PRELIMINARY RISK ASSESSMENT REPORT FOR RACKERY LANE, LLAY, WREXHAM

TE1798-TE-00-XX-RP-GE-001-V03

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FINAL

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RA and CE Platt Limited

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EXECUTIVE SUMMARY

Introduction	Tier Environmental was commissioned by RA and CE Platt Limited to undertake a desk study and Phase I Preliminary Risk Assessment of the proposed commercial / industrial development at Rackery Lane, Llay. The purpose of this investigation was to establish land use history, 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	Outline planning permission is being sought for up to 11,613 sqm (up to 125,000 sq ft) of industrial development (Use Class B1(c), B2 and / or B8) based on gross external floorspace on the Site (to include ancillary office accommodation), with all matters reserved for future consideration as presented in Appendix A. An attenuation pond is proposed in the north and a second pond in the northwest of the site, adjacent to the entrance, which will act as a replacement for the existing pond. Soft landscaping will comprise decorative planting around building peripheries and parking areas.
Site location and surrounding land uses	The site is located at Rackery Lane, located at Llay Industrial Park, Wrexham, LL12 0PB (approx.). The site is undeveloped comprised of grass and low lying vegetation. A small pond is located in the east of the site surrounded by trees. The site is bounded by fence lines with semi-mature trees along the site boundaries and following an old fence line in the north of the site. The site is currently accessed from Davy Way. The site is set within a mixed commercial area with industries to the south and north, and parking associated with North Wales Police to the west. To the east/northeast is a reservoir and undeveloped land beyond Rackery Lane.
Site history	The site comprises undeveloped land with a pond in the east and bisecting fence lines from earliest records, remaining broadly unchanged until circa 1975 when an adjacent textile factory development passes its northern boundary through the south of the site. Surrounding land is also broadly undeveloped until circa 1938 when buildings associated with Llay Main Colliery appear on maps located 20m east of the site at its closest point, though mining records suggest coal was worked from 1923. By 1961 the mine expanded with associated mineral rails, sidings, and a number of large units. By 1974 the mine and a number of other buildings to the south of the site were redeveloped into multiple works including a textiles factory, an engineering works 125m south and a food products factory 80m south, 2 No. disused shafts were labelled 170m and 210m south of the site. An area of marshy land is shown circa 80m west of the site and potentially infilled by 1984 when a new road is formed (Davy Way) along the northern site boundary connecting to Rackery Lane. Through 1990-1991 the area sees news units as part of Llay Industrial Estate and extensions on existing works. By 2018, land to the west is shown as a carpark and the unit to the south has expanded an area of containers to the site boundary.
Geology, Hydrogeology and Hydrology	The site isn't shown to be located within an area of artificial ground according to the Groundsure report. Given the history of partial development in the south of the site, the presence of localised of Made Ground is anticipated. Artificial ground is recorded 187m south of the site associated with a historic coal mine. Natural soils of Till comprised of diamicton (clays) are present site wide. Alluvial deposits are recorded circa 53m NW of the site. Nearby boreholes (SJ35NW374) recorded circa 160m north record Made Ground over 6.00m of peat and soft silt from 4.00m to 10.00m bgl. Similar soft soils could be present around the vicinity of the pond feature. Till is recorded to comprise cohesive soils to between 5.00m and 14.00m bgl underlain by granular glacial soils to at least 20.00m bgl. A total of 3 No. bedrock strata are recorded on site: Kinnerton Sandstone Formation (Sandstone) in the east of the site, pinching out in the site centre; Salop Formation (Mudstone, Sandstone and Conglomerate) in the south of the site (forming the majority of site coverage); Etruria Formation (Mudstone, Sandstone and Conglomerate) in the north of the site. Superficial deposits (Till) are classified as a Secondary Undifferentiated Aquifer and the bedrock (Kinnerton Sandstone Formation, Salop Formation and Etruria Formation) is classified as a Secondary A Aquifer. The site is not within a Source Protection Zone, and there are no active potable abstraction wells within 2km of the site, though 1 No. non-potable abstraction well circa 1,750m north of the site. The nearest surface water feature is a pond in the east of the site, and a stream 8m west. A reservoir is located 35m east of the site though is likely lined. Groundwater flow is anticipated to be towards the north based on local topography. On this basis the controlled waters sensitivity is regarded as being low / moderate.
Ground Gases	There is a landfill record circa 13m east of the site associated with Astbury Landfill for Household, Commercial & Industrial Waste with dates between 1994-2019 however historical maps suggest this is for the site entrance and the landfill itself it circa 260m northeast of the site. Llay Main Colliery was historically located within 100m of the south of the site. A number of pond features/marshy ground has been infilled throughout development cycles within 250m of the site. The potential for ground gas is therefore considered to be moderate.

Radon Requirements	Basic radon protection measures are not currently required for the proposed development on this site.
Ecological Sensitivity	The site is not located within an ecologically sensitive area, and a recent survey has confirmed no protected pond life on site. Proposed designs suggest relocating of the existing pond to the northwest of the site and a landscape corridor along the east of the site to connect neighbouring ecological areas.
Potential contaminative features	On site localised Made Ground associated with historic textile factory compound. Off-site Made Ground associated with surrounding works.
Mining and quarrying	Llay Main Colliery was historically located within 100m of the south of the site. The Coal Authority has records of the following underground mining within close proximity to the site; seams are recorded at depths between 686m and 922m located east/south east/south and 691m to 720m southwest, dipping east/southeast between 9° and 25° and northeast at 8°-21°. Mining records indicate these were active between 1923 to 1962.
Phosphorus	The site is not located with 2km of a Phosphorus Sensitive SAC Freshwater catchment area and no further action is required; this should be confirmed with NRW.
Unexploded Ordnance	Low risk
Waste Soils Classification	Based on the history of the site and the anticipated potential contaminants of concern, it is considered possible that hazardous waste soil materials may be present beneath some areas of the site; this, however, 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	The following scope of works are proposed: • 1 No. days 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 and enable the performance of soak away testing. • 1 No. day window sample drilling (approximately 5 No. locations) and installation of 3 No. monitoring wells for gas and groundwater (if encountered) monitoring purposes and to facilitate soil sampling for environmental and geotechnical testing. • 2 No. cable percussive boreholes (1 No. to 15m bgl and 1 No. to 30m bgl) and installation of 2 No. monitoring wells, to determine deeper ground conditions for foundation design; • *In situ* geotechnical testing to assist with foundation design; and, • Geoenvironmental chemical testing on selected soil samples for metals, pH, speciated PAH, speciated TPH, phenol, SVOC/SVOC, 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. The Control of Asbestos Regulations 2012 should be adhered to. A summary of complying with CAR: risk assessments, licensing and training is provided in Appendix H.

1. INTRODUCTION

Tier Environmental was commissioned by RA and CE Platt Limited to undertake a Land Contamination Risk Management (LCRM) Preliminary Risk Assessment for an area of land referred to as Rackery Lane, located at Llay Industrial Park, Wrexham, LL12 0PB (approx.) (the "site").

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

Outline planning permission is being sought for up to 11,613 sqm (up to 125,000 sq ft) of industrial development (Use Class B1(c), B2 and / or B8) based on gross external floorspace on the Site (to include ancillary office accommodation), with all matters reserved for future consideration. An attenuation pond is proposed in the north and a second pond in the northwest of the site, adjacent to the entrance, which will act as a replacement pond. Soft landscaping will comprise decorative planting around building peripheries and parking areas. 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 commercial/industrial.

1.2. Previous Reports

No previous pertinent reports pertaining to this site have been made available.

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 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 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.

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2. SITE DETAILS AND DESCRIPTION

Table 2.1 Current Site Overview.

Site name	Rackery Lane, Llay
Site address	Rackery Lane, located at Llay Industrial Park, Wrexham, LL12 0PB (approx.) A site location plan is included as Drawing No. TE1798-TE-00-XX-DR-001-V01 within Appendix A.
National Grid Reference (NGR)	332690 356732
Approximate site area	3.23 ha
Site shape	The site is approximately rectangular in shape
Current land use on the site	The site is undeveloped comprised of grass and low lying vegetation. A small pond is located in the east of the site surrounded by trees. The site is bounded by fence lines with semi mature trees along the site boundaries and following an old fence line in the north of the site. The site is currently accessed from Davy Way. 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 set within a mixed commercial area with industries to the south and north, and parking associated with North Wales police to the west. To the east/northeast is a reservoir and undeveloped land beyond Rackery Lane.
General topography and ground levels	The site lies at approximately 100-101m AOD sloping to the 97m AOD in the southwest and gently north east from 100.83m to 100.14m AOD.

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

Figure 2.1 Recent Aerial Photograph from Groundsure



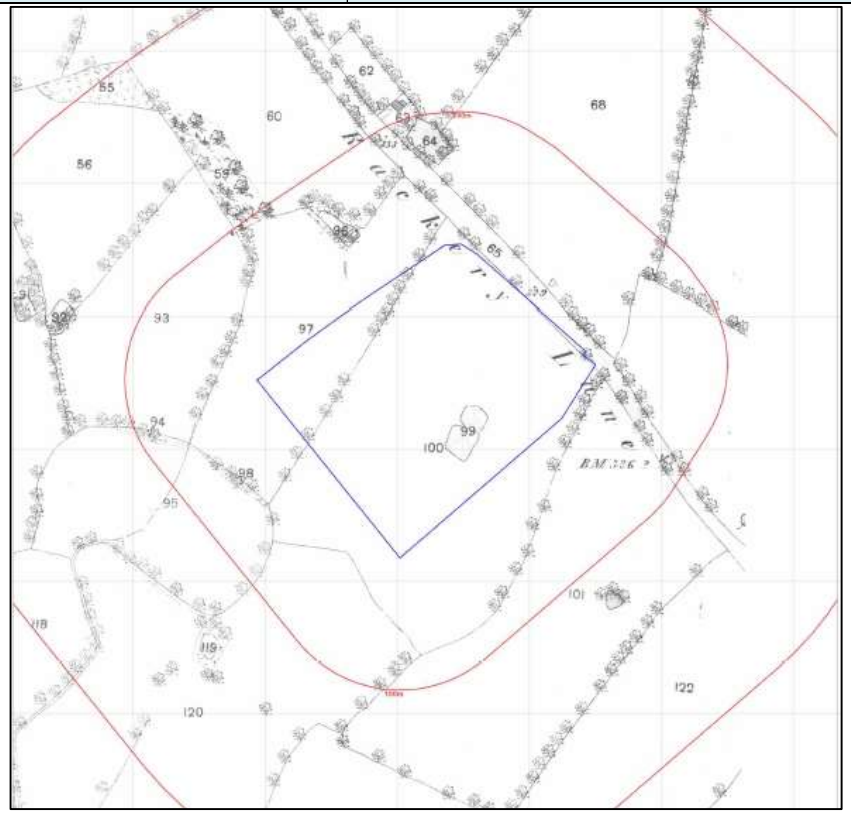
3. SITE HISTORY

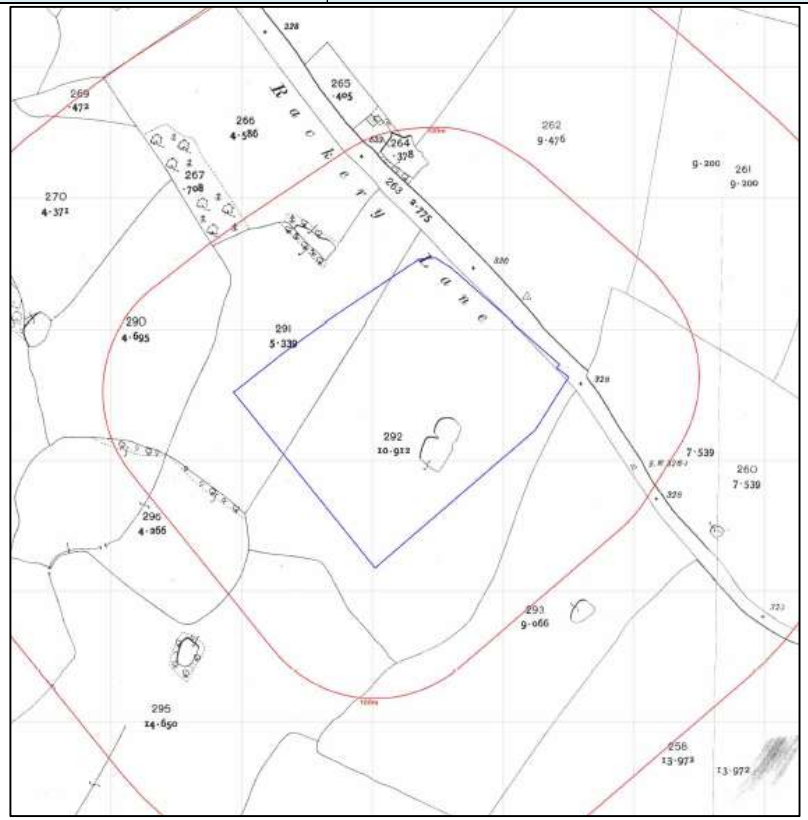
3.1. Site History Review

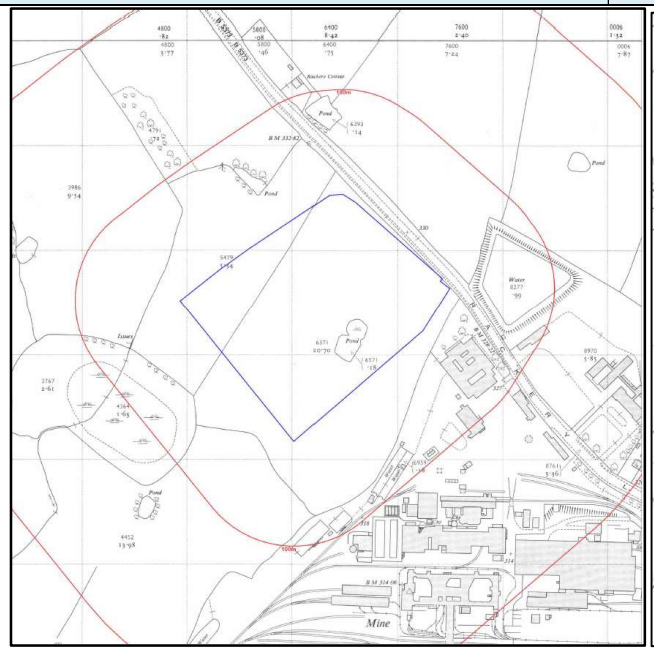
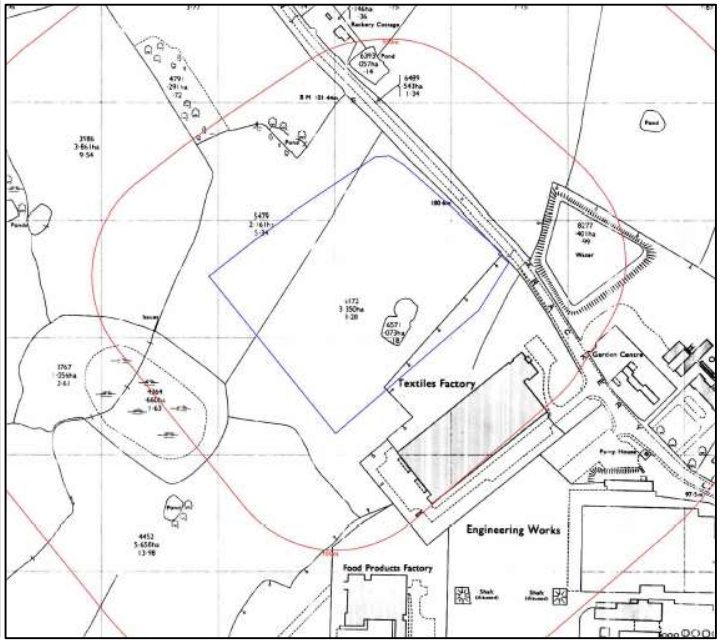
Extracts of Ordnance Survey (OS) plans dated from 1875 to 2023 were reviewed. These were obtained as part of the Groundsure report for the site, which is presented in Appendix B. In addition, historic aerial photography on Google Earth have been reviewed.

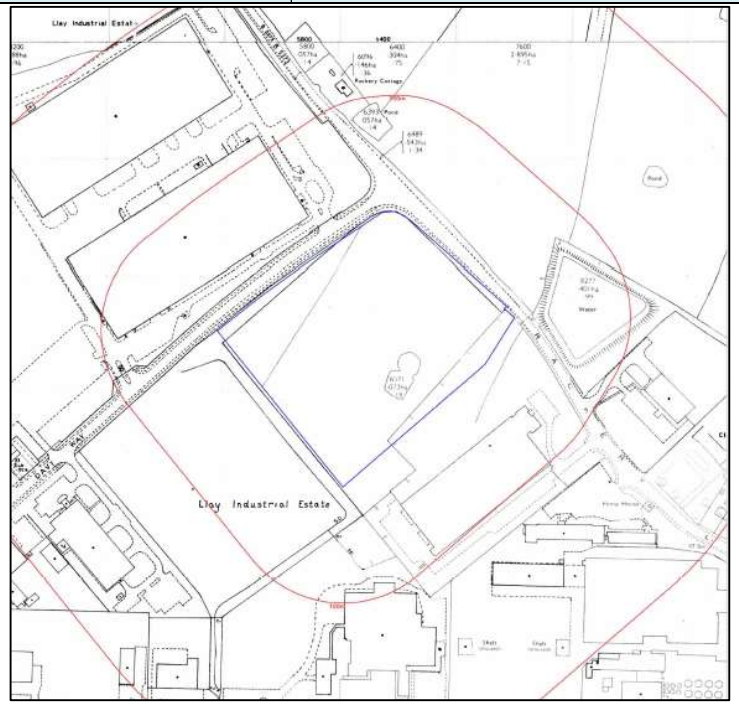
Table 3.1 below presents a summary of the main aspects of the site relevant to the current and proposed future end uses. It is not the intention of this report to describe in detail all of the changes that have occurred on or adjacent to the site, where these are not relevant to the land use.

Table 3.1 Site History.

Time Period	On-site features	Off-site features
Pre-1900	 1875 1:2,500	
	• The site is shown to be undeveloped land from earliest records. • A pond is located in the southeast of the site. • A fence line bisects the northwest of the site. • The eastern boundary is formed by Rackery Lane	• The surrounding land is predominantly undeveloped agricultural land. • A number of ponds are located within 250m.

Time Period	On-site features	Off-site features
1900 to 1939 (Pre-war period)	 1912 1:2,500	
	• The site remains unchanged	• Buildings associated with Llay Main Colliery appear on maps circa 1938 located 20m east of the site at its closest point, though mining records suggest coal was worked from 1923.
1945-1980 (Post war period)		

Time Period	On-site features	Off-site features
	 1961 1:2,500	 1975 1:2,500
	• The site remains broadly unchanged until circa 1975 when an adjacent Textile Factory development passes its northern boundary through the south of the site.	• By 1961 the mine has seen some development with associated mineral rails, sidings, and a number of large units. • A reservoir has been constructed 20m east of the site. • By 1974 the mine and a number of other buildings to the south of the site have been redeveloped into multiple works including a textiles factory, the fence line of which encroaches within the south of the site, an engineering works 125m south and a food products factory 80m south. A pump house is also located 180m southeast. • 2 No. disused shafts are labelled 170m and 210m south of the site. A significant spoil heap (assumed to be colliery waste) is present approx. 300m south of the site on the 1960 map, labelled as a disused tip by 1981. • An area of marshy land in shown circa 80m west of the site.

Time Period	On-site features	Off-site features
1980 – 2000 (Late 20th century period)	 1993 1:2,500	
	• The site remains unchanged though the Textile Factory fence line is no longer present from 1993.	• By 1984 the agricultural land to the north and west has been cleared and a new road 'Davy Way' runs along the northern site boundary connecting to Rackery lane. A number of ponds and marshy land has been cleared/infilled. • Llay Industrial Estate is now labelled 150m southwest of the site expanding to form the western boundary by 1993. • By 1986 land to the north of Davy Way is now a large factory. • A further spoil heap is shown approx. 300m northeast of the site, assumed to be located with sand pits from 500m northeast. • Through 1990-1991 the area sees news units in the industrial estate and extensions on existing works.

Time Period	On-site features	Off-site features
2000 to 2020 (Modern day period)	 2023 1:10,000	
	• The site remains unchanged.	• By 2018 land to the west is now a carpark and the unit to the south has expanded an area of containers to the site boundary.

3.2. Preliminary Unexploded Ordnance Risk Assessment

From the historical and anecdotal evidence, the site was not a target for bombing. Publicly available Zetica UXO risk maps indicate the site is within a low risk area.

Therefore, and in line with CIRIA C681: Unexploded ordnance (UXO) A guide for the construction industry, a preliminary UXO risk assessment has been completed.

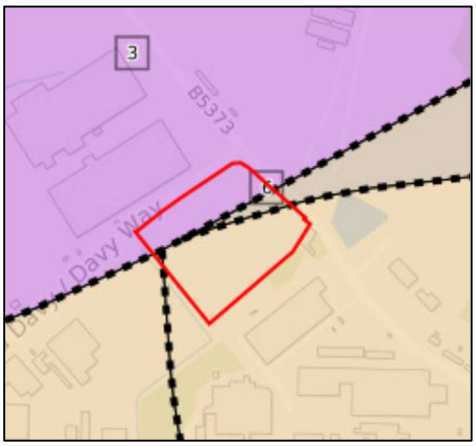
Table 3.2 Preliminary UXO Risk Assessment.

	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	The closest UXO find record is 3km east.
Could the site have been a high-risk target?	No	-
Any development cycles since 1945?	No	-
Mitigating Factors	None	-
Preliminary assessment of UXO Risk	Low	The site is considered to be at low risk.
Further works?	No	No further action required.

4. ENVIRONMENTAL SETTING

4.1. Geology

Table 4.1 Geological Summary.

Maps and publications referenced	Groundsure, BGS borehole Records
Made ground / artificial ground	The site isn't shown to be located within an area of artificial ground according to the Groundsure report. Given the history of development on localised areas of the site, the presence of Made Ground is anticipated. Artificial ground is recorded 187m south of the site associated with a historic coal mine.
Drift geology	Till comprised of diamicton (clays). Alluvial deposits are recorded circa 53m NW of the site. Nearby boreholes (SJ35NW374) recorded circa 160m north record Made Ground over 6.00m of peat and soft silt from 4.00m to 10.00m bgl. Similar soft soils could be present around the vicinity of the pond feature. Till is recorded to comprise cohesive soils to between 5.00-14.00m bgl followed by granular glacial soils to at least 20.00m bgl.
Solid geology	The site recorded 3 No. bedrock strata on site: • Kinnerton Sandstone Formation (Sandstone) in the east of the site, pinching out in the site centre. • Salop Formation (Mudstone, Sandstone and Conglomerate) in the south of the site (forming the majority of site coverage) • Etruria Formation (Mudstone, Sandstone and Conglomerate) in the north of the site.
Dip of solid strata	9° to 25° east and 8° to 21° northeast (based on coal mining records)
Faults	There are 3 No. faults recorded on site, all normal faults as indicated below. 
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	Llay Main Colliery located circa 20m east at its closest point, although the Coal Authority website states that the site is not located in an area of past or probable shallow coal mine workings.

