4
3.1. Site History Review 4
3.2. Preliminary Unexploded Ordnance Risk Assessment 10
4. ENVIRONMENTAL SETTING 11
4.1. Geology 11
4.2. Mining and Quarrying 11
4.3. Hydrogeology 12
4.4. Hydrology 13
4.5. Flood Risk Summary 13
4.6. Environmental Designations 13
4.7. Landfill and Waste Management Activity 14
4.8. Local Industrial Land Uses 15
4.9. Radon Risk 16
4.10. Waste Classification and Materials Re-Use 16
4.11. Regulator Provided Information 17
5. PREVIOUS INVESTIGATION FINDINGS 18
6. GROUND GAS CONCEPTUAL SITE MODEL CONSIDERATION 21
6.1. Potential Ground Gas Sources and Gas Generation Potential 21
7. PRELIMINARY CONCEPTUAL SITE MODEL 22
7.1. Uncertainties 22
8. PROPOSED FURTHER WORKS 25
8.1. Further works 25
8.2. Proposed Scope of Works 25
9. REGULATORY APPROVALS 26
10. REFERENCES 27
11. GLOSSARY OF TERMS 30

TABLES

Table 2.1 Current Site Overview. 3
Table 3.1 Site History. 5
Table 3.2 Preliminary UXO Risk Assessment. 10
Table 4.1 Geological Summary. 11
Table 5.1 Report Review Summary 18
Table 7.1 Preliminary Assessment of Potential Pollutant Linkages (Continued on Next Page). 23

FIGURES

Figure 2.1 Recent Aerial Photograph from Groundsure 3

APPENDICES

Appendix A - Drawings
Appendix B- Groundsure Report
Appendix C- Previous Reports (Available as separate document)
Appendix D- Definitions of Terms Used in Qualitative and Quantitative Risk Assessments
Appendix E- Controlled Waters Risk Assessment
Appendix F- Complying With Control of Asbestos Regulations 2012

EXECUTIVE SUMMARY

Introduction	Tier Environmental was commissioned by Mauna Kea Limited (a wholly owned subsidiary of Net World Sport) to undertake a desk study and Phase I Preliminary Risk Assessment of the proposed ecological development at the Strategic Ecological Corridor: Land off Francis Lane, Wrexham. The Strategic Ecological Corridor includes an additional parcel of land to the south east which is covered by a separate ground conditions report. This has been submitted as part of the planning application. The purpose of this investigation was to establish land use history and review the available information to determine the geoenvironmental setting of the site and develop a preliminary conceptual site model with due consideration of potential soil and groundwater contamination, hazardous ground gases and mining.
Proposed land use	It is proposed that the site will be developed as a dedicated ecological area laid entirely to soft landscaping and wildlife ponds, with no proposed buildings.
Site location and surrounding land uses	The site is located at Francis Lane, Ridleywood, Holt, Wrexham, Wales, LL13 9UR. The Site is currently in use as agricultural fields, with surrounding land uses comprising of agricultural land and residential to the north west. There are no nearby significant potentially contaminative current land uses in the vicinity of the site.
Site history	The site has remained largely undeveloped since earliest records as part of an adjacent farm with 2 No. ponds in the south east and northwest present until the 1960s when they are potentially infilled. By 1968, buildings are present in the northwest of the site associated with the off-site farm, removed by 1992. In the 2000s, industrial and recreational developments emerged nearby, including a JCB warehouse and Clays Farm Golf Centre. Infrastructure changes included the A5156 replacing part of Hugmore Lane to the south of the site.
Geology, hydrogeology and hydrology	The site is underlain by superficial deposits of Devensian Till (Secondary Undifferentiated Aquifer) and bedrock of the Kinnerton Sandstone Formation (Principal Aquifer) . Groundwater is anticipated groundwater depth of between 0.20 to 7.30m bgl, inferred from previous investigations on a site located 50m south of the site boundary. There are no recorded potable or non-potable water abstractions within 1km, and the site is within a Source Protection Zone 3. The nearest surface water feature is located 175m SE. The previous investigations proved the Till to be in the order of >10m thick which would provide sufficient protection the underlying Principal Aquifer. As a result, the controlled waters environment is considered to be low.
Ground gases	There are no landfills located within 250m of the Site. The only viable potential source of ground gases is therefore on-site localised Made Ground / potentially infilled ponds and off-site Made Ground.
Radon requirements	Basic radon protection measures are not currently required for the proposed development on this site as no buildings are proposed.
Ecological sensitivity	The site does not lie within an ecologically sensitive area.
Potential contaminative features	Numerous potentially infilled ponds have been identified within the site boundary. Made Ground associated with historic possible agricultural buildings located in the north-western area of the site.
Mining and quarrying	The site is not located within an area of shallow mining or an area subject to historic quarrying.
Previous investigations	Tier Environmental conducted a ground investigation between 5th and 23rd June 2023 (Ref: TE1750-TE-00-XX-RP-GE-001-V07, January 2024) for a site approximately 50m south of the site boundary. Investigations included trial pits, boreholes, and laboratory testing, confirming stable ground conditions primarily comprising Devensian Till clay. Groundwater was encountered at varying depths and contamination risks to human health and controlled waters are minimal. A gas risk assessment indicated a localised moderate risk in one area due to a historic pond infill, though this could be mitigated by soil removal.
Phosphorus	The site falls within a Phosphorus Sensitive SAC Freshwater catchment area associated with the River Dee. As such, due consideration during drainage strategy / design (if required) should be given with respect to this designation and any mitigation / avoidance measures.
Unexploded ordnance	Low UXO risk
Waste soils classification	Based on the history of the site and the anticipated potential contaminants of concern it is considered unlikely that hazardous waste soil materials may be present beneath the site; however, this will be subject to confirmatory investigation, sampling, laboratory analysis and waste classification in accordance with the Guidance on the Classification and Assessment of Waste (WM3).
Materials re-use	Subject to volumetric fill requirements and a future assessment of suitability of re-use (both chemically and geotechnically), some materials may be considered for potential re-use in line with an appropriate end-of-waste protocol such as WRAP Quality Protocol for Aggregates from Inert Waste, U1 Exemption or a Materials Management Plan in accordance with the CL:AIRE Definition of Waste Code of Practice (DoWCoP). Please note that any previously landfilled or mining waste materials may not be appropriately subject to consideration under DoWCoP and may not be re-used under DoWCoP unless sufficient lines of evidence and agreement with the local Environment Agency Waste Team can be sought beforehand.

	In addition, Section 4.10 of this report includes statements with respect to re-use of excavated and stockpiled clean naturally occurring soils within the site and re-use on other sites. These statements are designed to provide a clear intention to reuse any clean, naturally occurring soils derived from future excavations at this site (which may also include temporary future stockpiling these materials).
Further works	Limited Ground Investigation to comprise: • Trial pitting to determine the nature and extent of Made Ground and natural deposits across the site, facilitate soil sampling for environmental and geotechnical testing. • Soakaway testing to determine whether the proposed ponds will need to be lined. • Geoenvironmental chemical testing on selected soil samples for metals, pH, speciated PAH, speciated TPH, phenol, sulphate, TOC and asbestos screens in order to assess potential risks to human health based on historical land uses on and within close proximity to the site and to assist with basic waste characterisation.

1. INTRODUCTION

Tier Environmental was commissioned by Mauna Kea Limited (a wholly owned subsidiary of Net World Sport) to undertake a Land Contamination Risk Management (LCRM) Preliminary Risk Assessment for an area of land referred to as the Strategic Ecological Corridor: Land off Francis Lane, Wrexham (the "site"). The Strategic Ecological Corridor includes an additional parcel of land to the south east which is covered by a separate ground conditions report. This has been submitted as part of the planning application.

The full title of this report, a *'Stage 1 - LCRM Tier 1 Preliminary Risk Assessment Report'*, is in accordance with that described in the Land Contamination Risk Management guidance (available at https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm) which has superseded CLR 11.

1.1. Proposed Development

Under current proposals the development will comprise a dedicated ecological area by the creation of ponds (less than 1.5m deep) and landscaping. As such, in accordance with the *'Updated technical background to the CLEA model'* (Environment Agency, 2009) and *'Suitable 4 Use Levels'* (LQM / CIEH 2015) the proposed generic land use for this development is public open space.

1.2. Previous Reports

The following previous pertinent reports for land adjacent to the site have been produced by Tier Environmental:

- A Ground Investigation Report for Bryne Lane (Outline Planning) Wrexham (Ref: TE1749-TE-00-XX-RP-GE-001-V04, dated October 2023)
- A Ground Investigation Report for Bryne Lane (Detailed Planning) Wrexham (Ref: TE1750-TE-00-XX-RP-GE-001-V07, dated January 2024)

For clarity, Reports TE1749 and TE1750 were completed for an area of land circa 50m south of the site.

1.3. Objectives

Taking into account the proposed development of the site, the objectives of this appraisal were:

- To determine the historical and current land use.
- To establish the environmental setting of the site.
- To evaluate whether past mining or other extractive industries could have an influence on the site.
- To review previous pertinent third party reports;
- To determine likely ground and groundwater conditions.
- To determine the potential risks to human health and the wider environment.
- To determine potential risks posed to the site from hazardous ground gases and / or vapours.
- To derive a Preliminary Conceptual Site Model.

1.4. Assumptions

The following assumptions are made in this report:

- It is assumed that ground levels will not change significantly from those described in this report or a shown on proposed development drawings. If this is not the case, then amendments to the recommendations made in this report may be required.
- Any references to observations of suspected asbestos-containing materials are for information only and should be verified by a suitably qualified asbestos specialist and/or confirmed by laboratory analysis.
- The use of the term 'Topsoil' within this report is based on a visual identification only and that these materials have not been classified in accordance with BS3882:2015.
- The use of the terms ‘shallow’ and ‘deep’ within this report (from a geotechnical perspective) assume *typically* between ground level to circa 3.00m below ground level (bgl) for ‘shallow’ and greater than 3.00m bgl regarded as ‘deep’.
- The comments and opinions presented in this report are based on the findings of the desk study, review of third party information, and a review of ground conditions encountered during previous intrusive investigation works, performed by Tier Environmental. There may be other conditions prevailing on the site which have not been revealed by this investigation and which have not been taken into account by this report at this stage.
- Responsibility cannot be accepted for any conditions not revealed by this investigation. Any diagram or opinion on the possible configuration of the findings is conjectural and given for guidance only. Confirmation of ground conditions should be undertaken if deemed necessary.

This report has been prepared for the sole use of Mauna Kea Limited (a wholly owned subsidiary of Net World Sport). No other third party may rely upon or reproduce the contents of this report without the written approval of Tier Environmental. If any unauthorised third party comes into possession of this report, they rely on it entirely at their own risk and the authors do not owe them any Duty of Care or Skill.

2. SITE DETAILS AND DESCRIPTION

Table 2.1 Current Site Overview.

Site name	Strategic Ecological Corridor: Land off Francis Lane, Wrexham
Site address	Francis Lane, Ridleywood, Holt, Wrexham, Wales, LL13 9UR, United Kingdom. A site location plan is included as Drawing No. TE1905-TE-00-XX-DR-GE-001-V01 within Appendix A.
National Grid Reference (NGR)	338089 , 351295
Approximate site area	2.98 ha
Site shape	This site is approximately rectangular with a square area attached in the northwest area
Current land use on the site	The Site is predominantly agricultural with both grassed and cropped fields, with a residential / farm property (Holt Lodge Farm) located to the west, and a residential property, Holt Lodge Cottages, located to the northwest of the Site. The agricultural fields are delineated by trees and hedgerows. Underground service drawings have not been provided to Tier Environmental; however, there remains a potential for such features to be present beneath the site.
Surrounding land uses	The Site is surrounded by agricultural land, a residential property known as Honeysuckle Cottage located 50m to the southeast and industrial buildings associated with the industrial estate to the south of Bryn Lane approximately 335m South of the site boundary. Clays Farm Golf Centre is also located approximately 300m west of the site boundary.
General topography and ground levels	Topography within the site ranges from circa 34m AOD in the Northwest to 42m AOD in the east. The wider topography generally slopes towards the east.

An aerial photograph (from the Groundsure report) of the site and site boundary is shown below.

Figure 2.1 Recent Aerial Photograph from Groundsure



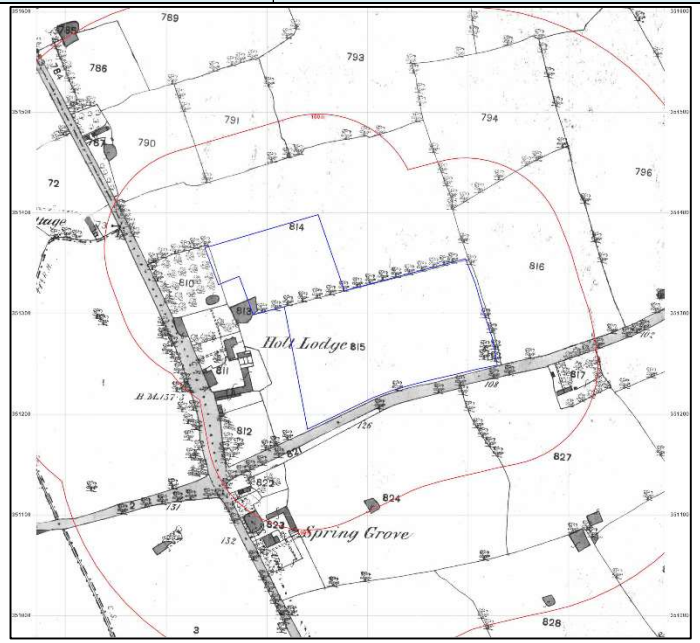
3. SITE HISTORY

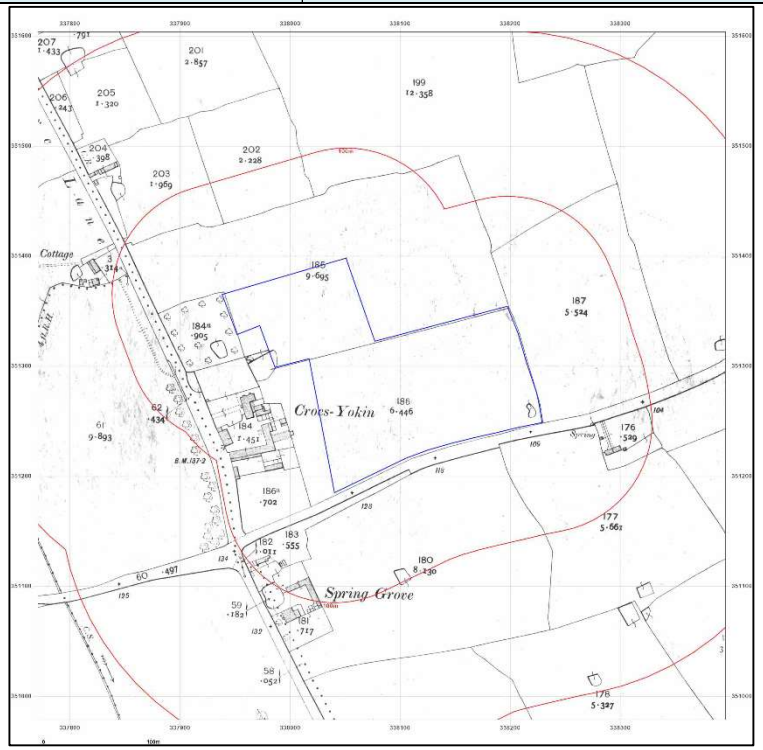
3.1. Site History Review

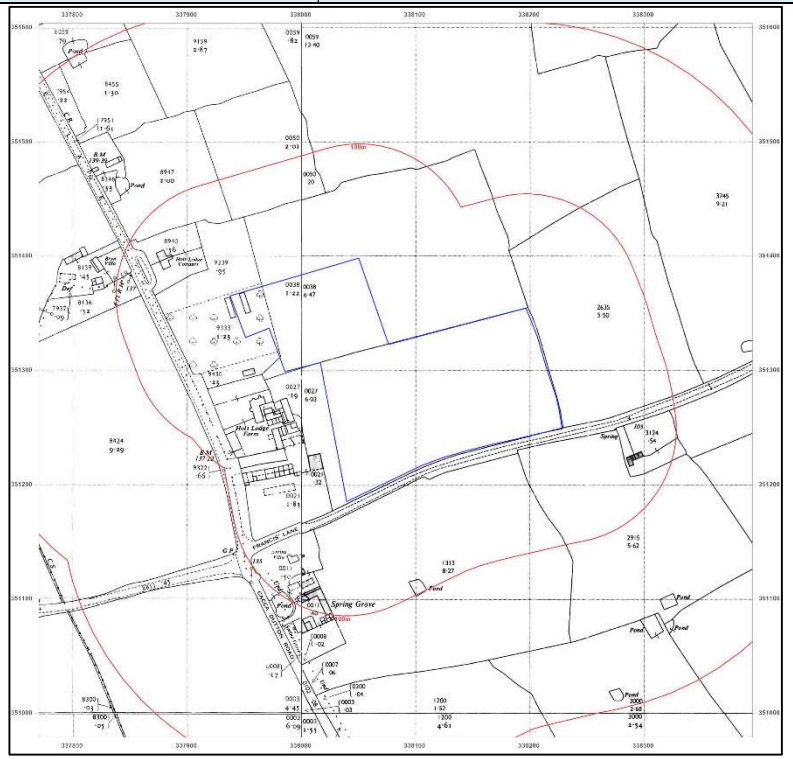
Extracts of Ordnance Survey (OS) plans dated from 1872 to 2025 were reviewed. These were obtained as part of the Groundsure report for the site, which is presented in Appendix B. In addition, historic aerial photography on Google Earth has been reviewed.

Table 3.1 below presents a summary of the main aspects of the site relevant to the current and proposed future end uses. It is not the intention of this report to describe in detail all of the changes that have occurred on or adjacent to the site, where these are not relevant to the land use.

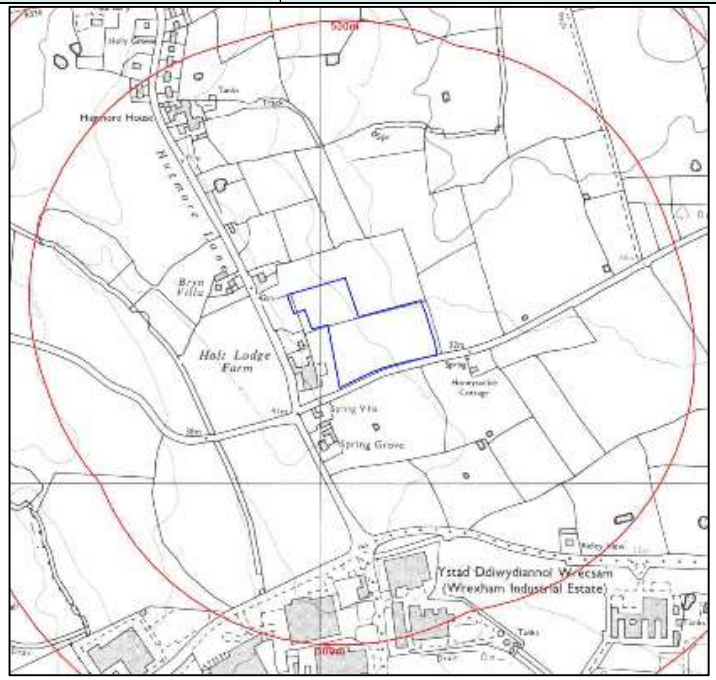
Table 3.1 Site History.

Time Period	On-site features	Off-site features
Pre-1900	 1873 Scale: 1:2,500	
	• The site is undeveloped from earliest records though a pond is located in the southeast corner of the site and intersecting the northwest site boundary. • The boundary of the site is separated by hedgerows and trees.	• Immediately west of the site boundary is Holt Lodge Farm with numerous agricultural buildings • Multiple ponds noted within a 250m radius of site boundary, including 10 and 60m west of the northern area of site, and 90m south of site boundary. • A spring is located 60m southeast. • Residential properties located 80m southwest and 105m northwest

Time Period	On-site features	Off-site features
1900 to 1939 (Pre-war period)	 1912 Scale 1:2,500	
	• No significant changes	• No significant changes

<table>
<tr><th>Time Period</th><th>On-site features</th><th>Off-site features</th></tr>
<tr><td rowspan="2">1945-1980 (Post war period)</td><td colspan="2">

1964 Scale 1:2,500</td></tr>
<tr><td>• Ponds located in the southeast corner and northwest boundary are no longer shown, indicating potential infilling.
• 2 No. buildings shown in north-western corner of site on maps as early as 1960.</td><td>• Residential properties appear, listed as Holt Lodge Cottages shown 60m northwest of site and Honeysuckle cottage 55m southeast.
• The wider site remains predominantly agricultural though some industrial development has occurred circa 500m south of the site.</td></tr>
</table>

Time Period	On-site features	Off-site features
1980 – 2000 (Late 20th century period)	 1992 Scale: 1:10,000	
	• Buildings in the northwest no longer shown on mapping by 1988.	• Wrexham Industrial Estate has been established circa 350m south of the site

Time Period	On-site features	Off-site features
2000 to 2025 (Modern day period)	 2025 Scale: 1:10.000	
	• No significant changes	• Industrial warehouse along with conjoining roads, appears on the map belonging to JCB transmissions in maps from 2001, located 240m Southeast of site boundary • Hugmore Lane to the south is replaced after 2010 with the emergence of the A5156 130m west of the site. • Ponds are shown 175m southeast, 190m west and 230m north.

3.2. Preliminary Unexploded Ordnance Risk Assessment

Publicly available online Zetica UXO Risk mapping shows the site is within a Low risk area.

Table 3.2 Preliminary UXO Risk Assessment.

	Yes/no	Comments
Is the site indicated to have been directly bombed?	No	There are no records of a direct bomb drop on site.
Is the site within an area recorded to have been bombed?	No	N/A
Could the site have been a high-risk target?	No	N/A
Any development cycles since 1945?	No	No significant site wide development.
Mitigating Factors	No	N/A
Preliminary assessment of UXO Risk	Low	N/A
Further works?	No	No further works required

4. ENVIRONMENTAL SETTING

4.1. Geology

Table 4.1 Geological Summary.

Maps and publications referenced	Groundsure, BGS Map viewer and BGS Geoindex (onshore)
Made ground / artificial ground	The site is not shown to be located within an area of artificial ground according to the Groundsure report. Given the history of development on the site and potential for historically infilled ponds, the presence of localised Made Ground is anticipated.
Drift geology	Till, Devensian - Diamiction.
Solid geology	Kinnerton Sandstone Formation – Sandstone.
Dip of solid strata	None recorded on or in the immediate vicinity of the site.
Faults	None recorded on or in the immediate vicinity of the site.
Coal seams	None shown to outcrop or subcrop on or in the immediate vicinity of the site.

4.2. Mining and Quarrying

Table 4.2 Coal Mining Activities.

	Yes/No	**Comments**
Is the site in an area of potential shallow coal workings?	No	Source: Mining Remediation Authority (formerly Coal Authority)
Is the site in a high risk development area?	Yes	The site is located within a coal mining area as defined by the Mining Remediation Authority
Are there any known shafts, adits, tips, lagoons, or opencast workings likely to affect the site?	No	Source: Mining Remediation Authority
Is exploratory work required to investigate the potential risk from shallow mining or quarrying?	No	Source: Mining Remediation Authority

Table 4.3 Other Extractive Industries.

	Yes/No	**Comments**
Superficial drift deposits		
Evidence of extraction on or within 250 m of the site?	NR	Source: Groundsure Report
Action required?	No	
Solid Strata		
Any evidence of mineral extraction on or within 250 m of the site?	NR	Source: Groundsure Report
Action required?	No	

Other, undocumented mineral workings on or close to the site cannot be completely dismissed.

4.3. Hydrogeology

Table 4.4 Groundwater Occurrence and Abstraction.

	Presence/location	Comments
Environment Agency aquifer designation – Superficial Deposits	Till	Secondary Undifferentiated
Environment Agency aquifer designation – Bedrock	Kinnerton Sandstone Formation	Principal Aquifer
Groundwater vulnerability	Superficial	Vulnerability : Low Aquifer Type: Secondary Thickness : >10m Patchiness Value >90% Recharge potential: Low
	Bedrock	Vulnerability: Low Aquifer Type: Principal Flow Mechanism: Intergranular and Well-connected fractures
Anticipated groundwater depth(s)	On site	Groundwater in the TE1750 investigation south of the site boundary was encountered between 0.20 to 7.30m bgl, with a shallow body of between circa 0.20-3.10m and a deeper body of between circa 4.50m to 7.30m bgl in the cable percussive boreholes. Trial pits recorded limited light seepage and some shallow inflow from Made Ground soils.
Direction of flow	Unknown	Anticipated shallow groundwater flow may be to the northeast / east following the local topography
Current licensed abstractions – potable	NR	Source: Groundsure Report
Current licensed abstractions – non-potable	NR	Source: Groundsure Report
Private wells	Yes	1 No. pump was observed on a historical map from 1900 115m south-west of the site.
Source Protection Zones	On Site	Type 3 protection zone
Springs	60m southeast	Identified on 1909 maps, disappearing in 1968 maps

NR - none recorded.

For definition of Source Protection Zones, see Appendix E

4.4. Hydrology

Table 4.5 Surface Water Features.

	Presence/location	Comments
Nearest surface water feature	197m SW	Underground stream
Other surface water features	242m W	Inland river stream
Canals, ponds, lakes, etc.	Ponds	190m west and 230m north
Water Framework Directive (WFD) Surface Water Bodies	NR	Source: Groundsure Report
Licensed surface water abstractions	NR	Source: Groundsure Report
Surface run-off and site drainage	On site	The full nature and extent of underground drainage system is unknown at this stage however, it is anticipated that waters drain direct to the ground

NR - none recorded. Environment Agency GQA assessments: A = very good to E = poor

4.5. Flood Risk Summary

Table 4.6 below represents a summary of the flood risk data contained within the Groundsure report obtained for the site.

Table 4.6 Flood Risk Summary

	Presence/location	Comments
Risk of Flooding from Rivers and Sea (RoFRaS)	NR	Source: Groundsure Report
Historical Flood Events	NR	Source: Groundsure Report
Flood Defences	NR	Source: Groundsure Report
Areas Benefiting from Flood Defences	NR	Source: Groundsure Report
Flood Storage Areas	NR	Source: Groundsure Report
Records of Flood Zone 2	NR	Source: Groundsure Report
Records of Flood Zone 3	NR	Source: Groundsure Report
Surface water flooding	Highest risk on site	Negligible
	Highest risk within 50m	Negligible
Groundwater flooding	Highest risk on site	Low
	Highest risk within 50m	Low

NR - none recorded

4.6. Environmental Designations

Table 4.7 Summary of Environmental Designations.

	Presence/location	Comments
Sites of Special Scientific Interest (SSSI)	NR	Source: Groundsure Report

	Presence/location	Comments
Conserved wetland sites (Ramsar sites)	NR	Source: Groundsure Report
Special Areas of Conservation (SAC)	NR	Source: Groundsure Report
Special Protection Areas (SPA)	NR	Source: Groundsure Report
National Nature Reserves (NNR)	NR	Source: Groundsure Report
Local Nature Reserves (LNR)	NR	Source: Groundsure Report
Designated Ancient Woodland	NR within 250m	Source: Groundsure Report
Biosphere Reserves	NR	Source: Groundsure Report
Forest Parks	NR	Source: Groundsure Report
Marine Conservation Zones	NR	Source: Groundsure Report
Green Belt	NR	Source: Groundsure Report
Proposed Ramsar sites	NR	Source: Groundsure Report
Possible Special Areas of Conservation (pSAC)	NR	Source: Groundsure Report
Potential Special Protection Areas (pSPA)	NR	Source: Groundsure Report
Nitrate Sensitive Areas	NR	Source: Groundsure Report
Nitrate Vulnerable Zones	NR	Source: Groundsure Report
SSSI Units	NR	Source: Groundsure Report

NR - none recorded

4.7. Landfill and Waste Management Activity

Table 4.8 Waste Management Activities.

	Presence/location	Comments
Active or recent landfill	NR	Source: Groundsure Report
Historical landfill (BGS records)	NR	Source: Groundsure Report
Historical landfill (LA/mapping records)	NR	Source: Groundsure Report
Historical landfill (EA/NRW records)	NR	Source: Groundsure Report
Historical waste sites	NR	Source: Groundsure Report
Licensed waste sites	NR within 300m	Source: Groundsure Report
Waste exemptions	243m NW	Dcww, Rodens Hall Farm, Bowling Bank, Wrexham, LL13 9RS Category: Storing waste exemption Description: Storage of sludge
Evidence of other landfilling or potential infilling on or within 250m of site	NR	Source: Groundsure Report
Walkover evidence of fly-tipping on Site?	NR	No evidence of fly tipping on site walkover.

	Presence/location	Comments
Is a landfill/ground gas risk assessment required?	Yes	Consideration of potential low ground gas risk should be undertaken based on the Site history.

NR - none recorded

4.8. Local Industrial Land Uses

Other potentially contaminative activities are shown in Table 4.9 below with those features considered pertinent to the conceptual site model highlighted in **bold**. The entries relate to activities within *circa* 250 m of the site, with the exception of COMAH facilities where the assessment is extended to a distance of *circa* 500m from the site.

Table 4.9 Other Potentially Contaminative Processes in the Locality

	Location	Comments
Recent industrial land uses	61m SW	Hugmore Lane, Llan-y-Pwll, Wrexham, Clwyd, LL13 9YE Construction and Tool hire
	244m SW	Electricity Sub Station, Clwyd, LL13
Current or recent petrol stations	NR	Source: Groundsure Report
Electricity cables	NR	Source: Groundsure Report
Gas pipelines	NR	Source: Groundsure Report
Sites determined as Contaminated Land	NR	Source: Groundsure Report
Control of Major Accident Hazards (COMAH)	NR	Source: Groundsure Report
Regulated explosive sites	NR	Source: Groundsure Report
Hazardous substance storage/usage	NR	Source: Groundsure Report
Historical licensed industrial activities (IPC)	NR	Source: Groundsure Report
Licensed industrial activities (Part A(1))	NR	Source: Groundsure Report
Licensed pollutant release (Part A(2)/B)	NR within 250m	Source: Groundsure Report
Radioactive Substance Authorisations	NR	Source: Groundsure Report
Licensed Discharges to controlled waters	NR within 250m	Source: Groundsure Report
Pollutant release to surface waters (Red List)	NR	Source: Groundsure Report
Pollutant release to public sewer	NR	Source: Groundsure Report
List 1 Dangerous Substances	NR	Source: Groundsure Report
List 2 Dangerous Substances	NR	Source: Groundsure Report
Pollution Incidents (EA/NRW)	NR within 250m	Source: Groundsure Report
Pollution inventory substances	NR	Source: Groundsure Report
Pollution inventory waste transfers	NR	Source: Groundsure Report

	Location	Comments
Pollution inventory radioactive waste	NR	Source: Groundsure Report

NR - none recorded

COMAH – Control of Major Accident Hazards (regulations); NIHHS – Notification of Installations Handling Hazardous Substances (regulations)

4.9. Radon Risk

Table 4.10 Radon Risk Status.

	Comments
Estimated properties affected	Less than 1% of properties above the Action Level
Does a basement (or converted cellar/basement) form part of the proposed development?	As stated within BR 211, basements represent areas that are more at risk because the walls are in contact with the ground as well as the floor. This, coupled with reduced natural ventilation below ground level, increases the risk of elevated radon levels. All basements are therefore considered under BR 211 to be at increased risk of elevated levels of radon regardless of geographic location. Currently, no basements or converted cellars / basements are proposed for the development and therefore no additional consideration of potential increased risk needs to be made; however, this should be revisited in the event that the proposals change to include for a basement.
Radon Protection Measures required?	No

4.10. Waste Classification and Materials Re-Use

If the site is to be redeveloped and materials are disposed off-site, the material exported from the site to landfill should be hauled by a register waste character in accordance with Duty of Care Regulations 1991 and the Hazardous Waste Regulations 2005.

Based on the history of the site and the anticipated potential contaminants of concern, it is considered unlikely that significant hazardous waste soil will be present, however, they may be present locally beneath some areas of the site; however, this will be subject to confirmatory investigation, sampling, laboratory analysis and waste classification in accordance with the Guidance on the Classification and Assessment of Waste (WM3).

It will be necessary to register the site in advance of the intended reclamation works with the Environment Agency before disposal to landfill can take place. There will be requirement for the waste producer to provide appropriate Waste Acceptance Criteria (WAC) testing of the Soils for disposal to ensure that the soils are appropriately classified and that the landfill is licensed to receive such soils. A consignment note shall be completed, signed and retained by all parties involved. The consignment note shall state the volume of waste, a physical description of the material and statement of its chemical composition. The waste consignment notes shall be kept by the contractor for a period of at least two years.

Subject to volumetric fill requirements and a future assessment of suitability of re-use (both chemically and geotechnically), some materials may be considered for potential re-use in line with an appropriate end-of-waste protocol such as WRAP Quality Protocol for Aggregates from Inert Waste, U1 Exemption or a Materials Management Plan in accordance with the CL:AIRE Definition of Waste Code of Practice (DoWCoP). Please note that any previously landfilled or mining waste materials may not be appropriately subject to consideration under DoWCoP and may not be re-used under DoWCoP unless sufficient lines of evidence and agreement with the local Environment Agency Waste Team can be sought beforehand.

Re-Use of Excavated and Stockpiled Clean Naturally Occurring Soils on Other Sites

In addition, Tier Environmental are aware that CL:AIRE is classing stockpiled clean, naturally occurring soils as waste, unless their final destination is identified in a Materials Management Plan, before they are excavated. However, Tier Environmental consider that any clean naturally occurring soils arising from enabling works, earthworks or construction activities would be regarded as an asset and the default assumption for this site (prior to excavation and stockpiling) is not the intention to discard these materials where they may be reasonably re-used on this, or another, development site. Stockpiling is a recognised, recommended means of safely storing soils. Whilst there may be advantages to leaving soils in-situ, stripping topsoil and subsoil prior to earthworks is a routine construction activity. Tier Environmental consider that it is not unreasonable to state that in the event that the developer owns another site where the construction phase is ongoing, soils can be transferred between their sites as an owned product and never become waste.

The above paragraph above is therefore considered a clear intention to reuse any clean, naturally occurring soils derived from excavations at this site (which may also include temporary stockpiling these materials). It is considered; however, that in addition to this the following must be adhered to:

- Reuse does need to occur within a 'reasonable' timeframe (12 No. months); and,
- If soils are transferred to a third party (another developer), there needs to be some contractual agreement in place, as in this situation it is important to have something in place confirming that surplus soils are required by the third party.

Re-Use of Excavated and Stockpiled Clean Naturally Occurring Soils Within The Site They Are Excavated From

Further to the above, where soils are naturally occurring, uncontaminated and re-used on the site they are excavated from, they fall outside of the Waste Framework Directive (WFD) i.e. they will not be classified as a waste Currently the CL:AIRE Definition of Waste Code of Practice states the following which appears to support this position: *"If the material is waste an Environmental Permit will be required to lawfully deposit or re-use it unless the material is "uncontaminated soil and other naturally occurring material excavated in the course of construction activities where it is certain that the material will be used for the purposes of construction in its natural state on the site from which it was excavated", which is excluded from waste regulation by the Waste Framework Directive (2008)."*

4.11. Regulator Provided Information

Relevant searches for the site have been requested and will be conducted by Natural Resources Wales, local authority, fire service and petroleum licencing officer.

Responses will be included in an updated version of this report.

5. PREVIOUS INVESTIGATION FINDINGS

Tier Environmental have previously conducted a Ground Investigation for a site circa 50m south of the site boundary (Ref: TE1750-TE-00-XX-RP-GE-001-V07, dated January 2024). A full copy of this report is included within Appendix C

Table 5.1 Report Review Summary

Site location and surrounding land uses	The site is located at Bryn Lane, Wrexham, nearest post code LL13 9XW. To the north and east of the site the area is agricultural with a few residential houses and Wrexham Industrial Estate to the west and south of the site and the Clays Golf Driving Range and golf Course is west of the site. There are no nearby significant current land uses in the vicinity of the Site.
Site history	The Site was historically agricultural. Approximately 3 No. wells were identified in the south of the site within an area which will remain undeveloped under the current scheme. Pond locations and sizes are shown to vary over time indicating the potential for some of them to have been potentially infilled. Ridley View (shown in the present day location of Little Acorns) was developed in the south by 1992 (residential / farm). Pertinent surrounding land uses include farms, the Royal Ordnance Factory (Wrexham) to the south of the Site (as close as 20m south) and associated buildings and tanks etc, a clothing factory to the south (60m south), Wrexham Industrial Estate (25m south at its closest point). Given that the Site itself did not form part of the ROF Wrexham site it is not considered that there are any risks from explosives at the Site.
Potential contaminative features identified	There were 4 No unspecified tanks south of the Site within 250m. A farm is located in the southern part of the Site and a residence in the north of the site. Numerous potentially infilled ponds were identified within the site.
Mining and quarrying	The Site Is not located within a mining area or an area subject to historic quarrying.
Fieldwork	Fieldwork was conducted between 5th and 23rd of June 2023, supervised by a suitably qualified Tier Environmental Engineer and comprised: • 21 No. machine excavated trial pits to depths between 3.00m bgl and 4.00m bgl. • 7 No. hand excavated trial pits to depths between 1.00m bgl and 1.20m bgl. • 11 No. cable percussive boreholes to depths between 10.00m bgl and 15.45m bgl. • 12 No. window sample boreholes to depths between 2.38m bgl and 5.45m bgl.
Laboratory testing	Samples of soil and groundwater were submitted for analysis of a range of metal, other inorganic and organic components including asbestos. Geotechnical testing was scheduled on selected samples. All testing was undertaken at accredited laboratories.
Ground conditions	The site is broadly underlain site wide by topsoil to depths of 0.18m to 0.46m bgl or Made Ground to depths of between 0.34m to 0.55m bgl, principally in the east of the site. These are underlain by natural soils comprised of Devensian Till, described as a firm becoming stiff and locally very stiff Clay. A more weathered horizon of brown clay was recorded in the order of 0.30m to 0.92m thick overlying the dark grey unweathered Till which was proven to the maximum drilled depth of 15.15m bgl. Sand lenses were also recorded near surface to 0.45m and 0.63m bgl. Localised areas of soft organic clays and peat are described within the east of the site within an infilled pond from depths of 0.33m to 1.90m bgl to depths of between 1.25m to 2.80m bgl. Groundwater was encountered between 0.20 to 7.30m bgl, with a shallow body of between circa 0.20-3.10m and a deeper body of between circa 4.50m to 7.30m bgl in the cable percussive boreholes. Trial pits recorded limited light seepage and some shallow inflow from Made Ground soils.
Ground stability	No geotechnical or stability issues were highlighted in the desk study review. Ground conditions were stable across the majority of Site. Locally softer cohesive materials associated with a former infilled pond were observed in the east of the Site but the trial pits both within this area and other areas across the Site were observed to be stable during the trial pitting works and no spalling was observed
Foundations and floor slab recommendations	Given the encountered ground conditions and the nature of the proposed development, the most likely foundation solution would be a pads or similar traditional shallow foundations. Based on the range of shear strengths derived from *in-situ* shear testing, an allowable bearing capacity of circa 150-170kN/m^2 could be achieved at 1.20m bgl. Localised over excavation of organic rich Made Ground soils and Peat as recorded in TP117 and TP118 in the east of the site under proposed Unit 2 (which would not be considered suitable as a founding stratum and would arise to differential settlements beyond tolerable limits) may be required, with deepening of foundations or engineered replacement with suitable material. Piles could be considered where loadings cannot be transferred to shallow soils

Sulphate class	The conclusion of the assessment is that a DS-4m and ACEC Class AC-4m may be required for buried concrete design purposes within Made Ground soils and for natural soils, based on results from groundwater testing. Further testing and detailed analysis may be considered to attempt to reduce this class. This class is being driven by elevated sulphate within 'deeper' groundwater sampled from the cable percussive boreholes. It should be noted that the level of 3200 mg/l is only just exceeding the threshold of 3000 mg/l for a DS-3 class. and for natural soils, based on results from groundwater testing, however this is further discussed below: Due consideration has been given to the minimum and maximum groundwater levels encountered during monitoring, and the depths at which the groundwater samples were obtained. Based on this further analysis of the results; it is recommended that for buried concrete design purposes in soils or groundwater between ground level and 2.50m bgl; a classification of DS-2 and ACEC Class AC-2 is adopted. For any concrete to be buried at depths below 2.50m bgl, these may also remain as a DS-2/AC-2 classification only if groundwater is not encountered. If groundwater is encountered, then based on the results, these would have to be designed to comply with a DS-3 and ACEC Class-3 specification. If buried concrete is required to go to a depth at or below 6.00m bgl, then a DS-4m and ACEC Class AC-4m will need to be adopted for the buried design concrete purposes based on the recorded water soluble sulphate concentration recorded in CP101 at 6.00m bgl
Contamination – Human Health	No measured soil concentrations of potential contaminants of concern have been reported in excess of Generic Assessment Criteria (GACs) protective of human health appropriate to the proposed land use. On this basis , it is not considered that the site represents a potential risk to end-users. Of the 23 No. of Made Ground samples submitted for asbestos screening, none were reported to contain asbestos
Contamination – Controlled Waters	From a conceptual site model perspective, the Devensian Till is classified as a Secondary Undifferentiated Aquifer, and the bedrock geology is classified as a Principal Aquifer associated with Kinnerton Sandstone Formation in the western/northern parts of the Site and a Secondary A Aquifer associated with the Salop Formation comprising mudstone in the southern / southeastern part of the Site. There is an inferred fault located beneath the site orientated from southwest to northeast associated with these two bedrock formations. The site is within a Source Protection Zone Total Catchment 3 associated with the Principal Aquifer, and the nearest surface water receptor comprises an underground water course 110m west. There are no potable or non-potable water abstractions located within 1km of the Site. The low permeability cohesive Till deposits have been proven to depths of circa 15.00m bgl in this investigation and are recorded to depths of circa 26.0 to 38.0m bgl in nearby BGS records which is considered sufficient to provide protection of the underlying bedrock aquifers from any vertical migration of potential contaminants of concern. In addition, it is not considered that the proposed shallow foundation solution will form any preferential pathways to the underlying Principal Aquifer. On this basis the controlled waters sensitivity is considered to be low. Measured groundwater concentrations of copper, chromium, nickel, zinc, anthracene, Sum PAHs, fluoranthene, benzo(a)pyrene, total ammonia and electrical conductivity are not considered to present a risk to the controlled waters environment for the following reasons: • The potential for significant dilution between the Site and nearby significant water bodies; • The low sensitivity of the controlled waters environment; • The localised nature of those soil leachate concentrations in excess of the WQS and the absence of any reported widespread leachable concentrations; • The fact that the Site will incorporate buildings / hardstanding and a dedicated drainage system that shall reduce infiltration rates through the soils; • The absence of any nearby potable or non-potable groundwater abstractions; • The protection offered to the underlying Principal Aquifer by the presence of >10.0m of low permeability cohesive Till soils. The absence of a nearby viable surface water body where a consumption of fish by humans exposure scenario would be realised for fluoranthene and benzo(a)pyrene.

Gas protection	Based on the WS105 being installed in a historically infilled pond, Tier have zoned the site into the proposed Unit 2 zone and the remainder of the site zone. For the Unit 2 Zone, a Gas Screening Value of 1.32 l/hr has been recorded based on a maximum peak methane concentration of 60.1%v/v and the maximum peak flow rate of 2.2 l/hr. Assessment of this gas screening value alone places **the Unit 2 Zone in a Characteristic Situation 3 – Moderate Risk Scenario in accordance with CIRIA C665 for which ground gas protection measures are required**. This is driven, however, by an instance of elevated peak methane from well WS105 only. This location targeted a historic infilled pond and logs described soils of organic clays and peat; this is considered the primary source for this elevated methane and carbon dioxide. It is anticipated that these materials will be removed as part of enabling works due to them being geotechnically unsuitable; this will remove the source of the elevated methane and carbon dioxide, effectively placing the Unit 2 Zone in the same Zone as the remainder of the site, i.e. a **Characteristic Situation 1 – Very Low Risk Scenario**. However, this would only be applicable if these soils are removed; if the soils remain then the whole of Unit 2 must remain classified as a CS3. For the remainder of the site Zone, a Gas Screening Value of 0.062 l/hr has been recorded based on a maximum carbon dioxide concentration of 15.4%v/v and a representative steady flow rate of 0.4l/hr. Assessment of this gas screening value alone places **the remainder of the Site Zone in a Characteristic Situation 1 – Very Low Risk Scenario for which no ground gas protection measures are required.**
Radon Requirements	The majority of the Site lies within an area where less than 1% of the properties are above the action level whereby no radon protection measures are required. The south of the site is within an area where 1-3% of properties are above the action levels and therefore confirmation that no basic radon protection measures are required should be confirmed with the Local Building Control Office. UK Radon indicates testing/protection may be required for high risk locations i.e. basements
Other issues	A gas main runs through the Site in the East (oriented north to south) which meant excavations and boreholes could not be undertaken within this area; a recommended exclusion zone of 30m and compulsory 15m exclusion zone either side of the main was enforced by Wales and Western Utilities. Based on ecological sensitivity following an assessment on the Site; it was not possible to conduct intrusive investigations in the close proximity of existing trees, hedgerows and ponds. Tier Environmental did not undertake any machine operated intrusive investigation within 10m of these features.
Further works identified	Confirmation of the locations of the gas main that is to be diverted and the existing combined sewer. A specialist stabilisation contractor should undertake confirmatory bench trials prior to the commencement of the works, including the CBR mould (BS EN 13286-47) and the accelerated swell tests (BS EN 13286-49).
Waste Soils Classification	Basic waste characterisation has determined that all Made Ground soils are non-hazardous. WAC testing was not completed as part of these works and final waste disposal routes should be confirmed prior to removal from site. It was anticipated that natural soils will be suitable for disposal to an inert waste landfill.
Materials re-use considerations	Subject to volumetric cut and fill requirements the majority of Made Ground materials and all of natural soil materials and may be considered chemically suitable for potential re-use subject to careful management and placement of materials and in line with an appropriate end-of-waste protocol such as WRAP Quality Protocol for Aggregates from Inert Waste, U1 Exemption or a Materials Management Plan in accordance with the CL:AIRE Definition of Waste Code of Practice (DoWCoP). Suitability for re-use would also be subject to confirmation of the geotechnical suitability depending on whether the materials are to be re-used in load bearing areas. This would need to be detailed in a supporting document. Please note that any previously landfilled or mining waste materials may not be appropriately subject to consideration under DoWCoP and may not be re-used under DoWCoP unless sufficient lines of evidence and agreement with the local Environment Agency Waste Team can be sought beforehand. In addition, Section **Error! Reference source not found.** of this report includes statements with respect to re-use of excavated and stockpiled clean naturally occurring soils within the site and re-use on other sites. These statements are designed to provide a clear intention to reuse any clean, naturally occurring soils derived from future excavations at this Site (which may also include temporary future stockpiling these materials

6. GROUND GAS CONCEPTUAL SITE MODEL CONSIDERATION

6.1. Potential Ground Gas Sources and Gas Generation Potential

BS 8576:2013 outlines the importance of determining the ***gas generation potential*** on a given site by examining the potential source's characteristics, such as the type of waste or organic content, that could produce hazardous gases like methane or carbon dioxide. However, ***risk assessment is a separate step***, which considers pathways and receptors, using factors like Gas Screening Values (GSV) to estimate potential exposure and impact on receptors.

As such, it is important to delineate "generation potential" (linked to source characteristics) from "risk" (dependent on exposure likelihood and receptor sensitivity).

Taking into account the proposed land use as a dedicated ecological area with vegetation and ponds, and no proposed occupied buildings or enclosed spaces, Tier Environmental do not consider a ground gas conceptual site model relevant to the context of the development.

7. PRELIMINARY CONCEPTUAL SITE MODEL

Based on the information provided in the previous sections of this report a combined preliminary conceptual site model and conceptual exposure model has been developed for the proposed future land use. This summarises the understanding of surface and sub-surface features, the potential contaminant sources, transport pathways and receptors. In assessing the likely contaminants of concern present at the site, reference has also been made to Defra and Environment Agency supporting documentation. A preliminary qualitative risk assessment has also been made of the likelihood of the linkage operating and its potential significance in accordance with CIRIA C552.

The potential pollutant linkages identified and the qualitative risk assessment for these are presented in Table 7.1 below. The terms used in the preliminary qualitative risk assessment are defined in Appendix D.

7.1. Uncertainties

The following uncertainties exist in the preliminary conceptual model:

- The presence of any features unrecorded by the historic maps.
- Any unrecorded geological features.
- Any unrecorded pollution events during the site's history.

Table 7.1 Preliminary Assessment of Potential Pollutant Linkages (Continued on Next Page).

Justification / Comments
• The site is predominantly agricultural with both grassed and cropped fields, with a residential / farm property (Holt Lodge Farm) located in the western extent of the site, and a residential property, Holt Lodge Cottages, located just north west of the site boundary. The agricultural fields are delineated by trees and hedgerows. • The site has remained largely undeveloped since earliest records with 2 No. pond features in the south east and northwest both potentially infilled by circa 1960.. Limited development is recorded as two buildings in the northwest corner of the site by 1968, removed by 1992. In the 2000s, industrial and recreational developments emerged nearby, including a JCB warehouse and Clays Farm Golf Centre, and the wider Wrexham Industrial Estate circa 350m south of the site. • The site is underlain by Kinnerton Sandstone Formation, a Principal Aquifer and superficial deposits of Devensian Till, a Secondary Undifferentiated Aquifer.. There are no recorded potable or non-potable water abstractions within 1km, and the site is within a Source 3 Protection Zone. The nearest surface water feature is a underground inland river located 175m SE, and site drainage is anticipated to infiltrate directly into the ground. As a result, the controlled waters environment is considered to be low. • There are no landfills located within 250m of the Site. The only viable potential source of ground gases is therefore on-site localised Made Ground / potentially infilled ponds and off-site Made Ground. Given the context of the proposed development, ground gas risk need not be considered further. • Basic radon protection measures are not currently required for the proposed development on this site as less than 1% of properties above the Action Level are estimated to be affected. • The site falls within a Phosphorus Sensitive SAC Freshwater catchment area associated with the River Dee. As such, due consideration during drainage strategy / design (if required) should be given with respect to this designation and any mitigation / avoidance measures. • The site is not located within an ecologically sensitive area.

Source	Potential Contaminants of Concern	Pathway	Receptor	Consequence	Probability	Qualitative Risk Assessment
Localised Made Ground associated with historic buildings in the northwestern part of the site, and infilled ponds	Metals PAHs pH Hexavalent chromium Acids Alkalis	Direct contact, dust inhalation and ingestion	Future site users (public open space)	Medium	Unlikely	Low Risk
			Adjacent site users (residential)	Mild	Unlikely	Very Low Risk
			Construction, site investigation, demolition and future maintenance workers	Medium	Unlikely	Low Risk
		Migration of mobile contaminants from Made Ground soils to adjacent sites along services and conduits	Adjacent site users (residential)	Mild	Unlikely	Low Risk
		Migration via water pipes	Future site users (public open space)	Medium	Unlikely	Low Risk
		Lateral and/or vertical migration of mobile contaminants.	Aquifer 1 - Secondary (Undifferentiated) Aquifer associated with Till	Mild	Low Likelihood	Low Risk
			Aquifer 2 - Principal Aquifer associated with by Kinnerton Sandstone	Medium	Unlikely	Low Risk
			Underground inland river located approximately 175m south east	Mild	Low Likelihood	Low Risk
	Naphthalene (a semi-volatile PAH) Phenols Cyanides	Vapour inhalation, direct contact, dust inhalation and ingestion	Future site users (public open space)	Medium	Unlikely	Low Risk
			Adjacent site users (residential)	Mild	Unlikely	Very Low Risk
			Construction, site investigation, demolition and future maintenance workers	Medium	Unlikely	Low Risk
		Migration of mobile contaminants from Made Ground soils to adjacent sites along services and conduits	Adjacent site users (residential)	Mild	Unlikely	Very Low Risk
		Migration via water pipes	Future site users (public open space)	Medium	Unlikely	Low Risk
		Lateral and/or vertical migration of mobile contaminants.	Aquifer 1 - Secondary (Undifferentiated) Aquifer associated with Till	Mild	Low Likelihood	Low Risk
			Aquifer 2 - Principal Aquifer associated with by Kinnerton Sandstone	Medium	Unlikely	Low Risk
			Underground inland river located approximately 175m south west	Mild	Low Likelihood	Low Risk
	Asbestos	(Dust migration and) dust inhalation	Future site users (public open space)	Medium	Unlikely	Low Risk
			Adjacent site users (residential)	Mild	Unlikely	Very Low Risk
			Construction, site investigation, demolition and future maintenance workers	Medium	Unlikely	Low Risk

For definition of the terms used in the qualitative risk assessment, please see Appendix D.

8. PROPOSED FURTHER WORKS

8.1. Further works

The Phase 1 Preliminary Risk Assessment has determined a very low to moderate/low risk to human health and a low risk to controlled waters at the site with respect to potential contamination.

It is recommended that a ground investigation is undertaken in order to further assess the potential risks associated with the pollutant linkages identified in the Preliminary Conceptual Site Model (presented in Section 6).

The objectives of the Phase II Ground Investigation will be:

- to determine shallow soil and groundwater (if encountered) conditions, including whether significant contamination has resulted from past or current land uses;
- to determine the risks posed by any ground contamination and provide recommendations on remedial measures to manage such risks;
- to determine the risks posed to the site from hazardous ground gases;
- to determine the existence, and if applicable, the extent of contamination within local groundwater beneath the site;
- to provide advice relating to geotechnical issues associated with the site.

8.2. Proposed Scope of Works

The following scope of works are proposed

- Trial pitting to determine the nature and extent of Made Ground and natural deposits across the site, facilitate soil sampling for environmental and geotechnical testing.
- Soakaway testing to determine whether the proposed ponds will need to be lined.
- Geoenvironmental chemical testing on selected soil samples for metals, pH, speciated PAH, speciated TPH, phenol, sulphate, TOC and asbestos screens in order to assess potential risks to human health based on historical land uses on and within close proximity to the site and to assist with basic waste characterisation.

9. REGULATORY APPROVALS

The conclusions and recommendations presented above are considered reasonable based on the findings of the site investigation. However, these cannot be guaranteed to gain regulatory approval and, therefore, the report should be passed to the appropriate regulatory authorities and/or other organisations for their comment and approval prior to undertaking any works on site.

It is recommended that conditions placed on any planning permission are discharged prior to commencement of site works.

10.REFERENCES

BRE BR211 (2015). Radon: Guidance on Protective Measures for New Dwellings. IHS BRE Press, Bracknell.

BRE SD1 (2005). Concrete in Aggressive Ground. Special Digest 1 (revised edition). IHS BRE Press, Bracknell.

BRE 414 (2001) Protective measures for housing on gas-contaminated land. BRE.

BS 10175:2011+A2:2017 Investigation of Potentially Contaminated Sites - Code of Practice. British Standards Institution, London.

BS EN 1997-1:2004 Eurocode 7. Geotechnical Design. General Rules. British Standards Institution, London.

BS EN 1997-2:2007 Eurocode 7. Geotechnical Design. Ground Investigation and Testing. British Standards Institution, London.

BS5930:2015+A12020 Code of practice for ground investigations BSI

BS EN ISO 17892-1-12:2018 Geotechnical investigation and testing BSI

BS EN ISO 14688-1:2018 Geotechnical Investigation and Testing. Identification and Classification of Soil. Identification and Description. British Standards Institution, London.

BS EN ISO 14688-2:2018 Geotechnical Investigation and Testing. Identification and Classification of Soil. Principles for a Classification. British Standards Institution, London.

BS EN ISO 14689-1:2018 Geotechnical Investigation and Testing. Identification and Classification of Rock. Identification and Description. British Standards Institution, London.

BS8485 2015 Code of Practice for the design of protective measures for methane and carbon dioxide ground gases in new buildings. British Standards

BS85762013 Guidance on investigations for ground gas – permanent gases and volatile organic compounds (VOCs). BSI,

CIRIA Rep R 97 (2001) Trenching Practice. Report 097, 2nd edition, CIRIA, London.

CIRIA Rep R 149 (1995a) Protecting Development from Methane. Report 149, CIRIA, London.

CIRIA Rep R 150 (1995b) Methane Investigation Strategies. Report 150, CIRIA, London.

CIRIA Rep R 151 (1995c) Interpreting Measurement of Gas in the Ground Report 151, CIRIA, London.

CIRIA Rep R 152 (1995d) Risk Assessment for Methane and Other Gases from the Ground. Report 152, CIRIA, London.

CIRIA Rep R 132 (1996) A Guide for Safe Working on Contaminated Sites. Report 132, CIRIA, London.

CIRIA C552 (2001) Contaminated land risk assessment. A guide to good practice (report no. C552).

CIRIA C665 (2007) Assessing the risks posed by hazardous gases to buildings CIRIA, London

CIRIA C748 (2014) Guidance on the use of plastic membranes as VOC barriers, CIRIA, London

CIRIA C735 (2014) Good practice on the testing and verification of protection systems for buildings against hazardous ground gases. CIRIA.

CIRIA C681 (2009) Unexploded ordnance (UXO) A guide for the construction industry (C681)

CIRIA C785 (2019) Unexploded ordnance (UXO) risk management guide for land-based projects (C785)

CIRIA C758D (2019) Abandoned mine workings manual (C758D)

Contaminated Land: Applications in Real Environments (CL:AIRE) (2011) Definition of Waste Code of Practice (version 2).

Department of Environment Food and Rural Affairs (DEFRA) (2012) Environmental Protection Act 1990:Part 2A Contaminated Land Statutory Guidance (report no. PB13735).

Environment Agency (2000) Technical Aspects of Site Investigation. Report P5-065/TR, Environment Agency, Bristol.

Environment Agency (2002) Guidance on Monitoring Landfill Leachate, Groundwater and Surface Water. Report LFTGN02, Environment Agency, Bristol.

Environment Agency (2007) Evaluation of Models for Predicting Plant Uptake of Chemicals from Soil. Report SC050021/SR, Environment Agency, Bristol.

Environment Agency (2006) Remedial Targets Methodology - Hydrogeological Risk Assessment for Land Contamination (report no.ea/br/e/std/vr10thanni).

Environment Agency (2008) Science Report SC050021/SR7 Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values.

Environment agency, 2007. Inter-laboratory comparison of in vitro bioaccessibility measurements for arsenic lead and nickel in soil, Science Report SC040060/SR2.

Environment Agency, 2009 Human health toxicological assessment of contaminants in soil (Science Report Final SC050021/SR2)

Environment Agency (2015) Guidance on the Classification and Assessment of Waste Technical Guidance WM3 (1st edition).European Union (1998) Drinking Water Directive (Council Directive 98/83/EC).

Gibbons, R. (1994) Statistical Methods for Groundwater Monitoring. Wiley, New York.

Groundsure Report 2021 GSIP-2021-10752-4061

Highways Agency (2006) Design of Pavement Foundations. Document HD 25/IAN 73/06.

HSE (1991) Protection of Workers and the General Public During the Development of Contaminated Land. HMSO, London.

HSE (2005) Occupational Exposure Limits. HSE report EH40/2005, HMSO, London.

ICRCL (1986) Notes on the Fire Hazards of Contaminated Land. Guidance Note 61/84, 2nd Edition, Interdepartmental Committee on the Redevelopment of Contaminated Land, London.

Jeffries, J.(2009). A review of body weight and height data used within the Contaminated Land Exposure Assessment model (CLEA). Project SC050021/ Technical Review 1. Bristol: Environment Agency

Land Contamination Risk Management (LCRM) Environment Agency October 2020 https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm .

LQM/CIEH Ltd (2015) S4ULs for Human Health Risk Assessment. Land Quality Press, Nottingham.

NHBC (2007) Guidance on Evaluation of Development Proposals on Sites where Methane and Carbon Dioxide are Present (report no .04).

NRA (1994) Protocol for a Leaching Test to Assess the Leaching Potential for Soils from Contaminated Sites. R&D Note 181.

SoBRA (2017) Development of Generic Assessment Criteria for Assessing Vapour Risks to Human Health from Volatile Contaminants in Groundwater – Version 1.0.

The Water Framework Directive, (Standards and Classification) Directions (England and Wales).

UK Water Industry Research (2010) Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites (report no. 10/WM/03/21)

WHO (2000) Air Quality Guidelines for Europe. 2nd edition, WHO Regional Office for Europe, Copenhagen.

World Health Organisation (2017) Guidelines for Drinking Water Quality (4th edition).

Britain From Above - https://britainfromabove.org.uk/en/image/WPW060399

http://www.warstateandsociety.com/Bombing-Britain

https://www.epa.gov/pfas/basic-information-pfas

UK Maps of Radon, http://www.ukradon.org/information/ukmaps

Health and Safety Executive (2015) Construction (Design and Management) Regulations.

Coal Authority Interactive Map Viewer, http://mapapps2.bgs.ac.uk/coalauthority/home.html

BGS Geology of Britain Viewer http://mapapps.bgs.ac.uk/geologyofbritain/home.html

11.GLOSSARY OF TERMS

ACEC	Aggressive Chemical Environment for Concrete (classification)
aOD	Above Ordnance Datum
bgl	Below ground level
BGS	British Geological Survey
BRE	Building Research Establishment
CBR	California Bearing Ratio (test)
COMAH	Control of Major Accident Hazards (regulations)
Designated location	Site (and the ecosystem on that site) protected under national of international legislation. A potential ecological receptor to be considered as part of the assessment of land contamination. Example designated locations include SSSIs (q.v.), SACs (q.v.), national nature reserves, Ramsar sites and bird special protection areas.
DQA	Data Quality Assessment
DQO	Data Quality Objective
DQRA	Detailed Quantitative Risk Assessment
DWS	Drinking Water Standard
EQS	Environmental Quality Standard
GAC	Generic Assessment Criterion
GQA	General Quality Assessment (Environment Agency)
GSV	Gas Screening Value
HCV	Health Criteria Value
IPPC	Integrated Pollution Prevention and Control (regulations)
K_{ow}	Octanol-water partition coefficient
LEL	Lower Explosive Limit
LL	Liquid Limit
LoD	Limit of Detection (analytical)
LoQ	Limit of Quantification (analytical)
Mean Value Test	Statistical test (described in the CIEH Guidance) to estimate the mean value of a normally distributed population of data at a given level of confidence. Normally for contaminated land assessment, the 95th percentile (referred to as the 95%UCL or US95) is applied as a reasonable but conservative estimate of the mean concentration for comparison with the relevant assessment criteria.
Maximum Value Test	Statistical test (described in the CIEH Guidance) to identify whether an elevated concentration within a normally distributed data set forms part of the underlying population from which it has been sampled or whether it is an outlier (such as a localised area of contamination) that merits further consideration.
MC	Moisture Content
NGR	National Grid Reference
NIHHS	Notification of Installations Handling Hazardous Substances (regulations)
OS	Ordnance Survey
PI	Plasticity Index
PID	Photoionisation Detector
PL	Plastic Limit
ppm	Parts per million
ppmv	Parts per million by volume
QA	Quality Assurance
QC	Quality Control
SAC	Special Area of Conservation
SOM	Soil Organic Matter

SPT	Standard Penetration Test
SPZ	Source Protection Zone (see Appendix E)
SSAC	Site-Specific Assessment Criterion
SSSI	Site of Special Scientific Interest
SVOC	Semi-Volatile Organic Compound
TEF	Toxicity Equivalent Factor
TPH	Total Petroleum Hydrocarbons
TWA	Time Weighted Average
US95	95th percentile estimate of the true mean value of a data population (also known as 95%UCL).
VOC	Volatile Organic Compound

APPENDIX A - DRAWINGS

Contract Number	TE1905
Contract	ECOLOGICAL SITE NORTH WEST OF UPTOPIA CITY
Client	Net World Sports

Site Location Plan



Scale	NTS		
Drawn by	JL	Approved	SL
Drawing Number	TE1905-TE-00-XX-DR-GE-001-V01		

APPENDIX B- GROUNDSURE REPORT

Groundsure LOCATION INTELLIGENCE

Enviro+Geo Insight

Ecological Site, Uptopia City, Wrexham

Order Details

Date: 20/01/2025

Your ref: TE1905 / PO3501

Our Ref: GS-6GT-UCV-HJW-IKO

Site Details

Location: 338089 351295

Area: 2.98 ha

Authority: Wrecsam - Wrexham County Borough Council ↗



Summary of findings p. 2 >

Aerial image p. 9 >

OS MasterMap site plan p.14 >

Insight User Guide ↗

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

Certified B Corporation

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
15 >	1.1 >	Historical industrial land uses >	0	0	0	2	-
16 >	1.2 >	Historical tanks >	0	0	0	6	-
16	1.3	Historical energy features	0	0	0	0	-
17	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
18 >	2.1 >	Historical industrial land uses >	0	0	0	2	-
19 >	2.2 >	Historical tanks >	0	0	0	14	-
19	2.3	Historical energy features	0	0	0	0	-
20	2.4	Historical petrol stations	0	0	0	0	-
20	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
21	3.1	Active or recent landfill	0	0	0	0	-
21	3.2	Historical landfill (BGS records)	0	0	0	0	-
22	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
22	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
22	3.5	Historical waste sites	0	0	0	0	-
22 >	3.6 >	Licensed waste sites >	0	0	0	12	-
25 >	3.7 >	Waste exemptions >	0	0	1	14	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
28 >	4.1 >	Recent industrial land uses >	0	0	2	-	-
29	4.2	Current or recent petrol stations	0	0	0	0	-
29	4.3	Electricity cables	0	0	0	0	-
29	4.4	Gas pipelines	0	0	0	0	-
29	4.5	Sites determined as Contaminated Land	0	0	0	0	-

29	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
30	4.7	Regulated explosive sites	0	0	0	0	-
30	4.8	Hazardous substance storage/usage	0	0	0	0	-
30	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
30	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
30 >	**4.11 >**	**Licensed pollutant release (Part A(2)/B) >**	0	0	0	1	-
31	4.12	Radioactive Substance Authorisations	0	0	0	0	-
31 >	**4.13 >**	**Licensed Discharges to controlled waters >**	0	0	0	3	-
32	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
32	4.15	Pollutant release to public sewer	0	0	0	0	-
32	4.16	List 1 Dangerous Substances	0	0	0	0	-
32	4.17	List 2 Dangerous Substances	0	0	0	0	-
32 >	**4.18 >**	**Pollution Incidents (EA/NRW) >**	0	0	0	1	-
33	4.19	Pollution inventory substances	0	0	0	0	-
33	4.20	Pollution inventory waste transfers	0	0	0	0	-
33	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	**Hydrogeology >**	On site	0-50m	50-250m	250-500m	500-2000m
34 >	**5.1 >**	**Superficial aquifer >**	Identified (within 500m)				
36 >	**5.2 >**	**Bedrock aquifer >**	Identified (within 500m)				
38 >	**5.3 >**	**Groundwater vulnerability >**	Identified (within 50m)				
39	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
39	5.5	Groundwater vulnerability- local information	None (within 0m)				
40 >	**5.6 >**	**Groundwater abstractions >**	0	0	1	0	2
41 >	**5.7 >**	**Surface water abstractions >**	0	0	0	0	1
42	5.8	Potable abstractions	0	0	0	0	0
42 >	**5.9 >**	**Source Protection Zones >**	1	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
43 >	**6.1 >**	**Water Network (OS MasterMap) >**	0	0	4	-	-

44 >	6.2 >	Surface water features >	0	0	6	-	-
44 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
45 >	6.4 >	WFD Surface water bodies >	0	0	0	-	-
45 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
46	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
46	7.2	Historical Flood Events	0	0	0	-	-
46	7.3	Flood Defences	0	0	0	-	-
47	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
47	7.5	Flood Storage Areas	0	0	0	-	-
48	7.6	Flood Zone 2	None (within 50m)				
48	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
49	8.1	Surface water flooding	Negligible (within 50m)				
Page	Section	Groundwater flooding >					
50 >	9.1 >	Groundwater flooding >	Low (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
51	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
52	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
52	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
52	10.4	Special Protection Areas (SPA)	0	0	0	0	0
52	10.5	National Nature Reserves (NNR)	0	0	0	0	0
53	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
53 >	10.7 >	Designated Ancient Woodland >	0	0	0	0	13
54	10.8	Biosphere Reserves	0	0	0	0	0
54	10.9	Forest Parks	0	0	0	0	0
54	10.10	Marine Conservation Zones	0	0	0	0	0
54	10.11	Green Belt	0	0	0	0	0
54	10.12	Proposed Ramsar sites	0	0	0	0	0

55	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
55	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
55	10.15	Nitrate Sensitive Areas	0	0	0	0	0
55	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
56 >	10.17 >	SSSI Impact Risk Zones >	1	-	-	-	-
57	10.18	SSSI Units	0	0	0	0	0
Page	Section	Visual and cultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
58	11.1	World Heritage Sites	0	0	0	-	-
59	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
59	11.3	National Parks	0	0	0	-	-
59 >	11.4 >	Listed Buildings >	0	1	0	-	-
60	11.5	Conservation Areas	0	0	0	-	-
60	11.6	Scheduled Ancient Monuments	0	0	0	-	-
60	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
61 >	12.1 >	Agricultural Land Classification >	Grade 3a (within 250m)				
62	12.2	Open Access Land	0	0	0	-	-
62	12.3	Tree Felling Licences	0	0	0	-	-
62	12.4	Environmental Stewardship Schemes	0	0	0	-	-
62	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
63	13.1	Priority Habitat Inventory	0	0	0	-	-
63	13.2	Habitat Networks	0	0	0	-	-
63	13.3	Open Mosaic Habitat	0	0	0	-	-
63	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
64 >	14.1 >	10k Availability >	Identified (within 500m)				
65 >	14.2 >	Artificial and made ground (10k) >	0	0	0	1	-
66 >	14.3 >	Superficial geology (10k) >	1	0	0	0	-

67	14.4	Landslip (10k)	0	0	0	0	-
68 >	14.5 >	Bedrock geology (10k) >	1	0	0	1	-
69 >	14.6 >	Bedrock faults and other linear features (10k) >	0	0	0	1	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
70 >	15.1 >	50k Availability >	Identified (within 500m)				
71 >	15.2 >	Artificial and made ground (50k) >	0	0	0	1	-
72	15.3	Artificial ground permeability (50k)	0	0	-	-	-
73 >	15.4 >	Superficial geology (50k) >	1	0	0	2	-
74 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
74	15.6	Landslip (50k)	0	0	0	0	-
74	15.7	Landslip permeability (50k)	None (within 50m)				
75 >	15.8 >	Bedrock geology (50k) >	1	0	0	3	-
76 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
76 >	15.10 >	Bedrock faults and other linear features (50k) >	0	0	0	2	-
Page	Section	Boreholes >	On site	0-50m	50-250m	250-500m	500-2000m
77 >	16.1 >	BGS Boreholes >	0	2	14	-	-
Page	Section	Natural ground subsidence >					
79 >	17.1 >	Shrink swell clays >	Very low (within 50m)				
80 >	17.2 >	Running sands >	Very low (within 50m)				
81 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
82 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
83 >	17.5 >	Landslides >	Very low (within 50m)				
84 >	17.6 >	Ground dissolution of soluble rocks >	Negligible (within 50m)				
Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
86	18.1	BritPits	0	0	0	0	-
87 >	18.2 >	Surface ground workings >	0	0	11	-	-
87	18.3	Underground workings	0	0	0	0	0
87	18.4	Underground mining extents	0	0	0	0	-
88	18.5	Historical Mineral Planning Areas	0	0	0	0	-

88	18.6	Non-coal mining	0	0	0	0	0
88	18.7	JPB mining areas	None (within 0m)				
88	18.8	The Coal Authority non-coal mining	0	0	0	0	-
89	18.9	Researched mining	0	0	0	0	-
89	18.10	Mining record office plans	0	0	0	0	-
89	18.11	BGS mine plans	0	0	0	0	-
89 >	**18.12 >**	**Coal mining >**	Identified (within 0m)				
90	18.13	Brine areas	None (within 0m)				
90	18.14	Gypsum areas	None (within 0m)				
90	18.15	Tin mining	None (within 0m)				
90	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
91	19.1	Natural cavities	0	0	0	0	-
91	19.2	Mining cavities	0	0	0	0	0
91	19.3	Reported recent incidents	0	0	0	0	-
91	19.4	Historical incidents	0	0	0	0	-
Page	Section	**Radon >**					
93 >	**20.1 >**	**Radon >**	Less than 1% (within 0m)				
Page	Section	**Soil chemistry >**	On site	0-50m	50-250m	250-500m	500-2000m
95 >	**21.1 >**	**BGS Estimated Background Soil Chemistry >**	2	0	-	-	-
95	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
95	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
96	22.1	Underground railways (London)	0	0	0	-	-
96	22.2	Underground railways (Non-London)	0	0	0	-	-
96	22.3	Railway tunnels	0	0	0	-	-
96	22.4	Historical railway and tunnel features	0	0	0	-	-
96	22.5	Royal Mail tunnels	0	0	0	-	-
97	22.6	Historical railways	0	0	0	-	-

97	22.7	Railways	0	0	0	-	-
97	22.8	Crossrail 2	0	0	0	0	-
97	22.9	HS2	0	0	0	0	-

Recent aerial photograph



Capture Date: 25/04/2023

Site Area: 2.98ha

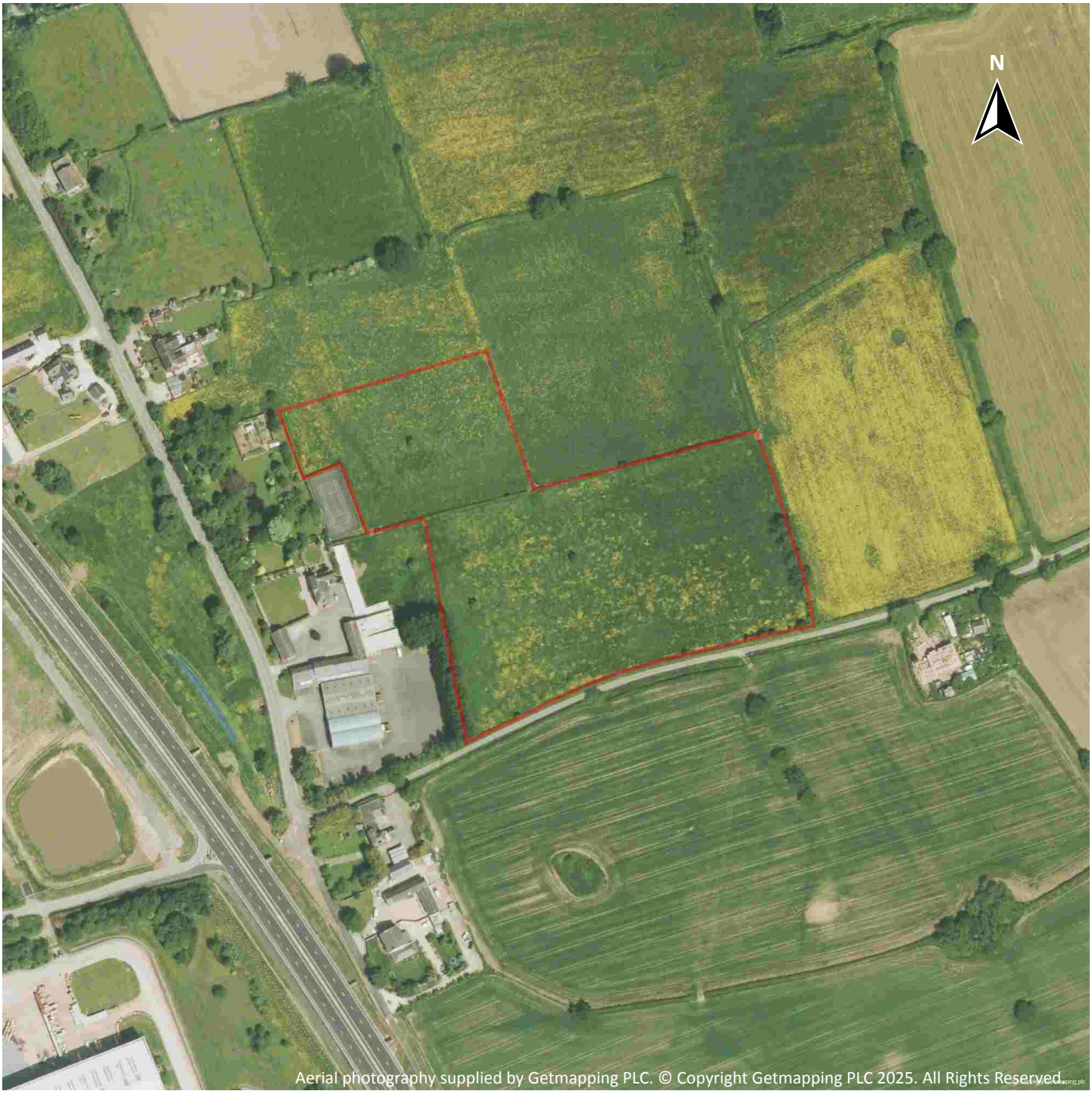
Recent site history - 2020 aerial photograph