	Yes/No	Comments
Is the site in a development high risk area?	No	Source: Coal Authority
Are there any known shafts, adits, tips, lagoons, or opencast workings likely to affect the site?	Yes	2 No, shafts located circa 175m south of the site associated with Llay Main Colliery.
Is exploratory work required to investigate the potential risk from shallow mining or quarrying?	No	Coal Authority data doesn't show surface mining (past and current) or past shallow coal mine workings within the site boundary. The Consultants Coal Mining Report (see below) suggests only deep mining has been undertaken beneath the site.
Consultants Coal Mining Report		The Coal Authority has records of the following underground mining within close proximity to the site: Seams are recorded at depths between 686m and 922m located east/southeast/south and 691m to 720m southwest, dipping east/southeast between 8.9° and 24.8° and northeast at 8.0-21.3°. Mining records indicate these were active between 1923 to 1962.

Table 4.3 Other Extractive Industries.

	Yes/No	Comments
Superficial drift deposits		
Evidence of extraction on or within 250 m of the site?	No	Source: Groundsure Report
Action required?	No	
Solid Strata		
Any evidence of mineral extraction on or within 250 m of the site?	No	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 on site	Secondary Undifferentiated Aquifer
Environment Agency aquifer designation – Bedrock	Kinnerton Sandstone Formation, Salop Formation and Etruria Formation on site	Secondary A Aquifer
Groundwater vulnerability	Superficial	Vulnerability: Low Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: Medium
	Bedrock	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures

	Presence/location	Comments
Anticipated groundwater depth(s)	Between 2.85-4.00m bgl	Based on limited data from nearby logs. A number of other records did not record water strikes within 20.00m bgl.
Direction of flow	South	Based on local topography
Current licensed abstractions – potable	NR within 1km	Source: Groundsure Report
Current licensed abstractions – non-potable	NR within 1km	Source: Groundsure Report Closest record 1,748m north
Private wells	180m southeast.	A pump house is labelled on historical maps from 1974
Source Protection Zones	NR within 500m	Source: Groundsure Report
Springs	60m west	'Issues' labelled on historical maps circa 1961 to 1980

NR - none recorded.

For definition of Source Protection Zones, see Appendix F.

4.4. Hydrology

Table 4.5 Surface Water Features.

	Presence/location	Comments
Nearest surface water feature	On site	Pond in the southeast of the site
Other surface water features	8m west	Stream
Canals, ponds, lakes, etc.	35m east	Reservoir (likely lined)
Water Framework Directive (WFD) Surface Water Bodies	NR within 500m	Source: Groundsure Report
Licensed surface water abstractions	NR (within 250m)	Source: Groundsure Report
Surface run-off and site drainage	On site	The site is laid to soft landscaping with a pond in the east. It is likely surface runoff pools in the pond or absorbed direct to the ground. The full nature and extent of any underground drainage system is unknown at this stage.

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 within 50m	Source: Groundsure Report
Historical Flood Events	NR within 250m	Source: Groundsure Report
Flood Defences	NR within 250m	Source: Groundsure Report
Areas Benefiting from Flood Defences	NR within 250m	Source: Groundsure Report

	Presence/location	Comments
Flood Storage Areas	NR within 250m	Source: Groundsure Report
Records of Flood Zone 2	NR within 50m	Source: Groundsure Report
Records of Flood Zone 3	NR within 50m	Source: Groundsure Report
Surface water flooding	Highest risk on site	1 in 30 year (0.10-0.30m) located in the southeast
Groundwater flooding	Highest risk on site	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 within 500m	Source: Groundsure Report
Conserved wetland sites (Ramsar sites)	NR within 500m	Source: Groundsure Report
Special Areas of Conservation (SAC)	NR within 500m	Source: Groundsure Report
Special Protection Areas (SPA)	NR within 500m	Source: Groundsure Report
National Nature Reserves (NNR)	NR within 500m	Source: Groundsure Report
Local Nature Reserves (LNR)	NR within 500m	Source: Groundsure Report
Designated Ancient Woodland	NR within 500m	Source: Groundsure Report
Biosphere Reserves	NR within 500m	Source: Groundsure Report
Forest Parks	NR within 500m	Source: Groundsure Report
Marine Conservation Zones	NR within 500m	Source: Groundsure Report
Green Belt	NR within 500m	Source: Groundsure Report
Proposed Ramsar sites	NR within 500m	Source: Groundsure Report
Possible Special Areas of Conservation (pSAC)	NR within 500m	Source: Groundsure Report
Potential Special Protection Areas (pSPA)	NR within 500m	Source: Groundsure Report
Nitrate Sensitive Areas	NR within 500m	Source: Groundsure Report
Nitrate Vulnerable Zones	On Site	Pulford Brook
SSSI Units	NR	Source: Groundsure Report
Other	On Site	Proposed designs suggest relocating of the existing pond to the northwest of the site and a landscape corridor is along the east of the site to connect neighbouring ecological areas.

NR - none recorded

4.7. Landfill and Waste Management Activity

Table 4.8 Waste Management Activities.

	Presence/location	Comments
Active or recent landfill	13m east	Operator: WRG Environmental Ltd Landfill type: A4: Household, Commercial & Industrial Waste Landfill
Historical landfill (BGS records)	NR within 500m	Source: Groundsure Report
Historical landfill (LA/mapping records)	NR (within 250)	Source: Groundsure Report
Historical landfill (EA/NRW records)	NR (within 250)	Source: Groundsure Report
Historical waste sites	NR (within 250)	Source: Groundsure Report
Licensed waste sites	12m E to 22m NE (11 No. records) Associated with a landfill circa 260m NE.	Site Name: Astbury Landfill Type of Site: Household, Commercial & Industrial Waste Landfill Issue Date (earliest): 17/08/1994 Effective Date (latest): 11/01/2019
Waste exemptions	68m SE	Unit 2, Northbrook Industrial Estate Storage of waste in a secure place
	91m SE	1 Prospect Estate, Llay Industrial Estate Screening and blending of waste
	203m E	Halo Plastics Ltd Use of waste to manufacture finished goods, use of waste in construction, recovery of scrap metal
Evidence of other landfilling or potential infilling on or within 250m of site	34m E	Pond (infilled circa 1900)
	145m SW	Pond (infilled circa 1980)
Walkover evidence of fly-tipping on site?	No	
Is a landfill/ground gas risk assessment required?	Yes	Ground gas risk assessment for Made Ground, possible unrecorded alluvial soils and nearby coal mining activity.

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	On Site	Business Parks and Industrial Estates (Groundsure uses a central geo-reference for the location of the wider industrial estate however it is acknowledged that the site itself has not been developed)
	68m SE	Electrical and Electronic Engineers

	Location	Comments
	68m SE	Consumer Products
	71m NW, 147m E, 217m SW, 237m SW, 247m S	Industrial Products
	82m S, 145m S, 170m W, 205m W, 224m SW	Electricity Substation
	91m SE	Motoring
	151m NW	Chimney
	157m SE	Civil Engineers
	171m SE	Water Pumping Station
	199m SE	Recycling Centre
	243m S	Construction Completion Services
	245m S, 248m S	Vehicle Repair, Testing and Servicing
Current or recent petrol stations	NR within 500m	Source: Groundsure Report
Electricity cables	NR within 500m	Source: Groundsure Report
Gas pipelines	NR within 500m	Source: Groundsure Report
Sites determined as Contaminated Land	NR within 500m	Source: Groundsure Report
Control of Major Accident Hazards (COMAH)	NR within 500m	Source: Groundsure Report
Regulated explosive sites	NR within 500m	Source: Groundsure Report
Hazardous substance storage/usage	NR within 250m	Source: Groundsure Report
Historical licensed industrial activities (IPC)	NR within 250m	Source: Groundsure Report
Licensed industrial activities (Part A(1))	NR within 250m	Source: Groundsure Report
Licensed pollutant release (Part A(2)/B)	128m S	Sharp Manufacturing Company of UK Process: Surface Cleaning Status: Historical Permit
	155m SE	Arvin Meritor Hvs Limited Process: Coating Processes Status: Historical Permit
Radioactive Substance Authorisations	NR within 500m	Source: Groundsure Report
Licensed Discharges to controlled waters	177m S	Llay Main Colliery Effluent Type: Unspecified Effective Date: 23/01/1967 Revocation Date: 12/01/1996
	216m S	Meritor Heavy Vehicle Systems Ltd Effluent Type: Trade Discharges -Site Drainage Effective Date: 30/04/2001 Revocation Date: 23/09/2011
Pollutant release to surface waters (Red List)	NR within 500m	Source: Groundsure Report
Pollutant release to public sewer	NR within 500m	Source: Groundsure Report
List 1 Dangerous Substances	NR within 250m	Source: Groundsure Report

	Location	Comments
List 2 Dangerous Substances	NR within 250m	Source: Groundsure Report
Pollution Incidents (EA/NRW)	14m S	Incident Date: 29/01/2016 Pollutant Description: Other Inert Material or Waste Water Impact: - Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
	79m NW	Incident Date: 21/06/2002 Pollutant Description: Firefighting Run-Off Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
	151m S	Incident Date: 13/09/2002 Pollutant Description: Diesel Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
Pollution inventory substances	NR within 500m	Source: Groundsure Report
Pollution inventory waste transfers	NR within 500m	Source: Groundsure Report
Pollution inventory radioactive waste	NR within 500m	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
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 possible that hazardous waste soil materials may be present 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 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).”*

5. 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 5.1 below. The terms used in the preliminary qualitative risk assessment are defined in Appendix E.

5.1. 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 5.1 Preliminary Assessment of Potential Pollutant Linkages (Continued on Next Page).

Justification / Comments

• The site comprises undeveloped land with a pond in the east and bisecting fence lines from earliest records, remaining broadly unchanged until circa 1975 when an adjacent Textile Factory development passes its northern boundary through the south of the site.
• Surrounding land is also broadly undeveloped until circa 1938 when buildings associated with Llay Main Colliery appear on maps located 20m east of the site at its closest point, though mining records suggest coal was worked from 1923. By 1961 the mine expanded with associated mineral rails, sidings, and a number of large units. By 1974 the mine and a number of other buildings to the south of the site were redeveloped into multiple works including a textiles factory, an engineering works 125m south and a food products factory 80m south, 2 No. disused shafts were labelled 170m and 210m south of the site. An area of marshy land in shown circa 80m west of the site infilled by 1984 when a new road is formed 'Davy Way' along the northern site boundary connecting to Rackery lane. Through 1990-1991 the area sees new units as part of Llay Industrial Estate and extensions on existing works. By 2018 land to the west is now a carpark and the unit to the south has expanded an area of containers to the site boundary.
• The site isn't shown to be located within an area of artificial ground according to the Groundsure report. Given the history of partial development in the south of the site, the presence of localised Made Ground is anticipated. Artificial ground is recorded 187m south of the site associated with a historic coal mine. Natural soils of Till comprised of diamicton (clays). Alluvial deposits are recorded circa 53m NW of the site. Nearby boreholes (SJ35NW374) recorded circa 160m north record Made Ground over 6.00m of peat and soft silt from 4.00m to 10.00m bgl. Similar soft soils could be present around the vicinity of the pond feature. Till is recorded to comprise cohesive soils to between 5.00-14.00m bgl followed by granular glacial soils to at least 20.00m bgl. 3 No. bedrock strata are recorded on site:
  ○ Kinnerton Sandstone Formation (Sandstone) in the east of the site, pinching out in the site centre.
  ○ Salop Formation (Mudstone, Sandstone and Conglomerate) in the south of the site (forming the majority of site coverage)
  ○ Etruria Formation (Mudstone, Sandstone and Conglomerate) in the north of the site
• Superficial deposits (Till) are classified as a Secondary Undifferentiated Aquifer and the bedrock (Kinnerton Sandstone Formation, Salop Formation and Etruria Formation) is classified as a Secondary A Aquifer. The site is not within a Source Protection Zone, and there are no active potable abstraction wells within 2km of the site, though 1 No. non-potable abstraction well circa 1750m north of the site. The nearest surface water feature is a pond in the east of the site, and a stream 8m west. A reservoir is located 35m east of the site though is likely lined. Groundwater flow is anticipated to be towards the south based on local topography. On this basis the controlled waters sensitivity is regarded as being low / moderate.
• There is a landfill record circa 13m east of the site associated with Astbury Landfill for Household, Commercial & Industrial Waste with dates between 1994-2019 however historical maps suggest this is for the site entrance and the landfill itself it circa 260m northeast of the site. Llay Main Colliery was historically located within 100m of the south of the site. A number of pond features/marshy ground has been infilled throughout development cycles within 250m of the site. The potential for ground gas is therefore considered to be moderate.
• The site is not located within an ecologically sensitive area, and a recent survey has confirmed no protected pond life on site. Proposed designs suggest relocating of the existing pond to the northwest of the site and a landscape corridor along the east of the site to connect neighbouring ecological areas.

Source	Potential Contaminants of Concern	Pathway	Receptor	Consequence	Probability	Qualitative Risk Assessment
Anticipated localised Made Ground associated with historic on and off-site land uses including within a textile factory compound in the south of the site.	Metals PAHs pH Hexavalent chromium Acids Alkalis	Direct contact, dust inhalation and ingestion	Future site users (commercial)	Medium	Unlikely	Low Risk
			Adjacent site users (commercial)	Mild	Unlikely	Very Low Risk
			Construction, site investigation, demolition and future maintenance workers	Medium	Low Likelihood	Moderate / Low Risk
		Migration of mobile contaminants from Made Ground soils to adjacent sites along services and conduits	Adjacent site users (commercial)	Mild	Unlikely	Very Low Risk
		Migration via water pipes	Future site users (commercial)	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 - Secondary A Aquifer associated with Kinnerton Sandstone Formation, Salop Formation and Etruria Formation.	Medium	Low Likelihood	Moderate / Low Risk
			Pond located on site.	Medium	Low Likelihood	Moderate / Low Risk
	Naphthalene (a semi-volatile PAH) TPH / BTEX / MTBE VOCs / SVOCs Phenols	Vapour inhalation, direct contact, dust inhalation and ingestion	Future site users (commercial)	Medium	Low Likelihood	Moderate / Low Risk
			Adjacent site users (commercial)	Mild	Unlikely	Very Low Risk
			Construction, site investigation, demolition and future maintenance workers	Medium	Low Likelihood	Moderate / Low Risk
		Migration of mobile contaminants from Made Ground soils to adjacent sites along services and conduits	Adjacent site users (commercial)	Mild	Unlikely	Very Low Risk
		Migration via water pipes	Future site users (commercial)	Medium	Low Likelihood	Moderate / 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 - Secondary A Aquifer associated with Kinnerton Sandstone Formation, Salop Formation and Etruria Formation.	Medium	Low Likelihood	Moderate / Low Risk
			Pond located on site.	Medium	Low Likelihood	Moderate / Low Risk
	Asbestos	(Dust migration and) dust inhalation	Future site users (commercial)	Medium	Unlikely	Low Risk
			Adjacent site users (commercial)	Medium	Unlikely	Low Risk
			Construction, site investigation, demolition and future maintenance workers	Medium	Low Likelihood	Moderate / Low Risk
Made Ground located beneath the site and upward migration of mine gas along geological faults	Hazardous ground gasses (methane, carbon dioxide, hydrogen sulphide, carbon monoxide and depleted oxygen)	Inhalation (indoor and outdoor)	Future site users (commercial)	Severe	Low Likelihood	Moderate Risk
			Adjacent site users (commercial)	Severe	Low Likelihood	Moderate Risk
			Construction, site investigation, demolition and future maintenance workers	Severe	Low Likelihood	Moderate Risk
		Migration of hazardous ground gases from beneath the site to adjacent sites along services or other preferential conduits	Adjacent site users (commercial)	Severe	Low Likelihood	Moderate Risk
		Migration of ground gas / explosion	Buildings and services	Severe	Low Likelihood	Moderate Risk

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

6. PROPOSED FURTHER WORKS

6.1. Further Works

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

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 5).

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; and,
- to provide advice relating to geotechnical issues associated with the site.

6.2. Proposed Scope of Works

The following scope of works are proposed:

- 1 No. days 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 and enable the performance of soak away testing.
- 1 No. day window sample drilling (approximately 5 No. locations) and installation of 3 No. monitoring wells for gas and groundwater (if encountered) monitoring purposes and to facilitate soil sampling for environmental and geotechnical testing.
- 2 No. cable percussive boreholes (1 No. to 15m bgl and 1 No. to 30m bgl) and installation of 2 No. monitoring wells, to determine deeper ground conditions for foundation design;
- *In situ* geotechnical testing to assist with foundation design;
- Geoenvironmental chemical testing on selected soil samples for metals, pH, speciated PAH, speciated TPH, phenol, SVOC/SVOC, 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.

The Control of Asbestos Regulations 2012 should be adhered to. A summary of complying with CAR: risk assessments, licensing and training is provided in Appendix G.

7. 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.

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9. 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 F)
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



SCHEDULE OF ACCOMMODATION

Unit Name	Ground Floor GIA	First Floor (Offices) GIA	Overall GIA	Car Parking (inc. disabled spaces)	Parking Ratio
Unit 01	9,810 ft²/ 912 m²	980 ft²/ 91 m²	10,790 ft²/ 1,003 m²	23 (3)	1:43
Unit 02	28,000 ft²/ 2,602 m²	3,000 ft²/ 279 m²	31,000 ft²/ 2,881 m²	28 (3)	1:102
Unit 3a	4,840 ft²/ 450 m²	750 ft²/ 70 m²	5,590 ft²/ 520 m²	11 (1)	1:47
Unit 3b	3,175 ft²/ 295 m²	750 ft²/ 70 m²	3,925 ft²/ 365 m²	4 (1)	1:91
Unit 3c	4,800 ft²/ 446 m²	750 ft²/ 70 m²	5,550 ft²/ 516 m²	8 (1)	1:64
Unit 3d	4,800 ft²/ 446 m²	750 ft²/ 70 m²	5,550 ft²/ 516 m²	8 (1)	1:64
Unit 3e	4,890 ft²/ 455 m²	750 ft²/ 70 m²	5,640 ft²/ 525 m²	12 (1)	1:43
Unit 04	38,750 ft²/ 3,600 m²	4,000 ft²/ 372 m²	42,750 ft²/ 3,972 m²	48 (3)	1:82
Total Development			**110,795 ft²/ 10,298 m²**	**142 (14)**	1:72

N

0 0.5 1.0 1.5 2.0 2.5m

Scale 1:50

NOTES

AEWTP026C

- All dimensions and levels are to be checked on site.
- Any discrepancies are to be reported to the architect before any work commences
- This drawing shall not be scaled to ascertain any dimensions. Work to figured dimensions only.
- This drawing shall not be reproduced without express written permission from AEW.
- Title overlay drawings and ownership boundaries are produced using all reasonable endeavors. AEW cannot be responsible for the accuracy or scale discrepancy of base plans supplied to them.
- All works are to be undertaken in accordance with Building Regulations and the latest British Standards.
- All proprietary materials and products are to be used strictly in accordance with the manufacturers recommendations.

CDM 2015

Client notified of duties:

Principal Designer: **tbc**

Unless noted below, all known hazards have been highlighted on the drawing:

- Red line site boundary: 3.29ha / 8.12 acres
- Existing dense vegetation retained where possible
- Potential new planting
- Pond retained / potential attenuation
- Existing pond to be relocated subject to confirmation by Ecologist
- Red line boundary traced from NRG pdf drawing ref: 1329/TP/01:01-01 (drawing underlay)
- Landscape and assumed ecological corridors shown subject to input from an Ecologist
- HGV circulation subject to tracking analysis
- Layout subject to levels design following topographical survey

REV	Date	Drawn by: -	Checked by: -
P2	16/08/23	TF	DOH
Updated to Sixteen RE comments			
P1	13/07/23	TF	DOH
Initial issue			

Status: S2 — Purpose of Issue: For Comment

drawing stage: **Stage 1**

client: **Oak Moss Group**

project: **Rackery Lane**
Llay Industrial Park
Wrexham

drawing title: **Proposed Site Plan**
Option 4b

date: 13/07/23 — drawn: TF

scale@A1: 1:500 — checked: DOH

Rev **P2**

Job No **13361-AEW-SI-XX-DR-A-0005**

aew architects
0161 214 4370
www.aewarchitects.com

AEW Reference Number 13361

Services carried out by Cheshire Surveys Ltd

Topographical Surveys - Measured Building Surveys - 3D Laser Scanning - Check Surveys
Monitoring Surveys - Deformation Surveys - Volumetric Surveys - Levelling - Setting Out

Disclaimer:
All efforts have been made to survey all utility services within the boundary of the survey
We can not guarantee that we have been able to locate everything and further investigation will be required to establish full extents of services

Legend

- Armco
- Barrier
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Abbreviations

BT	BT Manhole	IC	Inspection Cover
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CCTV	Close Circuit TV	LP	Lamp Post
DPC	Damp Proof Course	MH	Man Hole
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ER	Earth Rod	RS	Road Sign
ES	Escarpment	TP	Telegraph Pole
FFL	Finish Floor Level	W	Water Cover
G	Gulley	WL	Water Level

SURVEY STATIONS

Name	Easting	Northing	Height
A1	332751.867	356780.975	100.414
A10	332733.897	356740.269	99.892
A11	332739.655	356751.434	99.823
A2	332654.079	356855.490	100.741
A3	332618.674	356861.101	100.730
A4	332521.178	356794.089	99.874
A4A	332534.728	356777.557	99.800
A5	332549.168	356762.256	100.282
A5A	332572.193	356791.801	101.304
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A7	332627.630	356778.441	100.816
A8	332704.799	356747.618	100.385
A9	332720.326	356724.554	99.898

NOTES:
Horizontal and vertical control established using SmartNet GPS Network and OSGB36(15) coordinate System
This survey has been converted to a local grid orientated to OS grid. Position is only true at one point to OS coordinates

CHESHIRE SURVEYS LTD
Setting out and Survey Engineers
Unit 2, Barrowmore Enterprise Estate, Gt Barrow, Chester CH3 7JS
Email : gary@cheshiresurveys.co.uk Tel: 01829 741859 Mob: 077 8099 3661

Client	Oak Moss Group		
Location	Land Off Davy Way, Llay		
Description	Topographical Survey (Sheet 1 of 3)		
Drg. No.:	B0772/4579/1/*/1	Surveyed By:	GF
Scale: 1:	200/A0	Drawn By:	GF
Date:	28/09/2023	Amend:	*

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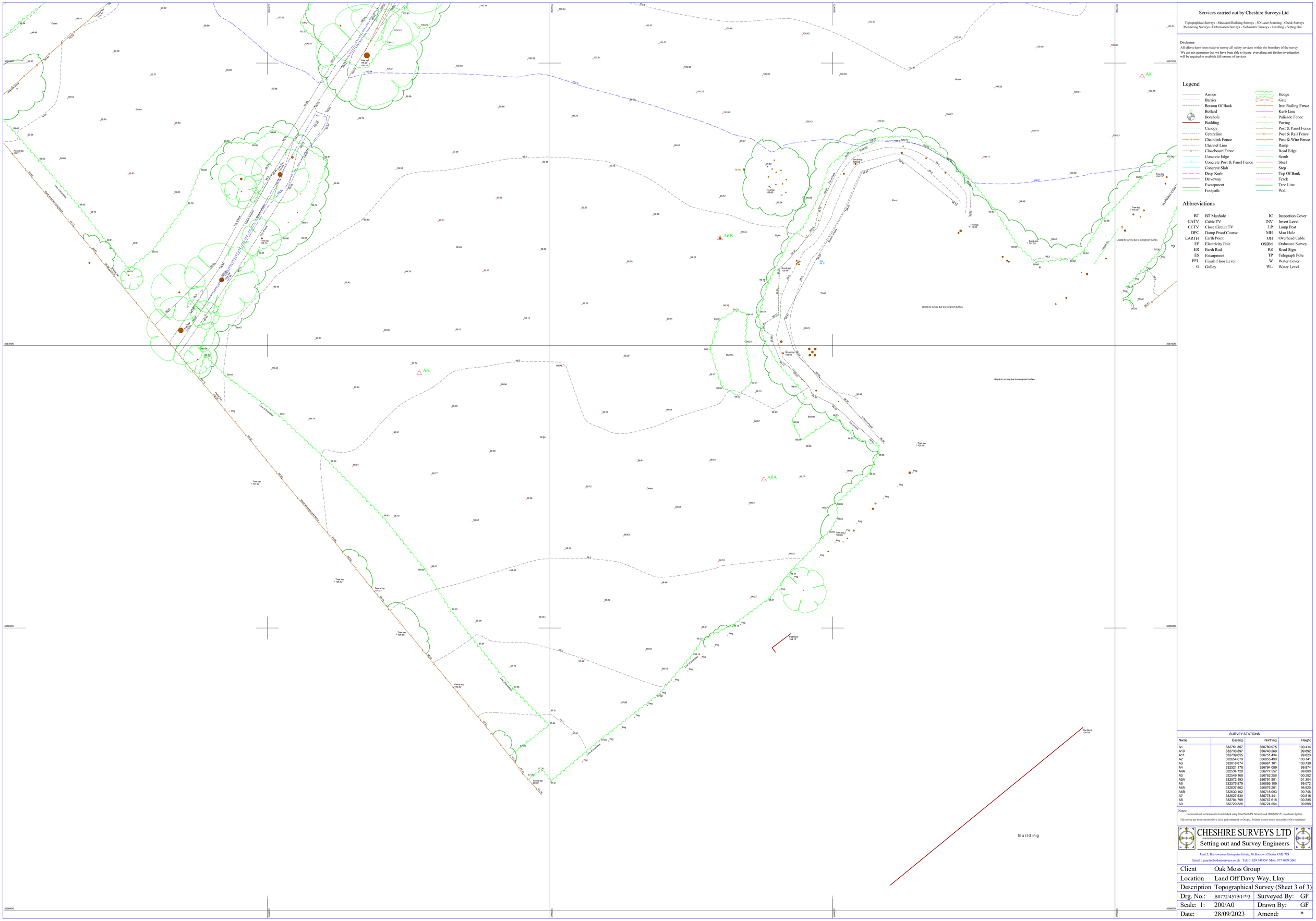
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Email : gary@cheshiresurveys.co.uk Tel: 01829 741859 Mob: 077 8099 3661

Client	Oak Moss Group		
Location	Land Off Davy Way, Llay		
Description	Topographical Survey (Sheet 2 of 3)		
Drg. No.:	B0772/4579/1/*/2	Surveyed By:	GF
Scale: 1:	200/A0	Drawn By:	GF
Date:	28/09/2023	Amend:	*



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Topographical Surveys - Measured Building Surveys - 3D Laser Scanning - Check Surveys
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Client	Oak Moss Group		
Location	Land Off Davy Way, Llay		
Description	Topographical Survey (Sheet 3 of 3)		
Drg. No.:	B0772/4579/1/*/3	Surveyed By:	GF
Scale: 1:	200/A0	Drawn By:	GF
Date:	28/09/2023	Amend:	*

APPENDIX B - GROUNDSURE REPORT

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

LAND AT, RACKERY LANE, LLAY, WREXHAM, LL12 0PB

Order Details

Date: 17/11/2023

Your ref: TE1798_PO_2871

Our Ref: GS-OWQ-4EF-DSK-T3Z

Site Details

Location: 332690 356732

Area: 3.23 ha

Authority: Wrecsam - Wrexham County Borough Council ↗



Summary of findings p. 2 >

Aerial image p. 9 >

OS MasterMap site plan p.14 >

groundsure.com/insightuserguide ↗

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 >	2	3	10	21	-
17 >	1.2 >	Historical tanks >	0	0	2	3	-
17 >	1.3 >	Historical energy features >	0	0	2	8	-
18	1.4	Historical petrol stations	0	0	0	0	-
18	1.5	Historical garages	0	0	0	0	-
19	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
20 >	2.1 >	Historical industrial land uses >	2	4	13	25	-
22 >	2.2 >	Historical tanks >	0	0	2	6	-
23 >	2.3 >	Historical energy features >	0	0	3	19	-
24	2.4	Historical petrol stations	0	0	0	0	-
24	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
25 >	3.1 >	Active or recent landfill >	0	1	0	0	-
26	3.2	Historical landfill (BGS records)	0	0	0	0	-
26 >	3.3 >	Historical landfill (LA/mapping records) >	0	0	0	1	-
26 >	3.4 >	Historical landfill (EA/NRW records) >	0	0	0	1	-
27 >	3.5 >	Historical waste sites >	0	0	0	1	-
27 >	3.6 >	Licensed waste sites >	0	11	0	8	-
32 >	3.7 >	Waste exemptions >	0	0	9	20	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
36 >	4.1 >	Recent industrial land uses >	1	0	20	-	-
38	4.2	Current or recent petrol stations	0	0	0	0	-
38	4.3	Electricity cables	0	0	0	0	-
38	4.4	Gas pipelines	0	0	0	0	-
38	4.5	Sites determined as Contaminated Land	0	0	0	0	-

39	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
39	4.7	Regulated explosive sites	0	0	0	0	-
39 >	4.8 >	Hazardous substance storage/usage >	0	0	0	1	-
39 >	4.9 >	Historical licensed industrial activities (IPC) >	0	0	0	2	-
40 >	4.10 >	Licensed industrial activities (Part A(1)) >	0	0	0	4	-
41 >	4.11 >	Licensed pollutant release (Part A(2)/B) >	0	0	2	4	-
42	4.12	Radioactive Substance Authorisations	0	0	0	0	-
42 >	4.13 >	Licensed Discharges to controlled waters >	0	0	2	4	-
43	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
43	4.15	Pollutant release to public sewer	0	0	0	0	-
44 >	4.16 >	List 1 Dangerous Substances >	0	0	0	1	-
44	4.17	List 2 Dangerous Substances	0	0	0	0	-
44 >	4.18 >	Pollution Incidents (EA/NRW) >	0	1	3	4	-
45	4.19	Pollution inventory substances	0	0	0	0	-
45	4.20	Pollution inventory waste transfers	0	0	0	0	-
46	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology >	On site	0-50m	50-250m	250-500m	500-2000m
47 >	5.1 >	Superficial aquifer >	Identified (within 500m)				
49 >	5.2 >	Bedrock aquifer >	Identified (within 500m)				
50 >	5.3 >	Groundwater vulnerability >	Identified (within 50m)				
51	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
51	5.5	Groundwater vulnerability- local information	None (within 0m)				
52 >	5.6 >	Groundwater abstractions >	0	0	0	0	5
54 >	5.7 >	Surface water abstractions >	0	0	0	0	1
54	5.8	Potable abstractions	0	0	0	0	0
54	5.9	Source Protection Zones	0	0	0	0	-
54	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology >	On site	0-50m	50-250m	250-500m	500-2000m
56 >	6.1 >	Water Network (OS MasterMap) >	0	1	1	-	-

57 >	6.2 >	Surface water features >	0	2	0	-	-
57 >	6.3 >	WFD Surface water body catchments >	2	-	-	-	-
58 >	6.4 >	WFD Surface water bodies >	0	0	0	-	-
58 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
59	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
59	7.2	Historical Flood Events	0	0	0	-	-
59	7.3	Flood Defences	0	0	0	-	-
60	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
60	7.5	Flood Storage Areas	0	0	0	-	-
61	7.6	Flood Zone 2	None (within 50m)				
61	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding >					
62 >	8.1 >	Surface water flooding >	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Groundwater flooding >					
64 >	9.1 >	Groundwater flooding >	Low (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
65 >	10.1 >	Sites of Special Scientific Interest (SSSI) >	0	0	0	0	2
66	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
66	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
66	10.4	Special Protection Areas (SPA)	0	0	0	0	0
66	10.5	National Nature Reserves (NNR)	0	0	0	0	0
67 >	10.6 >	Local Nature Reserves (LNR) >	0	0	0	0	1
67 >	10.7 >	Designated Ancient Woodland >	0	0	0	0	34
68	10.8	Biosphere Reserves	0	0	0	0	0
69	10.9	Forest Parks	0	0	0	0	0
69	10.10	Marine Conservation Zones	0	0	0	0	0
69	10.11	Green Belt	0	0	0	0	0
69	10.12	Proposed Ramsar sites	0	0	0	0	0

69	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
70	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
70	10.15	Nitrate Sensitive Areas	0	0	0	0	0
70 >	10.16 >	Nitrate Vulnerable Zones >	2	0	0	0	2
71 >	10.17 >	SSSI Impact Risk Zones >	1	-	-	-	-
72	10.18	SSSI Units	0	0	0	0	0
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
73	11.1	World Heritage Sites	0	0	0	-	-
73	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
73	11.3	National Parks	0	0	0	-	-
73	11.4	Listed Buildings	0	0	0	-	-
74	11.5	Conservation Areas	0	0	0	-	-
74	11.6	Scheduled Ancient Monuments	0	0	0	-	-
74	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
75 >	12.1 >	Agricultural Land Classification >	Grade 3a (within 250m)				
76	12.2	Open Access Land	0	0	0	-	-
76	12.3	Tree Felling Licences	0	0	0	-	-
76	12.4	Environmental Stewardship Schemes	0	0	0	-	-
76	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
77	13.1	Priority Habitat Inventory	0	0	0	-	-
77	13.2	Habitat Networks	0	0	0	-	-
77	13.3	Open Mosaic Habitat	0	0	0	-	-
77	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
78 >	14.1 >	10k Availability >	Identified (within 500m)				
79 >	14.2 >	Artificial and made ground (10k) >	0	0	1	2	-
80 >	14.3 >	Superficial geology (10k) >	1	0	1	0	-

81	14.4	Landslip (10k)	0	0	0	0	-
82 >	14.5 >	Bedrock geology (10k) >	4	0	0	1	-
83 >	14.6 >	Bedrock faults and other linear features (10k) >	3	0	0	0	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
84 >	15.1 >	50k Availability >	Identified (within 500m)				
85 >	15.2 >	Artificial and made ground (50k) >	0	0	1	1	-
86	15.3	Artificial ground permeability (50k)	0	0	-	-	-
87 >	15.4 >	Superficial geology (50k) >	1	0	1	1	-
88 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
88	15.6	Landslip (50k)	0	0	0	0	-
88	15.7	Landslip permeability (50k)	None (within 50m)				
89 >	15.8 >	Bedrock geology (50k) >	4	0	0	1	-
90 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
90 >	15.10 >	Bedrock faults and other linear features (50k) >	3	0	0	0	-
Page	Section	Boreholes >	On site	0-50m	50-250m	250-500m	500-2000m
91 >	16.1 >	BGS Boreholes >	0	0	22	-	-
Page	Section	Natural ground subsidence >					
93 >	17.1 >	Shrink swell clays >	Very low (within 50m)				
94 >	17.2 >	Running sands >	Very low (within 50m)				
95 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
96 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
97 >	17.5 >	Landslides >	Very low (within 50m)				
98 >	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
100 >	18.1 >	BritPits >	0	0	2	1	-
101 >	18.2 >	Surface ground workings >	9	13	22	-	-
103 >	18.3 >	Underground workings >	0	1	6	0	0
104	18.4	Underground mining extents	0	0	0	0	-
104	18.5	Historical Mineral Planning Areas	0	0	0	0	-

104 >	18.6 >	Non-coal mining >	1	0	0	1	1
105	18.7	JPB mining areas	None (within 0m)				
105	18.8	The Coal Authority non-coal mining	0	0	0	0	-
105	18.9	Researched mining	0	0	0	0	-
105	18.10	Mining record office plans	0	0	0	0	-
106	18.11	BGS mine plans	0	0	0	0	-
106 >	18.12 >	Coal mining >	Identified (within 0m)				
106	18.13	Brine areas	None (within 0m)				
106	18.14	Gypsum areas	None (within 0m)				
106	18.15	Tin mining	None (within 0m)				
107	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
108	19.1	Natural cavities	0	0	0	0	-
108	19.2	Mining cavities	0	0	0	0	0
108	19.3	Reported recent incidents	0	0	0	0	-
108	19.4	Historical incidents	0	0	0	0	-
109	19.5	National karst database	0	0	0	0	-
Page	Section	Radon >					
110 >	20.1 >	Radon >	Less than 1% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
112 >	21.1 >	BGS Estimated Background Soil Chemistry >	5	1	-	-	-
112	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
113	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
114	22.1	Underground railways (London)	0	0	0	-	-
114	22.2	Underground railways (Non-London)	0	0	0	-	-
115	22.3	Railway tunnels	0	0	0	-	-
115 >	22.4 >	Historical railway and tunnel features >	0	1	3	-	-
115	22.5	Royal Mail tunnels	0	0	0	-	-

116 >	22.6 >	Historical railways >	0	0	1	-	-
116	22.7	Railways	0	0	0	-	-
116	22.8	Crossrail 1	0	0	0	0	-
116	22.9	Crossrail 2	0	0	0	0	-
116	22.10	HS2	0	0	0	0	-

Recent aerial photograph



Capture Date: 10/04/2020

Site Area: 3.23ha

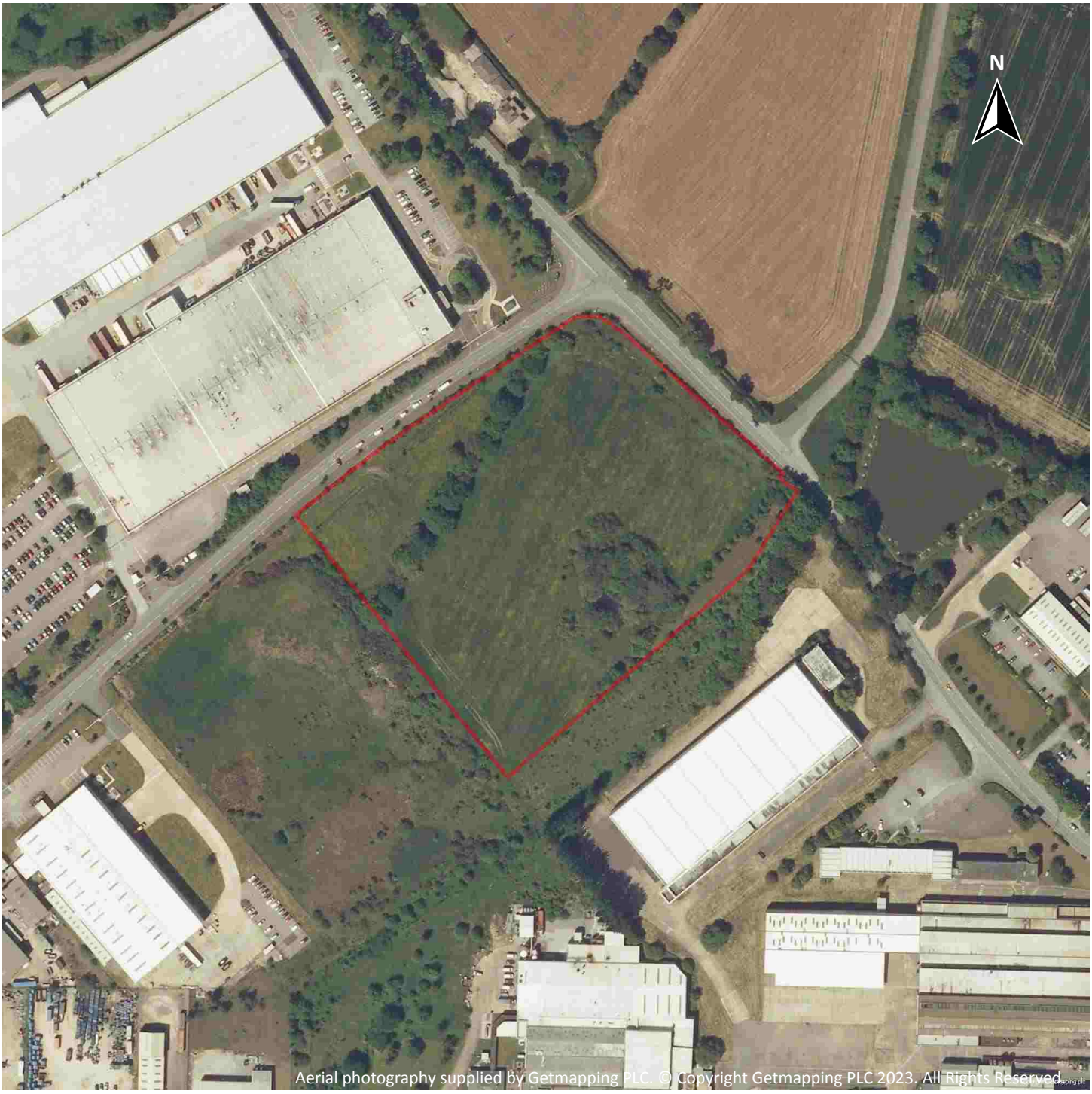
Recent site history - 2017 aerial photograph



Capture Date: 07/05/2017

Site Area: 3.23ha

Recent site history - 2009 aerial photograph



Capture Date: 01/06/2009

Site Area: 3.23ha

Recent site history - 2003 aerial photograph



Capture Date: 04/08/2003

Site Area: 3.23ha

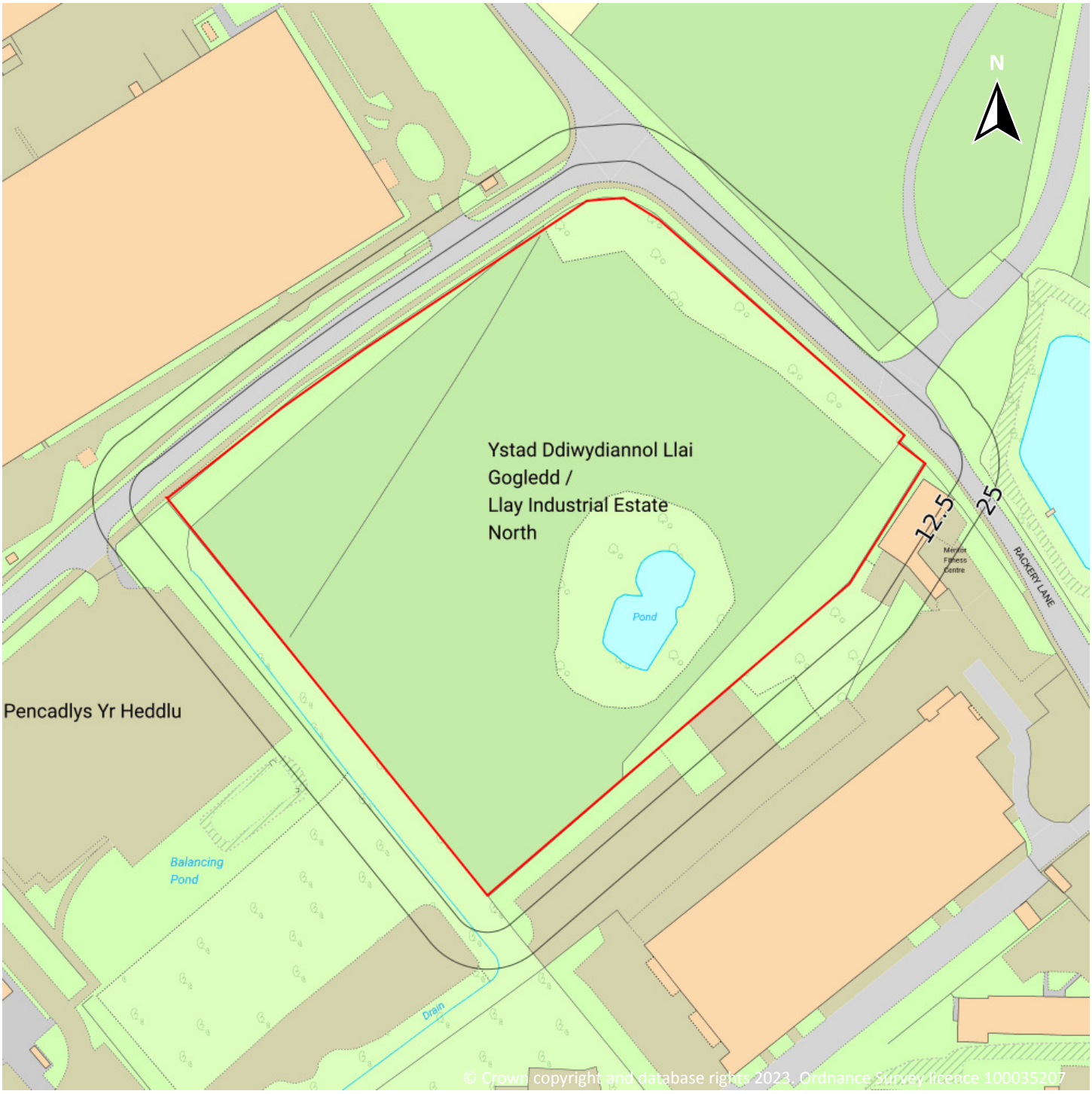
Recent site history - 2000 aerial photograph