Capture Date: 10/04/2020

Site Area: 2.98ha

Recent site history - 2013 aerial photograph



Capture Date: 09/06/2013

Site Area: 2.98ha

Recent site history - 2003 aerial photograph



Capture Date: 04/08/2003

Site Area: 2.98ha

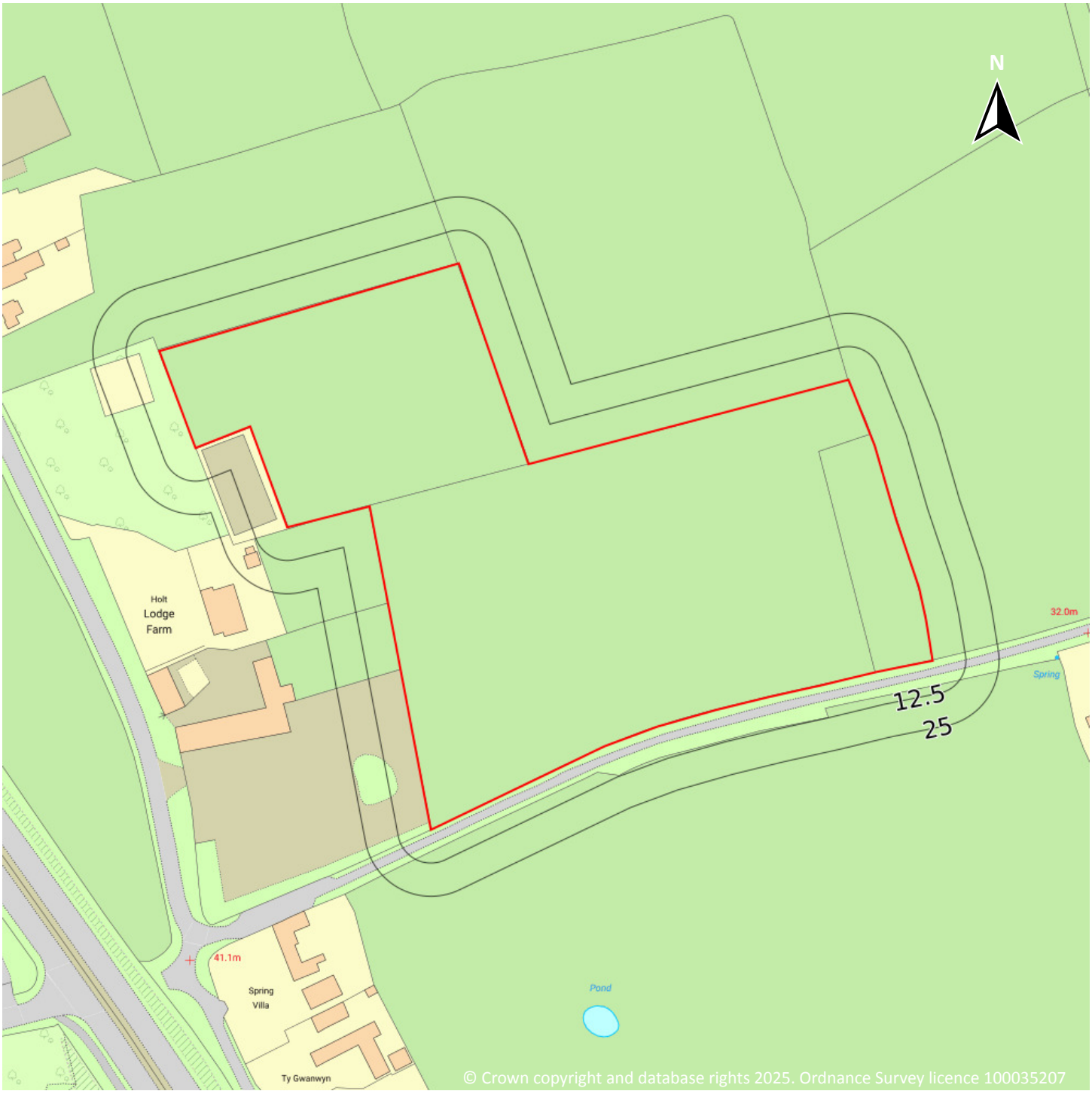
Recent site history - 2000 aerial photograph



Capture Date: 04/09/2000

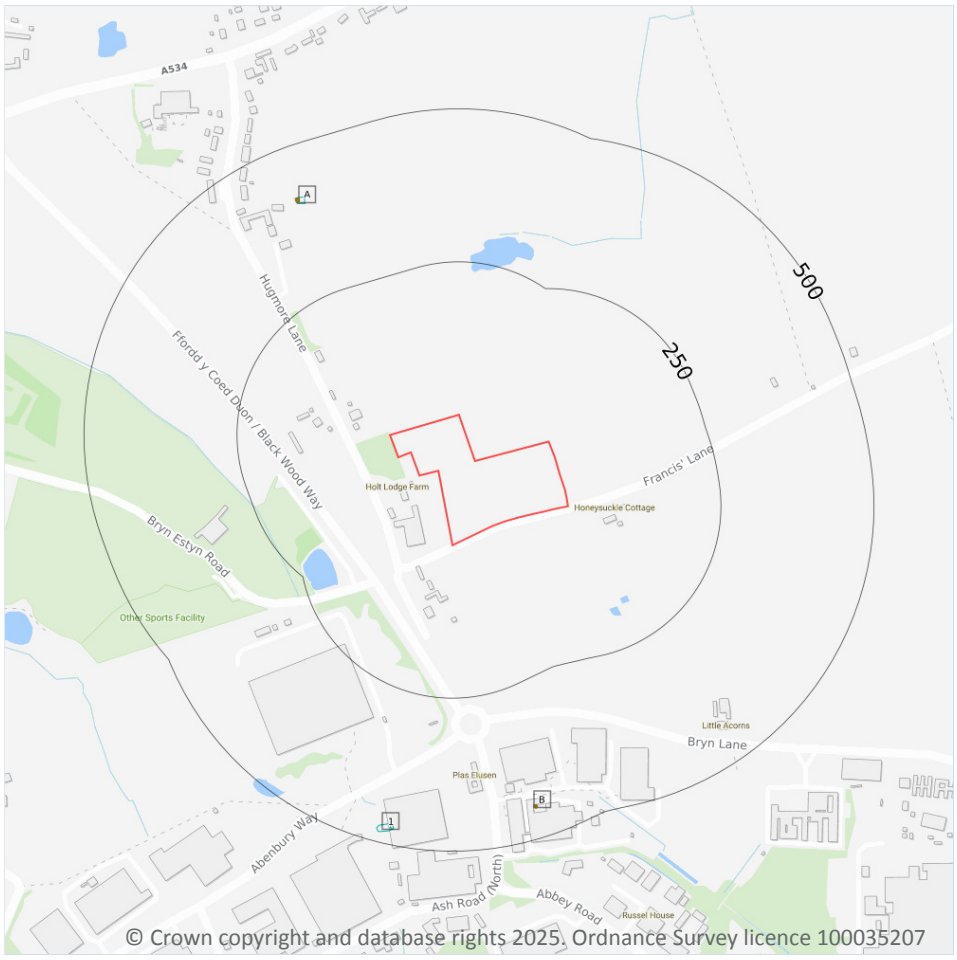
Site Area: 2.98ha

OS MasterMap site plan



Site Area: 2.98ha

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	2

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

Features are displayed on the Past land use map on **page 15 >**

ID	Location	Land use	Dates present	Group ID
A	403m NW	Unspecified Tanks	1992	819462

ID	Location	Land use	Dates present	Group ID
1	466m S	Unspecified Tanks	1949	819767

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	6

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

Features are displayed on the Past land use map on **page 15 >**

ID	Location	Land use	Dates present	Group ID
A	408m NW	Tanks	1991 - 1992	152534
A	410m NW	Tanks	1962	150865
B	446m S	Unspecified Tank	1982 - 1990	141176
B	446m S	Unspecified Tank	1974	142113
B	446m S	Unspecified Tank	1991	146140
B	447m S	Unspecified Tank	1993 - 1995	133286

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

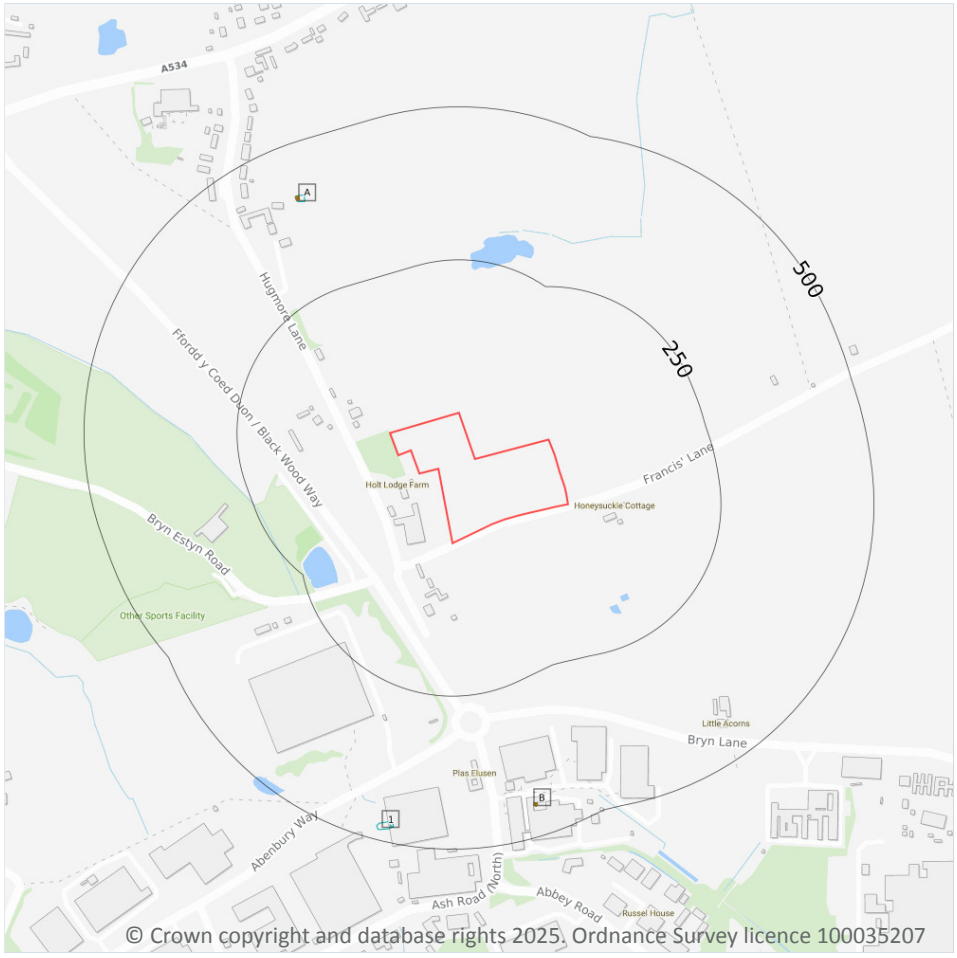
1.6 Historical military land

Records within 500m	0

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

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

2 Past land use - un-grouped



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

2.1 Historical industrial land uses

Records within 500m	2

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	403m NW	Unspecified Tanks	1992	819462
1	466m S	Unspecified Tanks	1949	819767

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	14

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
A	408m NW	Tanks	1992	152534
A	410m NW	Tanks	1962	150865
A	411m NW	Tanks	1991	152534
B	446m S	Unspecified Tank	1982	141176
B	446m S	Unspecified Tank	1987	141176
B	446m S	Unspecified Tank	1989	141176
B	446m S	Unspecified Tank	1989	141176
B	446m S	Unspecified Tank	1990	141176
B	446m S	Unspecified Tank	1990	141176
B	446m S	Unspecified Tank	1991	146140
B	446m S	Unspecified Tank	1974	142113
B	447m S	Unspecified Tank	1993	133286
B	447m S	Unspecified Tank	1995	133286
B	447m S	Unspecified Tank	1994	133286

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.

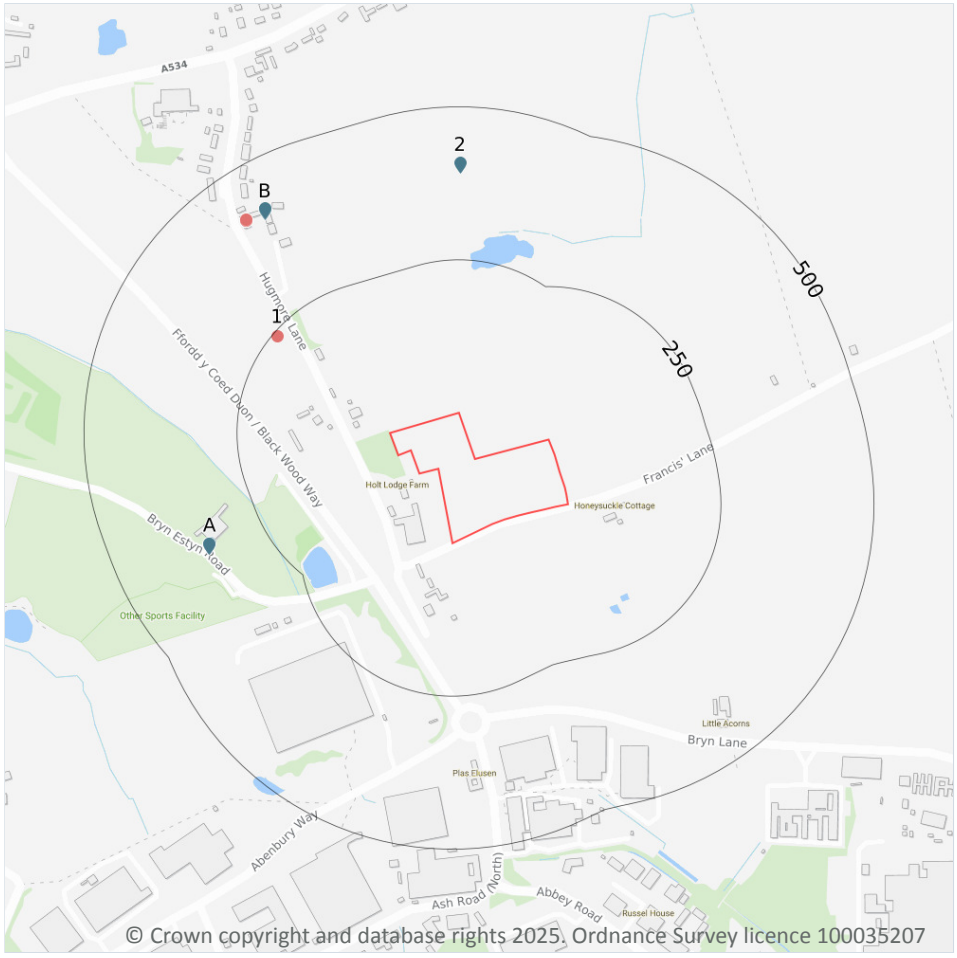
2.5 Historical garages

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)

Licensed waste sites

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	12

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

Features are displayed on the Waste and landfill map on **page 21 >**

ID	Location	Details		
A	342m W	Site Name: Clays Site Site Address: Clays Site, Bryn Estyn Road, Llan -y- Pwll, Wrexham, Clwyd, LL13 9UB Correspondence Address: -	Type of Site: Use of waste in construction 100,000 tps Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: LEW037 EPR reference: XP3691EG/A001 Operator: Clays Farm Golf Centre Limited Waste Management licence No: 102738 Annual Tonnage: 0	Issue Date: 05/10/2011 Effective Date: - Modified: - Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: Issued

ID	Location	Details		
A	344m W	Site Name: - Site Address: Clays Site, Bryn Estyn Rd, Llan -y- Pwll, Wrexham, Clwyd, LL13 9UB Correspondence Address: -	Type of Site: Deposit of waste to land as a recovery operation Size: - Environmental Permitting Regulations (Waste) Licence Number: XP3691EG EPR reference: - Operator: William Lewis Waste Management licence No: - Annual Tonnage: 20000	Issue Date: 21/02/2019 Effective Date: 21/02/2019 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective
A	344m W	Site Name: - Site Address: Clays Site, Llan -y- Pwll, Wrexham, Clwyd, LL13 9UB Correspondence Address: -	Type of Site: Use of waste in construction 100,000 tps Size: - Environmental Permitting Regulations (Waste) Licence Number: XP3691EG EPR reference: - Operator: William Lewis Waste Management licence No: - Annual Tonnage: 99999	Issue Date: 05/01/2018 Effective Date: 05/01/2018 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective
A	344m W	Site Name: - Site Address: Clays Site, Llan -y- Pwll, Wrexham, Clwyd, LL13 9UB Correspondence Address: -	Type of Site: Use of waste in construction 100,000 tps Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: XP3691EG EPR reference: - Operator: - Waste Management licence No: 102738 Annual Tonnage: 99999	Issue Date: 05/01/2018 Effective Date: 05/01/2018 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective
A	344m W	Site Name: Clays Site Site Address: Clays Site, Bryn Estyn Road, Llan -y- Pwll, Wrexham, Clwyd, LL13 9UB Correspondence Address: -	Type of Site: Use of waste in construction 100,000 tps Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LEW037 EPR reference: EA/EPR/XP3691EG/A001 Operator: Clays Farm Golf Centre Limited Waste Management licence No: 102738 Annual Tonnage: 99999	Issue Date: 05/10/2011 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued

ID	Location	Details		
A	344m W	Site Name: - Site Address: Clays Site, Llan -y-Pwll, Clwyd, Wrexham, Wrexham, LL13 9UB Correspondence Address: -	Type of Site: - Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: XP3691EG EPR reference: - Operator: William Lewis Waste Management licence No: 102738 Annual Tonnage: 99999	Issue Date: 05/01/2018 Effective Date: 05/01/2018 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective
A	344m W	Site Name: - Site Address: Clays Site, Llan -y-Pwll, Wrexham, Wrexham, LL13 9UB Correspondence Address: -	Type of Site: - Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: XP3691EG EPR reference: - Operator: Clays Farm Golf Centre Limited Waste Management licence No: 0 Annual Tonnage: 99999	Issue Date: 05/10/2011 Effective Date: 05/10/2011 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective
2	405m N	Site Name: - Site Address: Hugmore House, Hugmore Lane, Wrexham, LL13 9SW Correspondence Address: -	Type of Site: - Size: - Environmental Permitting Regulations (Waste) Licence Number: PAN-015164 EPR reference: - Operator: Trade Effluent Services Ltd Waste Management licence No: - Annual Tonnage: 4225	Issue Date: 06/10/2021 Effective Date: 06/10/2021 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective
B	416m NW	Site Name: N/a Mobile Plant Site Address: Trade Effluent Services Ltd, N/a Mobile Plant, Llanypwll, Wrexham, LL13 9YE Correspondence Address: -	Type of Site: Mobile Plant Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: AB3434AD EPR reference: - Operator: Trade Effluent Services Ltd Waste Management licence No: 103022 Annual Tonnage: 100000	Issue Date: 02/12/2011 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective

ID	Location	Details		
B	416m NW	Site Name: - Site Address: N/a Mobile Plant, Llanypwll, Wrexham, LL13 9YE Correspondence Address: -	Type of Site: Mobile Plant Size: - Environmental Permitting Regulations (Waste) Licence Number: AB3434AD EPR reference: - Operator: Trade Effluent Services Ltd Waste Management licence No: - Annual Tonnage: 100000	Issue Date: 02/12/2011 Effective Date: 02/12/2011 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective
B	416m NW	Site Name: - Site Address: N/a Mobile Plant, Llanypwll, Wrexham, Wrexham, LL13 9YE Correspondence Address: -	Type of Site: - Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: AB3434AD EPR reference: - Operator: Trade Effluent Services Ltd Waste Management licence No: 0 Annual Tonnage: 100000	Issue Date: 02/12/2011 Effective Date: 02/12/2011 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective
B	416m NW	Site Name: N/a Mobile Plant Site Address: Hugmore House, Hugmore Lane, Llanypwll, Wrexham, LL13 9YE Correspondence Address: -	Type of Site: Mobile Plant Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: TRA161 EPR reference: AB3434AD/A001 Operator: Trade Effluent Services Ltd Waste Management licence No: 103022 Annual Tonnage: 0	Issue Date: 08/12/2011 Effective Date: - Modified: - Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: Issued

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

3.7 Waste exemptions

Records within 500m	15

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

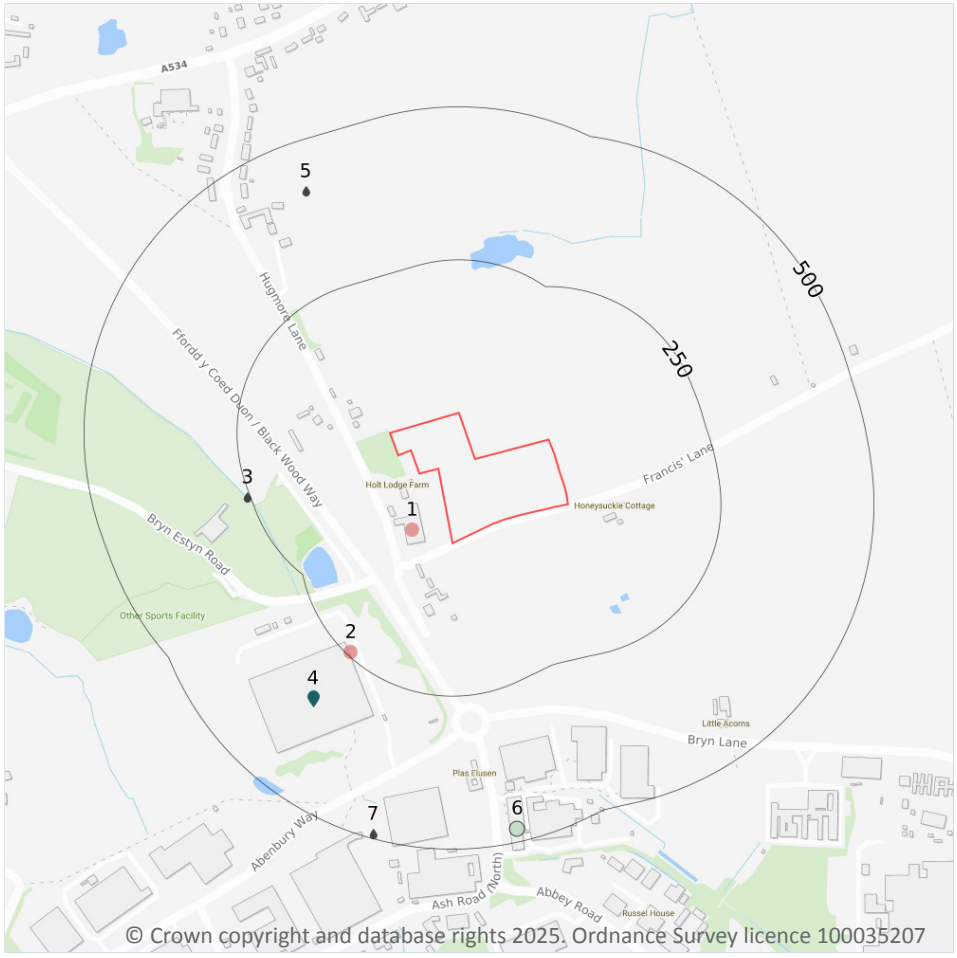
Features are displayed on the Waste and landfill map on **page 21 >**

ID	Location	Site	Reference	Category	Sub-Category	Description
1	243m NW	Dcww, Rodens Hall Farm, Bowling Bank, Wrexham, Wrecsam, Ll13 9rs	NRW-WME054232	Storing waste exemption	Not on a farm	Storage of sludge
B	418m NW	Land At Holt Lodge Farm, Hugmore Lane, Llan-Y-Pwll, Wrexham, Wrecsam, Ll139ye	NRW-WME014729	Using waste exemption	On a farm	Use of waste in construction
B	418m NW	Land At Holt Lodge Farm, Hugmore Lane, Llan-Y-Pwll, Wrexham, Wrecsam, Ll139ye	NRW-WME014729	Using waste exemption	On a farm	Use of waste for a specified purpose
B	418m NW	Land At Holt Lodge Farm, Hugmore Lane, Llan-Y-Pwll, Wrexham, Wrecsam, Ll139ye	NRW-WME014729	Treating waste exemption	On a farm	Cleaning, washing, spraying or coating relevant waste
B	418m NW	Land At Holt Lodge Farm, Hugmore Lane, Llan-Y-Pwll, Wrexham, Wrecsam, Ll139ye	NRW-WME014729	Treating waste exemption	On a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
B	418m NW	Land At Holt Lodge Farm, Hugmore Lane, Llan-Y-Pwll, Wrexham, Wrecsam, Ll139ye	NRW-WME014729	Treating waste exemption	Not on a farm	Aerobic composting and associated prior treatment
B	418m NW	Land At Holt Lodge Farm, Hugmore Lane, Llan-Y-Pwll, Wrexham, Wrecsam, Ll139ye	NRW-WME014729	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
B	418m NW	Trade Effluent Services Ltd, Hugmore House, Hugmore Lane, Wrexham, Wrecsam, Ll13 9ye	NRW-WME001304	Storing waste exemption	Waste exemption - non-agricultural	Storage of sludge
B	418m NW	Trade Effluent Services Ltd, Hugmore House, Hugmore Lane, Llan-Y-Pwll, Wrecsam, Ll139ye	NRW-WME010284	Storing waste exemption	Not on a farm	Storage of sludge
B	418m NW	Trade Effluent Services Ltd, Hugmore House, Hugmore Lane, Llan-Y-Pwll, Wrecsam, Ll139ye	NRW-WME010290	Storing waste exemption	Not on a farm	Storage of sludge

ID	Location	Site	Reference	Category	Sub-Category	Description
B	418m NW	Trade Effluent Services Ltd, Hugmore House, Hugmore Lane, Llan-Y-Pwll, Wrecsam, Ll139ye	NRW-WME010472	Storing waste exemption	Not on a farm	Storage of sludge
B	418m NW	Land At Holt Lodge Farm, Hugmore Lane, Llan-Y-Pwll, Wrexham, Wrecsam, Ll139ye	NRW-WME014729	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
B	418m NW	Land At Holt Lodge Farm, Hugmore Lane, Llan-Y-Pwll, Wrexham, Wrecsam, Ll139ye	NRW-WME014729	Treating waste exemption	On a farm	Anaerobic digestion at premises used for agriculture and burning of resultant biogas
B	418m NW	Land At Holt Lodge Farm, Hugmore Lane, Llan-Y-Pwll, Wrexham, Wrecsam, Ll139ye	NRW-WME014729	Disposing of waste exemption	On a farm	Burning waste in the open
B	420m NW	Trade Effluent Services Ltd, Trade Effluent Services Ltd, Hugmore House, Wrexham, Wrexham, Llan Y Pwll, Ll139ye	NRW-WME032931	Using waste exemption	Not on a farm	Use of waste in construction

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

4 Current industrial land use



© Crown copyright and database rights 2025. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

Recent industrial land uses

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

Licensed Discharges to controlled waters

Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m	2

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 28 >**

ID	Location	Company	Address	Activity	Category
1	61m SW	E M Y Plant Hire Ltd	Hugmore Lane, Llan-y-Pwll, Wrexham, Clwyd, LL13 9YE	Construction and Tool Hire	Hire Services
2	244m SW	Electricity Sub Station	Clwyd, LL13	Electrical Features	Infrastructure and Facilities

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	0

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	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	1

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

Features are displayed on the Current industrial land use map on **page 28 >**

ID	Location	Address	Details	
4	341m SW	JCB Transmissions, Unit 4, Abenbury Way, Wrexham Industrial Estate, Wrexham, LL13 9UF	Process: Coating Processes Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified. Date of enforcement: No Enforcement Notified. Comment: No Enforcement Notified.

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	**0**

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

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

4.13 Licensed Discharges to controlled waters

Records within 500m	**3**

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

Features are displayed on the Current industrial land use map on **page 28 >**

ID	Location	Address	Details	
3	255m W	BRYNVILLA,HUGMORELANE,LLANYPWLLL,WREXHAM,WALES,LL139YE	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CG0447601 Permit Version: 1 Receiving Water: UNNAMED WATERCOURSE	Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY Issue date: 01/09/2006 Effective Date: 01/12/2006 Revocation Date: -
5	418m NW	HUGMORELANESTW	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: CM0110401 Permit Version: 1 Receiving Water: DEVON BROOK	Status: CONSENT EXPIRED - TIME LIMIT Issue date: 24/02/1983 Effective Date: 24/02/1983 Revocation Date: 03/12/1993
7	493m S	JCBTRANSMISSIONSLTDWREXHAMINDE,JCBTRANSMISSIONSLTDWREXHAMIN,WREXHAMINDESTATEWREXHAM,WREXHAM	Effluent Type: UNSPECIFIED Permit Number: CM0097602 Permit Version: 1 Receiving Water: UN-NAMED TRIB. OF DEE	Status: CONSENT EXPIRED - TIME LIMIT Issue date: 25/07/1984 Effective Date: 25/07/1984 Revocation Date: 14/07/1994

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

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0

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

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

4.15 Pollutant release to public sewer

Records within 500m	0

Discharges of Special Category Effluents to the public sewer.

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

4.16 List 1 Dangerous Substances

Records within 500m	0

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

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

4.17 List 2 Dangerous Substances

Records within 500m	0

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

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

4.18 Pollution Incidents (EA/NRW)

Records within 500m	1

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

Features are displayed on the Current industrial land use map on **page 28 >**

ID	Location	Details	
6	478m S	Incident Date: 19/12/2013 Incident Identification: 1184930 Pollutant: Inorganic Chemicals/Products Pollutant Description: Other Inorganic Chemical or Product	Water Impact: - Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

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

4.19 Pollution inventory substances

Records within 500m	0

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

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

4.20 Pollution inventory waste transfers

Records within 500m	0

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

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

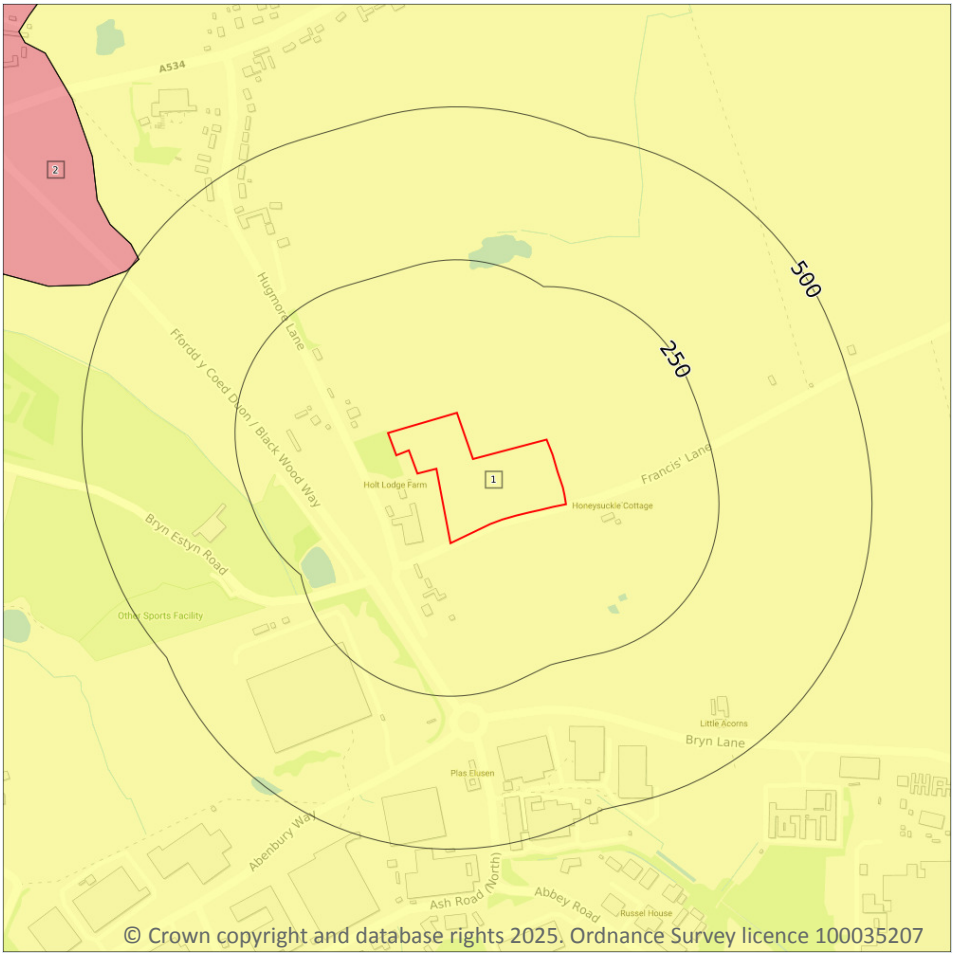
4.21 Pollution inventory radioactive waste

Records within 500m	0

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

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

5 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

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

5.1 Superficial aquifer

Records within 500m	2

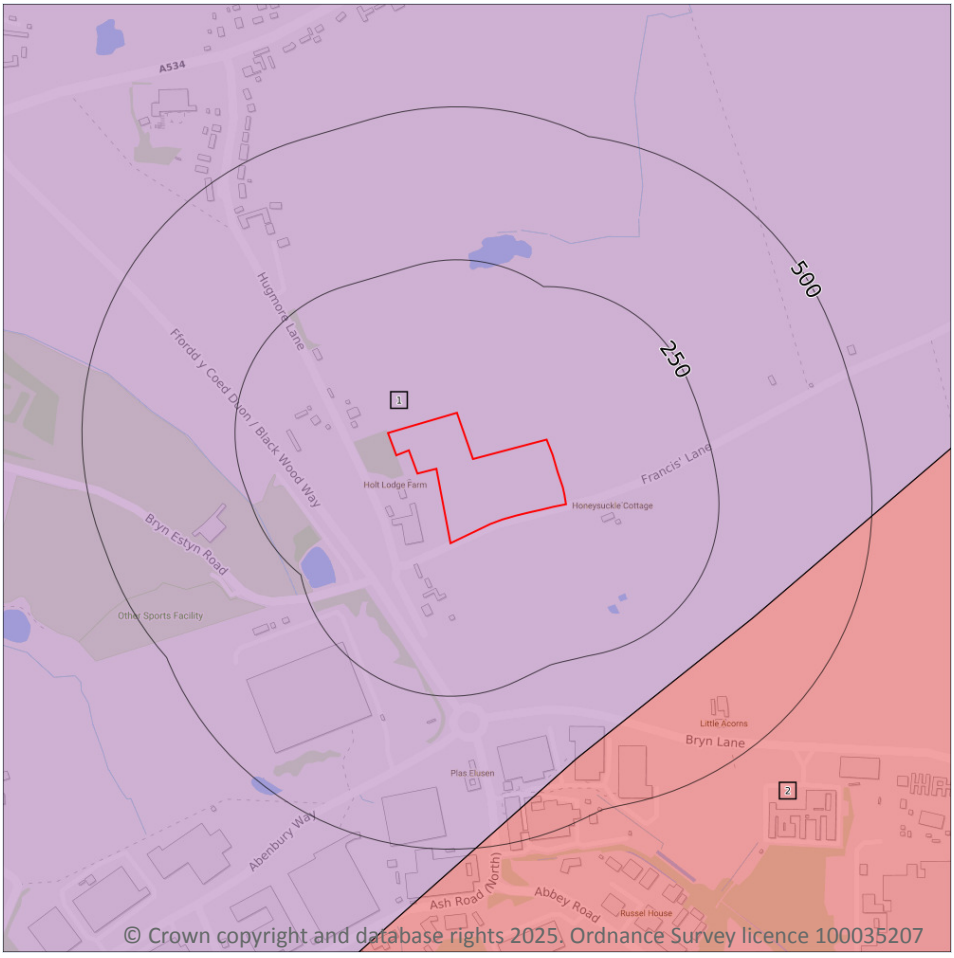
Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 34 >**

ID	Location	Designation	Description
1	**On site**	**Secondary Undifferentiated**	**Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type**
2	496m 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	2

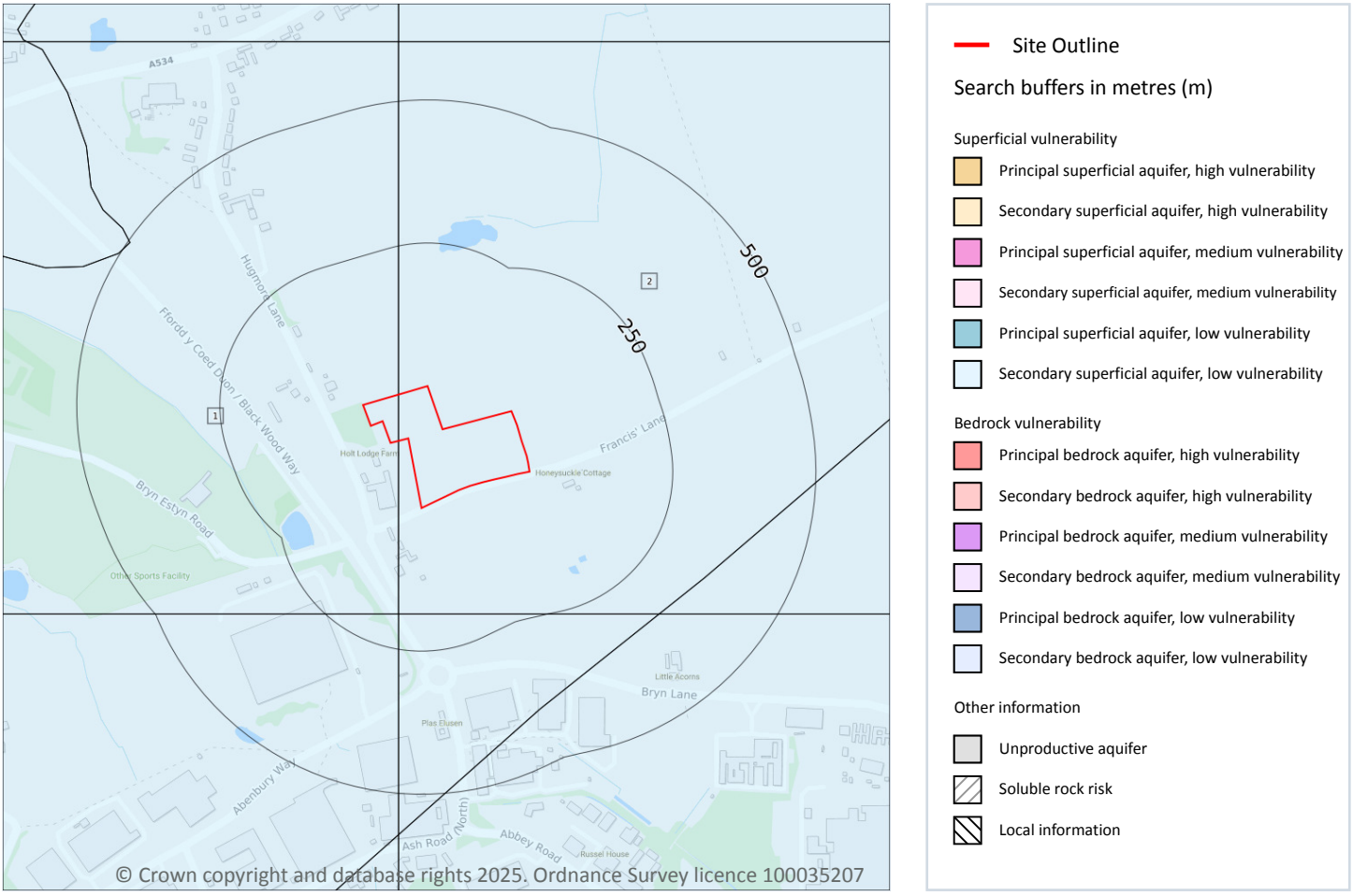
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 36 >**