Capture Date: 04/09/2000

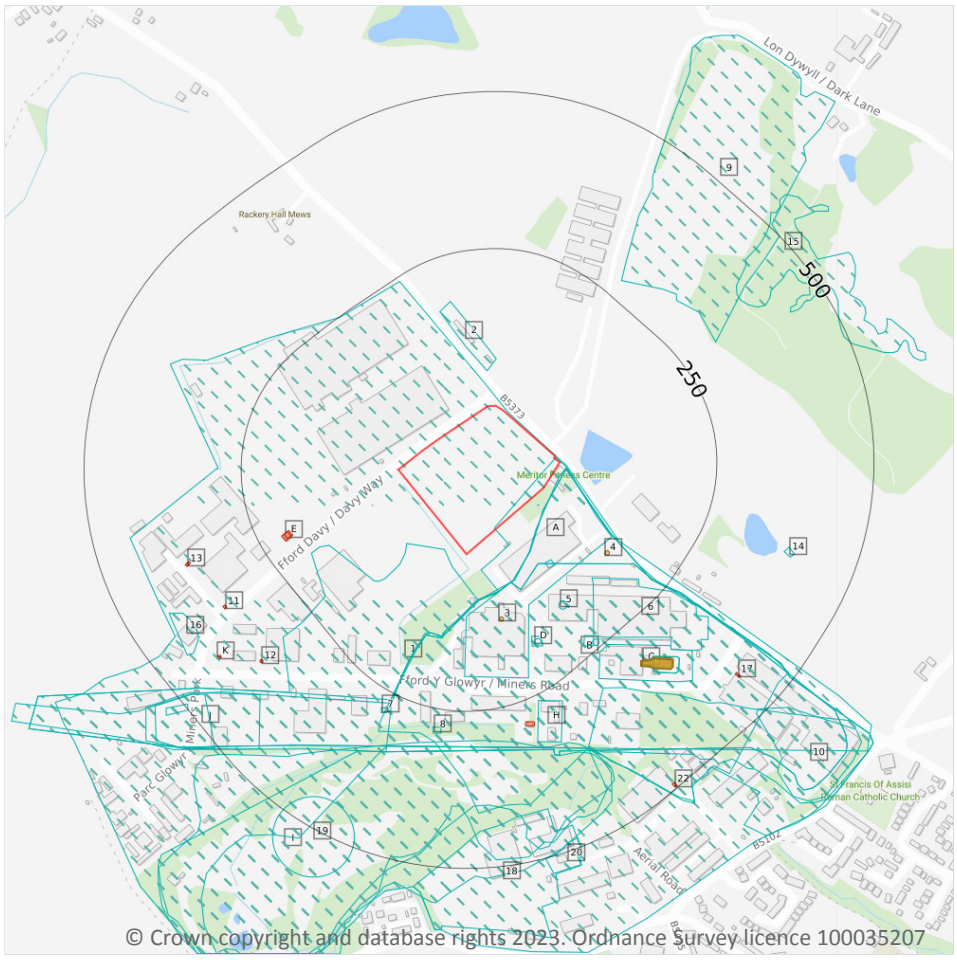
Site Area: 3.23ha

OS MasterMap site plan



Site Area: 3.23ha

1 Past land use



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

1.1 Historical industrial land uses

Records within 500m	36

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

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

ID	Location	Land use	Dates present	Group ID
1	**On site**	**Industrial Estate**	**1992**	**806998**

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Unspecified Factory**	**1979**	**885716**
B	11m E	Colliery	1938	885345
C	15m E	Railway Sidings	1949	872492
C	15m E	Colliery	1949	872721
2	57m N	Nursery	1992	831641
B	75m S	Unspecified Mine	1960 - 1968	854279
C	75m S	Railway Sidings	1960 - 1968	866110
A	92m SE	Magazine	1949	827262
5	155m SE	Unspecified Tank	1949	823925
6	159m SE	Unspecified Works	1979	829782
D	167m S	Unspecified Disused Shafts	1979	943034
D	175m S	Unspecified Disused Shafts	1992	880533
F	221m SE	Unspecified Disused Shafts	1979	892752
F	235m SE	Unspecified Disused Shafts	1992	975963
G	256m SE	Unspecified Factory	1979	821309
H	259m S	Unspecified Depot	1979	818106
7	273m S	Railway Building	1960 - 1968	845327
8	278m S	Railway Building	1968	819528
9	280m NE	Refuse Heap	1992	828337
I	297m S	Unspecified Disused Tip	1979	808655
10	303m SE	Refuse Heap	1949	828336
I	307m S	Refuse Heap	1949	974764
I	313m S	Refuse Heap	1960 - 1968	952510
G	317m SE	Unspecified Tanks	1979	881487
G	317m SE	Unspecified Tanks	1992	960682
14	384m E	Magazine	1949	827269
15	386m NE	Unspecified Ground Workings	1960 - 1968	950884
J	396m SW	Cuttings	1979	869604

ID	Location	Land use	Dates present	Group ID
16	407m SW	Unspecified Heap	1992	802800
18	425m S	Unspecified Works	1992	959832
19	447m SW	Unspecified Disused Workings	1992	842250
J	464m SW	Cuttings	1992	896381
20	484m S	Unspecified Depot	1979	818107
21	490m SE	Unspecified Heap	1979	802801
J	495m SW	Railway Buildings	1960 - 1968	959253

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**5**

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
3	114m S	Unspecified Tank	1961	109552
4	141m SE	Unspecified Tank	1961	109551
G	309m SE	Tanks	1984 - 1990	122404
G	310m SE	Tanks	1996	136501
G	312m SE	Tanks	1974	139908

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	**10**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or

succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

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

ID	Location	Land use	Dates present	Group ID
E	198m W	Electricity Substation	1996	69197
E	200m W	Electricity Substation	1990	78734
H	283m S	Electricity Substation	1984 - 1996	80331
11	350m SW	Electricity Substation	1984 - 1990	67607
12	358m SW	Electricity Substation	1990	60056
13	363m W	Electricity Substation	1990 - 1996	81610
K	405m SW	Electricity Substation	1996	74462
K	408m SW	Electricity Substation	1990	72836
17	425m SE	Electricity Substation	1984 - 1990	67465
22	490m SE	Electricity Substation	1984 - 1990	66125

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.

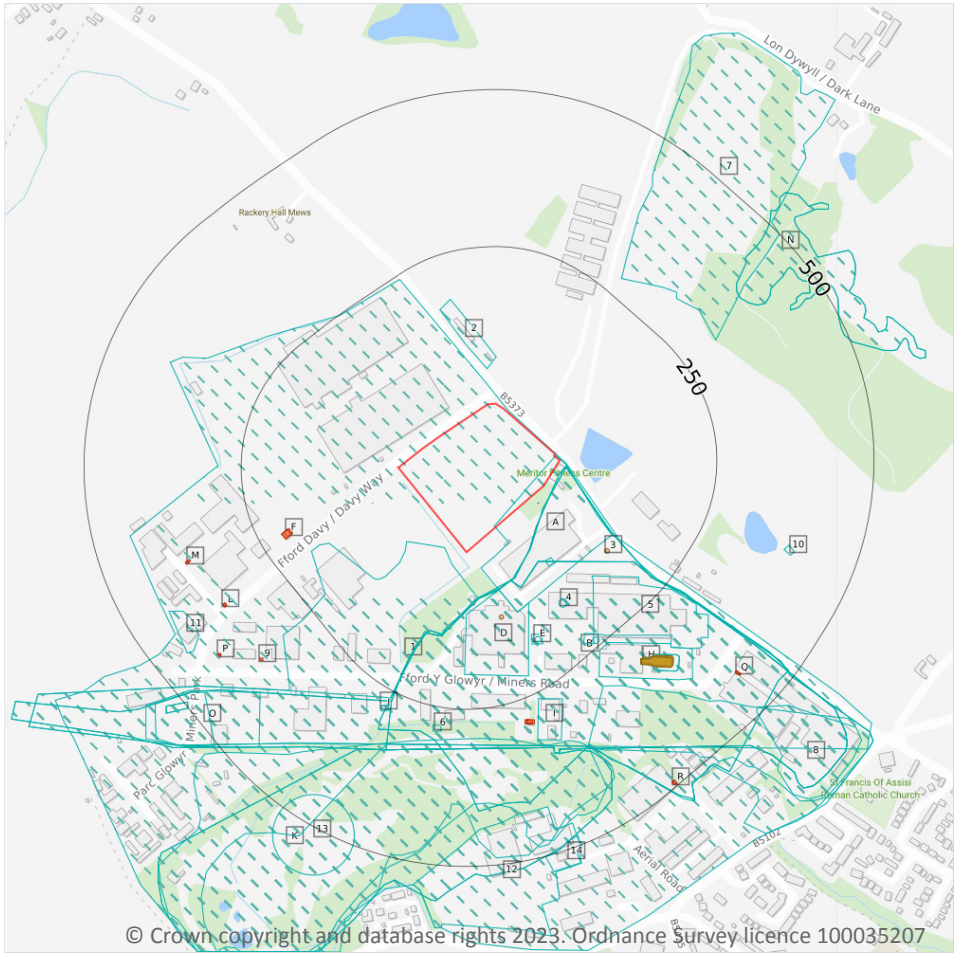
1.6 Historical military land

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



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Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

2.1 Historical industrial land uses

Records within 500m	44

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 20 >**

ID	Location	Land Use	Date	Group ID
1	**On site**	**Industrial Estate**	**1992**	**806998**
A	**On site**	**Unspecified Factory**	**1979**	**885716**
B	11m E	Colliery	1938	885345

ID	Location	Land Use	Date	Group ID
B	11m E	Colliery	1938	885345
C	15m E	Railway Sidings	1949	872492
C	15m E	Colliery	1949	872721
2	57m N	Nursery	1992	831641
B	75m S	Unspecified Mine	1968	854279
B	75m S	Unspecified Mine	1960	854279
C	75m S	Railway Sidings	1968	866110
C	75m S	Railway Sidings	1960	866110
D	79m S	Unspecified Factory	1979	885716
A	92m SE	Magazine	1949	827262
4	155m SE	Unspecified Tank	1949	823925
5	159m SE	Unspecified Works	1979	829782
E	167m S	Unspecified Disused Shafts	1979	943034
E	175m S	Unspecified Disused Shafts	1992	880533
G	221m SE	Unspecified Disused Shafts	1979	892752
G	235m SE	Unspecified Disused Shafts	1992	975963
H	256m SE	Unspecified Factory	1979	821309
I	259m S	Unspecified Depot	1979	818106
J	273m S	Railway Building	1968	845327
J	273m S	Railway Building	1960	845327
6	278m S	Railway Building	1968	819528
7	280m NE	Refuse Heap	1992	828337
K	297m S	Unspecified Disused Tip	1979	808655
8	303m SE	Refuse Heap	1949	828336
K	307m S	Refuse Heap	1949	974764
K	313m S	Refuse Heap	1968	952510
K	313m S	Refuse Heap	1960	952510
H	317m SE	Unspecified Tanks	1992	960682

ID	Location	Land Use	Date	Group ID
H	317m SE	Unspecified Tanks	1979	881487
10	384m E	Magazine	1949	827269
N	386m NE	Unspecified Ground Workings	1968	950884
N	386m NE	Unspecified Ground Workings	1960	950884
O	396m SW	Cuttings	1979	869604
11	407m SW	Unspecified Heap	1992	802800
12	425m S	Unspecified Works	1992	959832
13	447m SW	Unspecified Disused Workings	1992	842250
O	464m SW	Cuttings	1992	896381
14	484m S	Unspecified Depot	1979	818107
15	490m SE	Unspecified Heap	1979	802801
O	495m SW	Railway Buildings	1968	959253
O	495m SW	Railway Buildings	1960	959253

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	**8**

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 20 >**

ID	Location	Land Use	Date	Group ID
D	114m S	Unspecified Tank	1961	109552
3	141m SE	Unspecified Tank	1961	109551
H	309m SE	Tanks	1984	122404
H	309m SE	Tanks	1986	122404
H	309m SE	Tanks	1990	122404
H	309m SE	Tanks	1990	122404
H	310m SE	Tanks	1996	136501

ID	Location	Land Use	Date	Group ID
H	312m SE	Tanks	1974	139908

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	**22**

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

Features are displayed on the Past land use - un-grouped map on **page 20 >**

ID	Location	Land Use	Date	Group ID
F	198m W	Electricity Substation	1996	69197
F	200m W	Electricity Substation	1990	78734
F	200m W	Electricity Substation	1990	78734
I	283m S	Electricity Substation	1984	80331
I	283m S	Electricity Substation	1986	80331
I	283m S	Electricity Substation	1990	80331
I	283m S	Electricity Substation	1990	80331
I	284m S	Electricity Substation	1996	80331
L	350m SW	Electricity Substation	1984	67607
L	350m SW	Electricity Substation	1986	67607
L	350m SW	Electricity Substation	1990	67607
9	358m SW	Electricity Substation	1990	60056
M	363m W	Electricity Substation	1996	81610
M	366m W	Electricity Substation	1990	81610
P	405m SW	Electricity Substation	1996	74462
P	408m SW	Electricity Substation	1990	72836
P	408m SW	Electricity Substation	1990	72836
Q	425m SE	Electricity Substation	1984	67465
Q	425m SE	Electricity Substation	1990	67465

ID	Location	Land Use	Date	Group ID
R	490m SE	Electricity Substation	1984	66125
R	490m SE	Electricity Substation	1986	66125
R	490m SE	Electricity Substation	1990	66125

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.

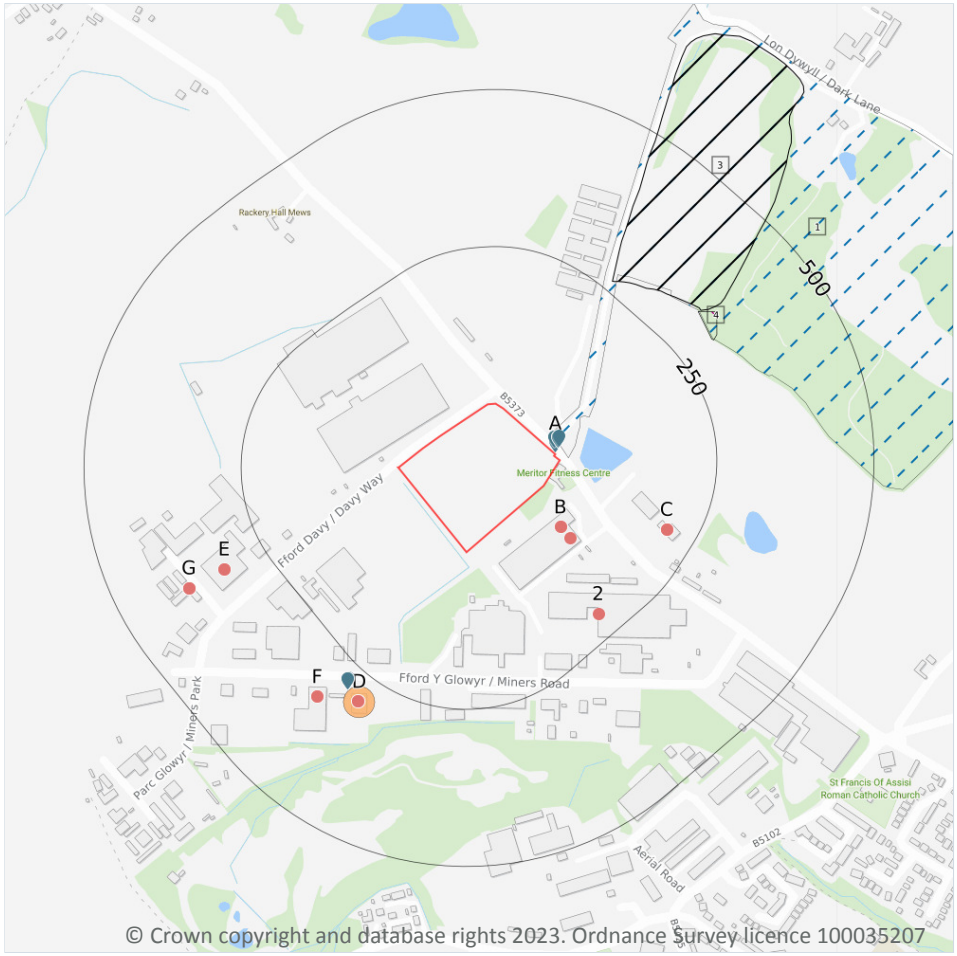
2.5 Historical garages

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



3.1 Active or recent landfill

Records within 500m	1

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

Features are displayed on the Waste and landfill map on **page 25 >**

ID	Location	Details	
1	13m E	Operator: W R G Environmental Ltd Site Address: Astbury Landfill, Dark Lane, Burton, Wrexham, Clwyd, LL12 0AE	WML Number: 37116 EPR Reference: CAI002 Landfill type: A4 : Household, Commercial & Industrial Waste Landfill Status: Modified IPPC Reference: - EPR Number: EAEPR\EA/EPR/FP3894FP/V008

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	1

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

Features are displayed on the Waste and landfill map on **page 25 >**

ID	Location	Site address	Source	Data type
4	309m NE	Refuse Tip	1996 mapping	Polygon

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

3.4 Historical landfill (EA/NRW records)

Records within 500m	1

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.

Features are displayed on the Waste and landfill map on **page 25 >**

ID	Location	Details		
3	266m NE	Site Address: Astbury Quarry, Dark Lane, Llay, Wrexham Licence Holder Address: -	Waste Licence: Yes Site Reference: WMBC L/13, NOW-510-L, 6955/0062 Waste Type: Inert, Industrial, Commercial, Household, Special Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 31/12/1983 Licence Surrender: 31/12/1987	Operator: - Licence Holder: Shanks First Recorded 31/12/1983 Last Recorded: 31/12/1987

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

3.5 Historical waste sites

Records within 500m	1

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

Features are displayed on the Waste and landfill map on **page 25 >**

ID	Location	Address	Further Details	Date
D	268m SW	Site Address: Miners Road,Miners Road, Llay Industrial Estate, WREXHAM, Clwyd, LL12 0PJ	Type of Site: Waste Transfer Station Planning application reference: CB2654 Description: The work will involve the construction of a waste transfer station. The work will involve the construction of 4 waste transfer units with associated access road and car parking. Detailed plans have been submitted to Wrexham City Council to go to committ ee early 1998. An application (ref: CB2654) for Detailed Planning permission was submitted to Wrexham B.C. on 12th October 1998. Data source: Historic Planning Application Data Type: Point	-

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

3.6 Licensed waste sites

Records within 500m	19

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

Features are displayed on the Waste and landfill map on **page 25 >**

ID	Location	Details		
A	12m E	Site Name: Astbury Landfill (rossett) Site Address: Dark Lane, Burton, Rossett, Wrexham, LL12 0AE Correspondence Address: Wrg Waste Services Ltd, Ground Floor West, 900, Pavilion Drive, Nothampton Business Park, Northampton, NN4 7RG	Type of Site: Household, Commercial & Industrial Waste Landfill Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CAI002 EPR reference: - Operator: Caird Environmental Ltd Waste Management licence No: 37116 Annual Tonnage: 0	Issue Date: 17/08/1994 Effective Date: - Modified: 29/01/2003 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified

ID	Location	Details		
A	17m NE	Site Name: Astbury Landfill (rossett) Site Address: Dark Lane, Burton, Rossett, Wrexham, LL12 0AE Correspondence Address: Astbury Landfill (rossett), Dark Lane, Burton, Rossett, Wrexham, LL12 0AE	Type of Site: Household, Commercial & Industrial Waste Landfill Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CAI002 EPR reference: - Operator: Caird Environmental Ltd Waste Management licence No: 37116 Annual Tonnage: 0	Issue Date: 17/08/1994 Effective Date: - Modified: 29/01/2003 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
A	17m NE	Site Name: Astbury Quarry Site Address: Dark Lane, Burton, Rossett, Wrexham, LL12 0AE Correspondence Address: Deerplay, Bacup Road, Cliviger, Burnley, Lancashire, BB11 3RL	Type of Site: Co-Disposal Landfill Site Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CAI002 EPR reference: - Operator: Caird Environmental Ltd Waste Management licence No: 37116 Annual Tonnage: 0	Issue Date: 17/08/1994 Effective Date: - Modified: 09/07/2002 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
A	20m NE	Site Name: - Site Address: Astbury (Rossett) Landfill, Dark Lane, Burton, Wrexham, Clwyd, LL12 0AE Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste Landfill Size: - Environmental Permitting Regulations (Waste) Licence Number: FP3894FP EPR reference: - Operator: W R G Environmental Ltd Waste Management licence No: - Annual Tonnage: 0	Issue Date: 11/01/2019 Effective Date: 11/01/2019 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective
A	20m NE	Site Name: - Site Address: Astbury (Rossett) Landfill, Dark Lane, Burton, Wrexham, Clwyd, LL12 0AE Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste Landfill Size: - Environmental Permitting Regulations (Waste) Licence Number: FP3894FP EPR reference: - Operator: W R G Environmental Ltd Waste Management licence No: - Annual Tonnage: 0	Issue Date: 11/01/2019 Effective Date: 11/01/2019 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective

ID	Location	Details		
A	20m NE	Site Name: - Site Address: Astbury Landfill (rossett), Burton, Wrexham, Wrexham, LL12 0AE Correspondence Address: -	Type of Site: - Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: FP3894FP EPR reference: - Operator: W R G Environmental Ltd Waste Management licence No: 0 Annual Tonnage: 0	Issue Date: 17/08/1994 Effective Date: 17/08/1994 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective
A	20m NE	Site Name: - Site Address: Astbury Landfill (rossett), Burton, Clwyd, Wrexham, Wrexham, LL12 0AE Correspondence Address: -	Type of Site: - Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: FP3894FP EPR reference: - Operator: W R G Environmental Ltd Waste Management licence No: 37116 Annual Tonnage: 0	Issue Date: 17/08/1994 Effective Date: 17/08/1994 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective
A	20m NE	Site Name: Astbury Landfill (rossett) Site Address: Astbury Landfill, Dark Lane, Burton, Wrexham, Clwyd, LL12 0AE Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste Landfill Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CAI002 EPR reference: EA/EPR/FP3894FP/V008 Operator: W R G Environmental Ltd Waste Management licence No: 37116 Annual Tonnage: 0	Issue Date: 17/08/1994 Effective Date: - Modified: 03/03/2014 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
A	20m NE	Site Name: Astbury Landfill (rossett) Site Address: Astbury Landfill, Dark Lane, Burton, Wrexham, Clwyd, LL12 0AE Correspondence Address: Wrg Waste Services Ltd, Ground Floor West, 900, Pavilion Drive, Northampton Business Park, Northampton, Northants, NN4 7RG	Type of Site: Household, Commercial & Industrial Waste Landfill Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CAI002 EPR reference: - Operator: Wrg Environmental Ltd Waste Management licence No: 37116 Annual Tonnage: 0	Issue Date: 17/08/1994 Effective Date: - Modified: 01/10/2007 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified

ID	Location	Details		
A	20m NE	Site Name: - Site Address: Astbury Landfill (rossett), Burton, Wrexham, Clwyd, LL12 0AE Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste Landfill Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: FP3894FP EPR reference: - Operator: - Waste Management licence No: 37116 Annual Tonnage: 0	Issue Date: 17/08/1994 Effective Date: 17/08/1994 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective
A	22m NE	Site Name: Astbury Landfill (rossett) Site Address: Astbury Landfill, Dark Lane, Burton, Wrexham, Clwyd, LL12 0AE Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste Landfill Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: CAI002 EPR reference: FP3894FP/V008 Operator: W R G Environmental Ltd Waste Management licence No: 37116 Annual Tonnage: 0	Issue Date: 17/08/1994 Effective Date: - Modified: 03/03/2014 Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: Modified
D	277m SW	Site Name: W H Chaloner & Son Ltd Site Address: W H Chaloner & Son Ltd, Miners Road, Llay Industrial Estate, Wrexham, Clwyd, LL12 0PJ Correspondence Address: -	Type of Site: Metal Recycling Site (mixed MRS's) Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: CHA002 EPR reference: ZP3594FN/V008 Operator: W H Chaloner & Son Limited Waste Management licence No: 37135 Annual Tonnage: 0	Issue Date: 20/07/1995 Effective Date: - Modified: 23/10/2012 Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: Modified
D	279m SW	Site Name: - Site Address: W H Chaloner & Son Ltd, Llay Industrial Estate, Wrexham, Clwyd, LL12 0PJ Correspondence Address: -	Type of Site: Metal Recycling Site (mixed MRS's) Size: - Environmental Permitting Regulations (Waste) Licence Number: ZP3594FN EPR reference: - Operator: W H Chaloner & Son Limited Waste Management licence No: - Annual Tonnage: 24999	Issue Date: 20/07/1995 Effective Date: 20/07/1995 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective

ID	Location	Details		
D	279m SW	Site Name: - Site Address: W H Chaloner & Son Ltd, Llay Industrial Estate, Wrexham, Clwyd, LL12 0PJ Correspondence Address: -	Type of Site: Metal Recycling Site (mixed MRS's) Size: - Environmental Permitting Regulations (Waste) Licence Number: ZP3594FN EPR reference: - Operator: W H Chaloner & Son Limited Waste Management licence No: - Annual Tonnage: 24999	Issue Date: 20/07/1995 Effective Date: 20/07/1995 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective
D	279m SW	Site Name: W H Chaloner & Sons Ltd Site Address: Miners Road, Llay Industrial Estate, Llay, Wrexham, LL12 0PJ Correspondence Address: Park House, Pulford, Chester, Cheshire, CH4 9DG	Type of Site: Metal Recycling Site (mixed MRS's) Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CHA002 EPR reference: - Operator: Chaloner W H & Son Ltd Waste Management licence No: 37135 Annual Tonnage: 0	Issue Date: 20/07/1995 Effective Date: - Modified: 29/11/2002 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
D	279m SW	Site Name: W H Chaloner & Son Ltd Site Address: W H Chaloner & Son Ltd, Miners Road, Llay Industrial Estate, Wrexham, Clwyd, LL12 0PJ Correspondence Address: -	Type of Site: Metal Recycling Site (mixed MRS's) Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CHA002 EPR reference: EA/EPR/ZP3594FN/V008 Operator: W H Chaloner & Son Limited Waste Management licence No: 37135 Annual Tonnage: 24999	Issue Date: 20/07/1995 Effective Date: - Modified: 23/10/2012 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
D	279m SW	Site Name: - Site Address: W H Chaloner & Son Ltd, Llay Industrial Estate, Wrexham, Clwyd, LL12 0PJ Correspondence Address: -	Type of Site: Metal Recycling Site (mixed MRS's) Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: ZP3594FN EPR reference: - Operator: - Waste Management licence No: 37135 Annual Tonnage: 24999	Issue Date: 20/07/1995 Effective Date: 20/07/1995 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective

ID	Location	Details		
D	279m SW	Site Name: - Site Address: W H Chaloner & Son Ltd, Llay Industrial Estate, Wrexham, Wrexham, LL12 0PJ Correspondence Address: -	Type of Site: - Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: ZP3594FN EPR reference: - Operator: W H Chaloner & Son Limited Waste Management licence No: 0 Annual Tonnage: 24999	Issue Date: 20/07/1995 Effective Date: 20/07/1995 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective
D	279m SW	Site Name: - Site Address: W H Chaloner & Son Ltd, Llay Industrial Estate, Clwyd, Wrexham, Wrexham, LL12 0PJ Correspondence Address: -	Type of Site: - Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: ZP3594FN EPR reference: - Operator: W H Chaloner & Son Limited Waste Management licence No: 37135 Annual Tonnage: 24999	Issue Date: 20/07/1995 Effective Date: 20/07/1995 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective

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

3.7 Waste exemptions

Records within 500m **29**

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 25 >**

ID	Location	Site	Reference	Category	Sub-Category	Description
B	68m SE	UNIT 2, NORTHBROOK INDUSTRIAL ESTATE, VINCENT AVENUE, SOUTHAMPTON, SO16 6PB	WEX094344	Storing waste exemption	Not on a farm	Storage of waste in a secure place
B	68m SE	UNIT 2, NORTHBROOK INDUSTRIAL ESTATE, VINCENT AVENUE, SOUTHAMPTON, SO16 6PB	WEX094344	Storing waste exemption	Not on a farm	Storage of waste in secure containers

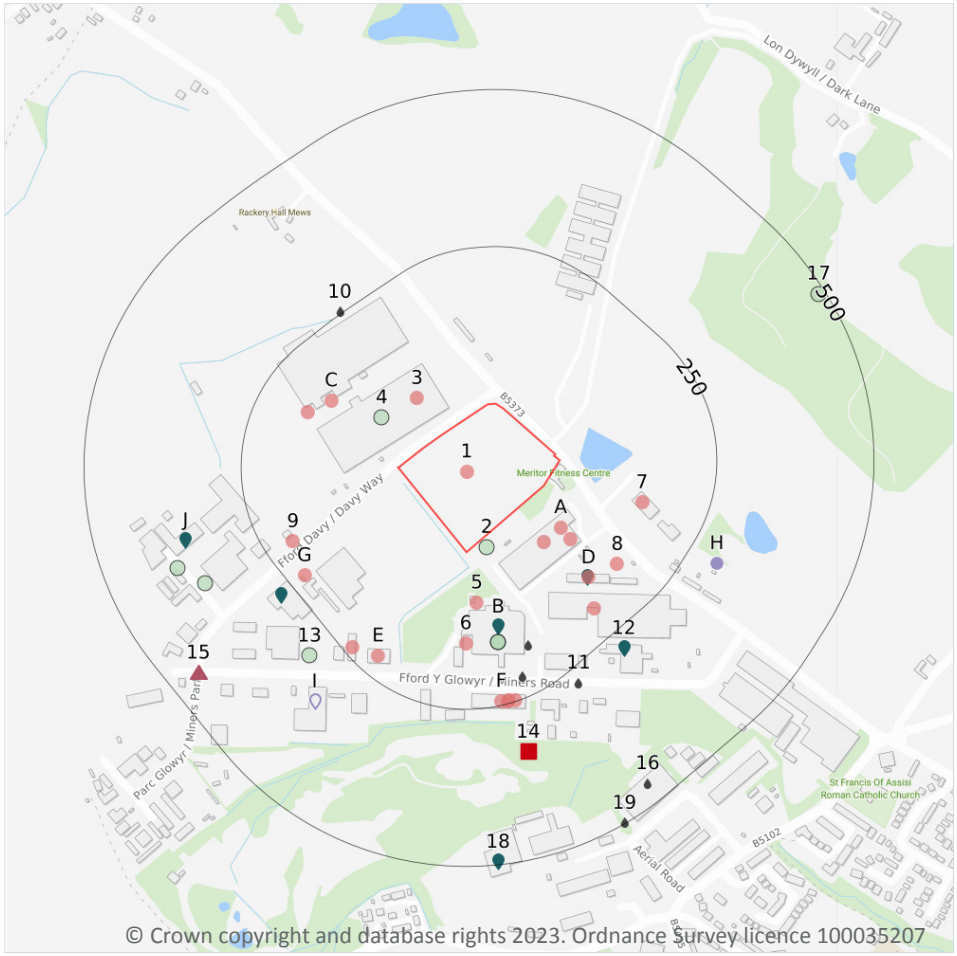
ID	Location	Site	Reference	Category	Sub-Category	Description
B	91m SE	1 Prospect Estate, Llay Industrial Estate North, Wrexham, Wrecsam, LL12 0PB	NRW-WME001183	Treating waste exemption	Waste Exemption - Non-Agricultural	Screening and blending of waste
C	203m E	Halo Plastics Ltd, Vinyl GB Ltd, Rackery Lane, Llay, Wrexham, Wrecsam, LL12 0PB	NRW-WME068624	Using waste exemption	Not on a farm	Use of waste to manufacture finished goods
C	203m E	P M Dromgoole & Sons Agricultural Limited, Lower Rackery Farm, Dark Lane, Burton, Flintshire, LL120PB	NRW-WME035342	Using waste exemption	Not on a farm	Use of waste in construction
C	203m E	-	WEX332641	Using waste exemption	Not on a farm	Use of waste to manufacture finished goods
C	203m E	-	WEX355074	Treating waste exemption	Not on a farm	Recovery of scrap metal
C	203m E	-	WEX298947	Using waste exemption	Not on a Farm	Use of waste to manufacture finished goods
2	211m SE	-	WEX298950	Using waste exemption	Not on a Farm	Use of waste to manufacture finished goods
D	293m SW	WH Chaloner & Son Ltd, W H Chaloner & Son Ltd, Miners Road, Llay Industrial Estate, Llay, Wrexham, Wrecsam, LL12 0PJ	NRW-WME051874	Storing waste exemption	Not on a farm	Storage of waste in a secure place
D	294m SW	MINERS ROAD, LLAY INDUSTRIAL ESTATE, LLAY, WREXHAM, LL12 0PJ	WEX092257	Storing waste exemption	Not on a farm	Storage of waste in a secure place
D	294m SW	wrexham county bourough council, Unit 12, Miners Road, Llay Industrial Estate, Llay, Wrecsam, Wrexham, LL120PJ	NRW-WME022216	Storing waste exemption	Not on a farm	Storage of waste in a secure place
D	294m SW	WH Chaloner & Son Ltd, W H Chaloner & Son Ltd, Miners Road, Llay Industrial Estate, Llay, Wrecsam, LL120PJ	NRW-WME023190	Storing waste exemption	Not on a farm	Storage of waste in a secure place

ID	Location	Site	Reference	Category	Sub-Category	Description
D	294m SW	Miners Road, Llay Industrial Estate, Wrexham, Wrecsam, LL12 0PJ	NRW-WME001363	Storing waste exemption	Waste Exemption - Non-Agricultural	Storage of waste in a secure place
D	294m SW	Miners Road, Llay Industrial Estate, Wrexham, Wrecsam, LL12 0PJ	NRW-WME001363	Treating waste exemption	Waste Exemption - Non-Agricultural	Preparatory treatments (baling, sorting, shredding etc)
D	294m SW	Miners Road, Llay Industrial Estate, Wrexham, Wrecsam, LL12 0PJ	NRW-WME001363	Treating waste exemption	Waste Exemption - Non-Agricultural	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
E	321m W	Marlin Industries Wrexham Ltd, Marlin Industries (St. Helens) Ltd, Davy Way, Llay Industrial Estate, Llay, Wrexham, LL12 0PG	NRW-WME044437	Treating waste exemption	Not on a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
E	321m W	Marlin Industries Wrexham Ltd, Marlin Industries (St. Helens) Ltd, Davy Way, Llay Industrial Estate, Llay, Wrexham, LL12 0PG	NRW-WME044437	Treating waste exemption	Not on a farm	Preparatory treatments (baling, sorting, shredding etc)
E	321m W	Marlin Industries Wrexham Ltd, Marlin Industries (St. Helens) Ltd, Davy Way, Llay Industrial Estate, Llay, Wrexham, LL12 0PG	NRW-WME044437	Using waste exemption	Not on a farm	Use of waste to manufacture finished goods
F	331m SW	R.A & C.E Platt Ltd, Miners Road, Llay Industrial Estate, Wrexham, Wrecsam, LL120PJ	NRW-WME029416	Treating waste exemption	-	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
F	331m SW	R.A & C.E Platt Ltd, Miners Road, Llay Industrial Estate, Wrexham, Wrecsam, LL120PJ	NRW-WME029416	Treating waste exemption	-	Preparatory treatments (baling, sorting, shredding etc)
F	331m SW	R.A & C.E Platt Ltd, Miners Road, Llay Industrial Estate, Wrexham, Wrecsam, LL120PJ	NRW-WME029416	Storing waste exemption	-	Storage of waste in a secure place
G	385m W	Ecological Land Management Ltd, 6 Davy Way, Llay, Wrexham, Wrecsam, LL120PG	NRW-WME007499	Disposing of waste exemption	Not on a farm	Burning waste in the open

ID	Location	Site	Reference	Category	Sub-Category	Description
G	385m W	Marlin Industries Wrexham Ltd, Marlin Industries (St. Helens) Ltd, Davy Way, Llay Industrial Estate, Llay, Wrexham, LL120PG	NRW-WME016539	Treating waste exemption	Not on a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
G	385m W	Marlin Industries Wrexham Ltd, Marlin Industries (St. Helens) Ltd, Davy Way, Llay Industrial Estate, Llay, Wrexham, LL120PG	NRW-WME016539	Using waste exemption	Not on a farm	Use of waste to manufacture finished goods
G	385m W	Marlin Industries Wrexham Ltd, Marlin Industries (St. Helens) Ltd, Davy Way, Llay Industrial Estate, Llay, Wrexham, LL120PG	NRW-WME016539	Treating waste exemption	Not on a farm	Preparatory treatments (baling, sorting, shredding etc)
G	385m W	Galliford Try Building North, Sharp Manufacturing Co (UK) Ltd, Sharp House, Davy Way, Llay Industrial Estate, Llay, Wrecsam, LL120PG	NRW-WME016719	Using waste exemption	Not on a farm	Use of waste in construction
G	385m W	Sharp Manufacturing Co (UK) Ltd, Sharp House, Davy Way, Wrexham, Wrecsam, LL12 0PG	NRW-WME000845	Treating waste exemption	Waste Exemption - Non-Agricultural	Preparatory treatments (baling, sorting, shredding etc)
G	385m W	Sharp Manufacturing Co (UK) Ltd, Sharp House, Davy Way, Wrexham, Wrecsam, LL12 0PG	NRW-WME000845	Treating waste exemption	Waste Exemption - Agricultural	Sorting mixed waste

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

4 Current industrial land use



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4.1 Recent industrial land uses

Records within 250m	21

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 36 >**

ID	Location	Company	Address	Activity	Category
1	**On site**	**Llay Industrial Estate**	**Clwyd, LL12**	**Business Parks and Industrial Estates**	**Industrial Features**
A	68m SE	Tycon Automation Ltd	Unit I Llay Industrial Units Llay Industrial Estate, Rackery Lane, Llay, Wrexham, Clwyd, LL12 0PB	Electrical and Electronic Engineers	Engineering Services

ID	Location	Company	Address	Activity	Category
A	68m SE	Play Revolution	Unit G Llay Industrial Units Llay Industrial Estate, Rackery Lane, Llay, Wrexham, Clwyd, LL12 0PB	Baby, Nursery and Playground Equipment	Consumer Products
3	71m NW	Sharp	Sharp Electronics Factory, Davy Way, Llay Industrial Estate, Llay, Clwyd, LL12 0PG	Electronic Equipment	Industrial Products
5	82m S	Electricity Sub Stations	Clwyd, LL12	Electrical Features	Infrastructure and Facilities
A	91m SE	I & S Cars	Llay Industrial Estate, Rackery Lane, Llay, Wrexham, Clwyd, LL12 0PB	Secondhand Vehicles	Motoring
6	145m S	Electricity Sub Station	Clwyd, LL12	Electrical Features	Infrastructure and Facilities
7	147m E	Multi Factor Europe Ltd	Aerial Road, Llay Industrial Estate, Llay, Wrexham, Clwyd, LL12 0TU	Air and Water Filtration	Industrial Products
C	151m NW	Chimney	Clwyd, LL12	Chimneys	Industrial Features
D	157m SE	A-n-l Drain Contractors	Suite 5 Llay Business Centre, Rackery Lane, Llay, Wrexham, Clwyd, LL12 0PB	Civil Engineers	Engineering Services
C	170m W	Electricity Sub Station	Clwyd, LL12	Electrical Features	Infrastructure and Facilities
8	171m SE	Pumping Station	Clwyd, LL12	Water Pumping Stations	Industrial Features
D	199m SE	Recycling Business	Clwyd, LL12	Recycling Centres	Infrastructure and Facilities
9	205m W	Electricity Sub Station	Clwyd, LL12	Electrical Features	Infrastructure and Facilities
E	217m SW	Charcroft Electronics	-, Miners Road, Llay Industrial Estate, Llay, Clwyd, LL12 0PJ	Electrical Components	Industrial Products
G	224m SW	Electricity Sub Station	Clwyd, LL12	Electrical Features	Infrastructure and Facilities
E	237m SW	Wrexham Plastics Co Ltd	Trevor House, Miners Road, Llay Industrial Estate, Llay, Clwyd, LL12 0PJ	Rubber, Silicones and Plastics	Industrial Products
F	243m S	Premier Installations	Unit 3, Miners Road, Llay Industrial Estate, Llay, Clwyd, LL12 0PJ	Construction Completion Services	Construction Services
F	245m S	P P Autos	2 Miners Road, Llay Industrial Estate, Llay, Wrexham, Clwyd, LL12 0PJ	Vehicle Repair, Testing and Servicing	Repair and Servicing

ID	Location	Company	Address	Activity	Category
F	247m S	Reyton Wire Ltd	Unit 2, Miners Road, Llay Industrial Estate, Llay, Clwyd, LL12 0PJ	Cable, Wire and Fibre Optics	Industrial Products
F	248m S	D M H Tyres Ltd	Unit 1, Miners Road, Llay Industrial Estate, Llay, Clwyd, LL12 0PJ	Vehicle Repair, Testing and Servicing	Repair and Servicing

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	1

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.

Features are displayed on the Current industrial land use map on **page 36 >**

ID	Location	Details	
15	452m SW	Application reference number: No Details Application status: Historical Consent Application date: No Details Address: Magellan Aerospace Corp, Miners Road, Llay Industrial Estate, Wrexham, LL12 0PG	Details: No Details Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	2

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.

Features are displayed on the Current industrial land use map on **page 36 >**

ID	Location	Details	
H	298m E	Operator: Magellan Aerospace Corporation Ltd Address: Rackery Lane, Llay, Wrexham, Clwyd, LL12 0PB Process: Inorganic Chemical Processes Permit Number: AO6880	Original Permit Number: IPCAPP Date Approved: 21-4-1995 Effective Date: 25-4-1995 Status: Superseded By Variation
H	298m E	Operator: Magellan Aerospace Corporation Ltd Address: Rackery Lane, Llay, Wrexham, Clwyd, LL12 0PB Process: Inorganic Chemical Processes Permit Number: BD0150	Original Permit Number: IPCMINVAR Date Approved: 24-11-1998 Effective Date: 30-11-1998 Status: Revoked - Now Ippc

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

4.10 Licensed industrial activities (Part A(1))

Records within 500m **4**

Records of Part A(1) 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 36 >**

ID	Location	Details	
I	339m SW	Operator: 2 AGRICULTURE LTD Installation Name: LLAY FEED MILL EPR/AP3337HF Process: - Permit Number: AP3337HF Original Permit Number: AP3337HF	EPR Reference: - Issue Date: 08/03/2011 Effective Date: 08/03/2011 Last date noted as effective: 01/12/2016 Status: EFFECTIVE
I	339m SW	Operator: 2 Agriculture Ltd Installation Name: Llay Feed Mill Process: TREATMENT AND PROCESSING, OTHER THAN EXCLUSIVELY PACKAGING, OF THE FOLLOWING RAW MATERIALS, WHETHER PREVIOUSLY PROCESSED OR UNPROCESSED, INTENDED FOR THE PRODUCTION OF FOOD OR FEED (WHERE THE WEIGHT OF THE FINISHED PRODUCT EXCLUDES PACKAGING)—ONLY VEGETABLE RAW MATERIALS WITH A FINISHED PRODUCT PRODUCTION CAPACITY GREATER THAN 300 TONNES PER DAY OR 600 TONNES PER DAY WHERE THE INSTALLATION OPERATES FOR A PERIOD OF NO MORE THAN 90 CONSECUTIVE DAYS IN ANY YEAR Permit Number: AP3337HF Original Permit Number: -	EPR Reference: - Issue Date: 21/01/2022 Effective Date: 21/01/2022 Last date noted as effective: 25/05/2023 Status: Effective

ID	Location	Details	
I	339m SW	Operator: VION FOOD GROUP LIMITED Installation Name: LLAY FEED MILL Process: ANIMAL VEGETABLE AND FOOD; TREATING ETC VEGETABLE RAW MATERIALS FOR FOOD >300T/D Permit Number: RP3835SY Original Permit Number: RP3835SY	EPR Reference: - Issue Date: 13/04/2006 Effective Date: 13/04/2006 Last date noted as effective: 17/11/2015 Status: SUPERCEDED
I	339m SW	Operator: VION AGRICULTURE LTD Installation Name: LLAY FEED MILL EPR/AP3337HF Process: ANIMAL VEGETABLE AND FOOD; TREATING ETC VEGETABLE RAW MATERIALS FOR FOOD >300T/D Permit Number: AP3337HF Original Permit Number: AP3337HF	EPR Reference: - Issue Date: 08/03/2011 Effective Date: 08/03/2011 Last date noted as effective: 17/11/2015 Status: TRANSFER EFFECTIVE

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

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

Records within 500m	**6**

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 36 >**

ID	Location	Address	Details	
B	128m S	Sharp Manufacturing Company of UK, Sharp House, Davy Way, Llay Industrial Estate, Wrexham, LL12 0PG	Process: Surface Cleaning Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified. Date of enforcement: No Enforcement Notified. Comment: No Enforcement Notified.
D	155m SE	Arvin Meritor Hvs Limited, Rackery Lane, Llay, Wrexham, LL12 0PB	Process: Coating Processes Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified. Date of enforcement: No Enforcement Notified. Comment: No Enforcement Notified.
G	272m SW	Magellan Aerospace Metal Treatments, Miners Road, Llay, Wrexham, LL12 0PB	Process: Surface Treatment of Metal Processes Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified. Date of enforcement: No Enforcement Notified. Comment: No Enforcement Notified.
12	278m SE	Cymru Country Feeds Ltd, Miners Road, Llay, Wrexham, Llay, LL12 0PJ	Process: Animal and Plant/Vegetable Processes Status: Historical Permit Permit Type: Part B	Enforcement: Enforcement Notified Date of enforcement: 14/02/2002 Comment: Animal feed compounding process

ID	Location	Address	Details	
J	357m W	Marlin Industries, Davy Way, Llay Industrial Estate, Wrexham, LL12 0PG	Process: Timber Manufacture Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified. Date of enforcement: No Enforcement Notified. Comment: No Enforcement Notified.
18	495m S	Marshalls Mono Limited, Llay Industrial Estate, Llay, Wrexham, LL14 0TL	Process: Other Mineral Processes Status: Historical 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 **6**

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 36 >**

ID	Location	Address	Details	
B	177m S	LLAY MAIN COLLIERY	Effluent Type: UNSPECIFIED Permit Number: CM0142801 Permit Version: 1 Receiving Water: RIVER ALYN	Status: CONSENT EXPIRED - TIME LIMIT Issue date: 23/01/1967 Effective Date: 23/01/1967 Revocation Date: 12/01/1996
F	216m S	MERITOR HEAVY VEHICLE SYSTEMS LTD, MERITOR HEAVY VEHICLE SYSTEMS, RACKERY LANE, LLAY, WREXHAM, LL12 0PB	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: CG0393001 Permit Version: 1 Receiving Water: SINGRET BROOK VIA DRAIN	Status: SURRENDERED UNDER EPR 2010 Issue date: 30/04/2001 Effective Date: 30/04/2001 Revocation Date: 23/09/2011

ID	Location	Address	Details	
10	253m NW	RACKERY HALL, RACKERY LANE, LLAY, WREXHAM, WALES, LL12 0PB	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CM0187201 Permit Version: 0 Receiving Water: Groundwater via infiltration system	Status: Effective Issue date: 26/11/2012 Effective Date: 26/11/2012 Revocation Date: -
11	273m SE	MERITOR HEAVY VEHICLE SYSTEMS LTD, MERITOR HEAVY VEHICLE SYSTEMS, RACKERY LANE, LLAY, WREXHAM, LL12 0PB	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: CG0392001 Permit Version: 1 Receiving Water: SINGRET BROOK VIA MAINS DRAIN	Status: SURRENDERED UNDER EPR 2010 Issue date: 30/04/2001 Effective Date: 30/04/2001 Revocation Date: 23/09/2011
16	467m SE	LLAY IND ESTATE	Effluent Type: UNSPECIFIED Permit Number: CM0060002 Permit Version: 1 Receiving Water: SINGRET BROOK	Status: CONSENT EXPIRED - TIME LIMIT Issue date: 14/10/1969 Effective Date: 14/10/1969 Revocation Date: 06/02/1995
19	498m S	MARSHALLS MONO PLC LLAY WORKS, MARSHALLS MONO PLC, LLAY WORKS, LLAY INDUSTRIAL ESTATE, LLAY WREXHAM, LL12 0TL	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: CG0401501 Permit Version: 1 Receiving Water: TO GROUND	Status: REVOKED (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 10/01/2003 Effective Date: 10/01/2003 Revocation Date: 22/06/2009

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	1

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.