ID	Location	Designation	Description
1	**On site**	**Principal**	**Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers**
2	336m SE	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

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

Groundwater vulnerability



5.3 Groundwater vulnerability

Records within 50m	2

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

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

Features are displayed on the Groundwater vulnerability map on **page 38 >**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: 300-550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: Low	Vulnerability: Low Aquifer type: Principal Flow mechanism: Intergranular
2	On site	Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: 300-550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: Low	Vulnerability: Low Aquifer type: Principal Flow mechanism: Well connected fractures

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

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0

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

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

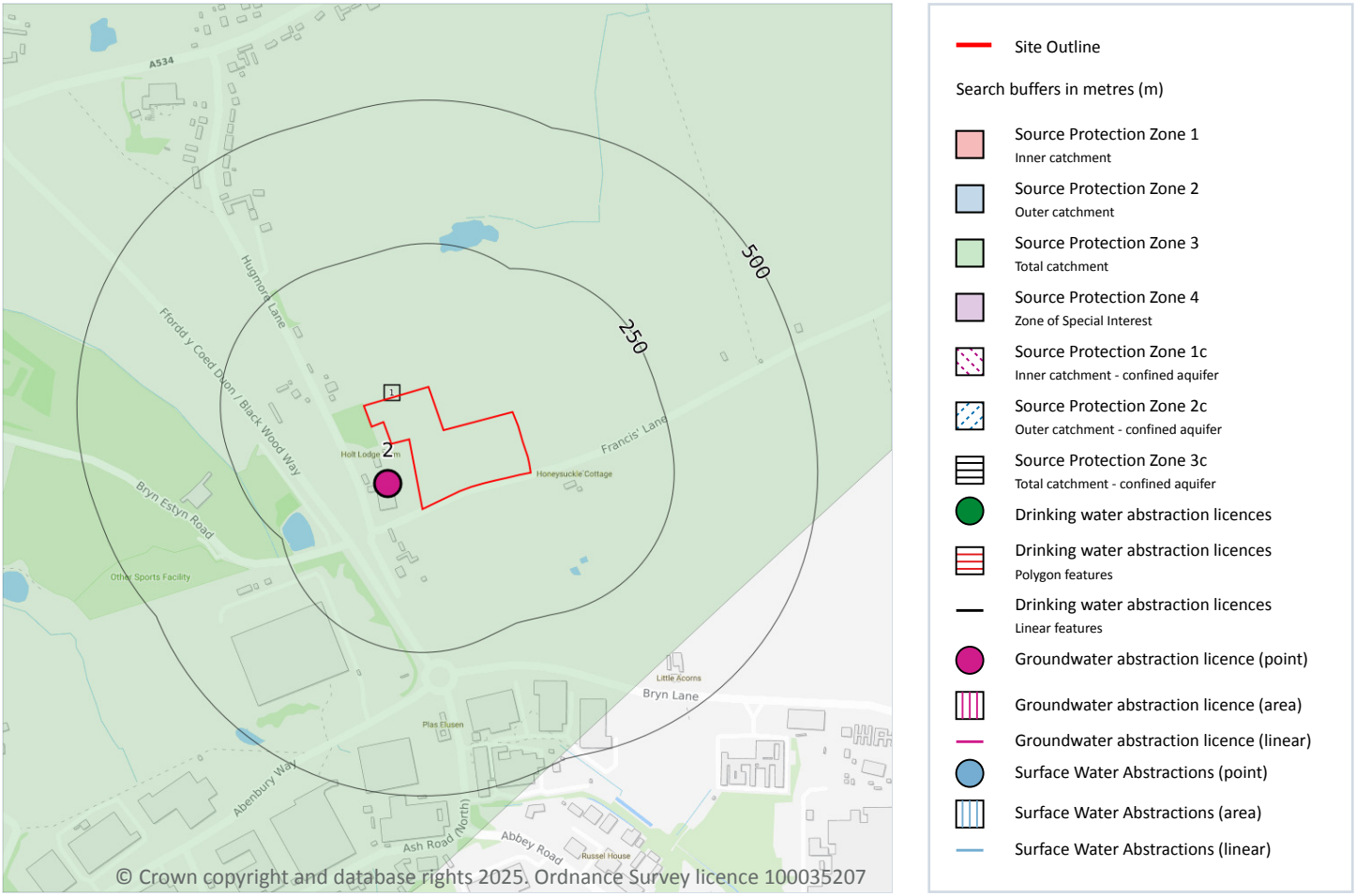
5.5 Groundwater vulnerability- local information

Records on site	0

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

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

Abstractions and Source Protection Zones



© Crown copyright and database rights 2025. Ordnance Survey licence 100035207

5.6 Groundwater abstractions

Records within 2000m	3

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

Features are displayed on the Abstractions and Source Protection Zones map on **page 40 >**

ID	Location	Details	
2	51m SW	Status: Historical Licence No: 24/67/9/0130 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: WELL Data Type: Point Name: Taylor Easting: 337980 Northing: 351230	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 14/06/1968 Expiry Date: - Issue No: 100 Version Start Date: 14/06/1968 Version End Date: -
-	1280m NW	Status: Active Licence No: 24/67/7/0197 Details: Mineral Washing - Low Direct Source: Carboniferous strata at Llan y Pwll, Wrexham Point: - Data Type: Point Name: - Easting: 336870 Northing: 352070	Annual Volume (m^3): 195180 Max Daily Volume (m^3): 533.28 Original Application No: - Original Start Date: 03/12/2021 Expiry Date: - Issue No: - Version Start Date: - Version End Date: -
-	1280m NW	Status: Historical Licence No: 24/67/7/0197 Details: Mineral Washing Direct Source: EAW Groundwater Point: BOREHOLE Data Type: Point Name: Lafarge Tarmac Trading Limited Easting: 336870 Northing: 352070	Annual Volume (m^3): 195180 Max Daily Volume (m^3): 533.28 Original Application No: - Original Start Date: 25/08/1982 Expiry Date: - Issue No: 103 Version Start Date: 27/03/2014 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m	**1**

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

Features are displayed on the Abstractions and Source Protection Zones map on **page 40 >**

ID	Location	Details	
-	723m S	Status: Historical Licence No: 24/67/7/0178 Details: Non-Evaporative Cooling Direct Source: EAW Surface Water Point: TRIBUTARY OF REDWITHER BROOK Data Type: Point Name: Caparo Wire Ltd Easting: 337810 Northing: 350500	Annual Volume (m^3): 9955.74 Max Daily Volume (m^3): 27.276 Original Application No: - Original Start Date: 12/05/1972 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2007 Version End Date: -

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

5.8 Potable abstractions

Records within 2000m	0

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

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

5.9 Source Protection Zones

Records within 500m	1

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

Features are displayed on the Abstractions and Source Protection Zones map on **page 40 >**

ID	Location	Type	Description
1	**On site**	**3**	**Total catchment**

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

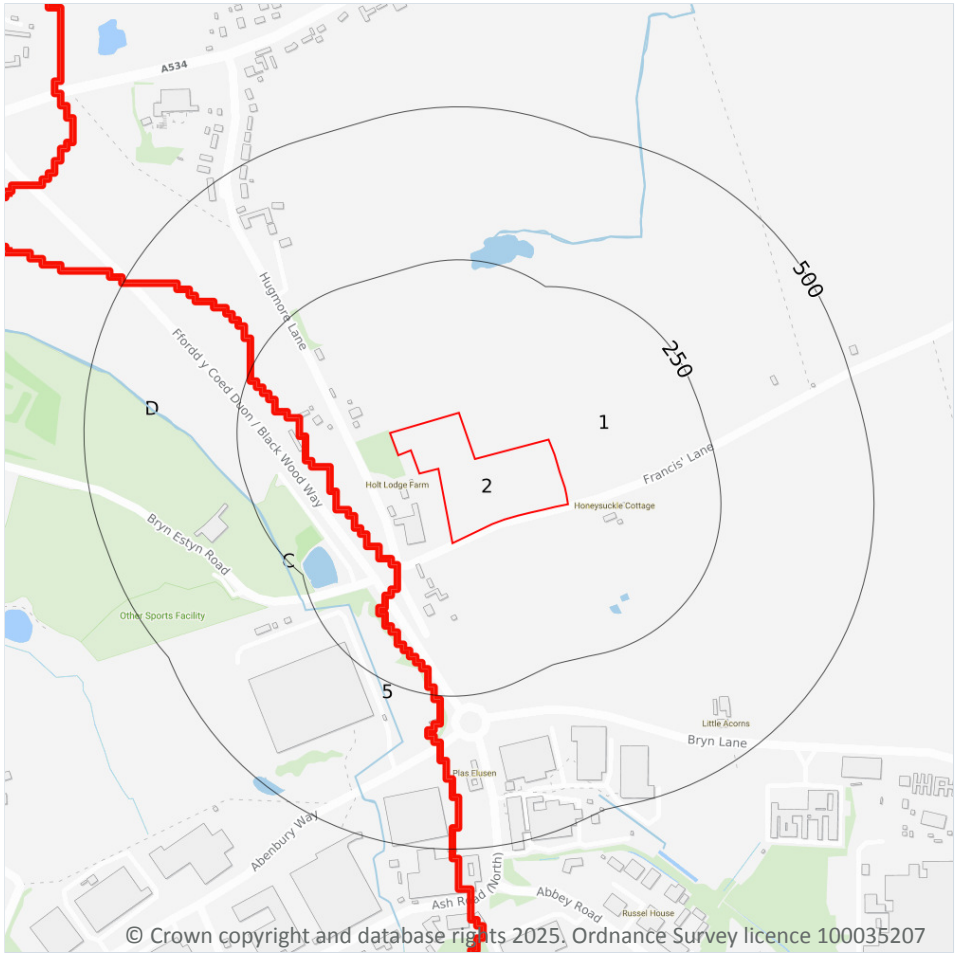
5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

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

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

6 Hydrology



Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	4

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
5	197m SW	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
C	242m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	246m W	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
D	247m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	**6**

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
1	**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
-	3389m NE	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
2	**On site**	**Dee Permo-Triassic Sandstone**	**GB41101G202400**	**Poor**	**Poor**	**Good**	**2019**

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

7 River and coastal flooding

7.1 Risk of flooding from rivers and the sea

Records within 50m	0

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

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

7.2 Historical Flood Events

Records within 250m	0

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

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

7.3 Flood Defences

Records within 250m	0

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

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

7.4 Areas Benefiting from Flood Defences

Records within 250m	0

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

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

7.5 Flood Storage Areas

Records within 250m	0

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

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

River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m	0

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

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

7.7 Flood Zone 3

Records within 50m	0

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

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

8 Surface water flooding

8.1 Surface water flooding

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

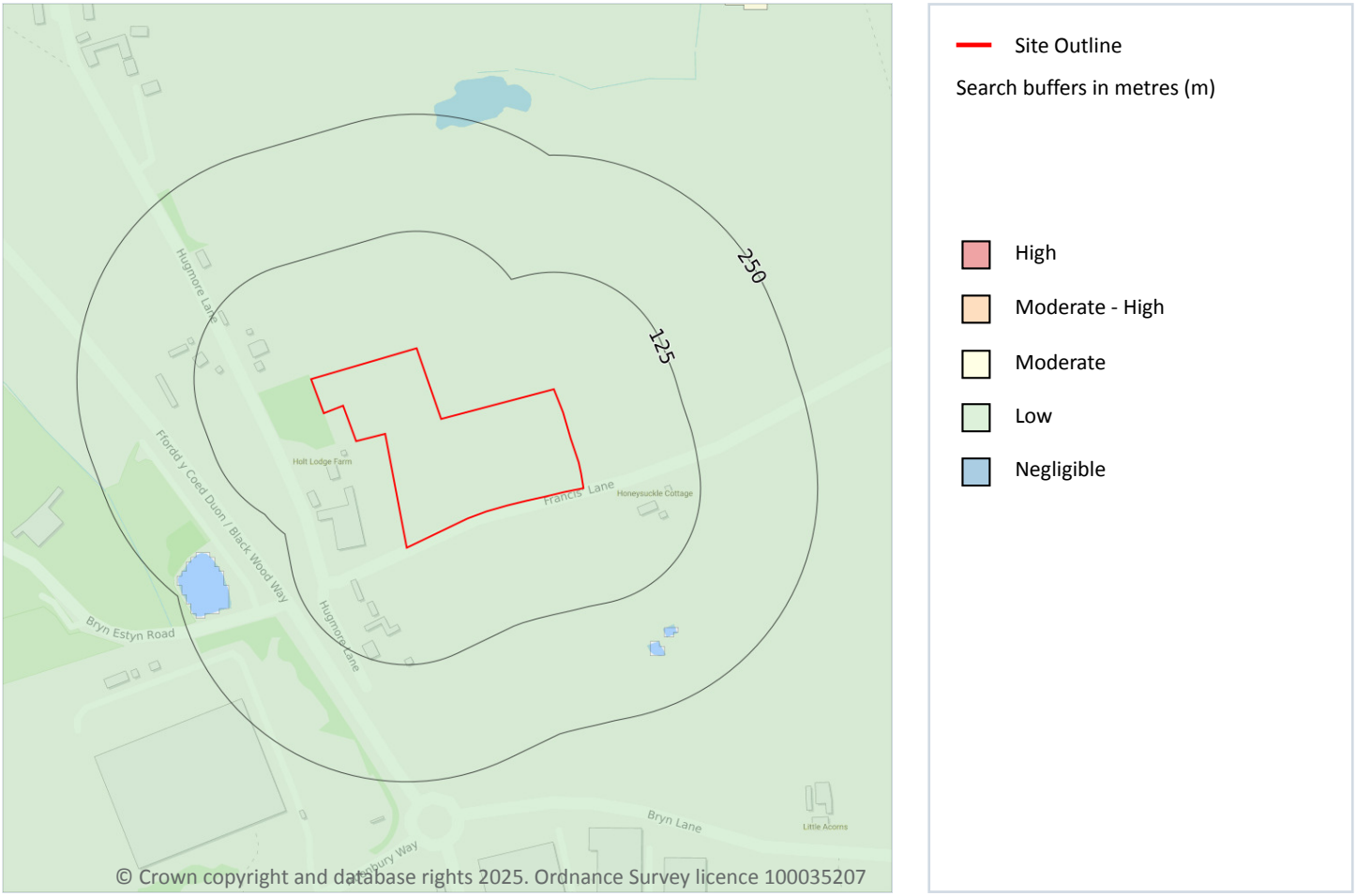
Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year 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.

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	Negligible
1 in 250 year	Negligible
1 in 100 year	Negligible
1 in 30 year	Negligible

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



9.1 Groundwater flooding

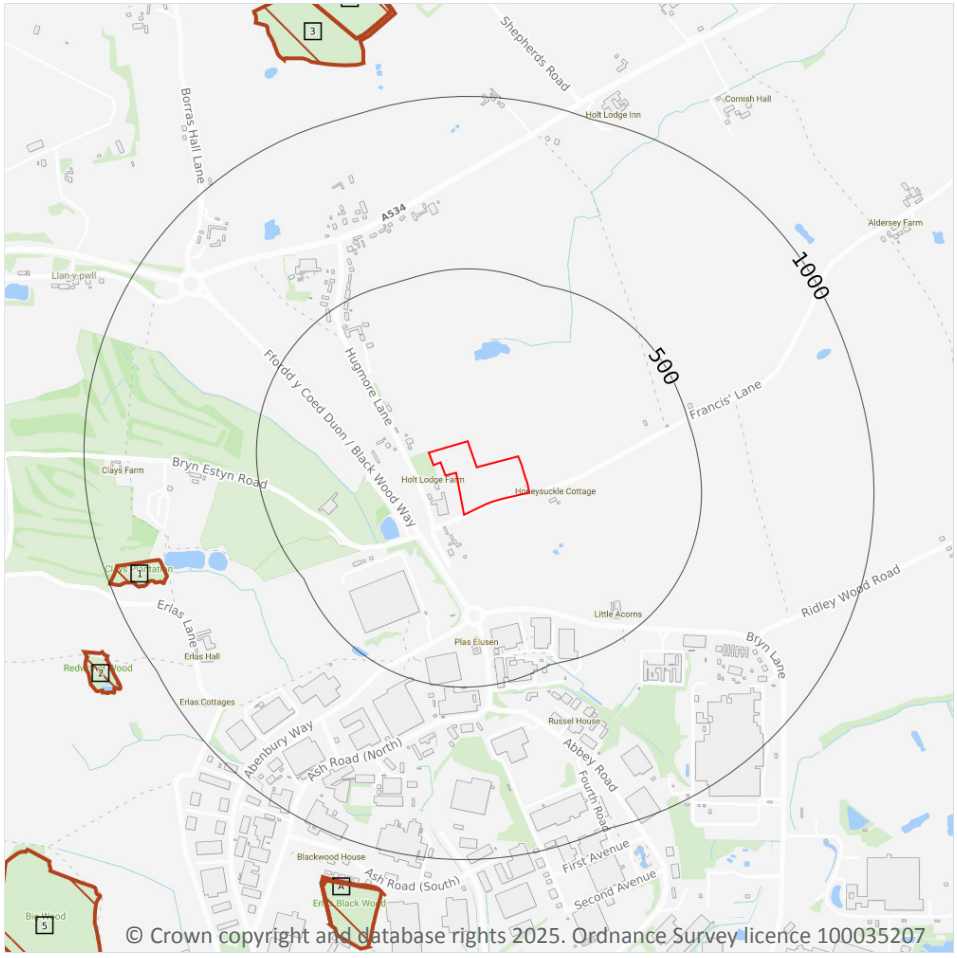
Highest risk on site	**Low**
Highest risk within 50m	**Low**

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

Features are displayed on the Groundwater flooding map on **page 50 >**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



Site Outline

Search buffers in metres (m)

Designated Ancient Woodland

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	0

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

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

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

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0

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

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

10.4 Special Protection Areas (SPA)

Records within 2000m	0

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

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

10.5 National Nature Reserves (NNR)

Records within 2000m	0

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

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

10.6 Local Nature Reserves (LNR)

Records within 2000m	0

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

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

10.7 Designated Ancient Woodland

Records within 2000m	13

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 51 >**

ID	Location	Name	Woodland Type
1	837m W	Unknown	Restored Ancient Woodland Site
2	1095m SW	Unknown	Ancient Semi Natural Woodland
A	1111m S	Unknown	Restored Ancient Woodland Site
A	1114m S	Unknown	Restored Ancient Woodland Site
3	1137m N	Unknown	Ancient Semi Natural Woodland
4	1212m N	Unknown	Ancient Semi Natural Woodland
-	1434m N	Unknown	Ancient Woodland Site of Unknown Category
-	1442m N	Unknown	Ancient Woodland Site of Unknown Category
5	1522m SW	Unknown	Ancient Semi Natural Woodland
-	1533m NW	Unknown	Ancient Semi Natural Woodland
-	1548m NW	Unknown	Ancient Semi Natural Woodland
-	1717m W	Unknown	Ancient Semi Natural Woodland
-	1872m S	Unknown	Ancient Semi Natural Woodland

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

10.8 Biosphere Reserves

Records within 2000m	0

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

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

10.9 Forest Parks

Records within 2000m	0

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

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

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

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

10.11 Green Belt

Records within 2000m	0

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

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

10.12 Proposed Ramsar sites

Records within 2000m	0

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

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

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

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

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

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

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

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

This data is sourced from Natural England.

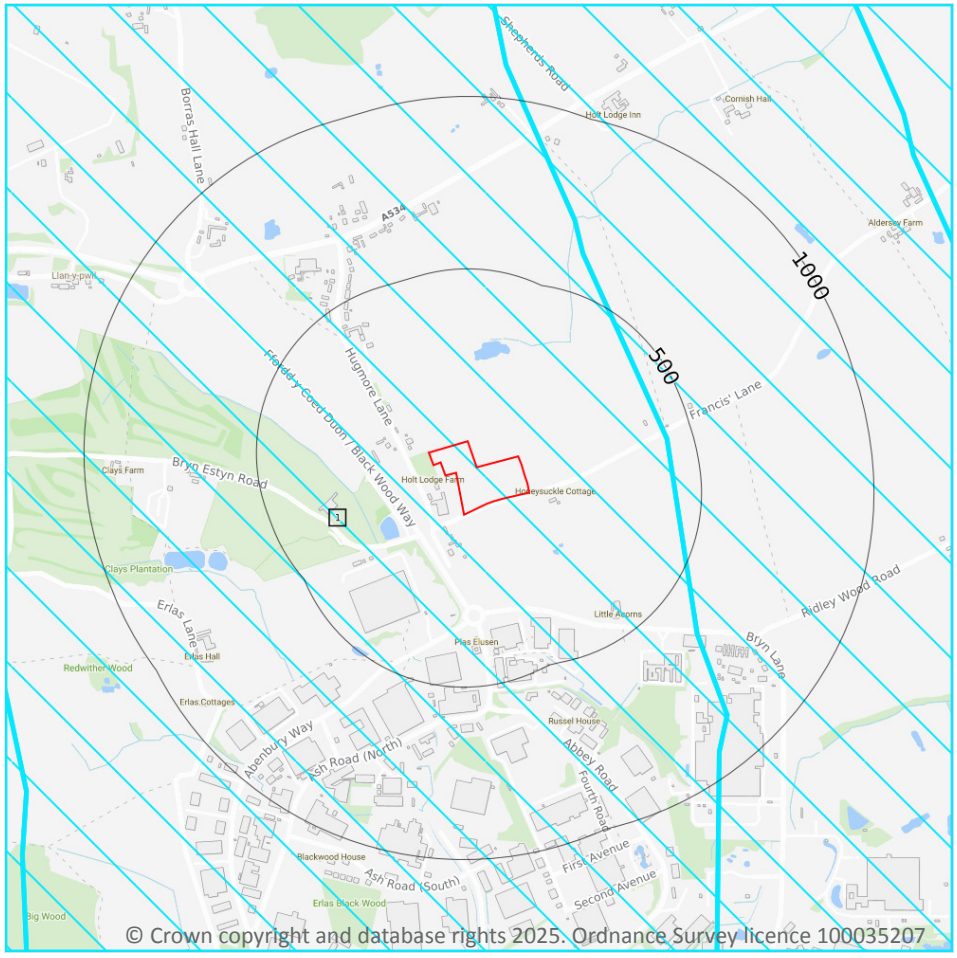
10.16 Nitrate Vulnerable Zones

Records within 2000m	0

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

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

SSSI Impact Zones and Units



10.17 SSSI Impact Risk Zones

Records on site	1

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

Features are displayed on the SSSI Impact Zones and Units map on **page 56 >**

ID	Location	Type of developments requiring consultation
1	**On site**	**Infrastructure - Airports, helipads and other aviation proposals.** **Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 750m², manure stores > 3500t).** **Combustion - General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.**

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	**0**

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

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

11 Visual and cultural designations



Site Outline

Search buffers in metres (m)

Listed buildings

Conservation areas

Conservation areas - no data

National Parks

Areas of Outstanding Natural Beauty

Registered parks and gardens

Scheduled Monuments

World Heritage Sites

11.1 World Heritage Sites

Records within 250m	0

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

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

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

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

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

11.3 National Parks

Records within 250m	0

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

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

11.4 Listed Buildings

Records within 250m	1

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 58 >**

ID	Location	Name	Grade	Reference Number	Listed date
1	38m W	New Holt Lodge Farm, Situated At Crossroads Where Hugmore Lane Meets Francis' Lane And Brynestyn Road.	II	1541	09/06/1952

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

11.5 Conservation Areas

Records within 250m	0

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

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

11.6 Scheduled Ancient Monuments

Records within 250m	0

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

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

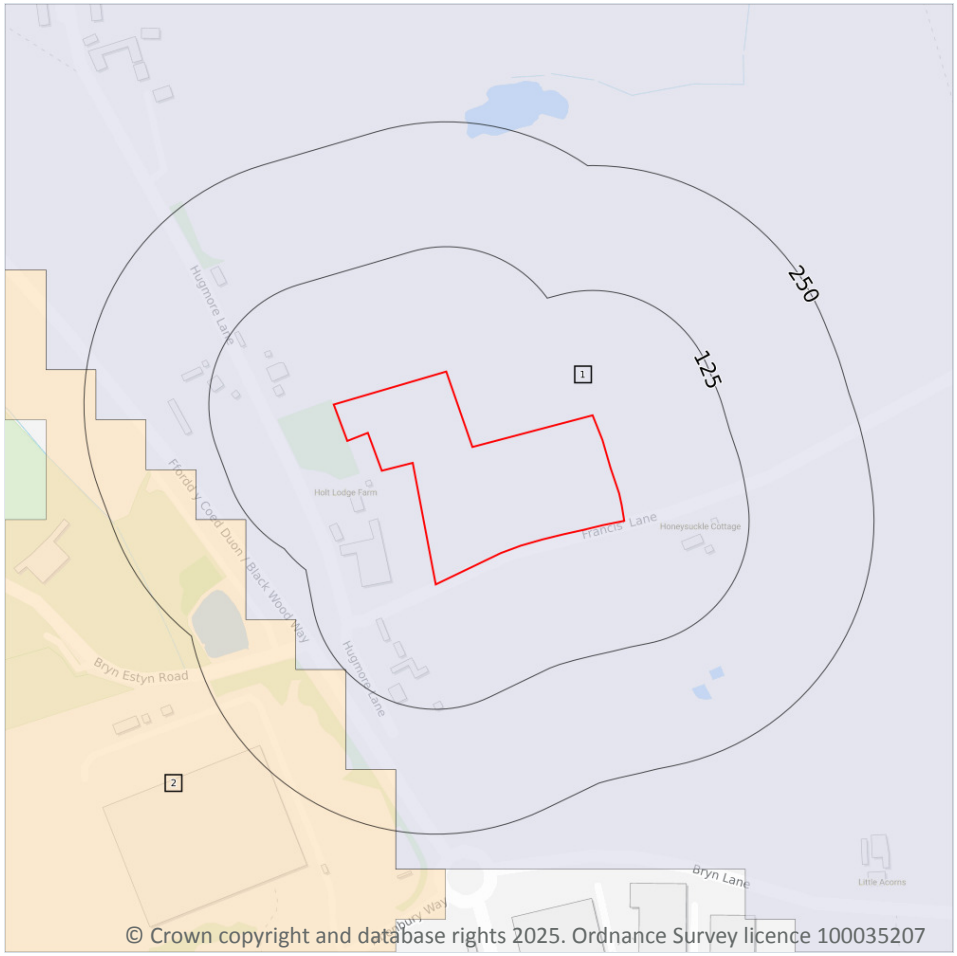
11.7 Registered Parks and Gardens

Records within 250m	0

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

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

12 Agricultural designations



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	2

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 61 >**

ID	Location	Classification	Description
1	**On site**	**Grade 3b**	**Moderate quality agricultural land**
2	124m SW	Grade 3a	Good to moderate quality agricultural land

This data is sourced from Natural Resources Wales.

12.2 Open Access Land

Records within 250m	0

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

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

12.3 Tree Felling Licences

Records within 250m	0

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

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	0

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m	0

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

This data is sourced from Natural England.

13 Habitat designations

13.1 Priority Habitat Inventory

Records within 250m	0

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	0

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	0

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

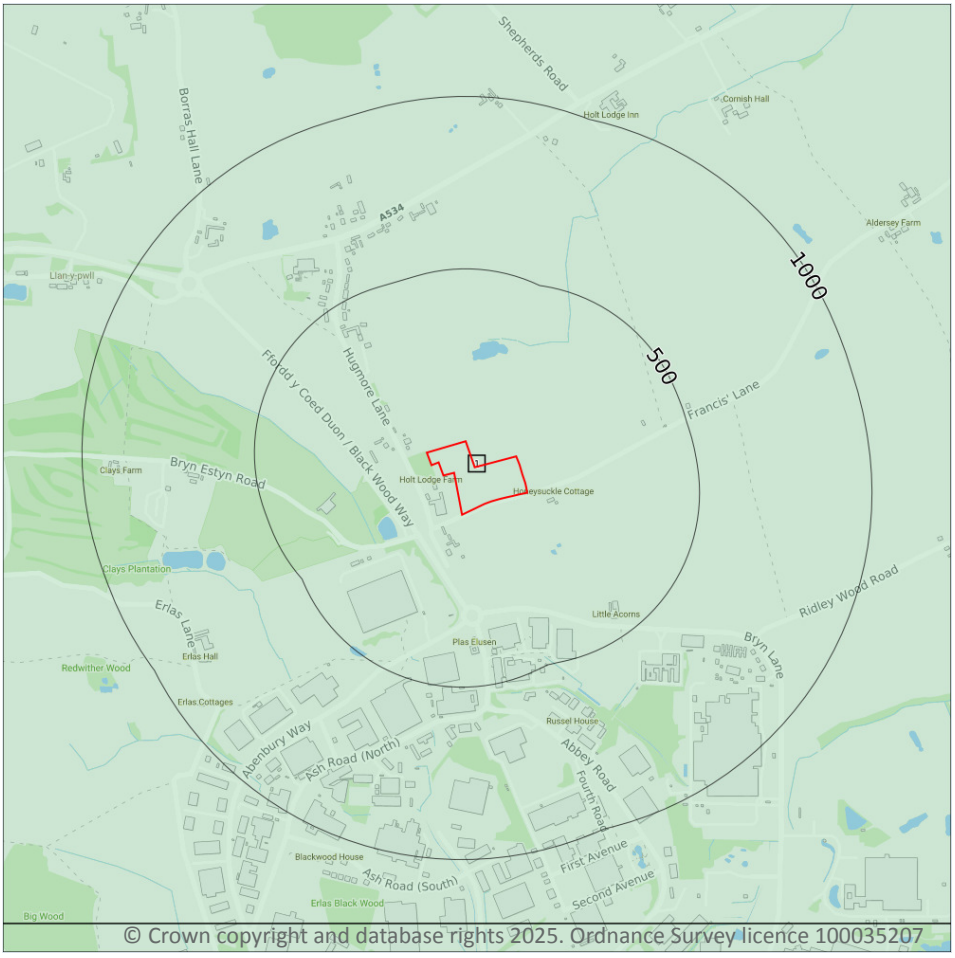
13.4 Limestone Pavement Orders

Records within 250m	0

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



Site Outline

Search buffers in metres (m)

Full coverage

Partial coverage

No coverage

14.1 10k Availability

Records within 500m	1

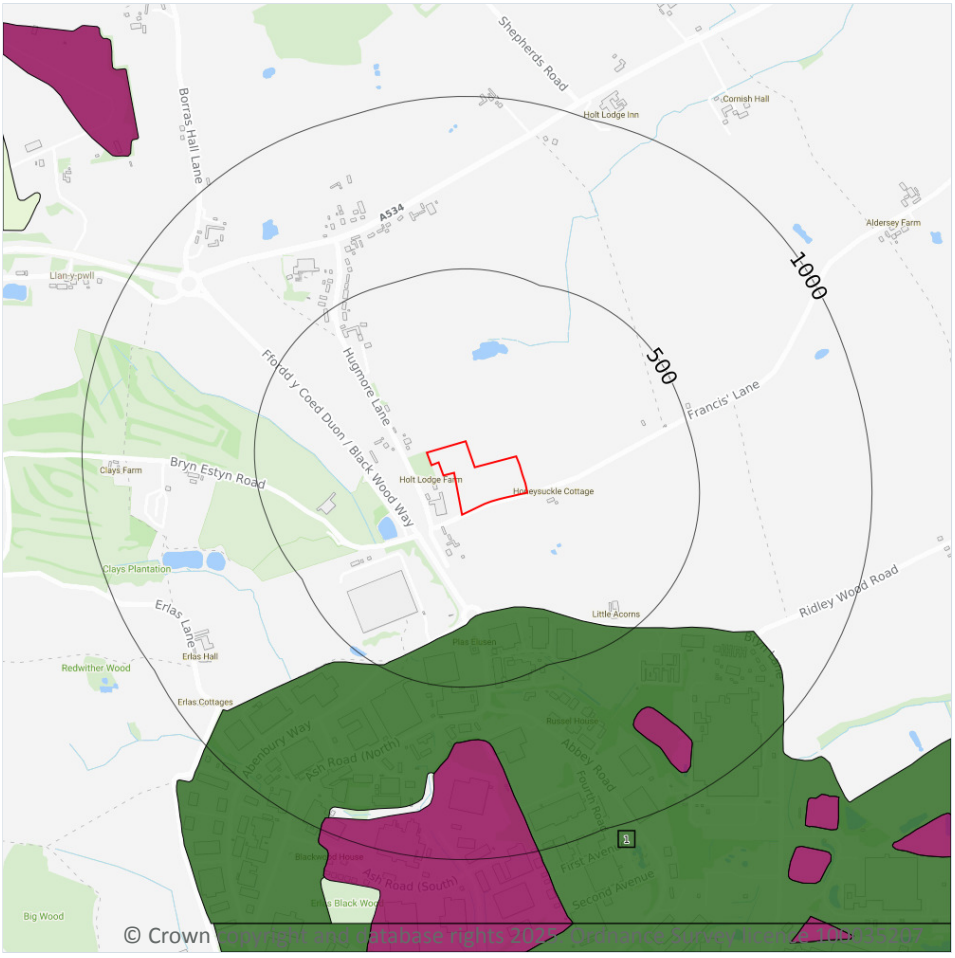
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 64 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**No coverage**	**SJ35SE**

This data is sourced from the British Geological Survey.

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



Site Outline

Search buffers in metres (m)

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

14.2 Artificial and made ground (10k)

Records within 500m	1

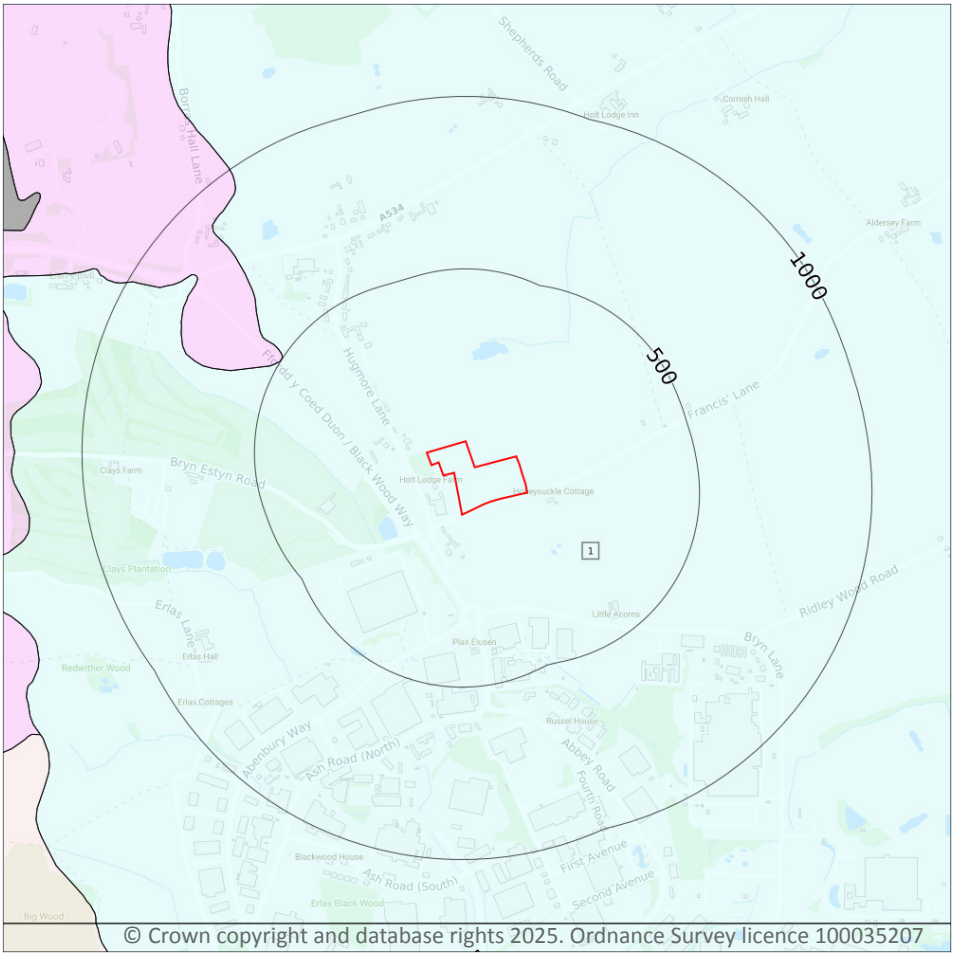
Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 65 >**

ID	Location	LEX Code	Description	Rock description
1	292m S	LSGR-UKNOWN	Landscaped Ground (Undivided)	Unknown/unclassified Entry

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial



© Crown copyright and database rights 2025. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

Landslip (10k)

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

14.3 Superficial geology (10k)

Records within 500m	1

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

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 66 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TILL-DMTN**	**Till - Diamicton**	**Diamicton**

This data is sourced from the British Geological Survey.