Features are displayed on the Current industrial land use map on **page 36 >**

ID	Location	Name	Status	Receiving Water	Authorised Substances
14	333m S	Trefn Eng Ltd,wrexham	Not Active	-	Cadmium

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	8

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 36 >**

ID	Location	Details	
2	14m S	Incident Date: 29/01/2016 Incident Identification: 1407151 Pollutant: Inert Materials and Wastes Pollutant Description: Other Inert Material or Waste	Water Impact: - Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
4	79m NW	Incident Date: 21/06/2002 Incident Identification: 86363 Pollutant: Contaminated Water Pollutant Description: Firefighting Run-Off	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
B	151m S	Incident Date: 13/09/2002 Incident Identification: 107555 Pollutant: Oils and Fuel Pollutant Description: Diesel	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

ID	Location	Details	
B	151m S	Incident Date: 13/09/2002 Incident Identification: 107555 Pollutant: Oils and Fuel Pollutant Description: Diesel	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
13	297m SW	Incident Date: 04/12/2013 Incident Identification: 1180861 Pollutant: Specific Waste Materials Pollutant Description: Asbestos	Water Impact: - Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
J	357m W	Incident Date: 17/05/2017 Incident Identification: 1702615 Pollutant: General Biodegradable Materials and Waste Pollutant Description: Other General Biodegradable Material or Waste	Water Impact: No Details Land Impact: Category 2 (Significant) Air Impact: No Details
J	386m W	Incident Date: 10/02/2003 Incident Identification: 136044 Pollutant: Specific Waste Materials Pollutant Description: Vehicles and Vehicle Parts	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
17	489m NE	Incident Date: 18/04/2001 Incident Identification: 2636 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Other Atmospheric Pollutant or Effect	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)

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

4.19 Pollution inventory substances

Records within 500m	**0**

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

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

4.20 Pollution inventory waste transfers

Records within 500m	**0**

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

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

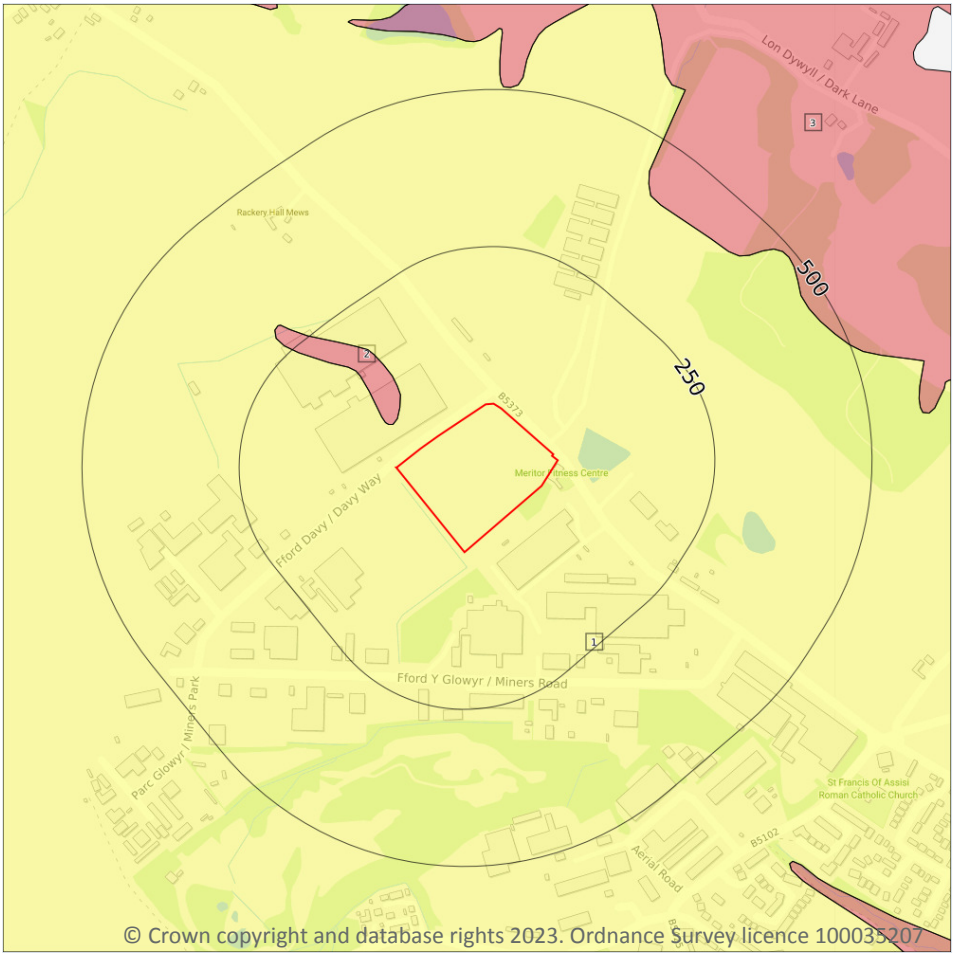
4.21 Pollution inventory radioactive waste

Records within 500m	0

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

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

5 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

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

5.1 Superficial aquifer

Records within 500m	3

Aquifer status of groundwater held within superficial geology.

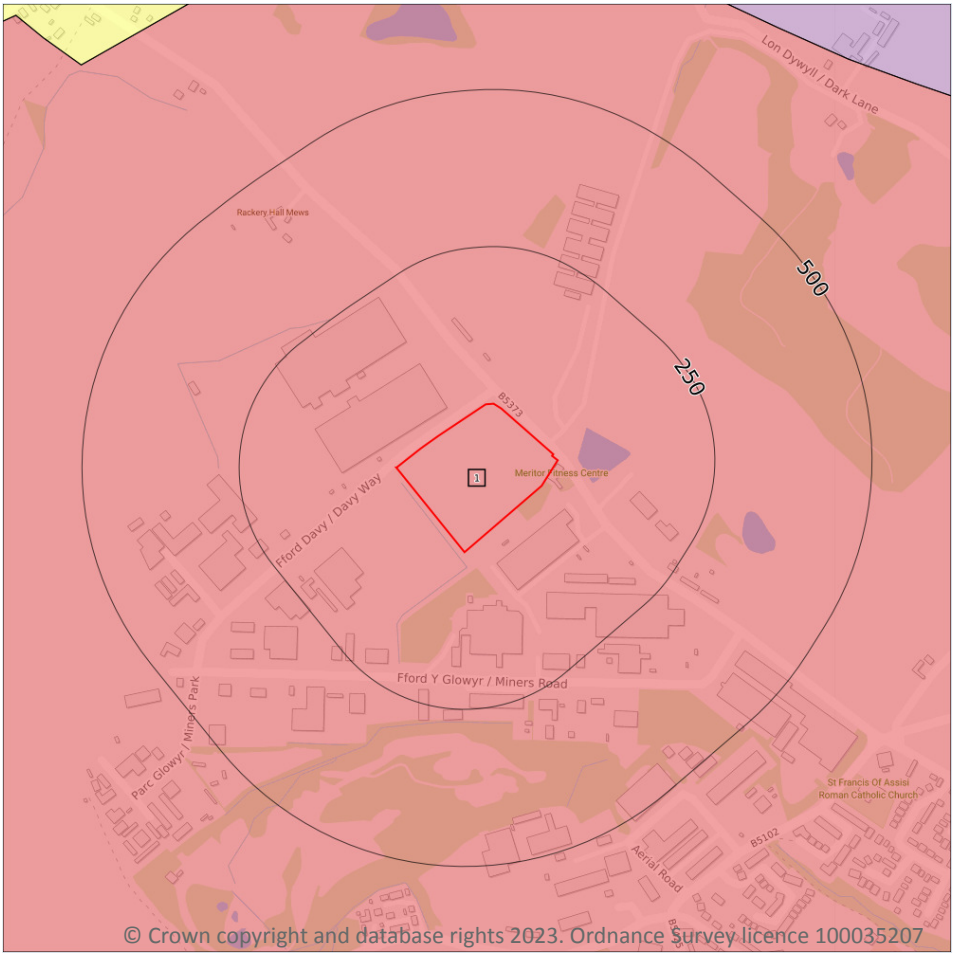
Features are displayed on the Hydrogeology map on **page 47 >**

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	57m 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

ID	Location	Designation	Description
3	411m NE	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

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	1

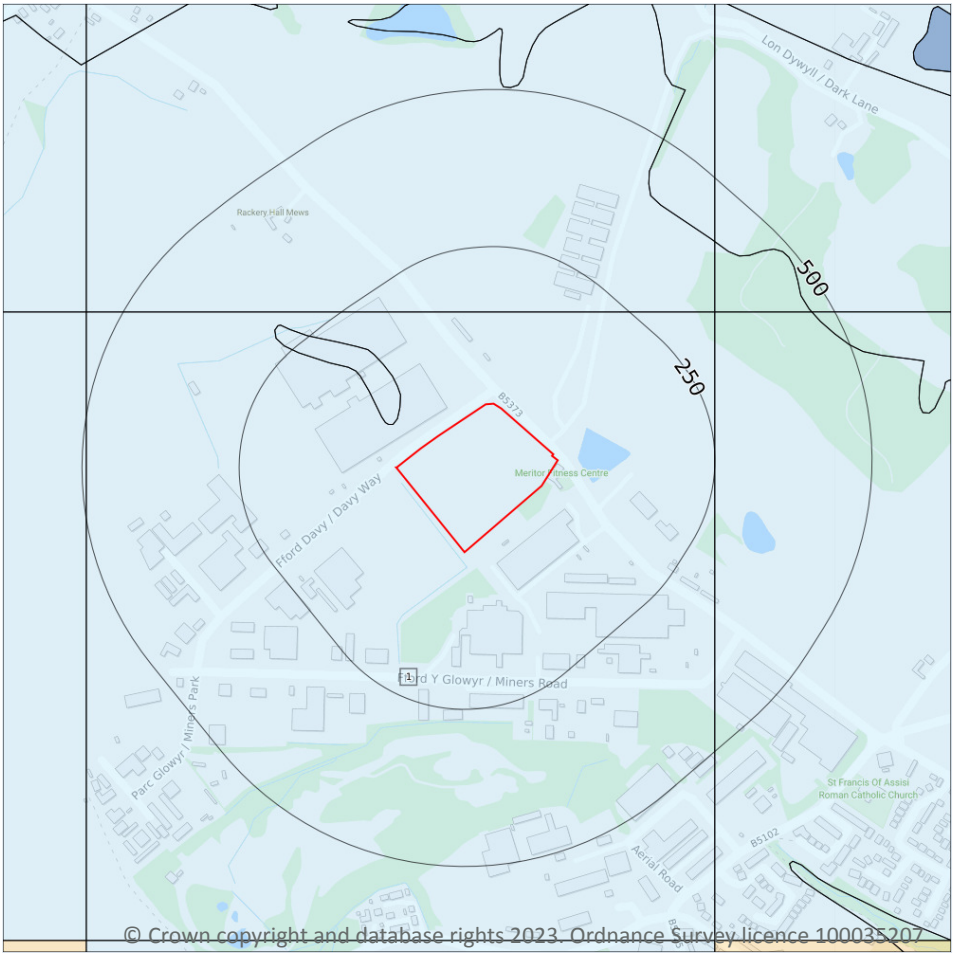
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 49 >**

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

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

Groundwater vulnerability



Site Outline

Search buffers in metres (m)

Superficial vulnerability
- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability
- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information
- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m	1

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

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

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

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: Medium**	**Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures**

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

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0

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

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

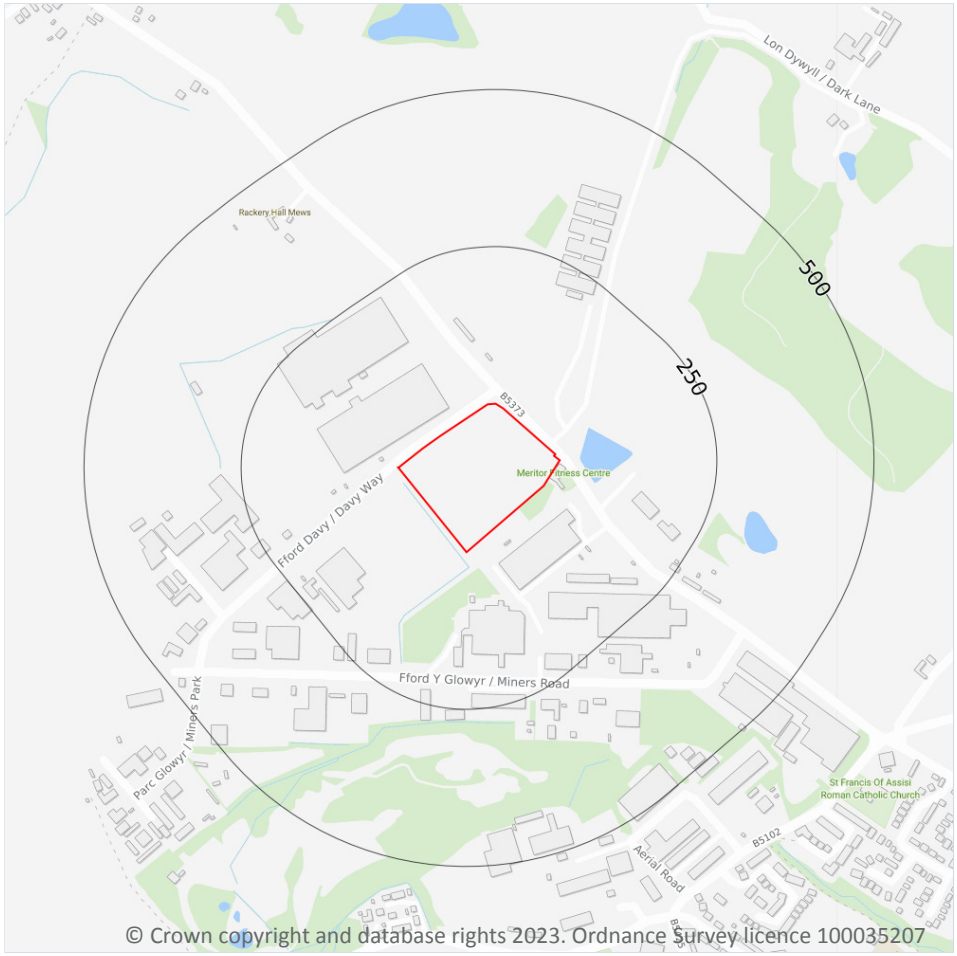
5.5 Groundwater vulnerability- local information

Records on site	0

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

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

Abstractions and Source Protection Zones



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Site Outline

Search buffers in metres (m)

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

5.6 Groundwater abstractions

Records within 2000m	5

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 52 >**

ID	Location	Details	
-	1748m N	Status: Active Licence No: WA/067/0007/011 Details: General Farming & Domestic - Medium Direct Source: - Point: - Data Type: Point Name: - Easting: 332440 Northing: 358590	Annual Volume (m^3): 10950 Max Daily Volume (m^3): 30 Original Application No: - Original Start Date: 17/10/2012 Expiry Date: 31/03/2027 Issue No: - Version Start Date: - Version End Date: -
-	1748m N	Status: Historical Licence No: 24/67/9/0175 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: CARBONIFEROUS SANDSTONE Data Type: Point Name: Pilkington Easting: 332440 Northing: 358590	Annual Volume (m^3): 10950 Max Daily Volume (m^3): 30 Original Application No: - Original Start Date: 29/06/2001 Expiry Date: 31/03/2012 Issue No: 1 Version Start Date: 01/04/2008 Version End Date: -
-	1748m N	Status: Historical Licence No: WA/067/0007/011 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: CARBONIFEROUS SANDSTONE Data Type: Point Name: Pilkington Easting: 332440 Northing: 358590	Annual Volume (m^3): 10950 Max Daily Volume (m^3): 30 Original Application No: - Original Start Date: 17/10/2012 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 17/10/2012 Version End Date: -
-	1748m N	Status: Historical Licence No: WA/067/0007/011 Details: General Farming & Domestic - Medium Direct Source: - Point: - Data Type: Point Name: - Easting: 332440 Northing: 358590	Annual Volume (m^3): 10950 Max Daily Volume (m^3): 103.2 Original Application No: - Original Start Date: 17/10/2012 Expiry Date: 31/03/2027 Issue No: - Version Start Date: - Version End Date: -
-	1855m E	Status: Historical Licence No: 24/67/9/0146 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: BOREHOLE Data Type: Point Name: Lister Easting: 334500 Northing: 357380	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 07/10/1974 Expiry Date: - Issue No: 100 Version Start Date: 07/10/1974 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 52 >**

ID	Location	Details	
-	1680m SW	Status: Historical Licence No: 24/67/8/0094 Details: Fish Farm/Cress Pond Throughflow Direct Source: EAW Surface Water Point: RIVER CEGIDOG Data Type: Point Name: Morgan Easting: 331280 Northing: 355580	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/04/1991 Expiry Date: - Issue No: 100 Version Start Date: 01/04/1991 Version End Date: -

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

5.8 Potable abstractions

Records within 2000m	0

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

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

5.9 Source Protection Zones

Records within 500m	0

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

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

5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

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

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

6 Hydrology



Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	2

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 56 >**

ID	Location	Type of water feature	Ground level	Permanence	Name
A	8m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
5	124m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	**2**

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 56 >**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	**2**

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

Features are displayed on the Hydrology map on **page 56 >**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	**On site**	**River WB catchment**	**Pulford Brook**	**GB111067052130**	**Dee Lower Chester Weir to Ceiriog**	**Dee**
2	**On site**	**River WB catchment**	**Alyn - Hope to Dee**	**GB111067052173**	**Alyn**	**Dee**

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

6.4 WFD Surface water bodies

Records identified	2

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

Features are displayed on the Hydrology map on **page 56 >**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	1271m W	River	Alyn - Hope to Dee	GB111067052173	Moderate	Good	Moderate	2016
-	4349m NE	River	Pulford Brook	GB111067052130	Moderate	Good	Moderate	2016

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

6.5 WFD Groundwater bodies

Records on site	1

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

Features are displayed on the Hydrology map on **page 56 >**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
3	**On site**	**Dee Carboniferous Coal Measures**	**GB41102G204800**	**Poor**	**Poor**	**Good**	**2017**

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

7 River and coastal flooding

7.1 Risk of flooding from rivers and the sea

Records within 50m	0

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

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

7.2 Historical Flood Events

Records within 250m	0

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

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

7.3 Flood Defences

Records within 250m	0

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

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

7.4 Areas Benefiting from Flood Defences

Records within 250m	0

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

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

7.5 Flood Storage Areas

Records within 250m	0

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

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

River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m	0

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

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

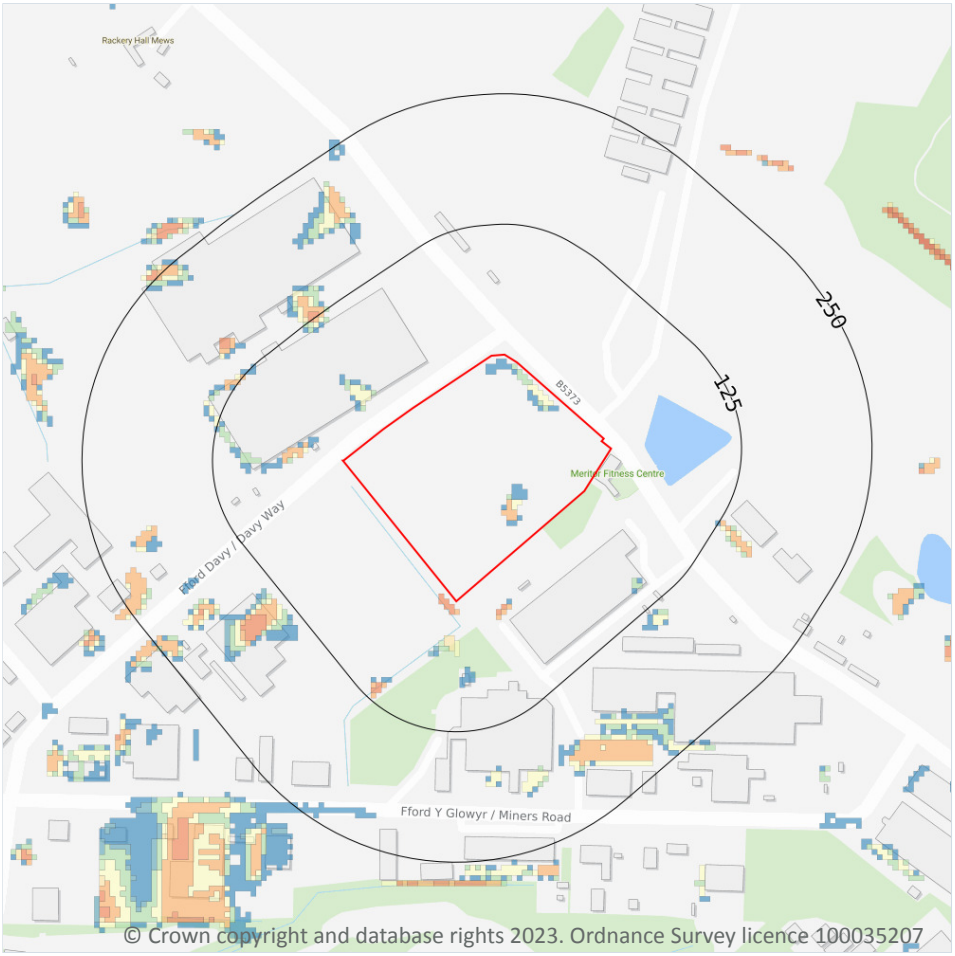
7.7 Flood Zone 3

Records within 50m	0

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

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

8 Surface water flooding



Site Outline

Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site	**1 in 30 year, 0.1m - 0.3m**
Highest risk within 50m	**1 in 30 year, 0.3m - 1.0m**