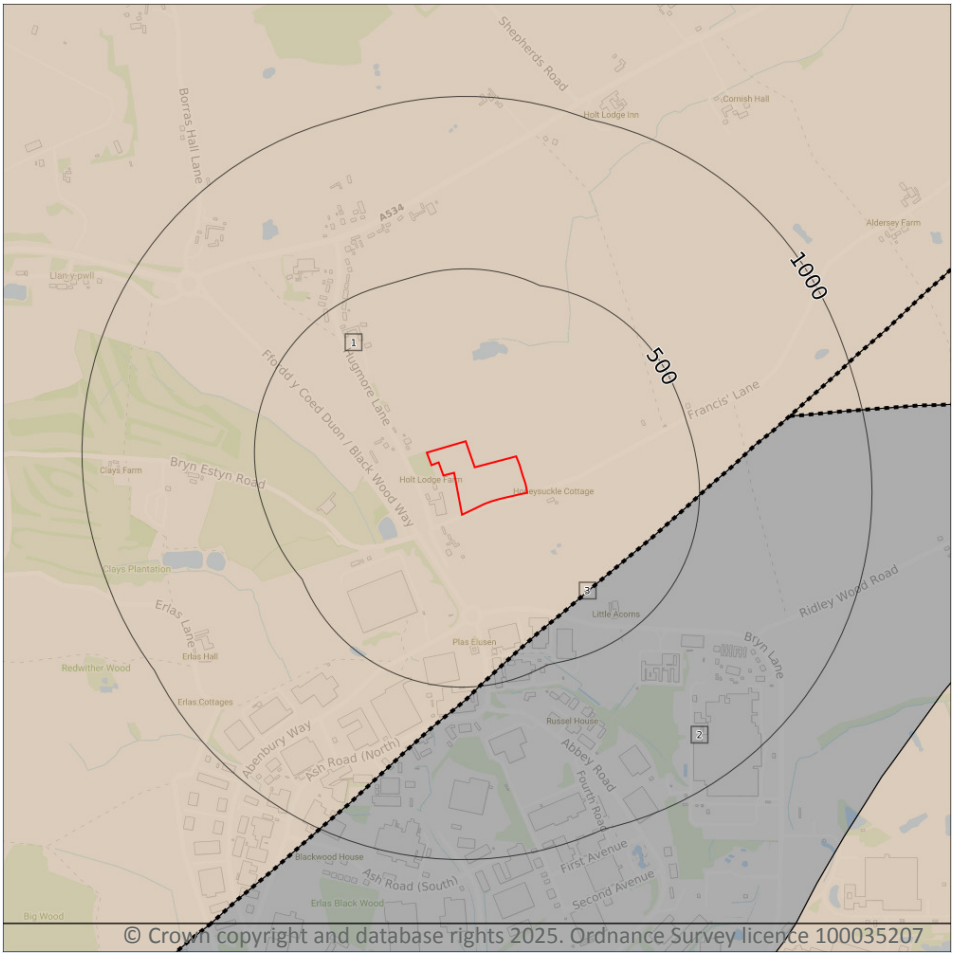
14.4 Landslip (10k)

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



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (10k)

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

14.5 Bedrock geology (10k)

Records within 500m **2**

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

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 68 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**KNSF-SDST**	**Kinnerton Sandstone Formation - Sandstone**	**Early Triassic Epoch**
2	332m SE	SAL-MDST	Salop Formation - Mudstone	Cisuralian Epoch - Westphalian D Sub-age

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m	1

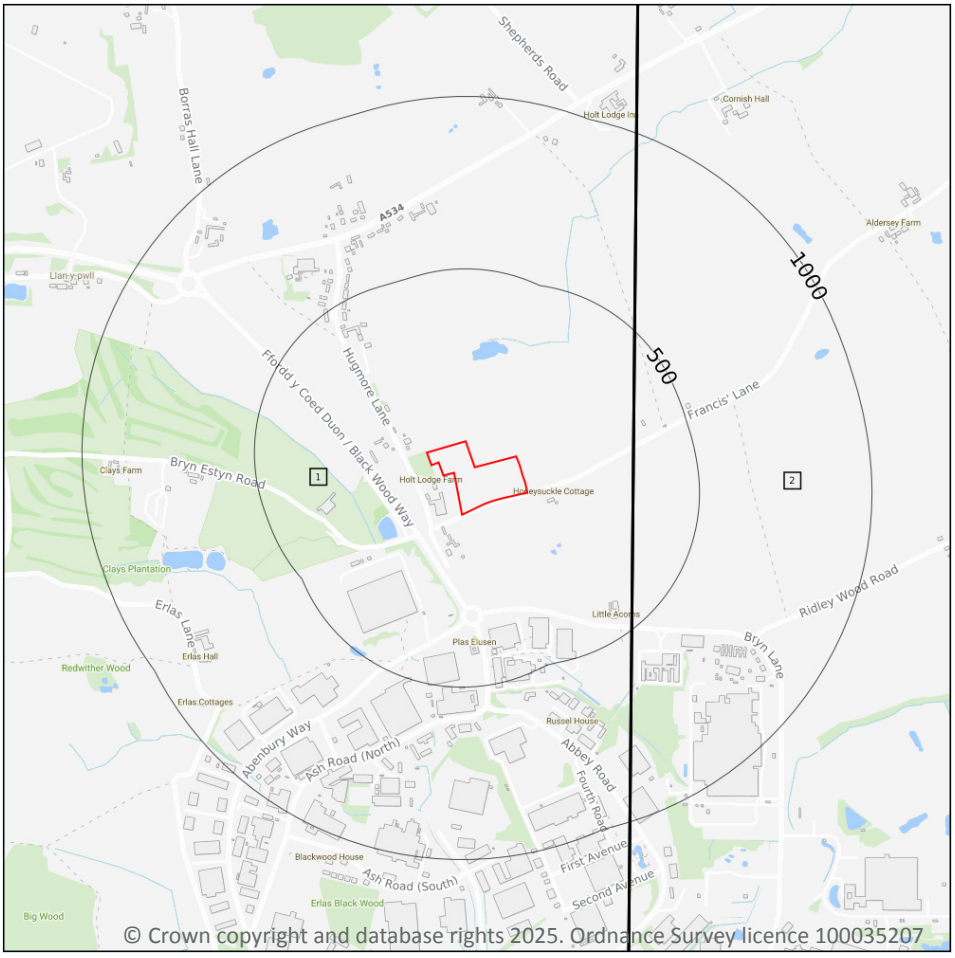
Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 68 >**

ID	Location	Category	Description
3	332m SE	FAULT	Normal fault, inferred

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	2

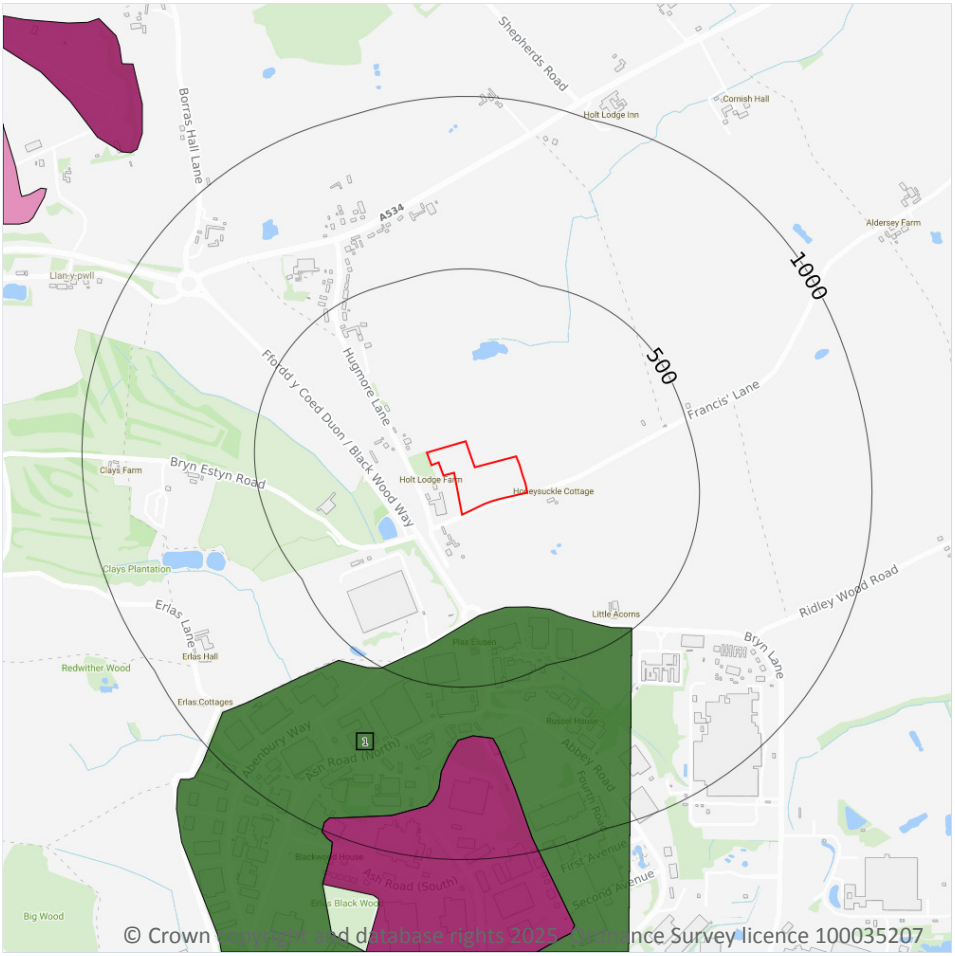
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme. Where 50k data is not available, this area has been filled in with 625k scale data.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 70 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**Full**	**EW121_wrexham_v4**
2	307m E	No coverage	Full	Full	Full	EW122_nantwich_v4

This data is sourced from the British Geological Survey.

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



Site Outline

Search buffers in metres (m)

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

15.2 Artificial and made ground (50k)

Records within 500m	1

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on **page 71 >**

ID	Location	LEX Code	Description	Rock description
1	294m S	LSGR-ARTGR	LANDSCAPED GROUND (UNDIVIDED)	ARTIFICIALLY MODIFIED GROUND

This data is sourced from the British Geological Survey.

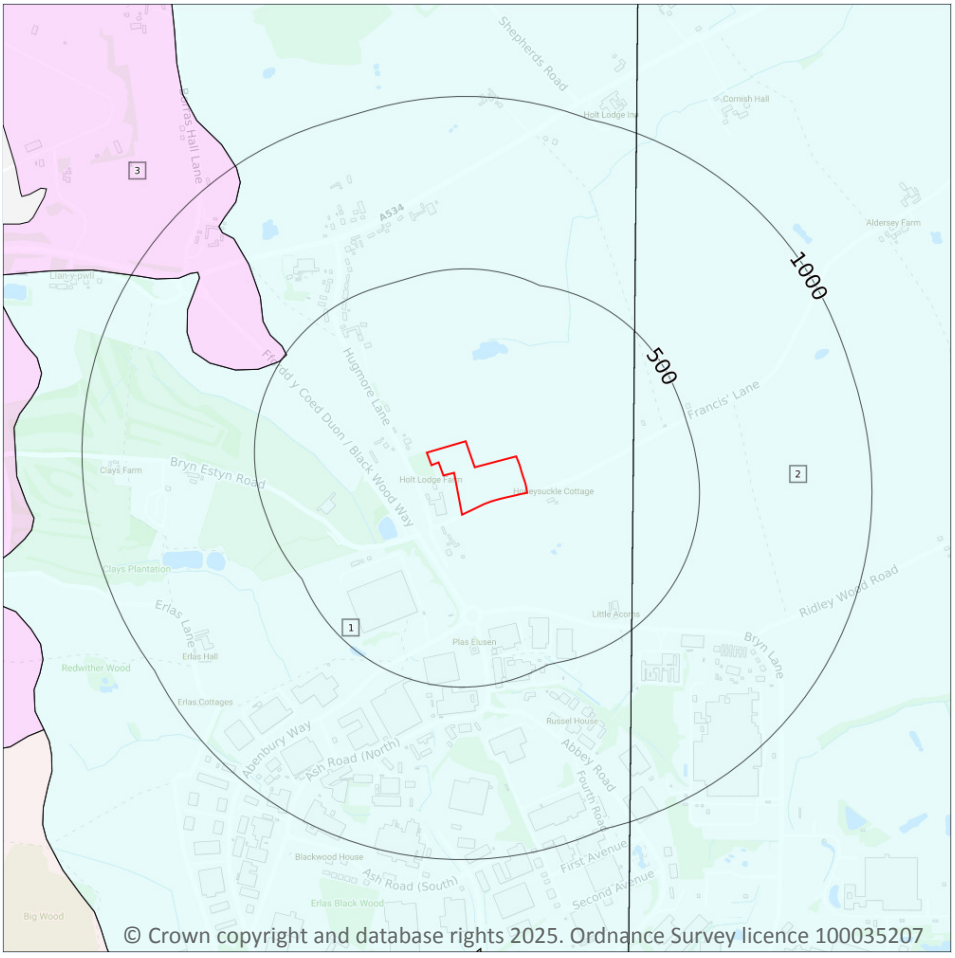
15.3 Artificial ground permeability (50k)

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	3

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

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 73 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TILLD-DMTN**	**TILL, DEVENSIAN**	**DIAMICTON**
2	307m E	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
3	496m NW	GFSDD-XSV	GLACIOFLUVIAL SHEET DEPOSITS, DEVENSIAN	SAND AND GRAVEL

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	1

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

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

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

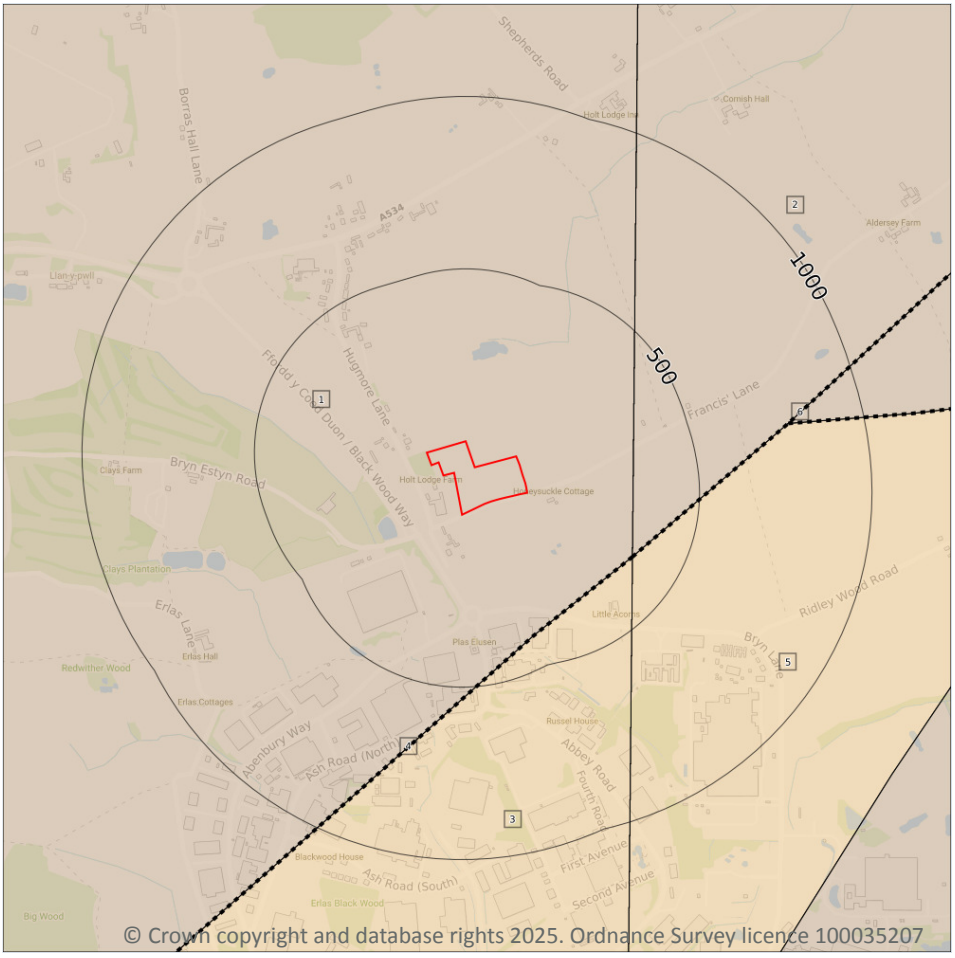
15.7 Landslip permeability (50k)

Records within 50m	0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



© Crown copyright and database rights 2025. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

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

15.8 Bedrock geology (50k)

Records within 500m **4**

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

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 75 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**KNSF-SDST**	**KINNERTON SANDSTONE FORMATION - SANDSTONE**	**-**
2	307m E	KNSF-SDST	KINNERTON SANDSTONE FORMATION - SANDSTONE	-
3	336m SE	SAL-MDSC	SALOP FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE	WESTPHALIAN

ID	Location	LEX Code	Description	Rock age
5	357m SE	SAL-MDSC	SALOP FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE	WESTPHALIAN

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	**Intergranular**	**High**	**High**

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	**2**

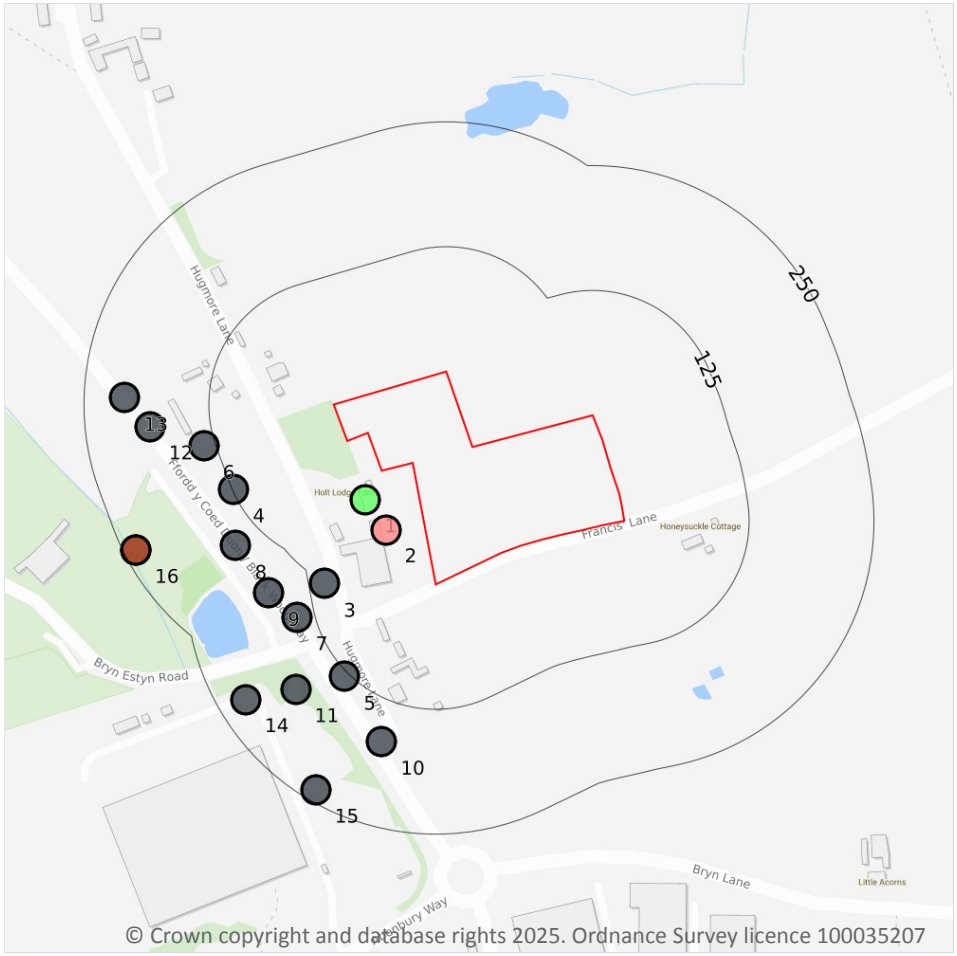
Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 75 >**

ID	Location	Category	Description
4	336m SE	FAULT	Fault, inferred, displacement unknown
6	357m SE	FAULT	Fault, inferred, displacement unknown

This data is sourced from the British Geological Survey.

16 Boreholes



© Crown copyright and database rights 2025. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

Confidential

0 - 10m

10 - 30m

30m+

Unknown

16.1 BGS Boreholes

Records within 250m	16

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

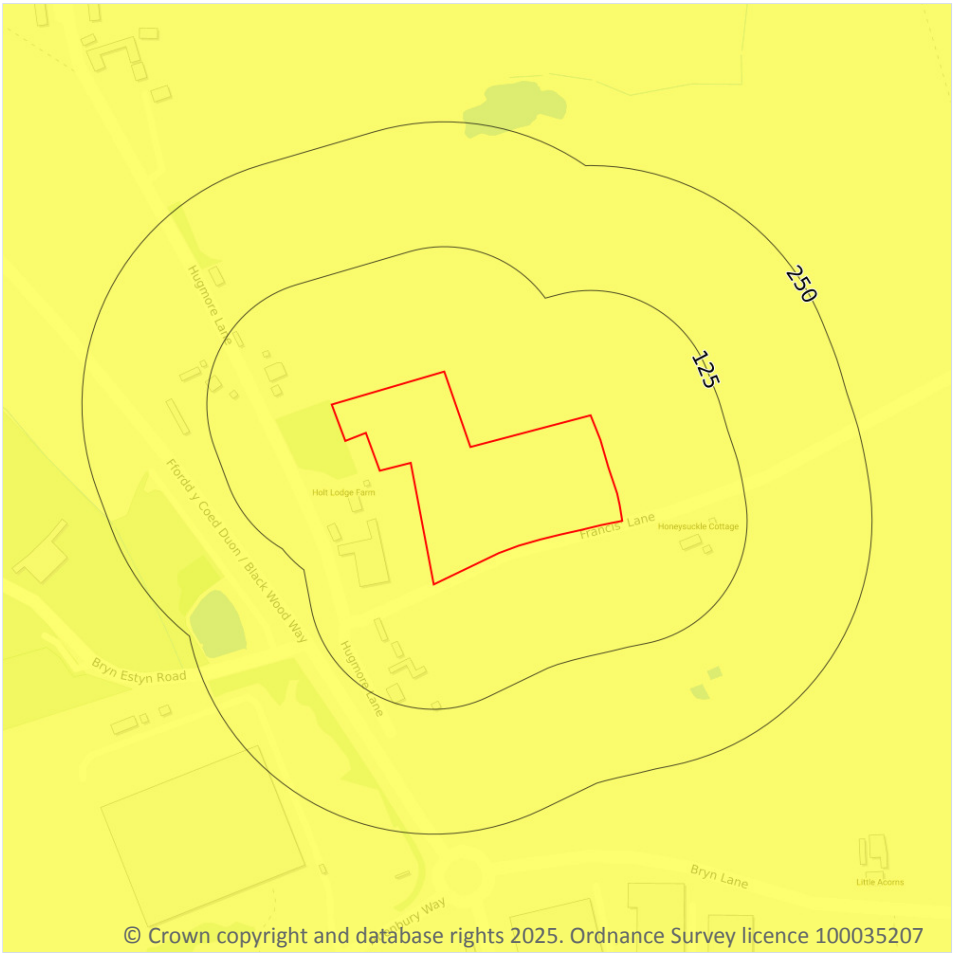
Features are displayed on the Boreholes map on **page 77 >**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	33m W	337970 351270	HOLT LODGE FARM	20.31	N	154843 ↗
2	39m SW	337990 351240	COMMON WOOD FARM	61.57	N	154655 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
3	109m SW	337929 351186	WREXHAM INDUSTRIAL ESTATE ACCESS ROAD TP61	-	Y	N/A
4	124m W	337838 351280	WREXHAM INDUSTRIAL ESTATE ACCESS ROAD 31	-	Y	N/A
5	130m SW	337949 351093	WREXHAM INDUSTRIAL ESTATE ACCESS ROAD TP37	-	Y	N/A
6	136m W	337808 351324	WREXHAM INDUSTRIAL ESTATE ACCESS ROAD TP34	-	Y	N/A
7	143m SW	337901 351152	WREXHAM INDUSTRIAL ESTATE ACCESS ROAD TP36	-	Y	N/A
8	153m W	337840 351224	WREXHAM INDUSTRIAL ESTATE ACCESS ROAD TP35	-	Y	N/A
9	166m SW	337873 351177	WREXHAM INDUSTRIAL ESTATE ACCESS ROAD 32	-	Y	N/A
10	166m S	337986 351028	WREXHAM INDUSTRIAL ESTATE ACCESS ROAD 34	-	Y	N/A
11	175m SW	337900 351080	WREXHAM IND EST 1	-	Y	N/A
12	185m W	337754 351343	WREXHAM INDUSTRIAL ESTATE ACCESS ROAD TPBH30	-	Y	N/A
13	209m W	337729 351372	WREXHAM INDUSTRIAL ESTATE ACCESS ROAD TP33	-	Y	N/A
14	222m SW	337850 351070	WREXHAM IND EST TP 1	-	Y	N/A
15	238m SW	337920 350980	WREXHAM IND EST TP 2	-	Y	N/A
16	238m W	337740 351220	CROES YOKIN	-1.0	N	154828 ↗

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

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

17.1 Shrink swell clays

Records within 50m	1

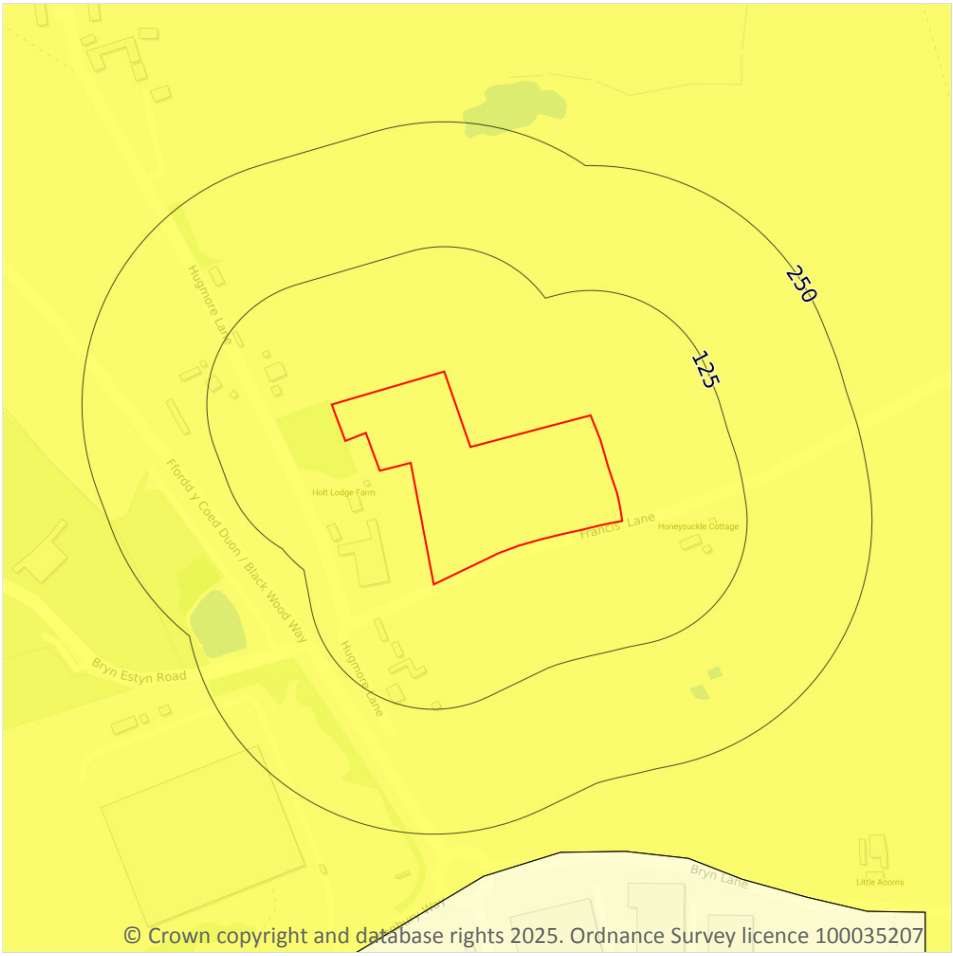
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 79 >**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



© Crown copyright and database rights 2025. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

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

17.2 Running sands

Records within 50m	1

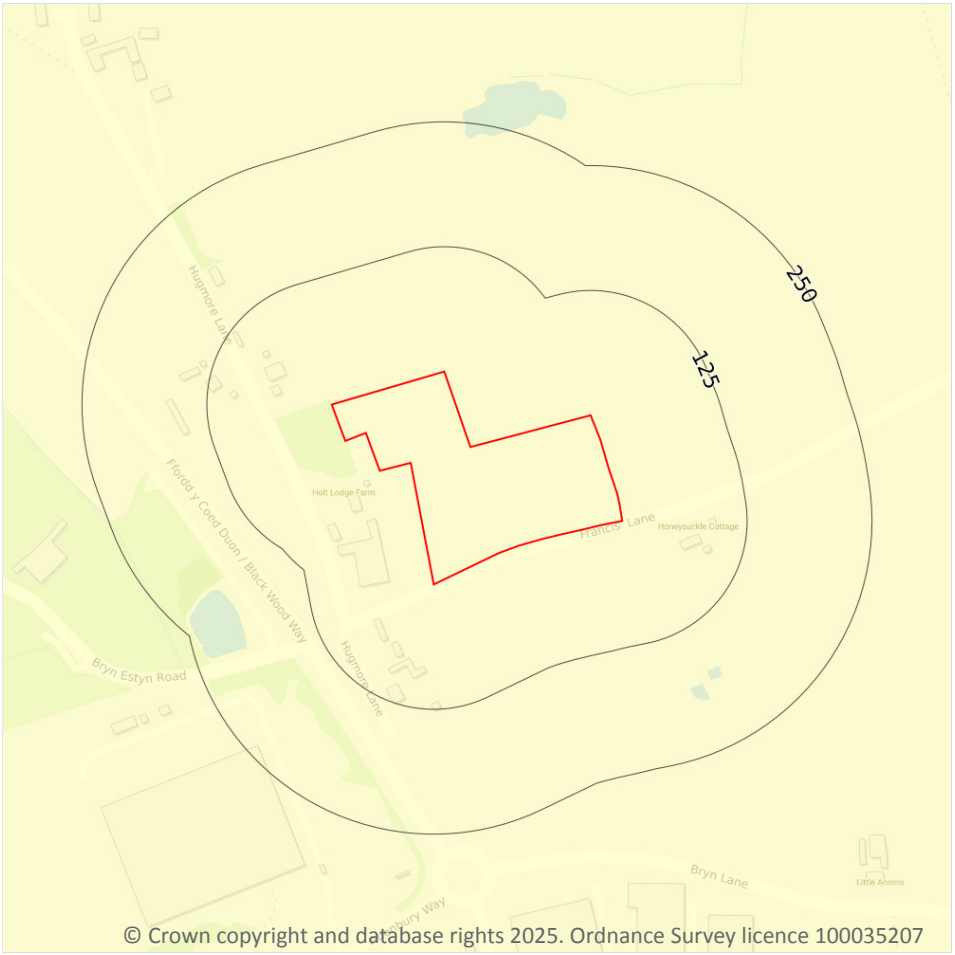
The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 80 >**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



© Crown copyright and database rights 2025. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

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

17.3 Compressible deposits

Records within 50m	1

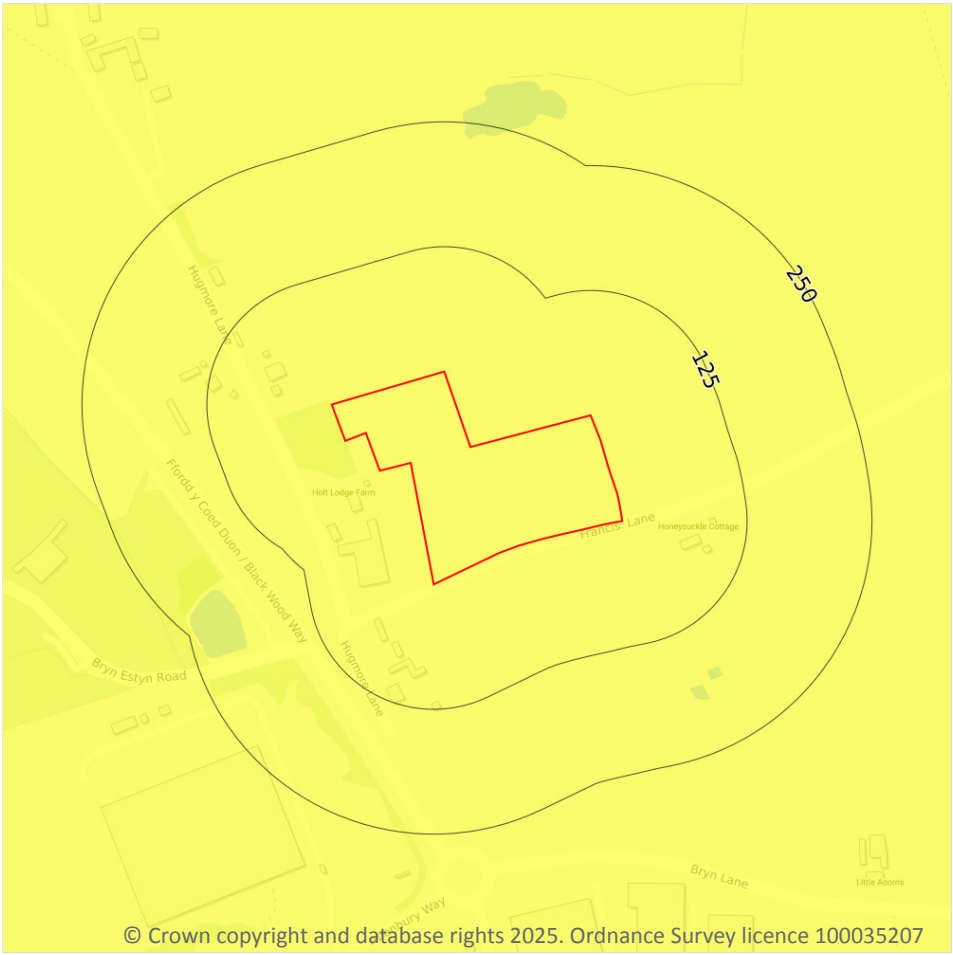
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 81 >**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

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

17.4 Collapsible deposits

Records within 50m	1

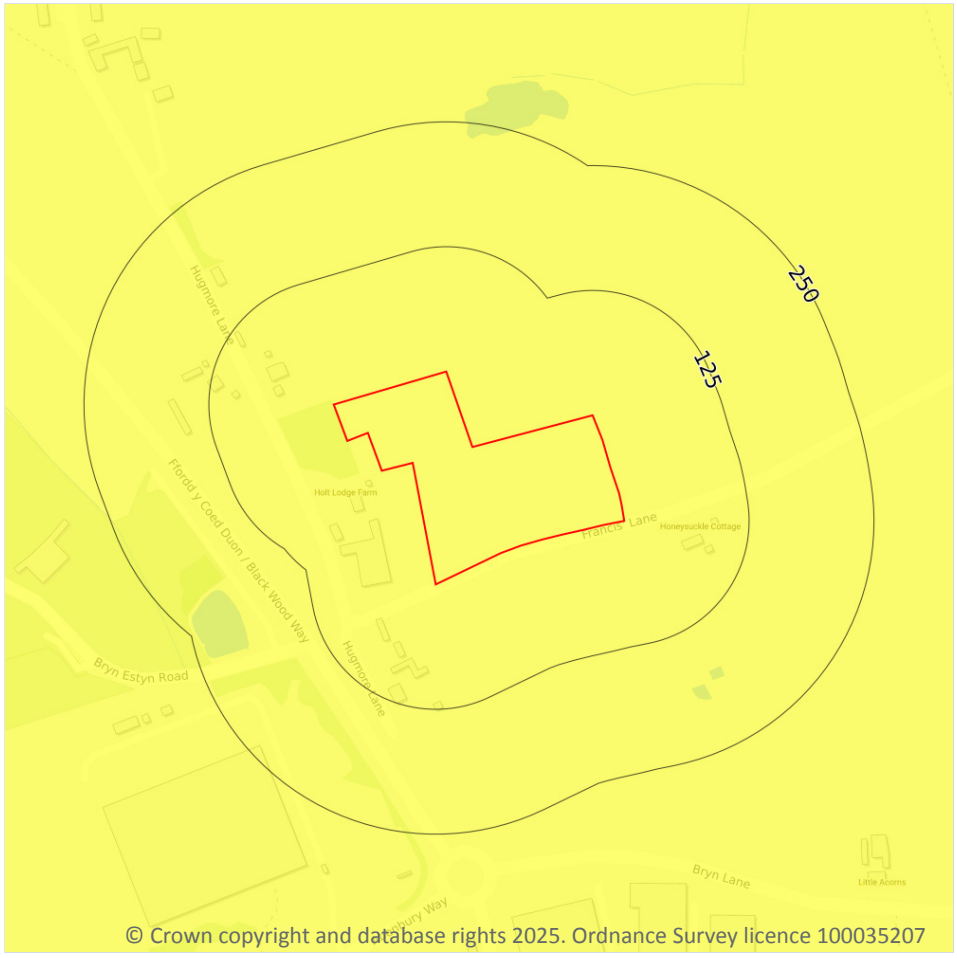
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 82 >**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

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

17.5 Landslides

Records within 50m	1

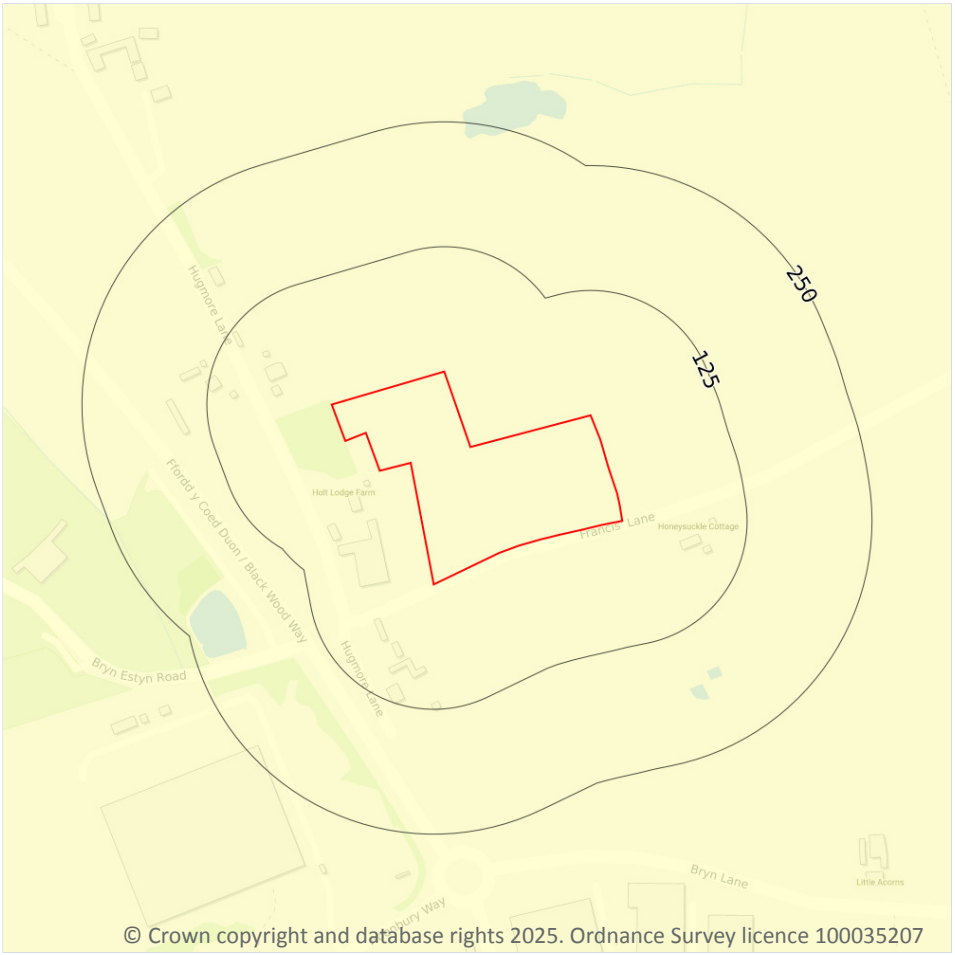
The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 83 >**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



© Crown copyright and database rights 2025. Ordnance Survey licence 100035207

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

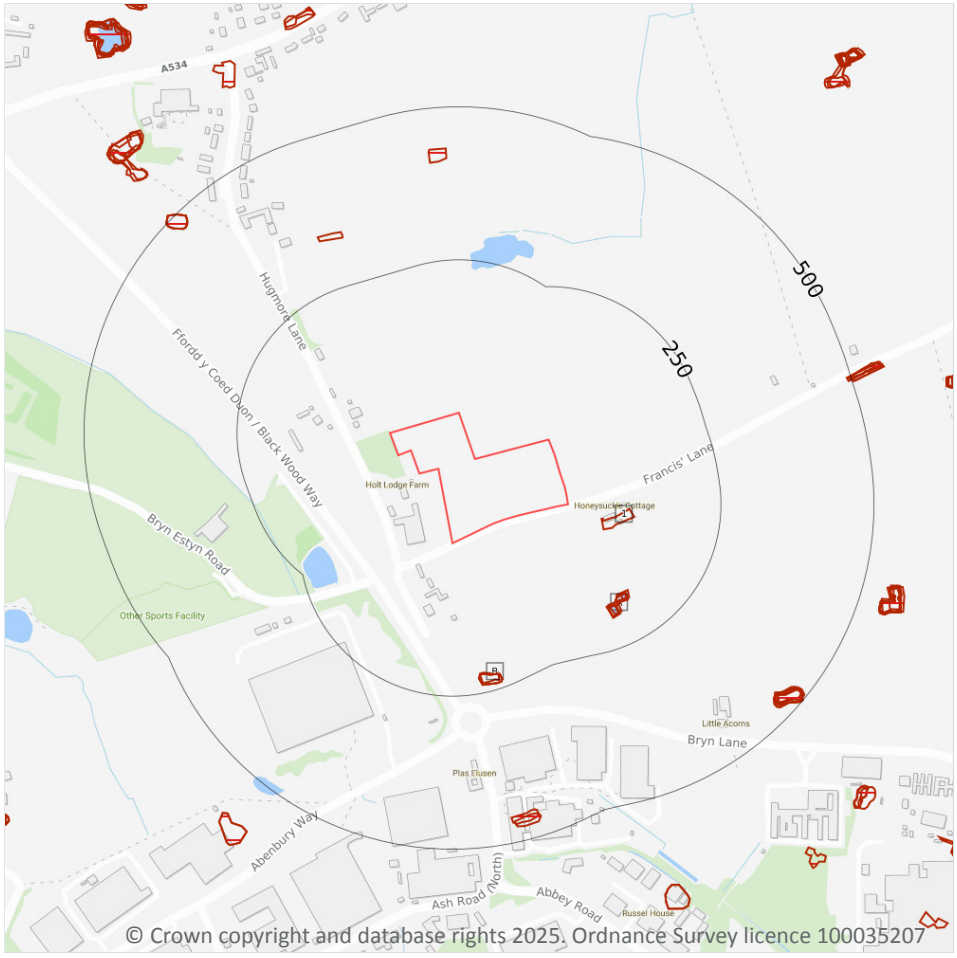
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 84 >**

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

This data is sourced from the British Geological Survey.

18 Mining and ground workings



Site Outline

Search buffers in metres (m)

BritPits

Surface ground workings

Underground workings

Underground mining extents

Historical mineral planning areas

TCA non-coal mining

Non Coal Mining

Sporadic underground mining of restricted extent possible

Localised small scale underground mining possible

Small scale mining possible

Underground mining known or likely within or in close proximity

Underground mining known within or in very close proximity

18.1 BritPits

Records within 500m	0

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.

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m	11

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

Features are displayed on the Mining and ground workings map on **page 86 >**

ID	Location	Land Use	Year of mapping	Mapping scale
1	60m E	Pond	1914	1:10560
A	168m SE	Ponds	1900	1:10560
A	169m SE	Ponds	1914	1:10560
A	172m SE	Ponds	1992	1:10000
A	172m SE	Ponds	1982	1:10000
A	172m SE	Ponds	1960	1:10560
A	172m SE	Ponds	1968	1:10560
B	217m S	Pond	1900	1:10560
B	219m S	Pond	1982	1:10000
B	219m S	Pond	1960	1:10560
B	219m S	Pond	1968	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m	0

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

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground mining extents

Records within 500m	0

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

This data is sourced from Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	0

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	0

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

This data is sourced from the British Geological Survey.

18.7 JPB mining areas

Records on site	0

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

This data is sourced from Johnson Poole and Bloomer.

18.8 The Coal Authority non-coal mining

Records within 500m	0

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

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m	0

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

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m	0

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

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m	0

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

This data is sourced from Groundsure.

18.12 Coal mining

Records on site	1

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

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

This data is sourced from the Coal Authority.

18.13 Brine areas

Records on site	0

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

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

18.14 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 Clay mining

Records on site	0

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

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

19 Ground cavities and sinkholes

19.1 Natural cavities

Records within 500m	0

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

This data is sourced from Stantec UK Ltd.

19.2 Mining cavities

Records within 1000m	0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m	0

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

This data is sourced from Groundsure.

19.4 Historical incidents

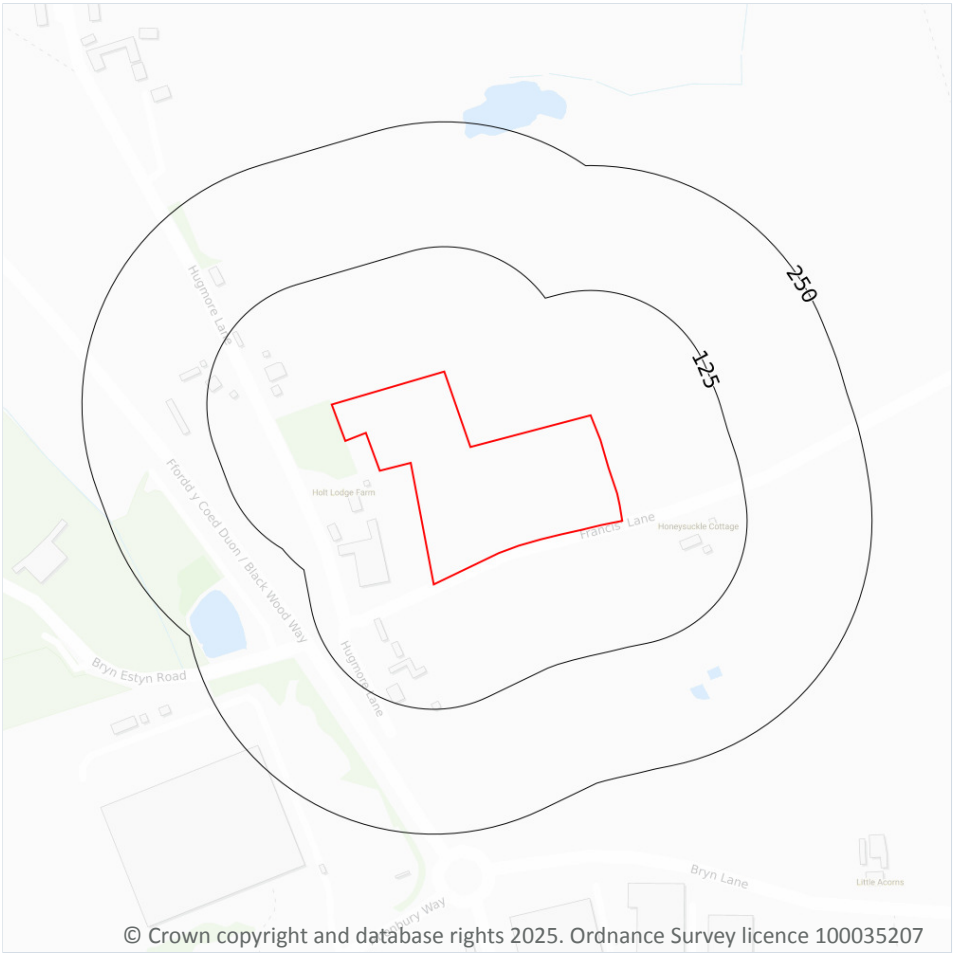
Records within 500m	0

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

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

This data is sourced from Groundsure.

20 Radon



© Crown copyright and database rights 2025. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

- Greater than 30%
- Between 10% and 30%
- Between 5% and 10%
- Between 3% and 5%
- Between 1% and 3%
- Less than 1%

20.1 Radon

Records on site	1

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

Features are displayed on the Radon map on **page 93 >**

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

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

21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m	2

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

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 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**

This data is sourced from the British Geological Survey.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m	0

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

This data is sourced from the British Geological Survey.

21.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

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

This data is sourced from the British Geological Survey.

22 Railway infrastructure and projects

22.1 Underground railways (London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

22.2 Underground railways (Non-London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

22.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 Historical railway and tunnel features

Records within 250m	0

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

This data is sourced from Ordnance Survey/Groundsure.

22.5 Royal Mail tunnels

Records within 250m	0

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

This data is sourced from Groundsure/the Postal Museum.

22.6 Historical railways

Records within 250m	0

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

This data is sourced from OpenStreetMap.

22.7 Railways

Records within 250m	0

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

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 2

Records within 500m	0

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

This data is sourced from publicly available information by Groundsure.

22.9 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.

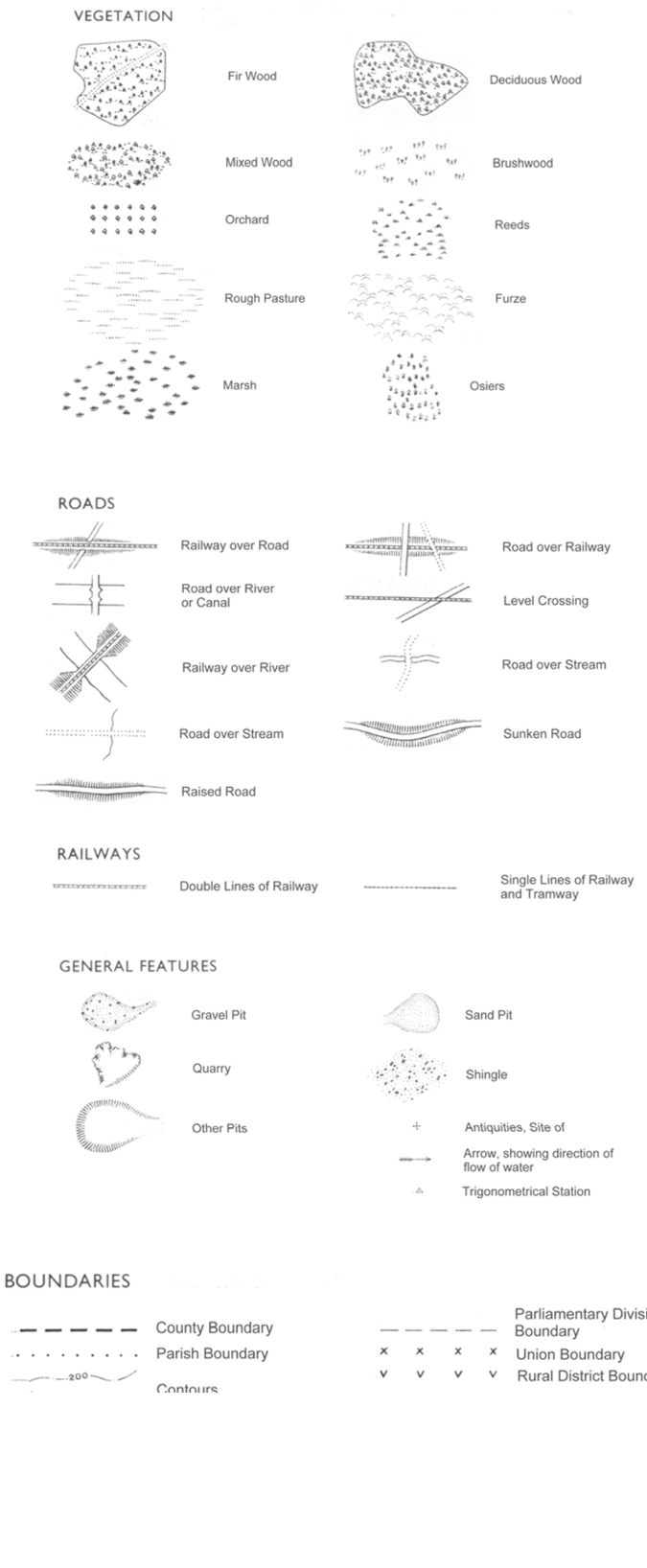
Data providers

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 ↗.

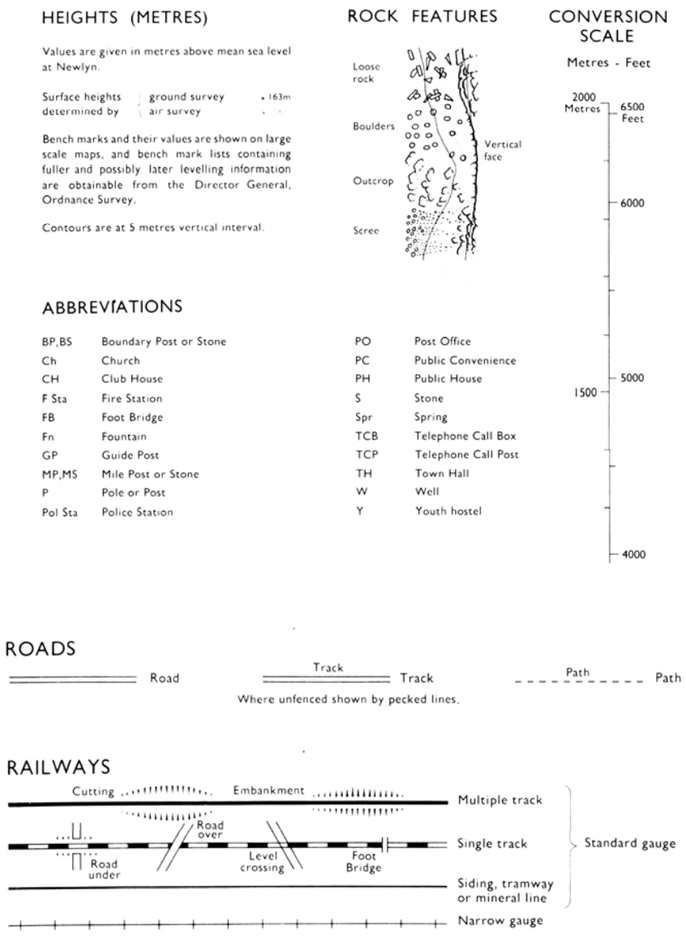
Terms and conditions

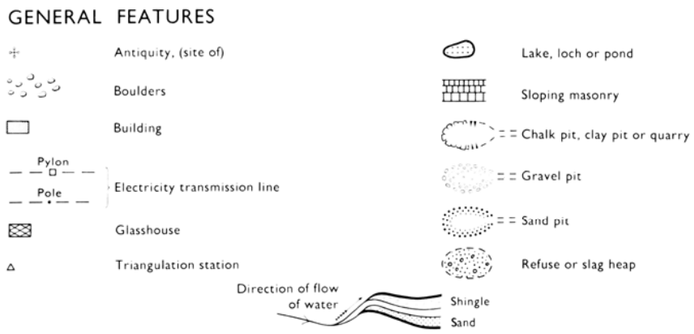
Groundsure's Terms and Conditions can be accessed at this link: www.groundsure.com/terms-and-conditions-april-2023/ ↗.

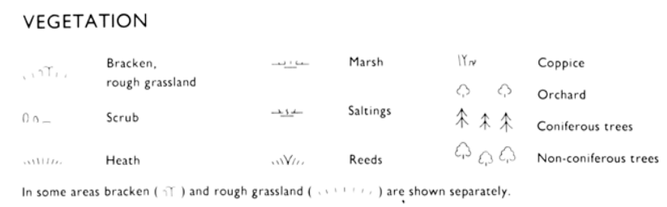
County Series 1:10,560 scale



National Grid 1:10,000 scale







GroundSure

Historical Map Pack Legend

County Series & National Grid

1:10,560 scale & 1:10,000 scale

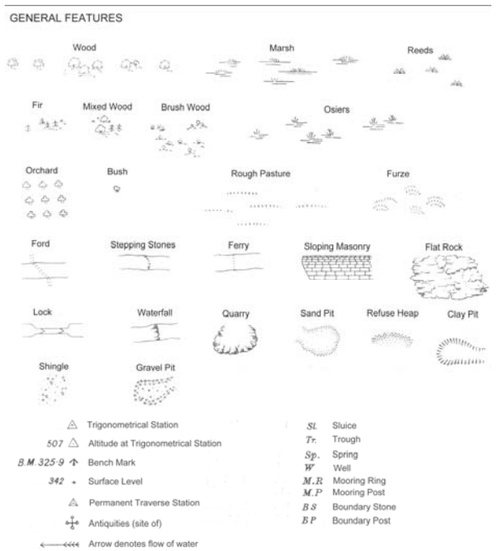
Information present on these legends is sourced from the same Ordnance Survey mapping as the maps used in this product.

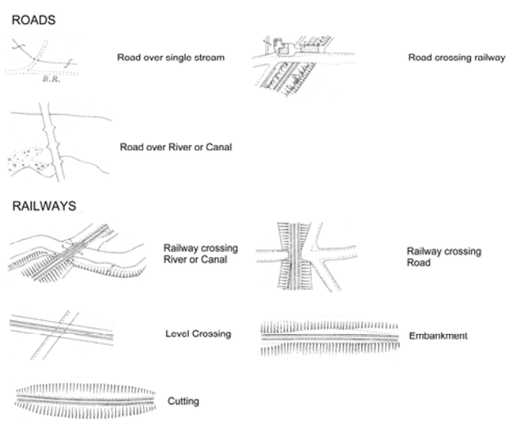
If you have a query regarding any of the maps provided please contact GroundSure's technical helpline. We will endeavour to answer any queries you may have.

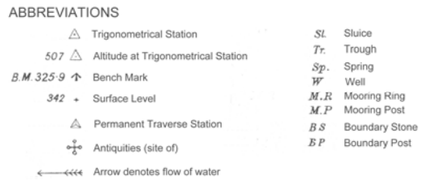
Technical Helpline

Tel:01273 819 700
maps&data@groundsure.com
www.groundsure.com

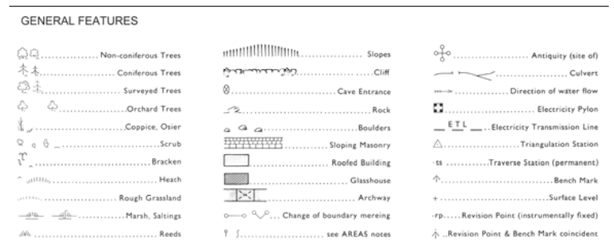
County Series 1:2,500 scale

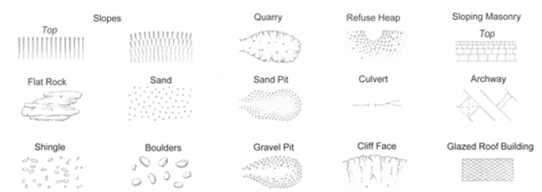


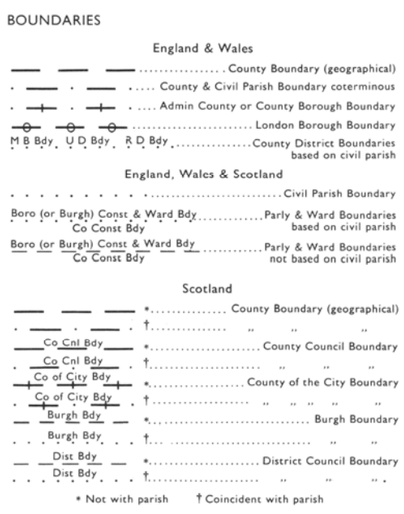


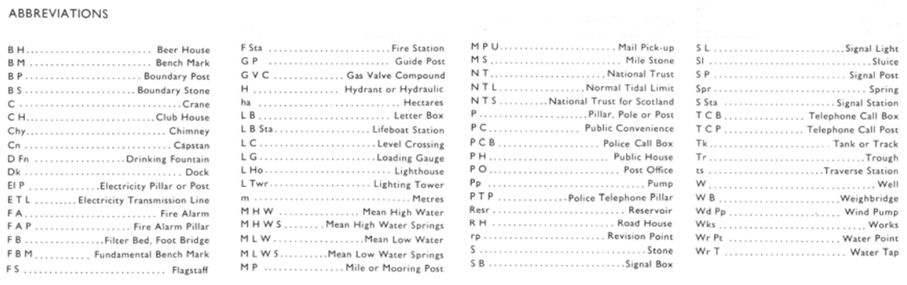


National Grid 1:2,500 / 1:1,250 scale









GroundSure

Historical Map Pack Legend

County Series

1:1,250 scale

~

County Series & National Grid

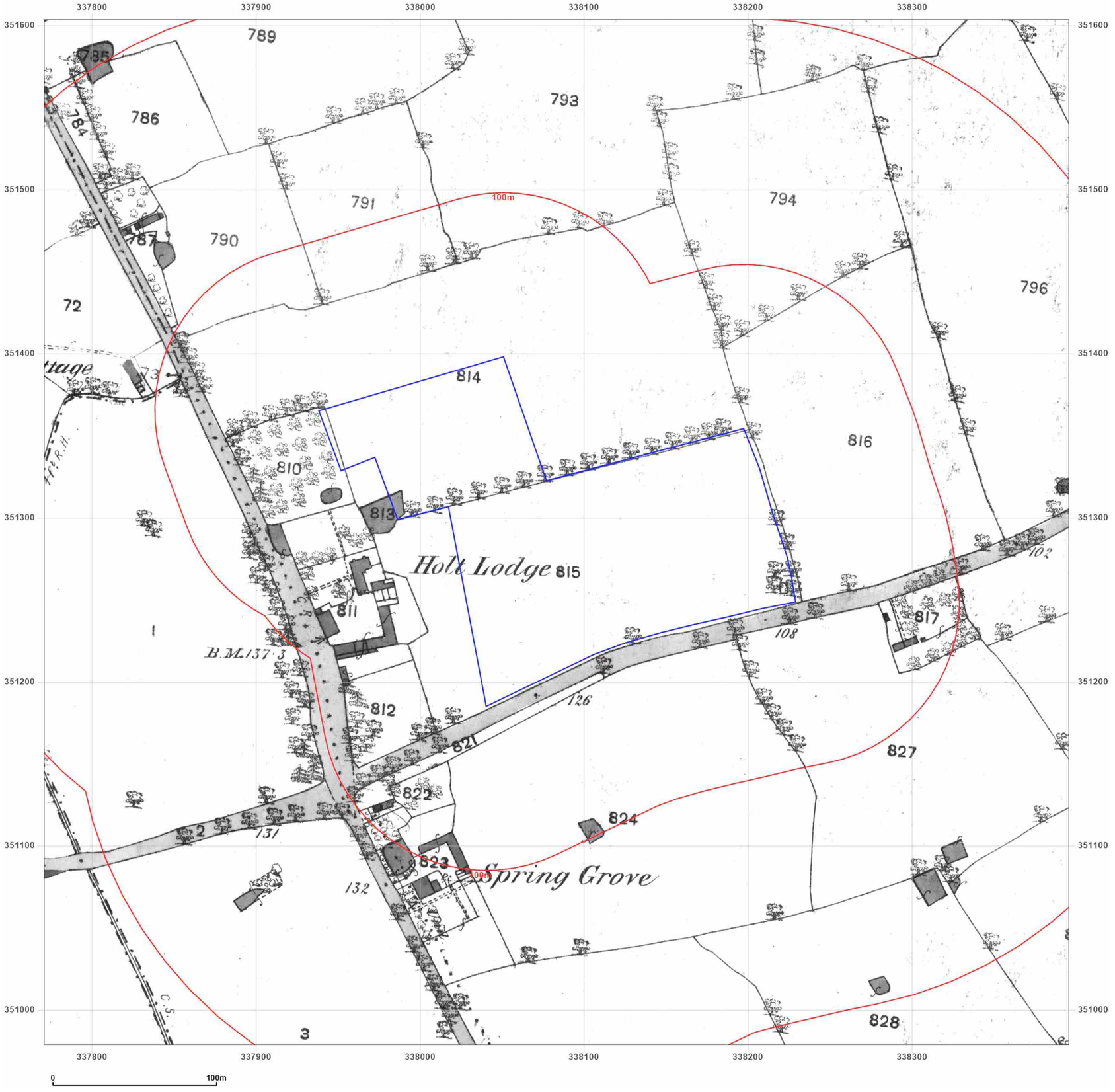
1:2,500 scale

Information present on these legends is sourced from the same Ordnance Survey mapping as the maps used in this product.

If you have a query regarding any of the maps provided within this map pack, please contact GroundSure's technical helpline. We will endeavour to answer any queries you may have.

Technical Helpline:

Tel:01273 819 700
maps&data@groundsure.com
www.groundsure.com



Groundsure INSIGHTS

Site Details:

Ecological Site, Uptopia City, Wrexham

Client Ref: TE1905 / PO3501
Report Ref: GS-DBZ-K25-F69-RDW
Grid Ref: 338083, 351291

Map Name: County Series

Map date: **1873**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

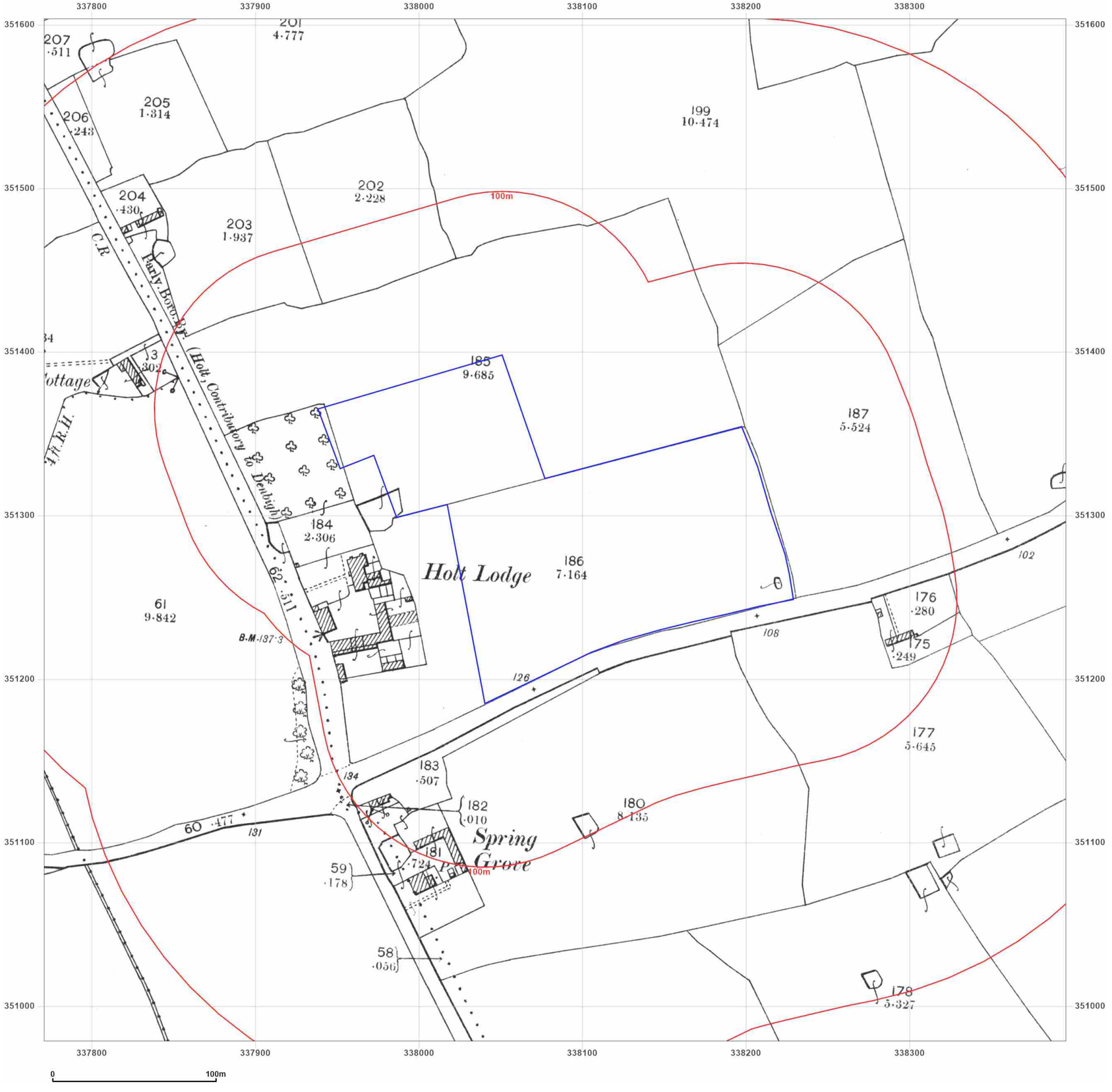
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 20 January 2025

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



Groundsure INSIGHTS

Site Details:

Ecological Site, Uptopia City, Wrexham

Client Ref: TE1905 / PO3501
Report Ref: GS-DBZ-K25-F69-RDW
Grid Ref: 338083, 351291

Map Name: County Series

Map date: **1899**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

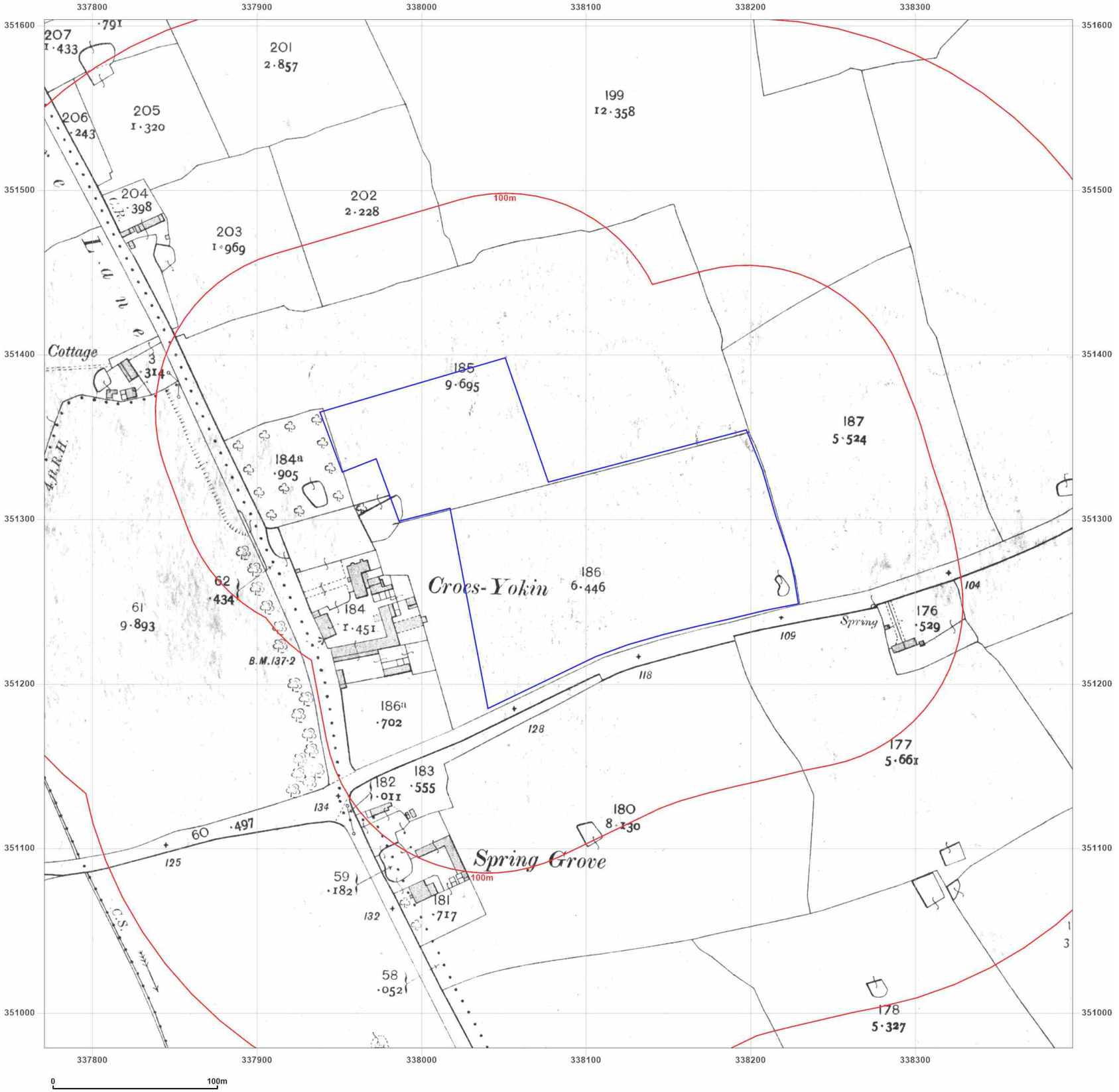
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 20 January 2025

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



Groundsure INSIGHTS

Site Details:

Ecological Site, Uptopia City, Wrexham

Client Ref: TE1905 / PO3501
Report Ref: GS-DBZ-K25-F69-RDW
Grid Ref: 338083, 351291

Map Name: County Series

Map date: **1912**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1912
Revised 1912
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 20 January 2025

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



Groundsure INSIGHTS

Site Details:

Ecological Site, Uptopia City, Wrexham

Client Ref: TE1905 / PO3501
Report Ref: GS-DBZ-K25-F69-RDW
Grid Ref: 338083, 351291

Map Name: National Grid

Map date: **1961-1964**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

Surveyed 1962
Revised 1962
Edition N/A
Copyright 1964
Levelled 1959

Surveyed 1960
Revised 1960
Edition N/A
Copyright 1961
Levelled 1950

Surveyed 1960
Revised 1960
Edition N/A
Copyright 1961
Levelled 1950

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 20 January 2025

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



Groundsure INSIGHTS

Site Details:

Ecological Site, Uptopia City, Wrexham

Client Ref: TE1905 / PO3501
Report Ref: GS-DBZ-K25-F69-RDW
Grid Ref: 338083, 351291

Map Name: National Grid

Map date: **1961-1964**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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

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

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

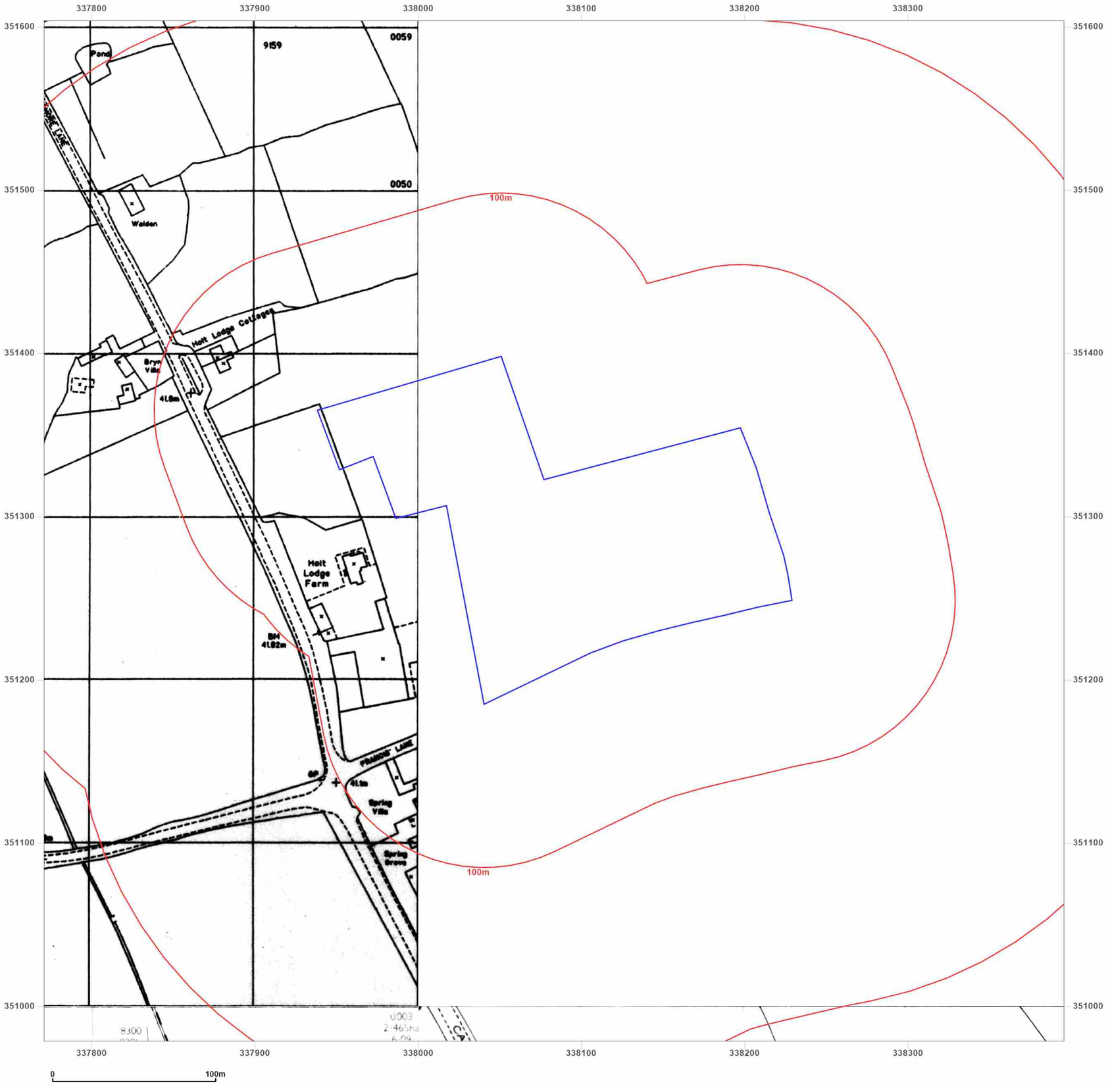
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 20 January 2025

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



Groundsure INSIGHTS

Site Details:

Ecological Site, Uptopia City,
Wrexham

Client Ref: TE1905 / PO3501
Report Ref: GS-DBZ-K25-F69-RDW
Grid Ref: 338083, 351291

Map Name: National Grid

Map date: **1988-1991**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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