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

Features are displayed on the Surface water flooding map on **page 62 >**

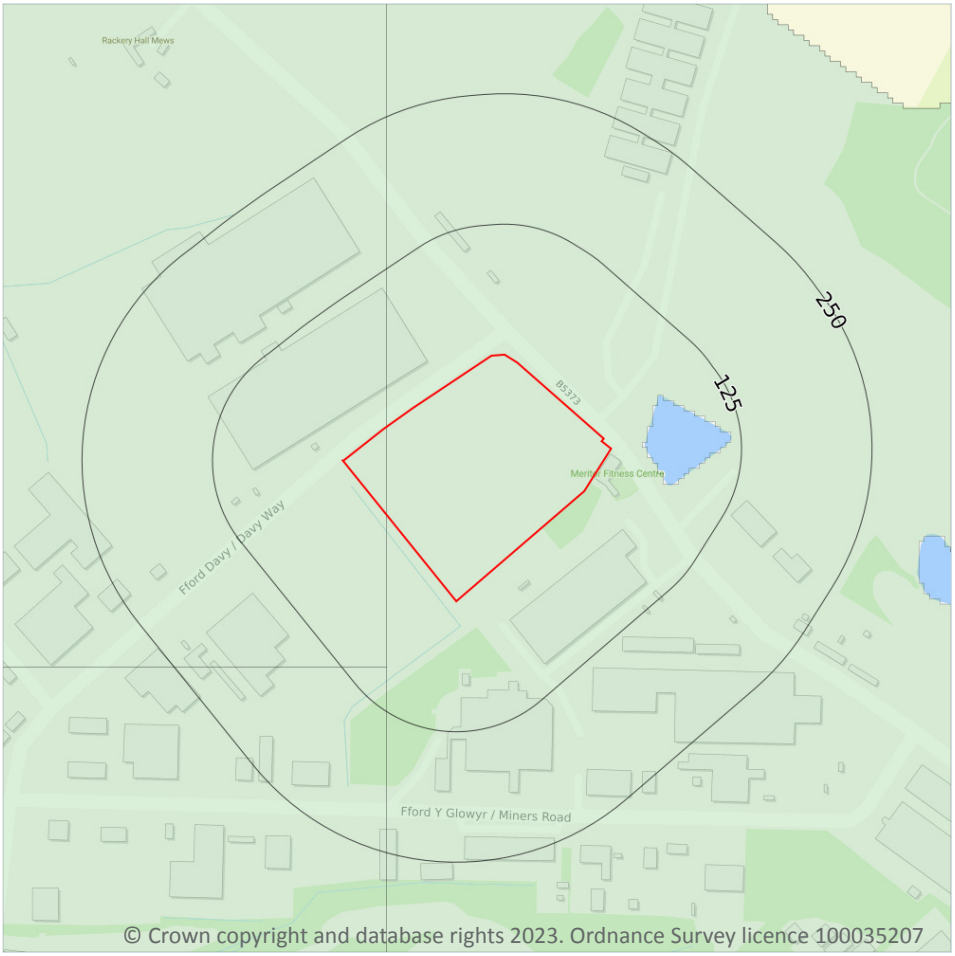
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

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

Return period	Maximum modelled depth
1 in 1000 year	Between 0.3m and 1.0m
1 in 250 year	Between 0.1m and 0.3m
1 in 100 year	Between 0.1m and 0.3m
1 in 30 year	Between 0.1m and 0.3m

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



Site Outline

Search buffers in metres (m)

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

9.1 Groundwater flooding

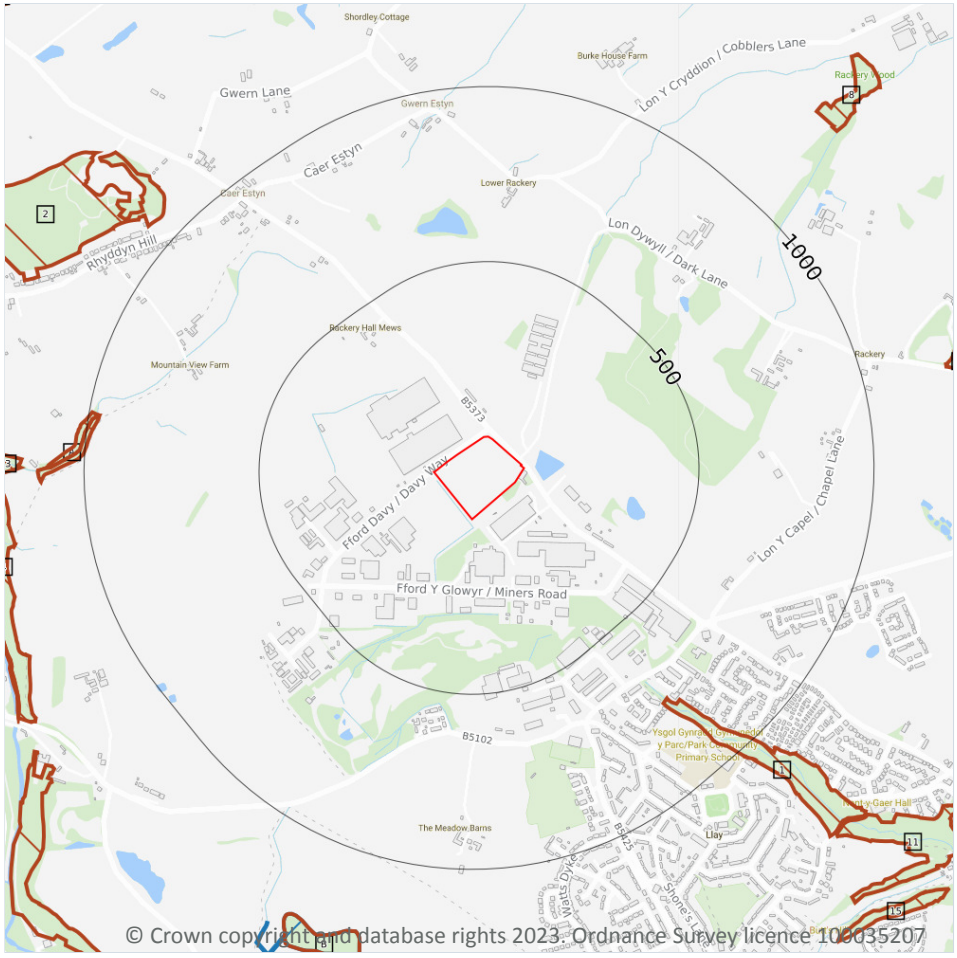
Highest risk on site	**Low**
Highest risk within 50m	**Low**

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 64 >**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



Site Outline

Search buffers in metres (m)

Sites of Special Scientific Interest (SSSI)

Local Nature Reserves (LNR)

Designated Ancient Woodland

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	2

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

Features are displayed on the Environmental designations map on **page 65 >**

ID	Location	Name	Data source
B	1223m S	Llay Bog	Natural Resources Wales

ID	Location	Name	Data source
-	1761m E	Chwarel Singret	Natural Resources Wales

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

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	1

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.

Features are displayed on the Environmental designations map on **page 65 >**

ID	Location	Name	Data source
-	1342m S	Alyn Waters	Natural Resources Wales

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

10.7 Designated Ancient Woodland

Records within 2000m	34

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 65 >**

ID	Location	Name	Woodland Type
1	751m SE	Unknown	Ancient Semi Natural Woodland
A	969m W	Unknown	Ancient Semi Natural Woodland
A	975m W	Unknown	Ancient Semi Natural Woodland
2	1067m NW	Unknown	Ancient Semi Natural Woodland
3	1179m W	Unknown	Ancient Semi Natural Woodland
4	1214m W	Unknown	Ancient Semi Natural Woodland
B	1223m S	Unknown	Ancient Semi Natural Woodland
5	1241m E	Unknown	Ancient Semi Natural Woodland
-	1263m W	Unknown	Ancient Semi Natural Woodland
7	1277m W	Unknown	Ancient Semi Natural Woodland
8	1311m NE	Unknown	Ancient Semi Natural Woodland
-	1320m W	Unknown	Restored Ancient Woodland Site

ID	Location	Name	Woodland Type
11	1355m SE	Unknown	Ancient Semi Natural Woodland
12	1377m SW	Unknown	Ancient Semi Natural Woodland
-	1506m SW	Unknown	Ancient Semi Natural Woodland
-	1520m W	Unknown	Ancient Semi Natural Woodland
-	1555m SW	Unknown	Restored Ancient Woodland Site
-	1581m NE	Unknown	Restored Ancient Woodland Site
15	1589m SE	Unknown	Ancient Semi Natural Woodland
-	1626m N	Unknown	Ancient Semi Natural Woodland
-	1662m SW	Unknown	Ancient Semi Natural Woodland
-	1676m SW	Unknown	Ancient Semi Natural Woodland
-	1758m W	Unknown	Ancient Semi Natural Woodland
-	1775m SE	Unknown	Restored Ancient Woodland Site
-	1800m NW	Unknown	Restored Ancient Woodland Site
E	1803m NW	Unknown	Restored Ancient Woodland Site
-	1832m NW	Unknown	Restored Ancient Woodland Site
-	1882m SE	Unknown	Restored Ancient Woodland Site
-	1914m N	Unknown	Ancient Semi Natural Woodland
-	1916m SW	Unknown	Ancient Semi Natural Woodland
-	1921m W	Unknown	Ancient Semi Natural Woodland
-	1951m SE	Unknown	Restored Ancient Woodland Site
-	1954m W	Unknown	Ancient Semi Natural Woodland
-	1979m W	Unknown	Restored Ancient Woodland Site

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

10.8 Biosphere Reserves

Records within 2000m	0

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

local community.

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

10.9 Forest Parks

Records within 2000m	0

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

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

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

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

10.11 Green Belt

Records within 2000m	0

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

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

10.12 Proposed Ramsar sites

Records within 2000m	0

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

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

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

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

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

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

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

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

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

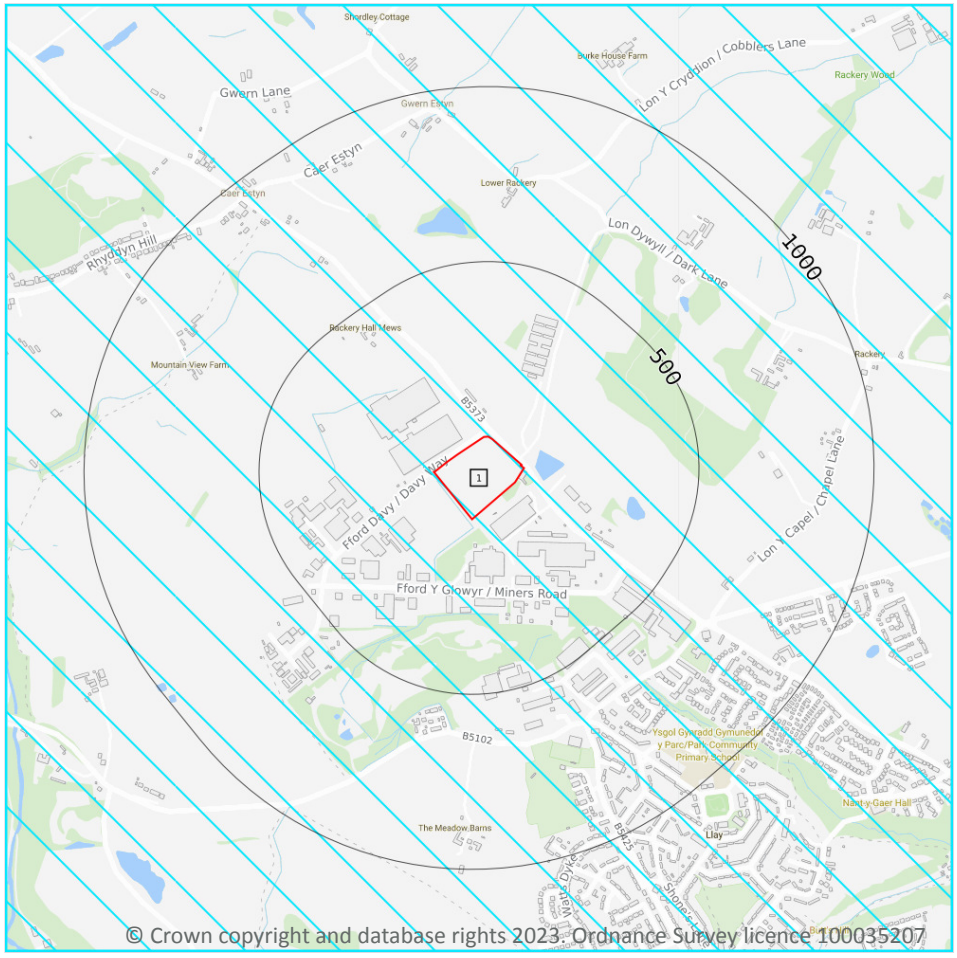
Records within 2000m	4

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.

Location	Name	Type	NVZ ID	Status
On site	**Pulford Brook NVZ**	**Surface Water**	**707**	**Existing**
On site	**-**	**Surface Water**	**707**	**New**
1342m E	Pulford Brook NVZ	Surface Water	707	Existing
1342m E	-	Surface Water	707	New

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

SSSI Impact Zones and Units



Site Outline

Search buffers in metres (m)

SSSI Impact Risk Zones

SSSI Units

- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

10.17 SSSI Impact Risk Zones

Records on site	1

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

Features are displayed on the SSSI Impact Zones and Units map on **page 71 >**

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

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	0

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

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

11 Visual and cultural designations

11.1 World Heritage Sites

Records within 250m	0

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

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

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

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

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

11.3 National Parks

Records within 250m	0

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

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

11.4 Listed Buildings

Records within 250m	0

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

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

11.5 Conservation Areas

Records within 250m	0

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

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

11.6 Scheduled Ancient Monuments

Records within 250m	0

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

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

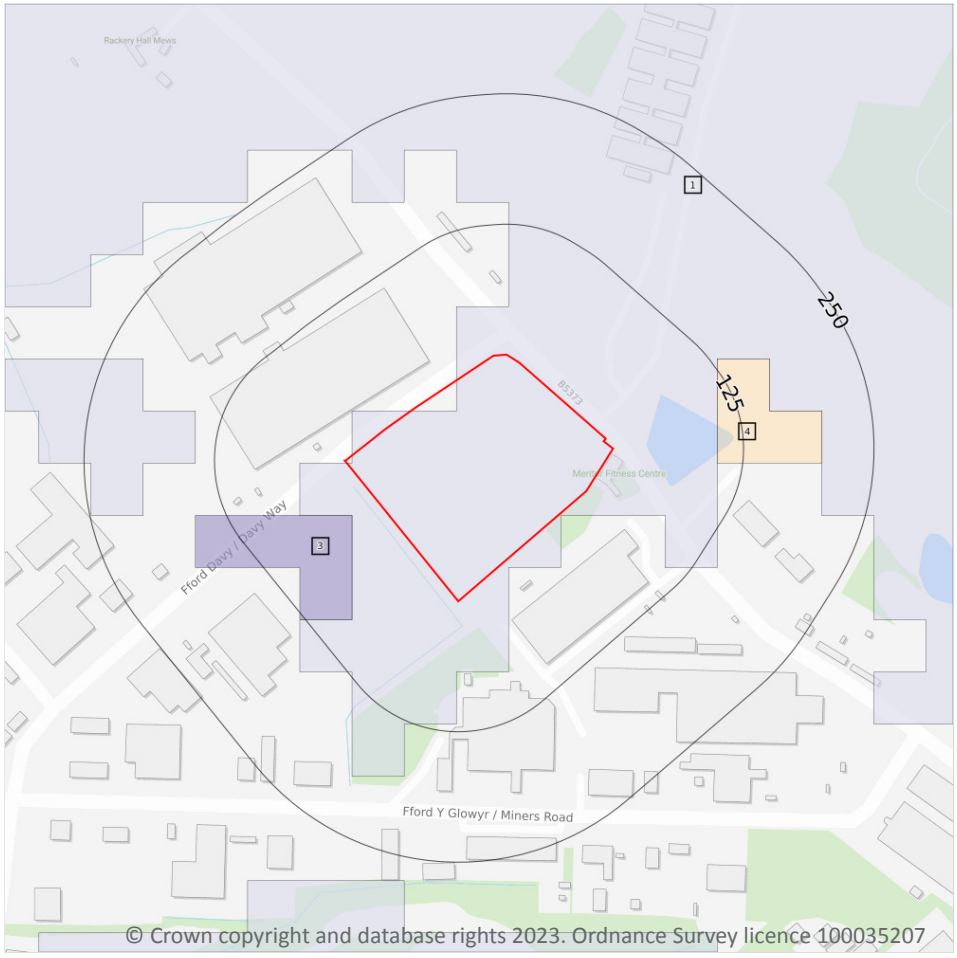
11.7 Registered Parks and Gardens

Records within 250m	0

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

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

12 Agricultural designations



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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	3

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 75 >**

ID	Location	Classification	Description
1	**On site**	**Grade 3b**	**Moderate quality agricultural land**
3	28m W	Grade 4	Poor quality agricultural land
4	100m E	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.

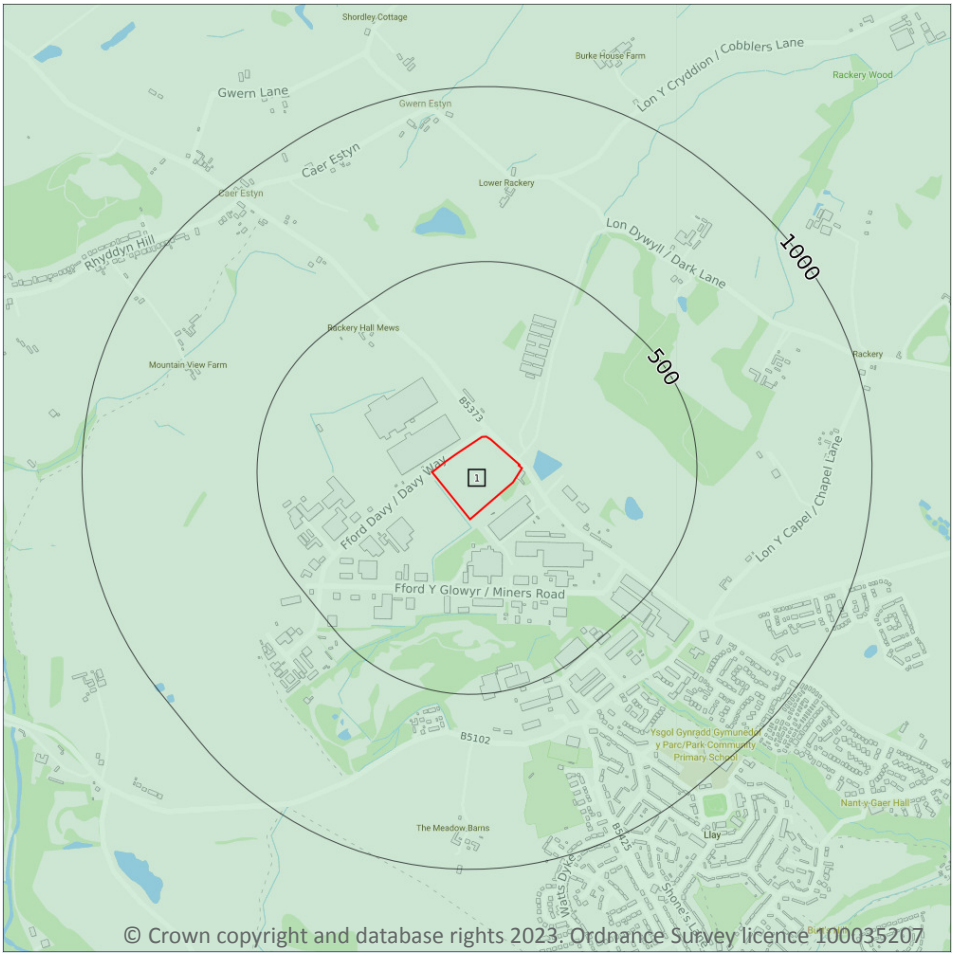
13.4 Limestone Pavement Orders

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

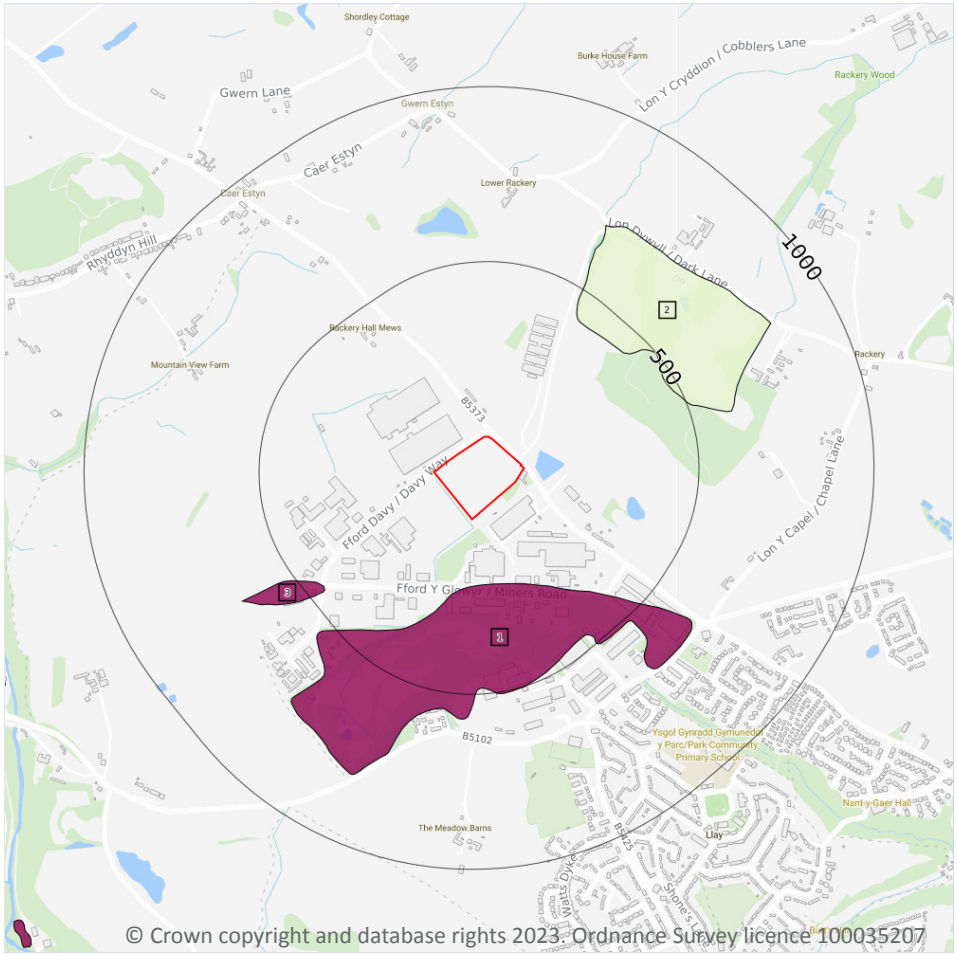
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 78 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**Full**	**SJ35NW**

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	3

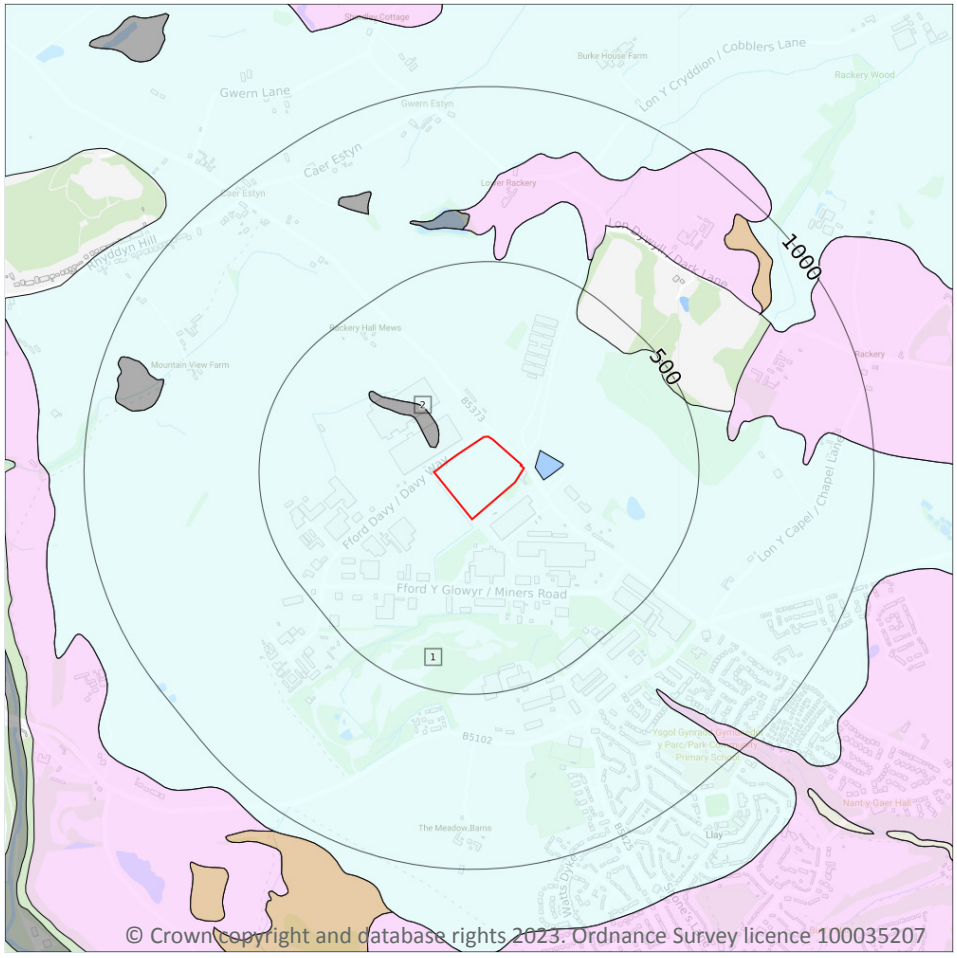
Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 79 >**

ID	Location	LEX Code	Description	Rock description
1	190m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	418m NE	WMGR-ARTDP	Infilled Ground	Artificial Deposit
3	450m SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

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

14.3 Superficial geology (10k)

Records within 500m	2

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 80 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TILL-DMTN**	**Till - Diamicton**	**Diamicton**
2	53m NW	ALV-C	Alluvium - Clay (unlithified Deposits Coding Scheme)	Clay

This data is sourced from the British Geological Survey.