Surveyed 1959
Revised 1989
Edition N/A
Copyright 1989
Levelled 1959

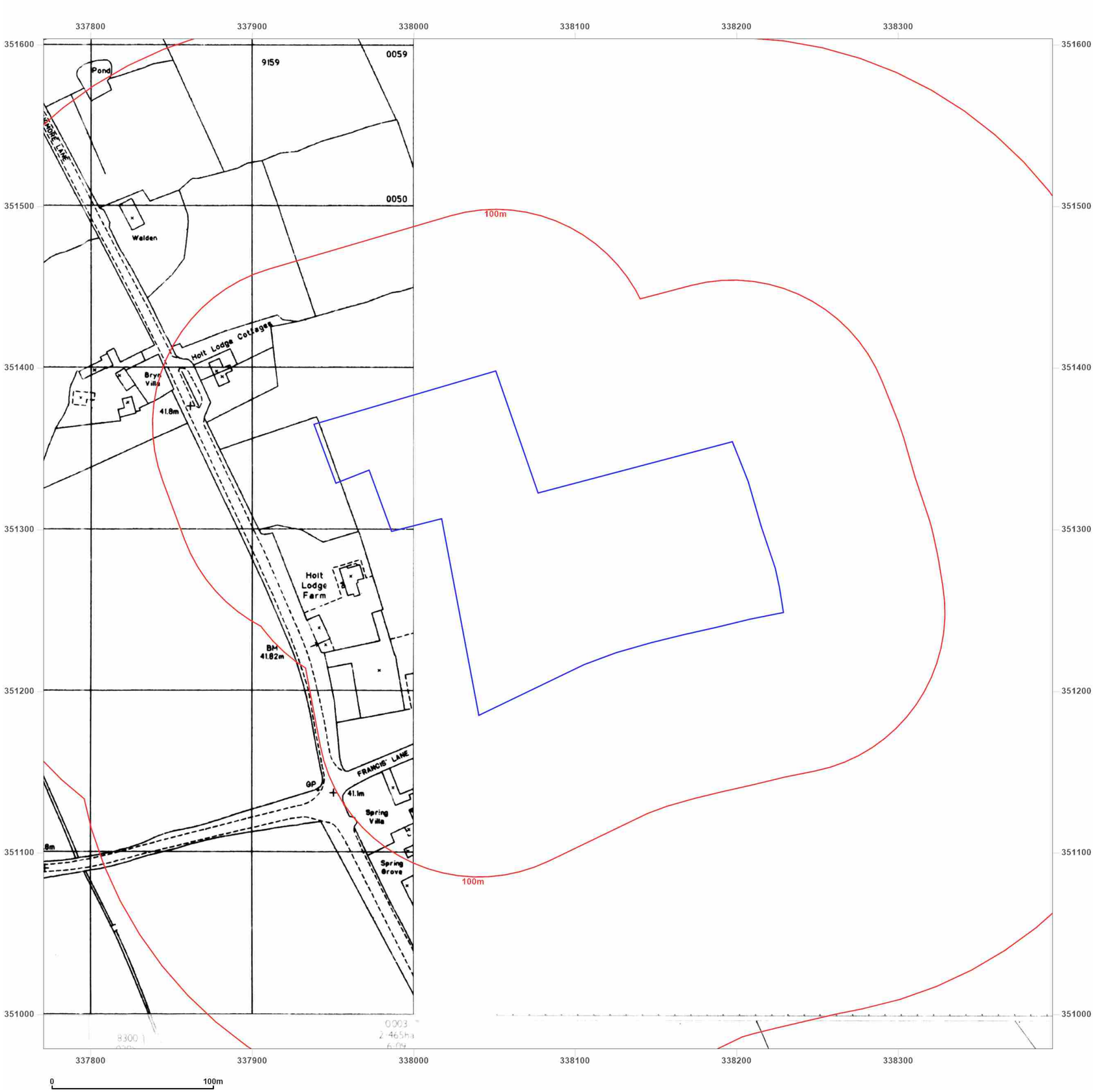
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 20 January 2025

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



Groundsure INSIGHTS

Site Details:

Ecological Site, Uptopia City, Wrexham

Client Ref: TE1905 / PO3501
Report Ref: GS-DBZ-K25-F69-RDW
Grid Ref: 338083, 351291

Map Name: National Grid

Map date: **1989-1991**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1989
Levelled 1959

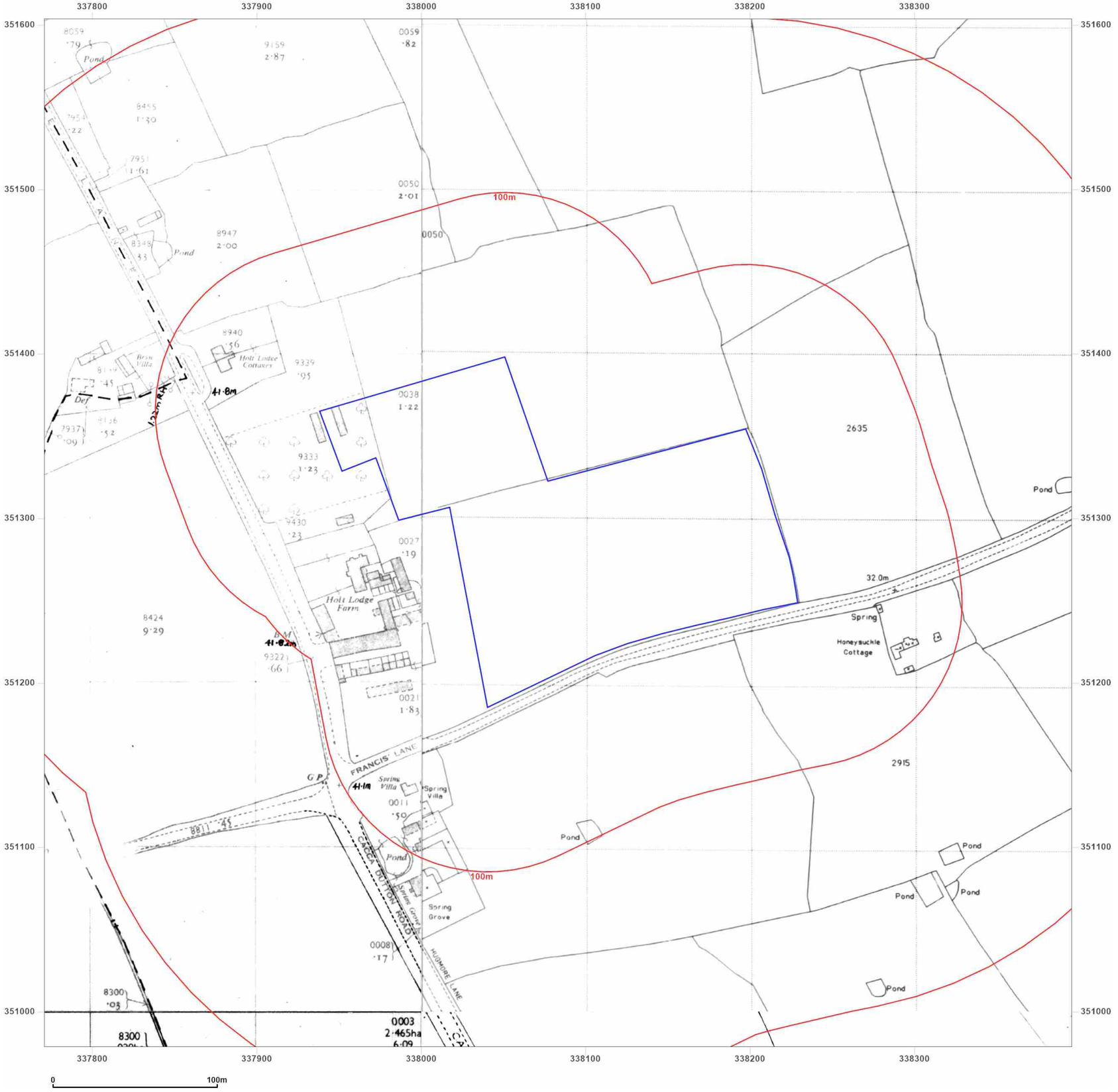
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 20 January 2025

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



Groundsure INSIGHTS

Site Details:

Ecological Site, Uptopia City, Wrexham

Client Ref: TE1905 / PO3501
Report Ref: GS-DBZ-K25-F69-RDW
Grid Ref: 338083, 351291

Map Name: National Grid

Map date: **1987-1992**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1959 Revised 1988 Edition N/A Copyright 1988 Levelled 1959	Surveyed 1992 Revised N/A Edition N/A Copyright 1992 Levelled N/A
Surveyed 1959 Revised 1988 Edition N/A Copyright 1988 Levelled 1959	Surveyed N/A Revised N/A Edition N/A Copyright 1987 Levelled 1959

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 20 January 2025

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



Groundsure INSIGHTS

Site Details:

Ecological Site, Uptopia City, Wrexham

Client Ref: TE1905 / PO3501
Report Ref: GS-DBZ-K25-F69-RDW
Grid Ref: 338083, 351291

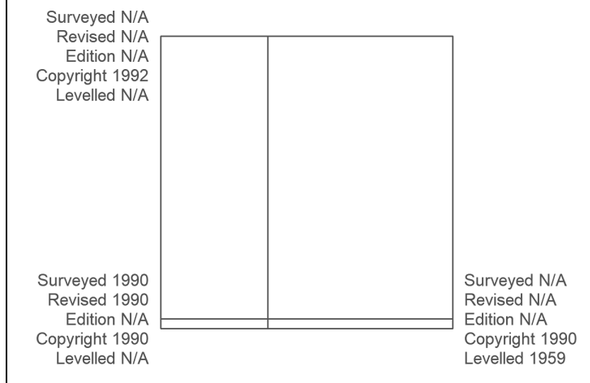
Map Name: National Grid

Map date: **1990-1992**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 20 January 2025

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



Groundsure INSIGHTS

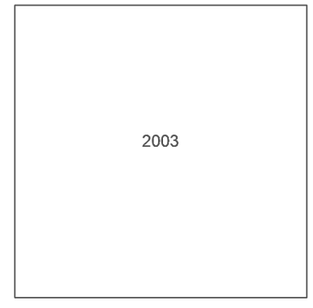
Site Details:

Ecological Site, Uptopia City,
Wrexham

Client Ref: TE1905 / PO3501
Report Ref: GS-DBZ-K25-F69-RDW
Grid Ref: 338083, 351291

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

N
W E
S



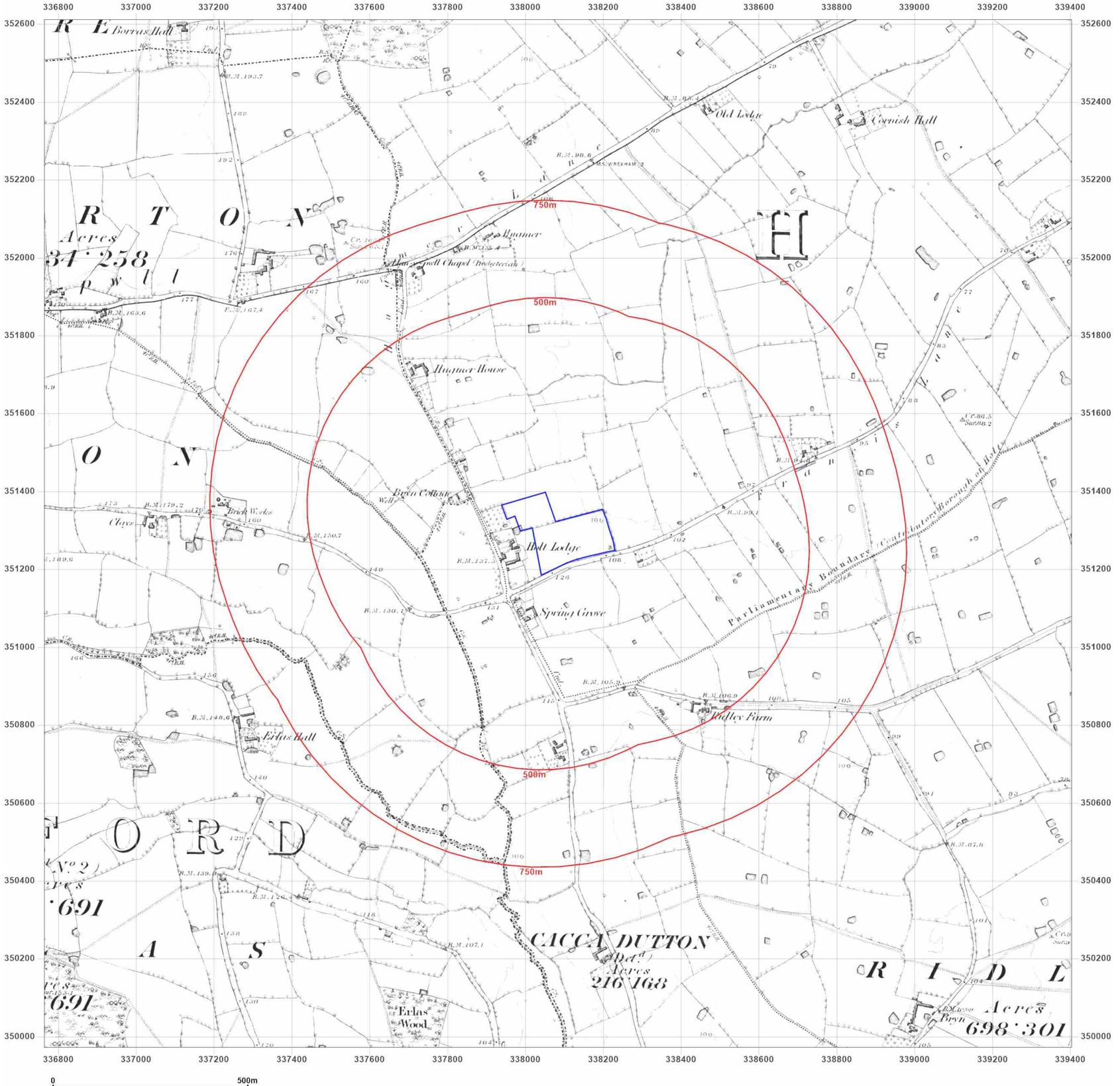
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 20 January 2025

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



Groundsure INSIGHTS

Site Details:

Ecological Site, Uptopia City, Wrexham

Client Ref: TE1905 / PO3501
Report Ref: GS-DBZ-K25-F69-RDW
Grid Ref: 338083, 351291

Map Name: County Series

Map date: **1872**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1872
Revised 1872
Edition N/A
Copyright N/A
Levelled N/A

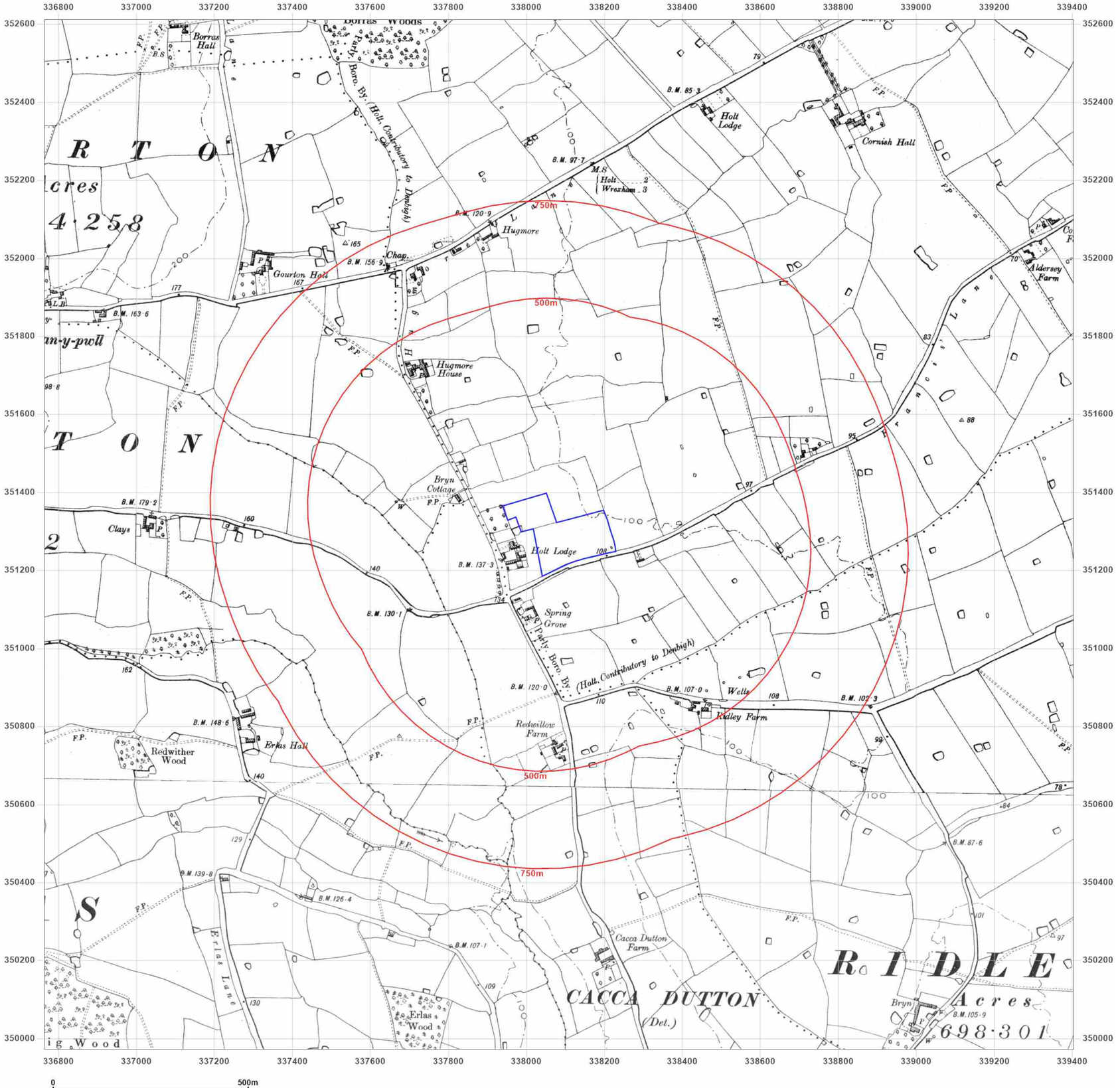
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 20 January 2025

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



Groundsure INSIGHTS

Site Details:

Ecological Site, Uptopia City, Wrexham

Client Ref: TE1905 / PO3501
Report Ref: GS-DBZ-K25-F69-RDW
Grid Ref: 338083, 351291

Map Name: County Series

Map date: **1898-1900**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

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

Surveyed 1872
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

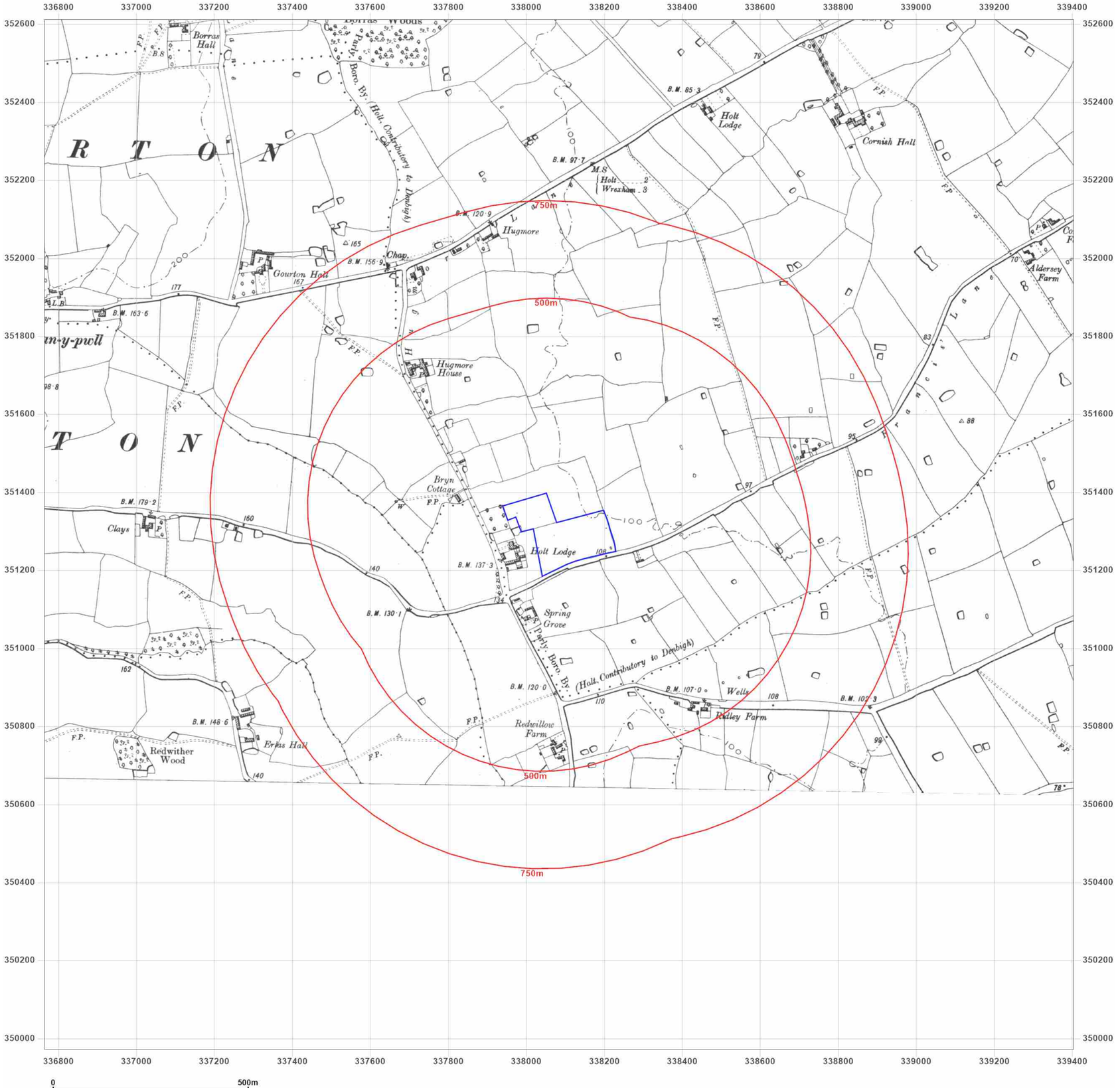
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 20 January 2025

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



Groundsure INSIGHTS

Site Details:

Ecological Site, Uptopia City, Wrexham

Client Ref: TE1905 / PO3501
Report Ref: GS-DBZ-K25-F69-RDW
Grid Ref: 338083, 351291

Map Name: County Series

Map date: **1900**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1872
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

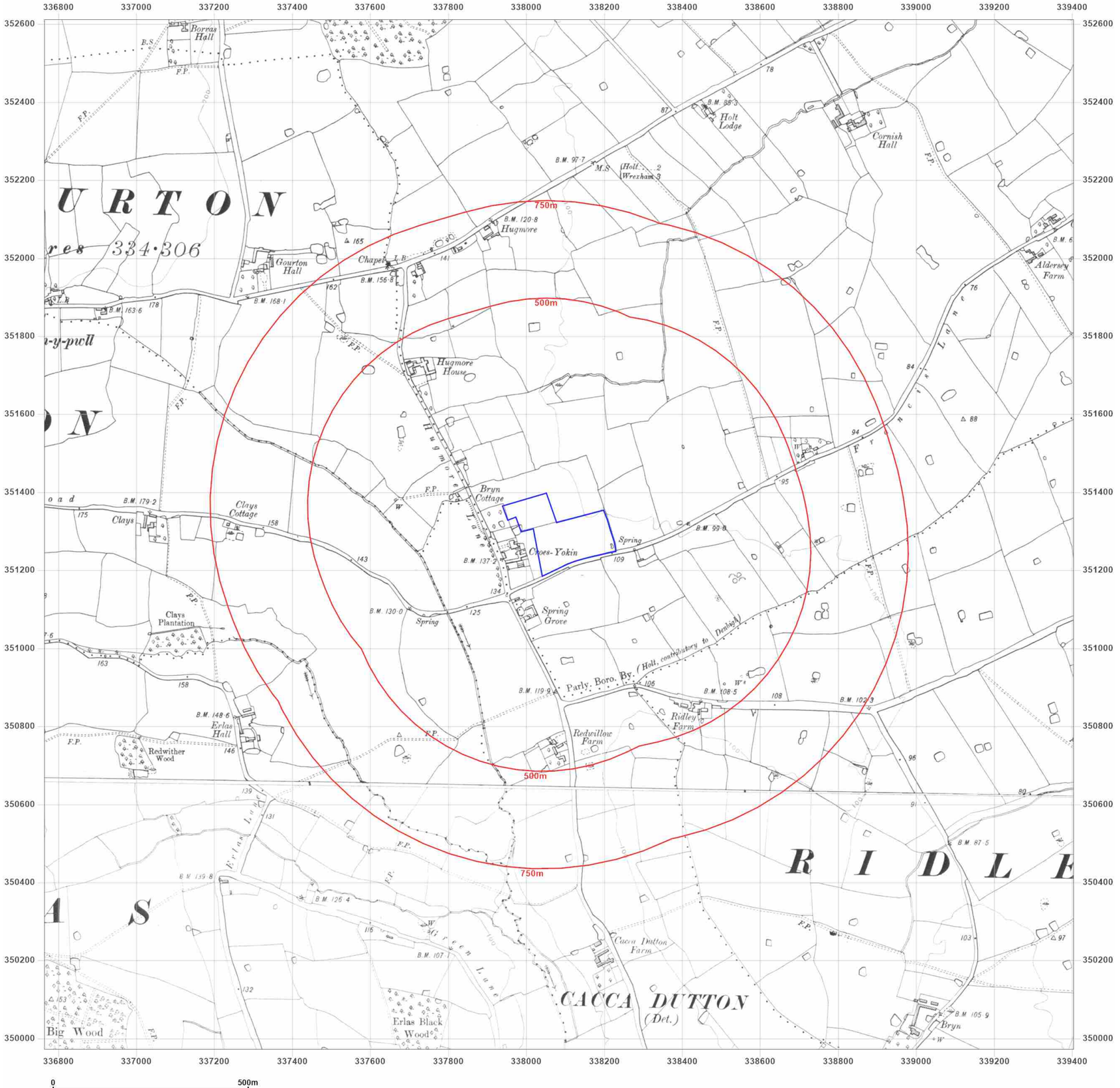
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 20 January 2025

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



Groundsure INSIGHTS

Site Details:

Ecological Site, Uptopia City, Wrexham

Client Ref: TE1905 / PO3501
Report Ref: GS-DBZ-K25-F69-RDW
Grid Ref: 338083, 351291

Map Name: County Series

Map date: **1909-1914**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1871
Revised 1914
Edition 1914
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1909
Edition N/A
Copyright N/A
Levelled N/A

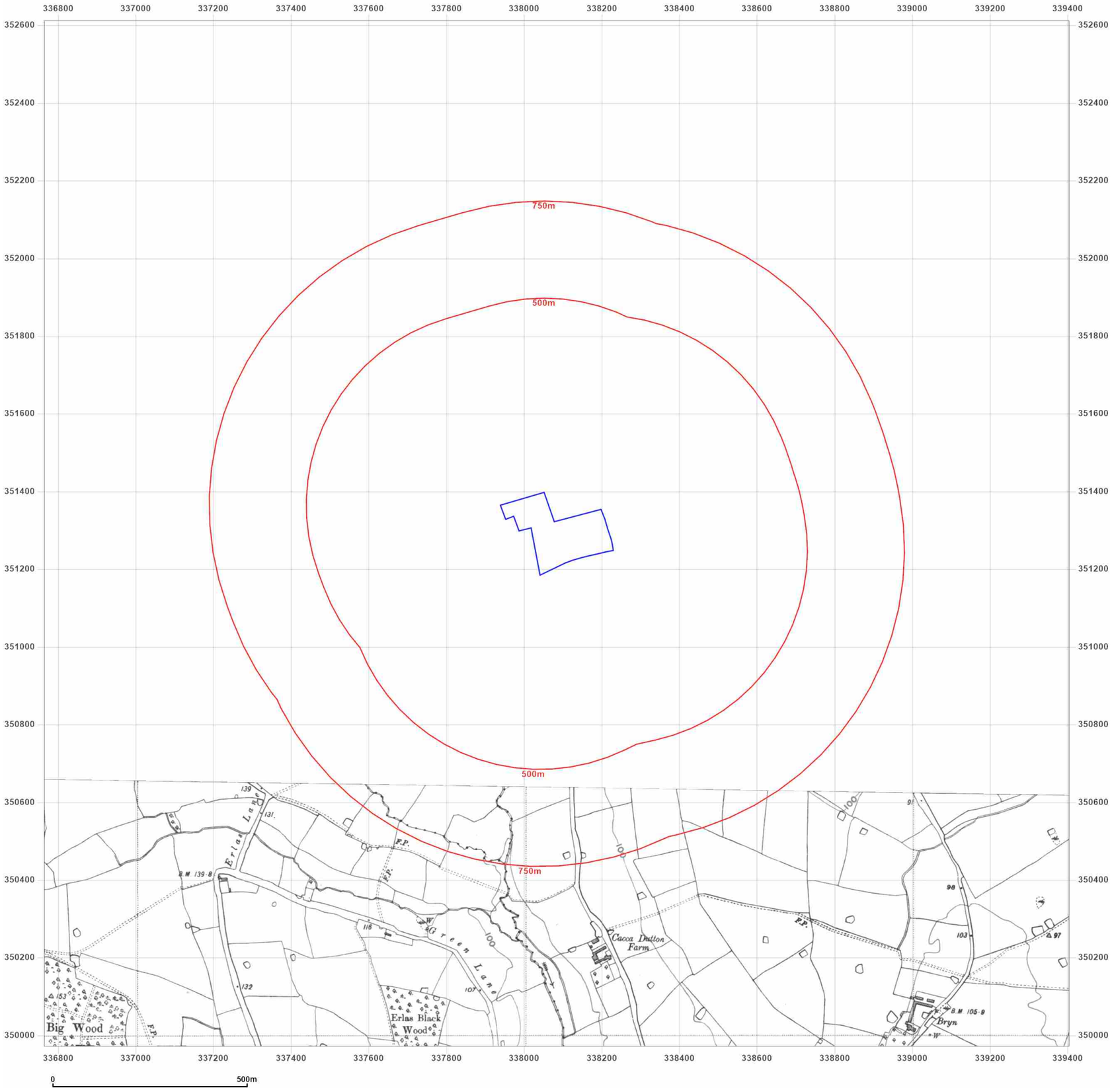
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 20 January 2025

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



Groundsure INSIGHTS

Site Details:

Ecological Site, Uptopia City, Wrexham

Client Ref: TE1905 / PO3501
Report Ref: GS-DBZ-K25-F69-RDW
Grid Ref: 338083, 351291

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1872
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

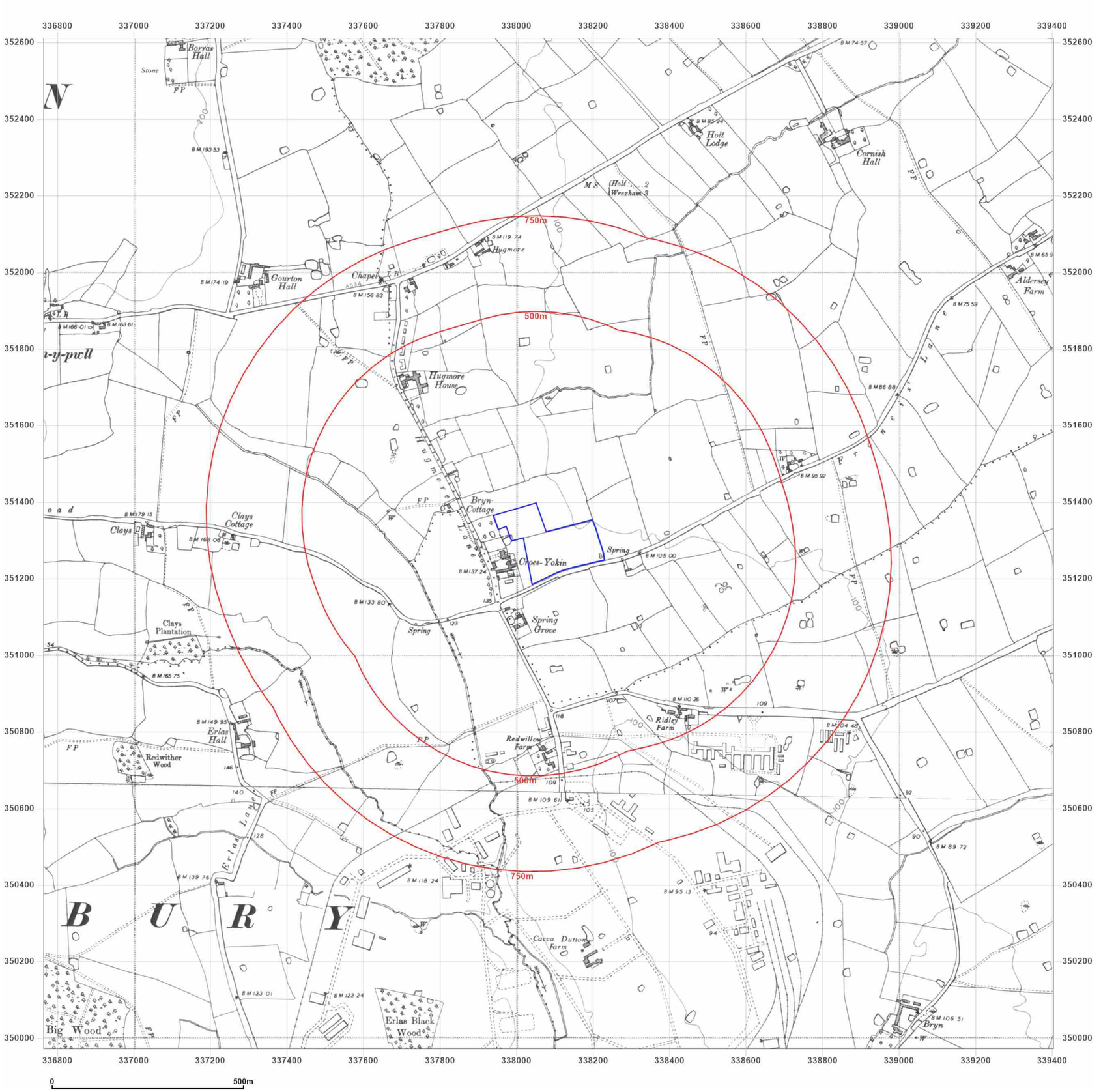
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 20 January 2025

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



Groundsure INSIGHTS

Site Details:

Ecological Site, Uptopia City, Wrexham

Client Ref: TE1905 / PO3501
Report Ref: GS-DBZ-K25-F69-RDW
Grid Ref: 338083, 351291

Map Name: County Series

Map date: **1949**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1871
Revised 1949
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1949
Edition N/A
Copyright N/A
Levelled N/A

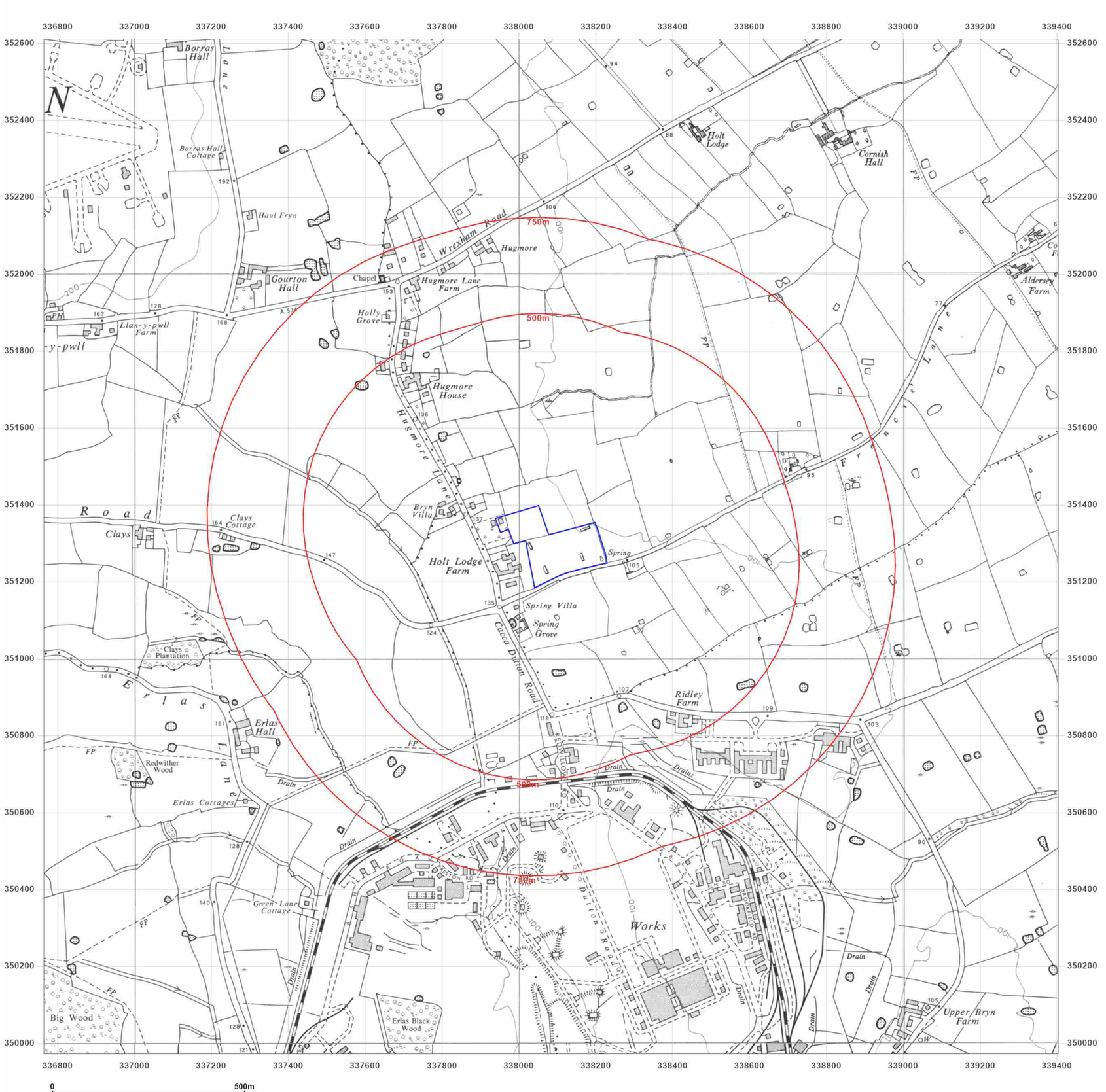
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 20 January 2025

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



Groundsure INSIGHTS

Site Details:

Ecological Site, Uptopia City, Wrexham

Client Ref: TE1905 / PO3501
Report Ref: GS-DBZ-K25-F69-RDW
Grid Ref: 338083, 351291

Map Name: Provisional

Map date: **1960-1964**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1874
Revised 1960
Edition N/A
Copyright N/A
Levelled N/A

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

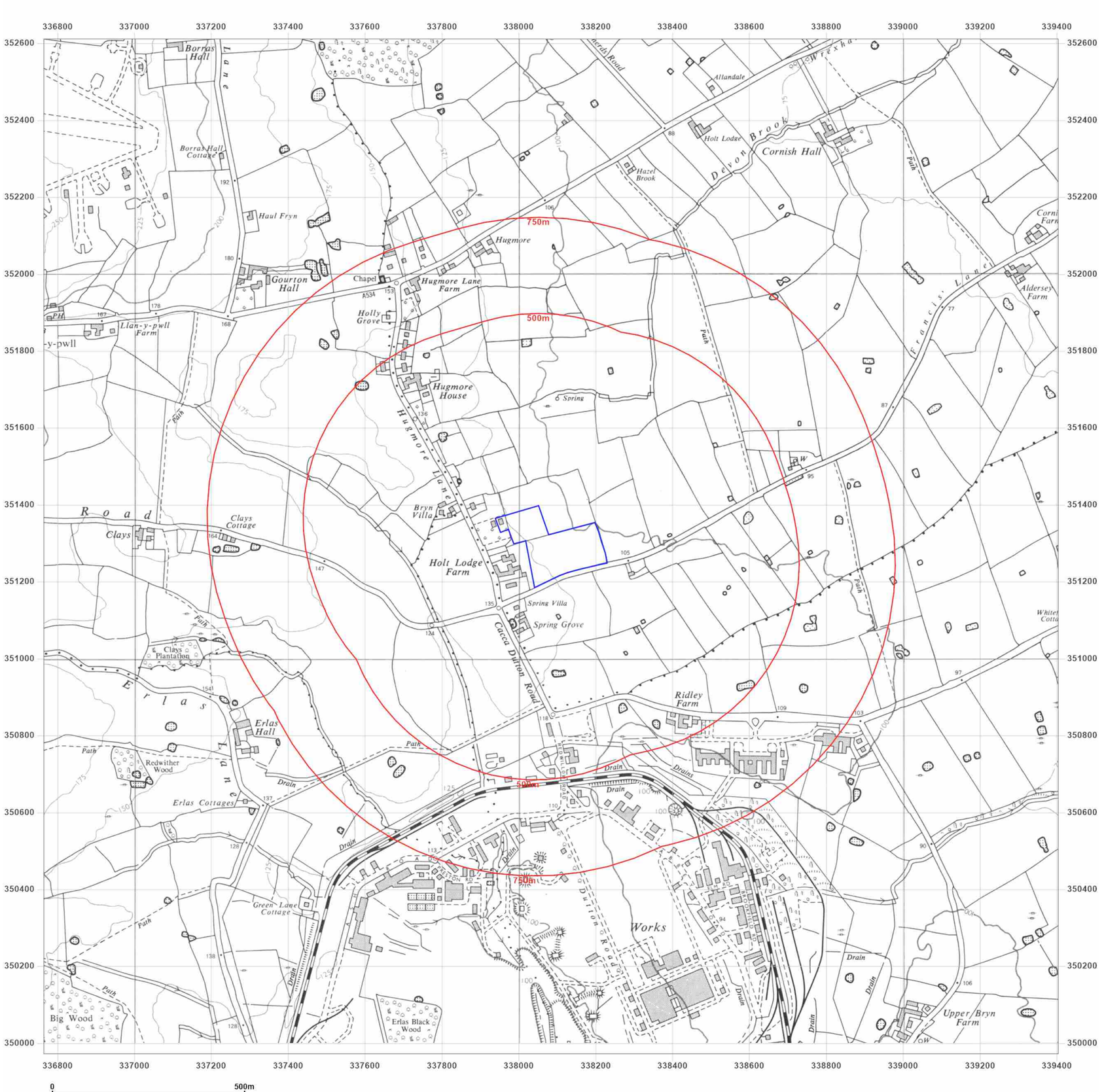
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 20 January 2025

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



Groundsure INSIGHTS

Site Details:

Ecological Site, Uptopia City, Wrexham

Client Ref: TE1905 / PO3501
Report Ref: GS-DBZ-K25-F69-RDW
Grid Ref: 338083, 351291

Map Name: Provisional

Map date: **1968**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1968
Revised 1968
Edition N/A
Copyright N/A
Levelled N/A

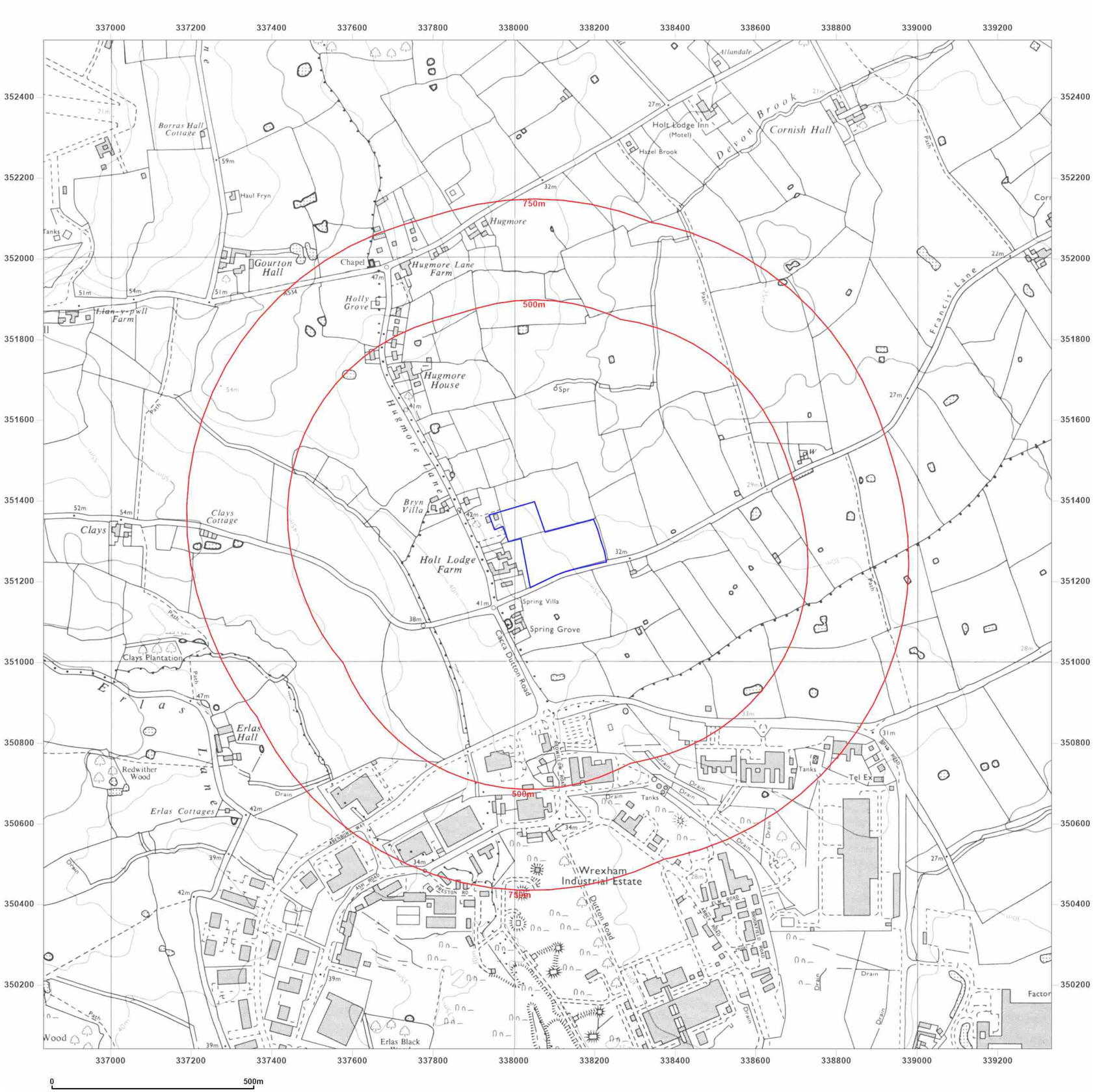
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 20 January 2025

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



Groundsure INSIGHTS

Site Details:

Ecological Site, Uptopia City, Wrexham

Client Ref: TE1905 / PO3501
Report Ref: GS-DBZ-K25-F69-RDW
Grid Ref: 338083, 351291

Map Name: National Grid

Map date: **1982**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1970
Revised 1982
Edition N/A
Copyright N/A
Levelled N/A

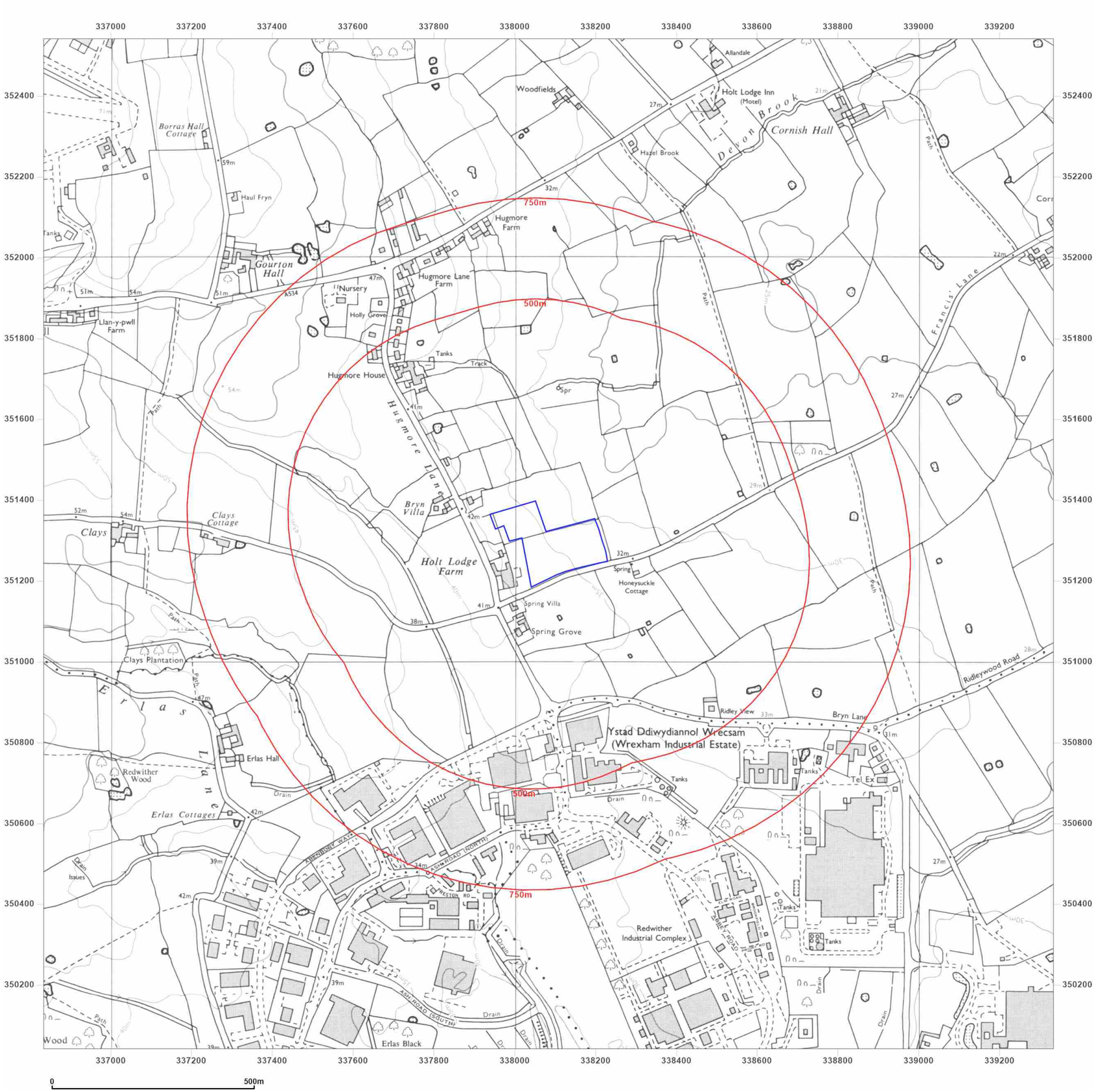
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 20 January 2025

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



Groundsure INSIGHTS

Site Details:

Ecological Site, Uptopia City, Wrexham

Client Ref: TE1905 / PO3501
Report Ref: GS-DBZ-K25-F69-RDW
Grid Ref: 338083, 351291

Map Name: National Grid

Map date: **1992**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1990
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

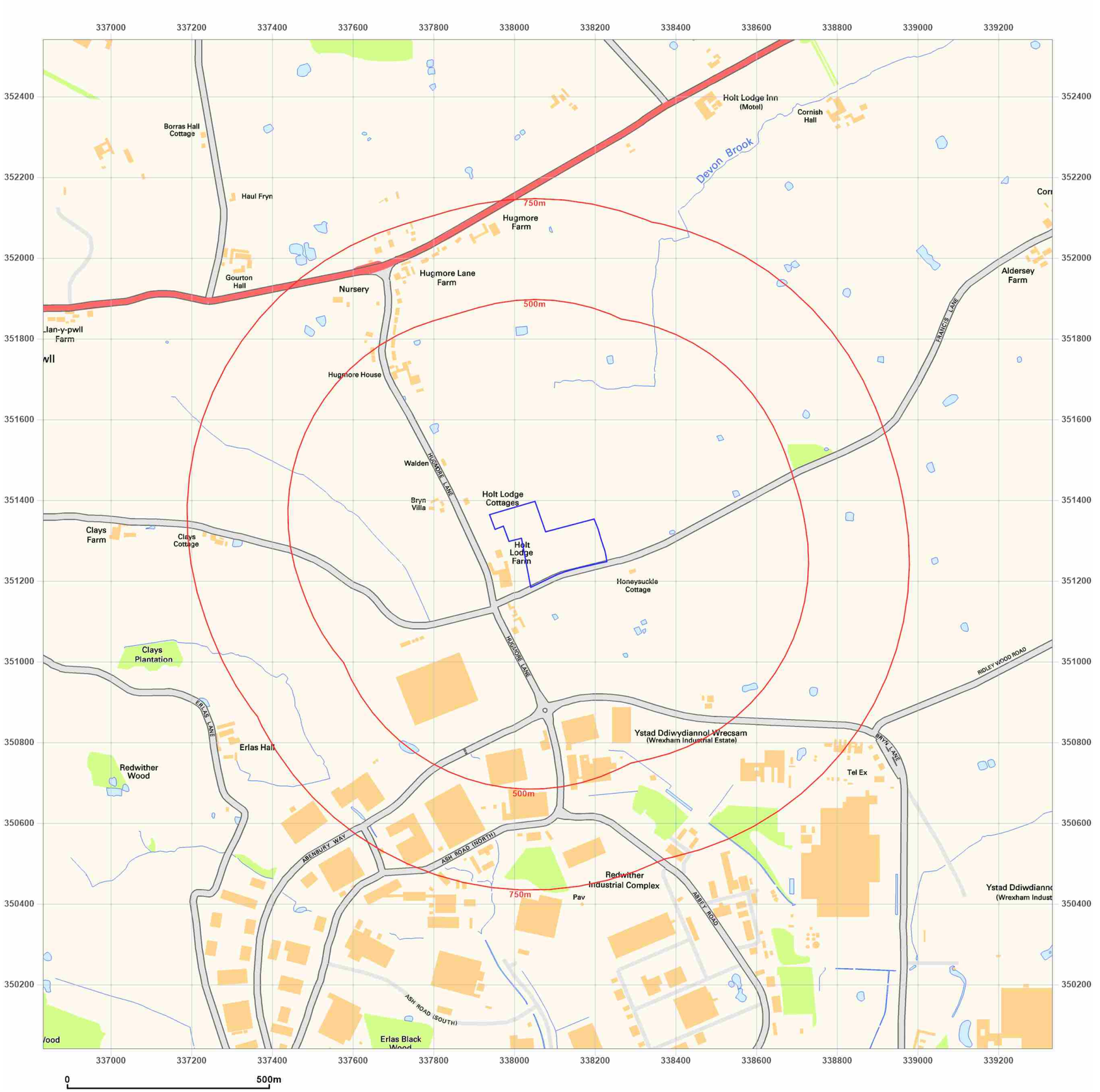
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 20 January 2025

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



Groundsure INSIGHTS

Site Details:

Ecological Site, Uptopia City, Wrexham

Client Ref: TE1905 / PO3501
Report Ref: GS-DBZ-K25-F69-RDW
Grid Ref: 338083, 351291

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2001

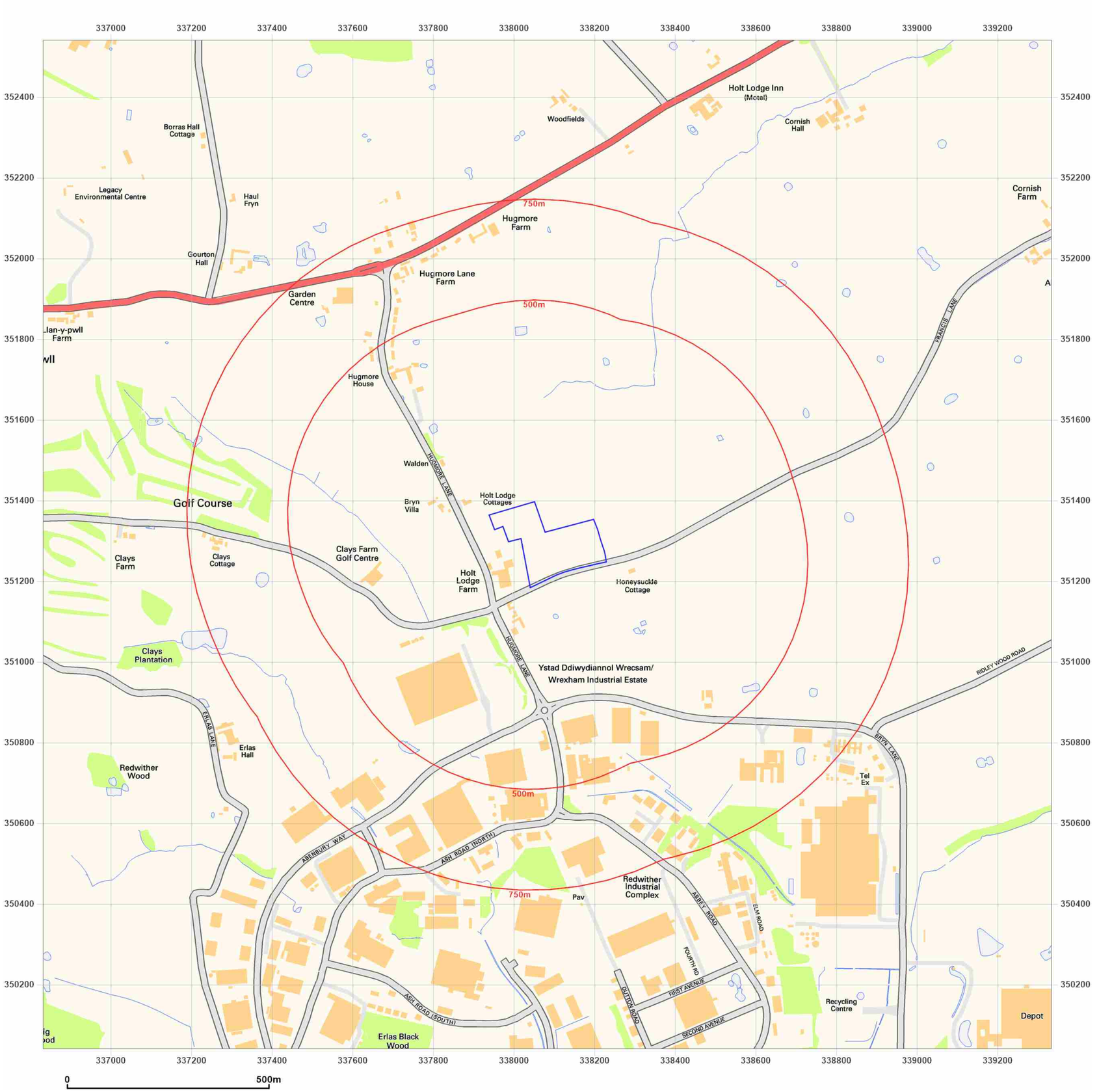
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 20 January 2025

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



Groundsure INSIGHTS

Site Details:

Ecological Site, Uptopia City,
Wrexham

Client Ref: TE1905 / PO3501
Report Ref: GS-DBZ-K25-F69-RDW
Grid Ref: 338083, 351291

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2010

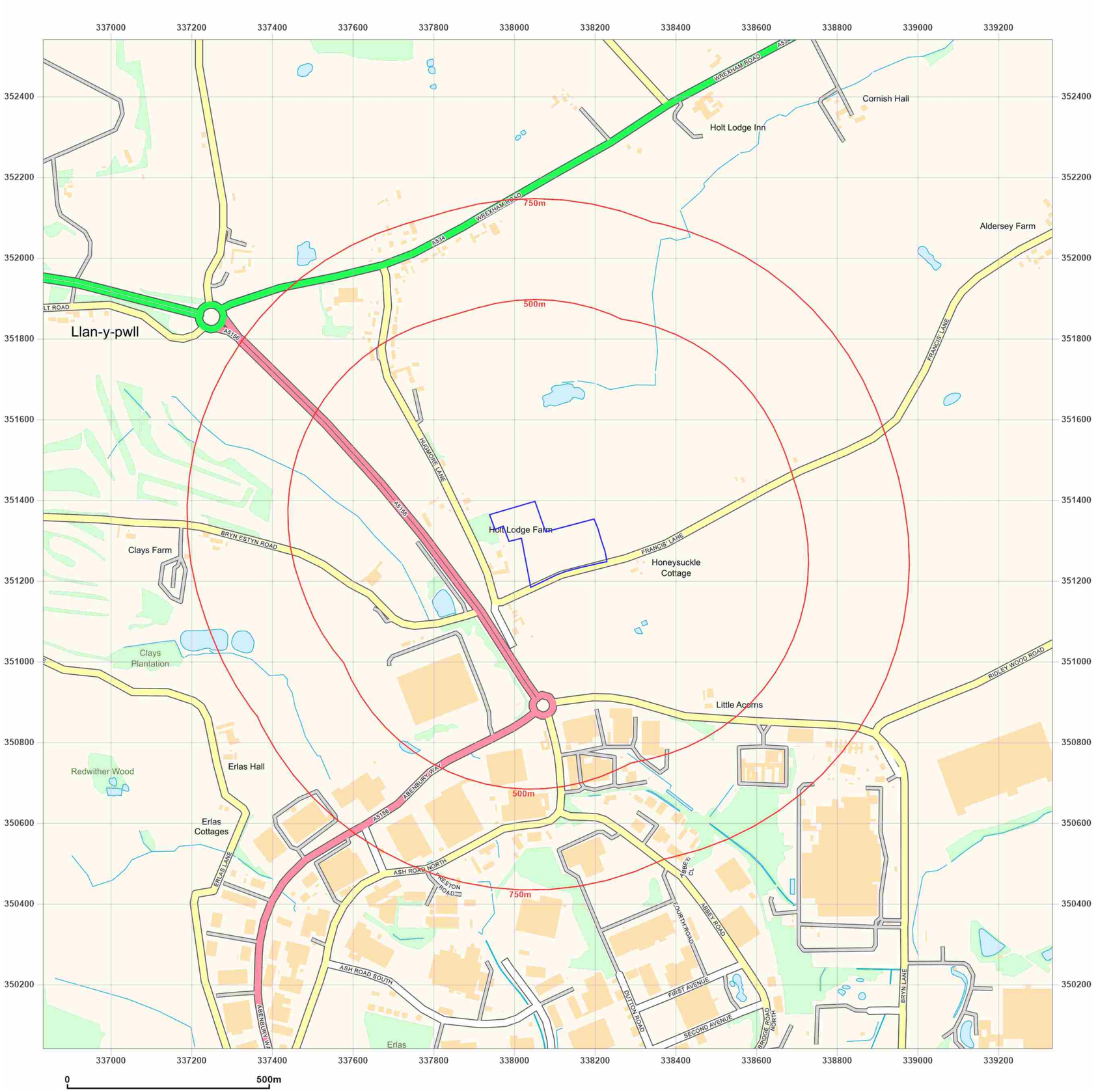
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 20 January 2025

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



Groundsure INSIGHTS

Site Details:

Ecological Site, Uptopia City, Wrexham

Client Ref: TE1905 / PO3501
Report Ref: GS-DBZ-K25-F69-RDW
Grid Ref: 338083, 351291

Map Name: National Grid

Map date: **2025**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2025

Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 20 January 2025

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

APPENDIX C- PREVIOUS REPORTS (AVAILABLE AS SEPARATE DOCUMENT)

APPENDIX D- DEFINITIONS OF TERMS USED IN QUALITATIVE AND QUANTITATIVE RISK ASSESSMENTS

CIRIA C552 Terminology

For the qualitative and quantitative assessment of risks posed by potential pollutant linkages have been undertaken using the risk matrix adapted from CIRIA C552 and outlined in the table below.

	Category	Definition
Potential severity	Severe	Acute (short term) risk to human health, Major pollution of sensitive controlled waters, ecosystems or habitat. Catastrophic damage to buildings or property or crops.
	Medium	Chronic (Medium / long term) risk to human health Pollution of sensitive controlled waters, ecosystems or species, Significant damage to crops, buildings or structures
	Mild	Easily preventable permanent health effects on humans. Pollution of non-sensitive controlled waters. Minor damage to buildings or structures.
	Minor	Easily preventable non-permanent health effects on humans, or no effects. Minor, low level and localised contamination of on-site soil. Easily repairable damage to buildings or structures.
Probability of risk	High Likelihood	Pollutant linkage may be present, and the risk is almost certain to occur , or there is evidence of harm already occurring.
	Likely	Pollutant linkage may be present, and it is probable that the risk will occur over the long term.
	Low Likelihood	Pollutant linkages may be present and there is a possibility of the risk occurring, although there is no certainty that it will do so.
	Unlikely	Pollutant linkage may be present but the circumstances under which harm would occur are improbable.

		Potential Severity			
		Severe	**Medium**	**Mild**	**Minor**
Probability of risk	**High Likelihood**	Very high risk	High risk	Moderate risk	Moderate / low risk
	Likely	High risk	Moderate risk	Moderate / low risk	Low risk
	Low Likelihood	Moderate risk	Moderate / low risk	Low risk	Very low risk
	Unlikely	Moderate / low risk	Low risk	very low risk	Very low risk

APPENDIX E- CONTROLLED WATERS RISK ASSESSMENT

CURRENT GUIDANCE FOR CONTROLLED WATERS RISK ASSESSMENT

Regulatory Context

Government policy is based upon a "suitable for use approach," which is relevant to both the current use of land and also to any proposed future use. When considering the current use of land, Part IIA of the Environment Protection Act 1990 (EPA 1990) provides the regulatory regime, which was introduced by Section 57 of the Environment Act 1995, which came into force in England on 1 April 2000. The main objective of introducing the Part IIA regime is to provide an improved system for the identification and remediation of land where contamination is causing unacceptable risks to human health, controlled waters or the wider environment given the current use and circumstances of the land. Part IIA provides a statutory definition of contaminated land under Section 78A(2) as:

> *"any land which appears to the Local Authority in whose area it is situated to be in such a condition, by reason of substances in, on, or under the land, that:*
>
> *(a) Significant harm is being caused or there is a significant possibility of such harm being caused; or*
>
> *(b) Pollution of controlled waters is being, or is likely to be, caused."*

Part IIA provides a statutory definition of the pollution of controlled waters under Section 78A(9) as:

> *"the entry into controlled waters of any poisonous, noxious or polluting matter or any solid waste matter"*

Controlled Waters are defined Section 104 of the Water Resources Act 1991. In summary, the comprise relevant territorial waters which extend seaward for three miles from the low-tide limit from which the territorial sea adjacent to England and Wales is measured.

The Environment Agency has powers under Part 7 of The Water Resources Act (1991) to take action to prevent or remedy the pollution of controlled waters, including circumstances where the pollution arises from contamination in the land. This is reinforced in The Contaminated Land (England) (Amendment) Regulations 2012 and Contaminated Land Statutory Guidance (DEFRA, 2012) which came into force in early April 2012.

Part IIA introduces the concept of a contaminant linkage; where for potential harm to exist there must be a connection between the source of the hazard and the receptor via a pathway. Risk assessment in contaminated land is therefore directed towards identifying the contaminants, pathways and receptors that can provide contaminant linkages. This is known as the contaminant-pathway-receptor link (CPR or contaminant linkage).

Part IIA places contaminated land responsibility as a part of the planning and redevelopment process, rather than Local Authority or Environment Agency directly, except in cases of very high pollution risk or where harm is occurring. In the planning process, guidance is provided by National Planning Policy Framework (NPPF) of March 2012. The NPPF requires that a site which has been developed shall not be capable of being determined "contaminated land" under Part IIA. Therefore, appropriate risk-based investigation is required to identify the contaminant linkages that can then be assessed, and then mitigated using methods that can be agreed with the planners.

Source Protection Zones

Source Protection Zones (SPZs) are defined by the Environment Agency (for England and Wales), SEPA (Scotland) and the Environment and Heritage Service (Northern Ireland) for groundwater sources such as wells, boreholes and springs that are used for public drinking water supply. The zones show the risk of contamination from activities that might cause groundwater pollution in the area. The size and shape of a zone depends upon subsurface conditions, how the groundwater is removed, and other environmental factors.

SPZs are classified into four categories:

- **Zone 1 (Inner protection zone).** Any pollution that can travel to the abstraction point within 50 days from any point within the zone is classified as being inside Zone 1. This applies at and below the groundwater table. This zone also has a minimum 50 m protection radius around the abstraction point. These criteria are designed to protect against the transmission of toxic chemicals and water-borne disease.
- **Zone 2 (Outer protection zone).** The outer zone covers pollution that takes up to 400 days to travel to the abstraction point, or 25% of the total catchment area, whichever area is the largest. This travel time is the minimum period over which the Environment Agency considers that pollutants need to be diluted, reduced in strength or delayed by the time they reach the abstraction point.
- **Zone 3 (Total catchment).** This is the total area needed to support removal of water from the abstraction point, and to support any discharge from this.
- **Zone of special interest.** This may occasionally be defined as a special case. This is usually where local conditions mean that industrial sites and other potential sources of contamination could affect the groundwater source, even though they are outside the normal catchment area.

Groundwater Vulnerability Assessments

From 1 April 2010 The Environment Agency Groundwater Protection Policy began to use aquifer designations which are consistent with the Water Framework Directive. These designations reflect the importance of aquifers in terms of groundwater as a resource (drinking water supply) but also their role in supporting surface water flows and wetland ecosystems.

The aquifer designation data is based on geological mapping provided by the British Geological Survey. It is updated regularly to reflect their ongoing programme of improvements to these maps. The maps are split into two different type of aquifer designation:

- Superficial (Drift) - permeable unconsolidated (loose) deposits. For example, sands and gravels.
- Bedrock -solid permeable formations e.g. sandstone, chalk and limestone.

The maps display the following aquifer designations:

Table 1. Aquifer Classification ("Geological Classification").

Classification	Definition
Principal Aquifers (Highly Permeable)	These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.
Secondary A Aquifers	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.
Secondary B Aquifers	Predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.
Secondary Undifferentiated Aquifers	This has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.
Unproductive Strata	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

Environment Agency Guidance

The Environment Agency's stance on groundwater resources is:

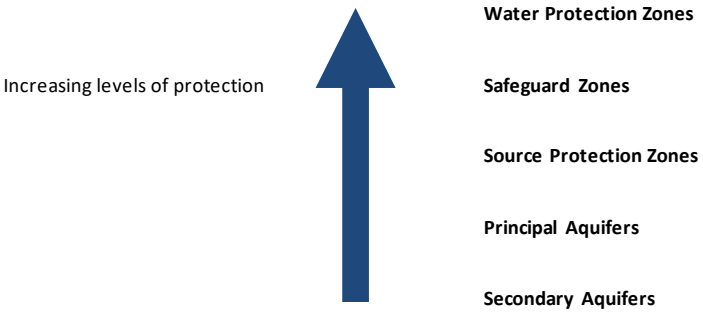
> *"to protect and manage groundwater resources for present and future generations in ways that are appropriate for the risks we identify"* (Groundwater Protection: Policy and Practice GP3, 2012).

At present, the legislation and guidance pertaining to the protection of controlled waters in the UK is complex; however, the core objectives seek to enforce the position given above.

In 1992, the National Rivers Authority published their Policy and Practice for the Protection of Groundwater (PPPG), this document introduced areas of focus for developments such as Source Protection Zones (SPZs) and Groundwater Vulnerability Maps. The Policy was revised in 1998, since which there have been substantial changes in legislation, driven by key European Directives relating to groundwater include the Groundwater Directive (80/68/EEC) and the Water Framework Directive (2000/60/EC). Aspects of these directives are controlled by primary UK legislation such as the Water Resources Act 1991 as amended by the Water Act 2003. Gaps in the 1998 PPPG that emerged as the result of further legislative changes were addressed in the Environment Agency Policy document Groundwater Protection: Policy and Practice (GP3), Version 1 of November 2012. The three main parts of GP3 were:

- Groundwater principals;
- Position statements and legislation; and
- Technical information.

The Environment Agency has a tiered risk based approach to drinking water protection as summarised below:



APPENDIX F- COMPLYING WITH CONTROL OF ASBESTOS REGULATIONS 2012

Complying with Control of Asbestos Regulations (CAR): Risk Assessments, Licensing and Training

This appendix outlines CAR risk assessments and where they should be applied in relation to assessing and remediating brownfield sites. The information below details the different classifications of work with asbestos under CAR, summarises the legal requirements for asbestos awareness training for all involved in the investigation and management of asbestos containing soil (ACS), and details the potential requirements for suitable proficiency training relating specifically to ACS.

CAR RISK ASSESSMENTS

A CAR Risk Assessment is required for any work which may expose employees to asbestos. It is recommended that a precautionary approach is adopted if there is any doubt about risks associated with asbestos.

There are three main activities for potential asbestos exposure during work on brownfield sites:

- Site reconnaissance visits;
- Site investigation works; and
- Site remediation.

CAR risk assessments are needed at each stage but may be incorporated during the site investigation stage into the overarching health and safety risk assessments.

The CAR risk assessment must:

- Identify the type of asbestos to which employees are liable to be exposed, where possible, or assume it is present in different forms;
- Determine the type and extent of exposures to asbestos that may occur during the work
- Identify the steps to be taken to prevent exposure or reduce it to the lowest level reasonably practicable; and,
- Consider the effects of control measures that have been or will be taken.

The CAR risk assessment should include any information used to inform the risk assessment such as asbestos reports or desk study information. In the event that this information is not available, the assessor should be assumed that all forms of asbestos may be present on site.

For all investigation and remediation of ACSs, a detailed written work plan should he produced and followed as detailed on the HSE website and in the CAR.

The CAR risk assessments for specific investigations or remediation projects, will determine whether or not work is 'licensable work' (LW), notifiable non-licensable work' (NNLW) or 'non-licensed work' (NLW). In addition, training requirements are also defined by the CAR risk assessment.

Some examples of control measures that apply during site reconnaissance, site investigation works, and site remediation are given below and should be applied depending on the asbestos risks identified for the site at each stage of investigation:

- Avoiding stirring up dust;
- Cleaning footwear after site works;
- Removing and bagging any overalls for disposal/laundering;
- Respirators and hygiene facilities for high risk sites;
- Segregated welfare units;
- Wetting ground
- Minimising soil disturbances;
- Implementation or retention of capping/break layers;
- Implementation of awareness training;
- Air monitoring;
- Managing stockpiles;
- Area segregation;
- Wheel washing
- Road washing/cleaning

It is important to note that during site reconnaissance visits, site investigation works and site remediation that asbestos should not be considered in isolation and control measures are likely to form part of a wider health and safety precautions.

Respiratory protective equipment (RPE)

RPE is the last line of defence and its requirement would be defined by the CAR risk assessment. HSE (2013b) advises that RPE should have an assigned protection factor of 20 or more for all work with asbestos. In certain instances, full face-piece, positive pressure respirators with a protection factor of 40 are necessary (to EN 12942:1998, TM3).

Suitable types of RPE for most ***short*** duration non-licensed asbestos work:

- Disposable respirator to standards EN149 (type FFP3) or EN1827 (type FMP3)
- Half mask respirator (to standard EN140) with P3 filter
- Semi-disposable respirator (to EN405) with P3 filter

These filters are not suitable for people with beards/stubble or for long or continuous use.

LICENSING

CAR defined certain types of activities involving asbestos as 'licensable work' (LW) or as 'notifiable non-licensable work' (NNLW). All other work would be 'non-licensable work' (NLW).

LW is defined as:

- work where exposure is not 'sporadic and low intensity'
- work where the risk assessment cannot demonstrate that the control limits (four hour and 10 minute limits) will not be exceeded
- work on asbestos coating
- work on AIB or insulation where risk assessment is either of first two points above or not of short duration (where short duration is defined for any work liable to disturb asbestos as taking less than two hours per week (including ancillary work) and no one person carries out that work for more than one hour').

NNLW includes work with:

- AIB or asbestos insulation of short duration that is not licensable
- fire-damaged asbestos cement or asbestos cement damaged so as to create significant dust and debris
- asbestos ropes, yarns, woven cloths in poor condition or handling cutting or breaking up the materials
- asbestos papers, felts and cardboard in poor condition, unencapsulated or not bound into another material.

Work with weathered asbestos cement, air monitoring and collecting samples of ACM in buildings would not normally be notifiable.

It is impossible to specify definitively what activities will and will not be licensable. This decision should be made as part of the CAR risk assessment. CAR is not primarily aimed at work with ACSs and there is little published information on airborne asbestos concentrations during work with ACSs. Nevertheless, CAR will require some remediation projects, and occasionally site investigations, to be LW. Investigations on other sites may involve NNLW. The decision as to whether work is LW or NNLW should be made during the CAR risk assessment by those in charge of the brownfield site investigations and remediation projects.

TRAINING REQUIREMENTS

Asbestos health and safety courses are offered by a number of providers in the UK. Training courses that include the problem of identifying ACMs in soil should be undertaken at regular intervals by those involved in the investigation, assessment and management of sites where ACs are known or suspected. It is the role of the employer to identify the level of training required for an employee based on their role, experience and duties. Reference to Regulation 10 of CAR should be referred to for more information on training requirements.

Recognising asbestos within soils is challenging due to the heterogeneity of such soils and the discolouration of asbestos by smeared soil. Specific training for ground workers should include understanding fibre release potential, potential control measures in the field, how to take representative ACSs safely, sample labelling and what analytical tests are available and when the y should be implemented.

Health and safety training required under CAR includes asbestos awareness, non-licensable work (including notifiable non-licensable work) and licensable work with asbestos.

In addition to health and safety training, some staff involved in the technical identification on site of ACMs, sampling and analysis may require technical proficiency training (competency training).

Training vs. Competence

HSE (2005) identifies that ‘training alone does not make people competent. Training must be consolidated by practical experience so that the person becomes confident, skilful and knowledgeable in practice on the job’. It is critical that ACS surveyors demonstrate competency with details of relevant field experience alongside training and examples of previous works/references.