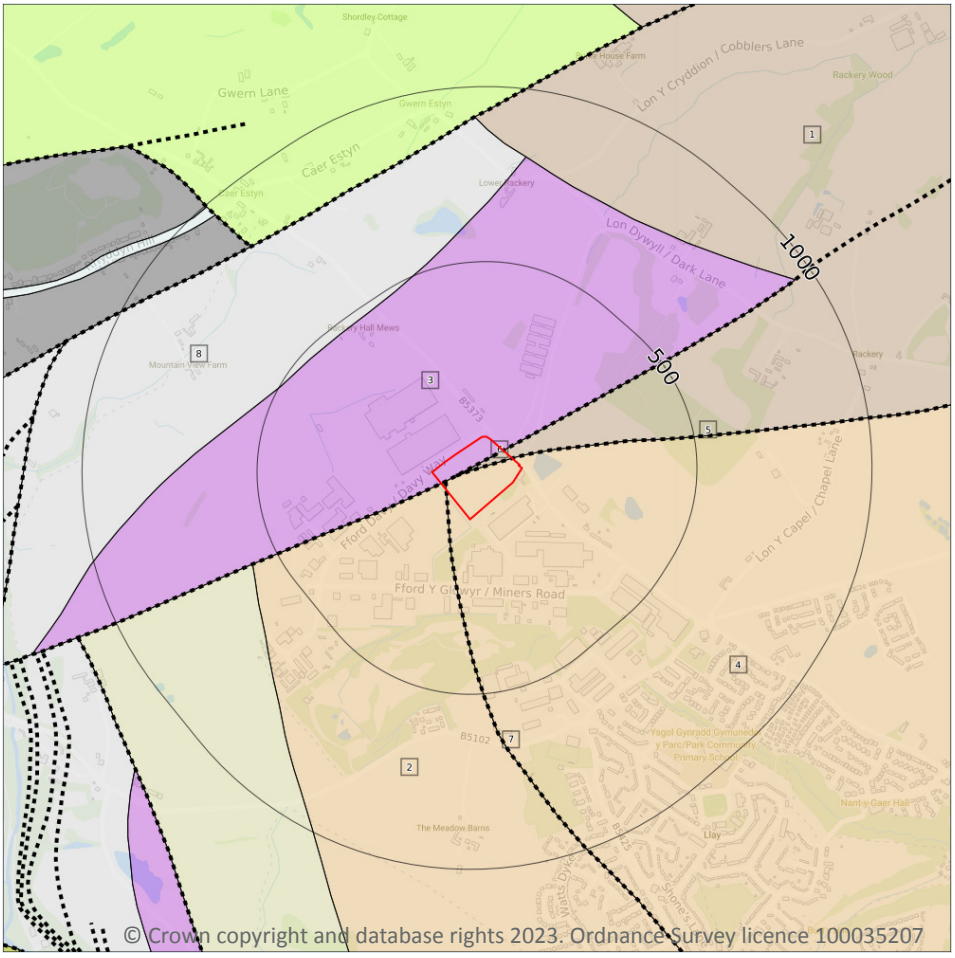
14.4 Landslip (10k)

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	5

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 82 >**

ID	Location	LEX Code	Description	Rock age
1	On site	KNSF-SDST	Kinnerton Sandstone Formation - Sandstone	Early Triassic Epoch
2	On site	SAL-MDSC	Salop Formation - Mudstone, Sandstone And Conglomerate	Cisuralian Epoch - Westphalian D Sub-age
3	On site	ETM-MDSC	Etruria Formation - Mudstone, Sandstone And Conglomerate	Westphalian Age

ID	Location	LEX Code	Description	Rock age
4	**On site**	**SAL-MDSC**	**Salop Formation - Mudstone, Sandstone And Conglomerate**	**Cisuralian Epoch - Westphalian D Sub-age**
8	471m NW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m	**3**

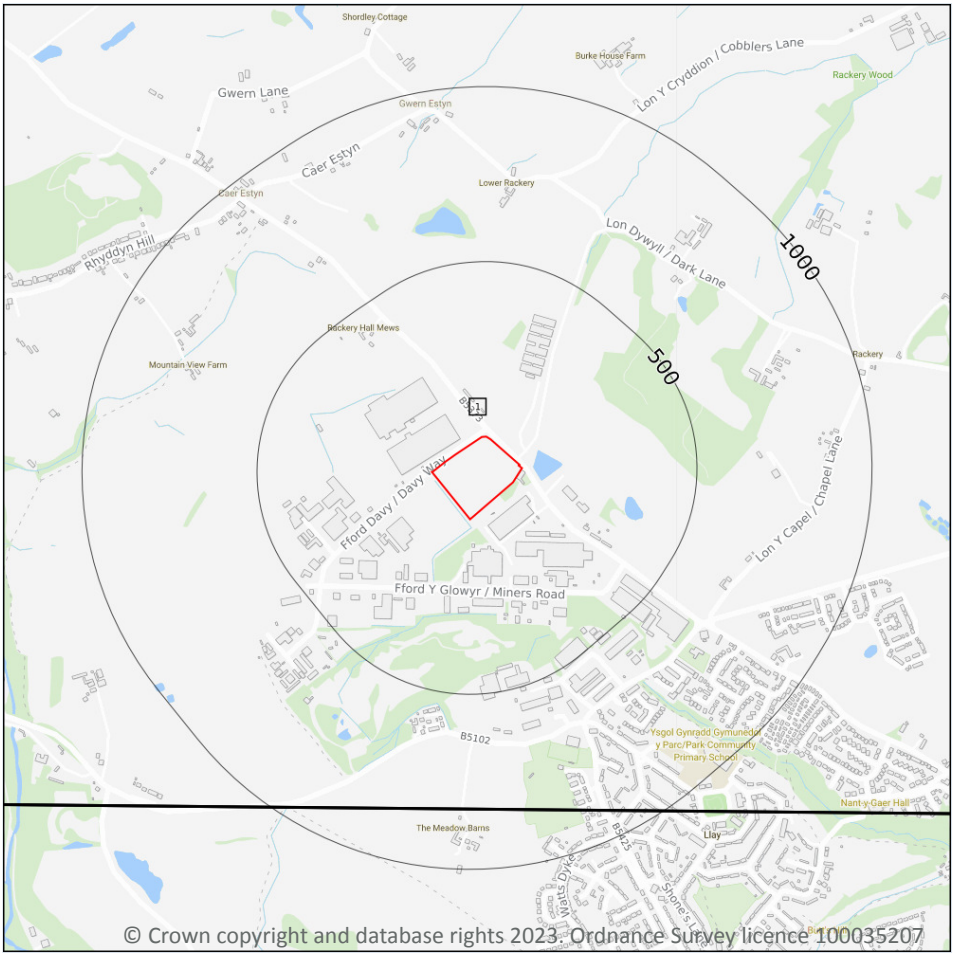
Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 82 >**

ID	Location	Category	Description
5	**On site**	**FAULT**	**Normal fault, inferred**
6	**On site**	**FAULT**	**Normal fault, inferred**
7	**On site**	**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	1

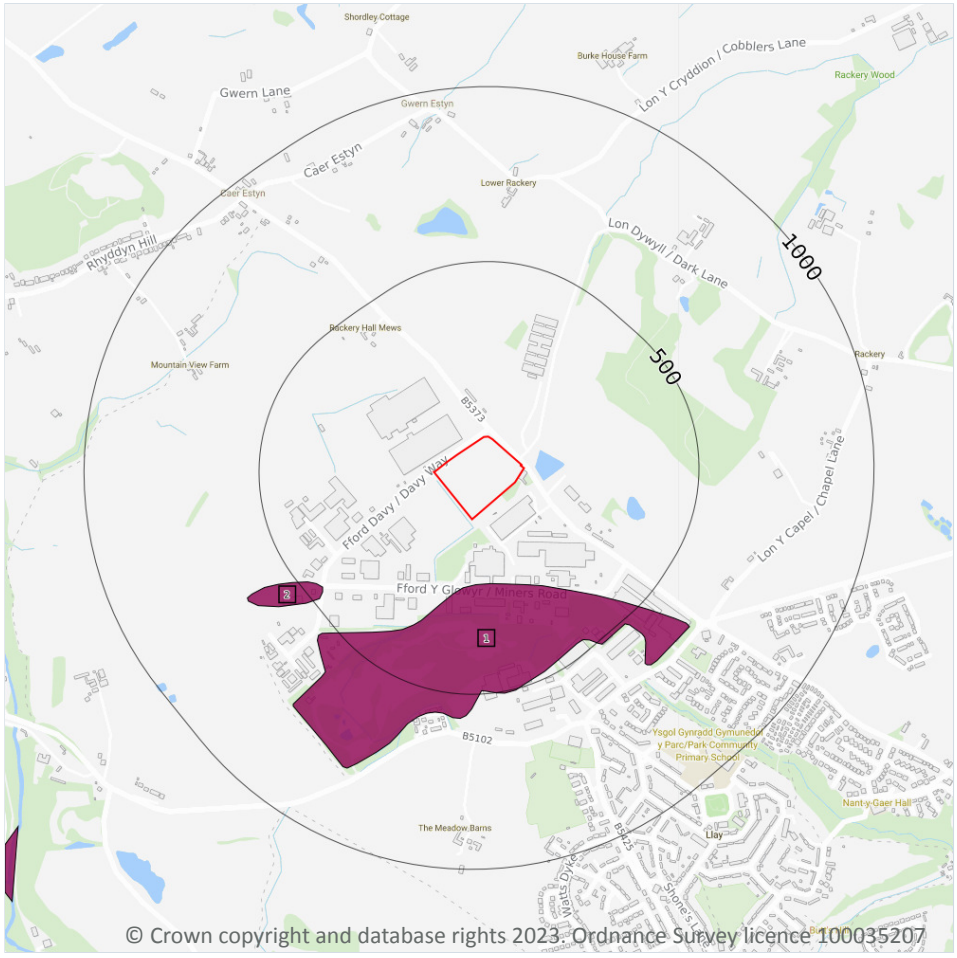
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme. Where 50k data is not available, this area has been filled in with 625k scale data.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 84 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**Full**	**EW108_flint_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	2

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 85 >**

ID	Location	LEX Code	Description	Rock description
1	187m S	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	454m SW	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.

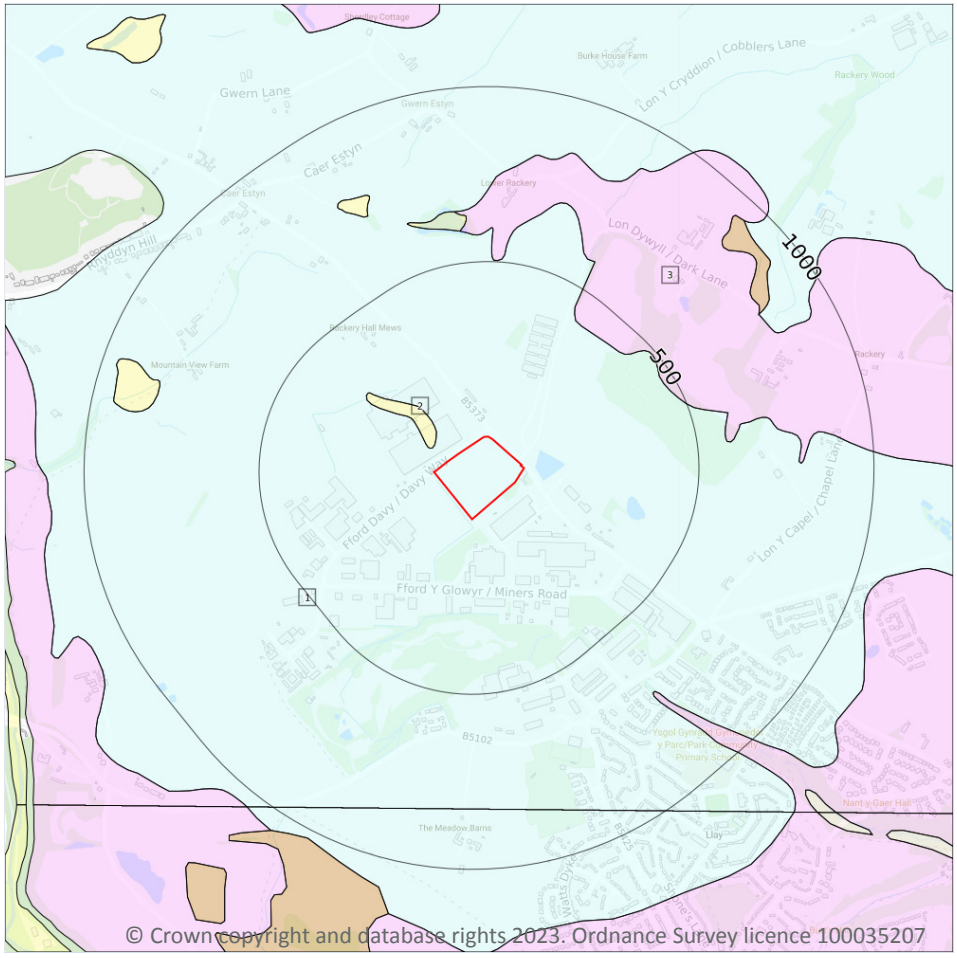
15.3 Artificial ground permeability (50k)

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



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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 87 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TILLD-DMTN**	**TILL, DEVENSIAN**	**DIAMICTON**
2	57m NW	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
3	411m NE	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.

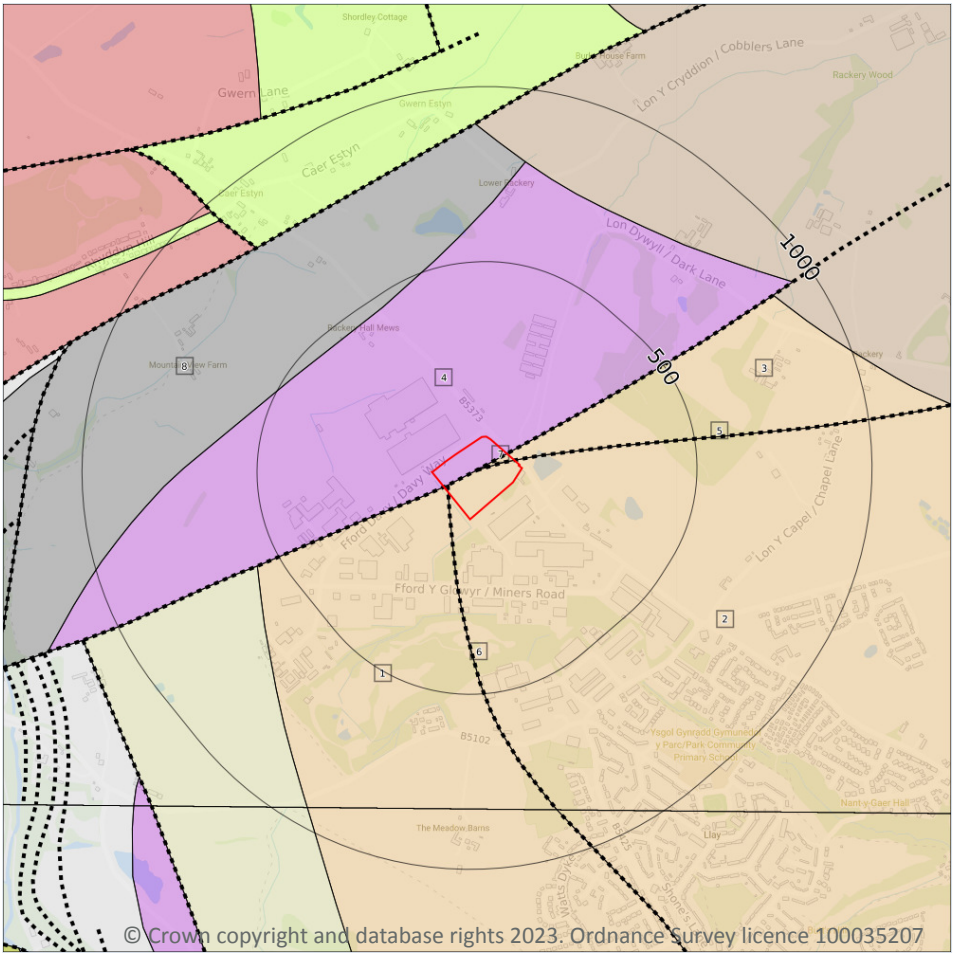
15.7 Landslip permeability (50k)

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



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	5

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 89 >**

ID	Location	LEX Code	Description	Rock age
1	On site	SAL-MDSC	SALOP FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE	WESTPHALIAN
2	On site	SAL-MDSC	SALOP FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE	WESTPHALIAN

ID	Location	LEX Code	Description	Rock age
3	**On site**	**SAL-MDSC**	**SALOP FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE**	**WESTPHALIAN**
4	**On site**	**ETM-MDSC**	**ETRURIA FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE**	**WESTPHALIAN**
8	457m NW	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	**2**

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

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

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	**3**

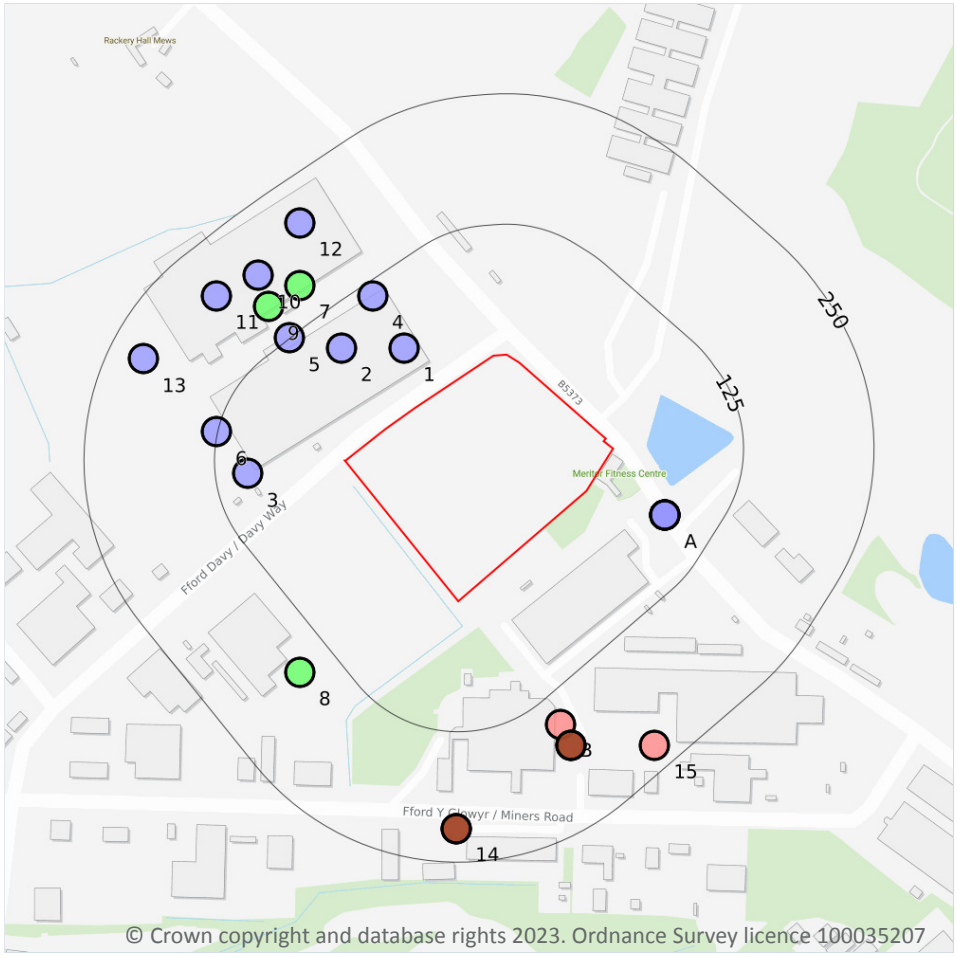
Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 89 >**

ID	Location	Category	Description
5	**On site**	**FAULT**	**Fault, inferred, displacement unknown**
6	**On site**	**FAULT**	**Fault, inferred, displacement unknown**
7	**On site**	**FAULT**	**Fault, inferred, displacement unknown**

This data is sourced from the British Geological Survey.

16 Boreholes



Site Outline

Search buffers in metres (m)

Confidential

0 - 10m

10 - 30m

30m+

Unknown

16.1 BGS Boreholes

Records within 250m	22

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.

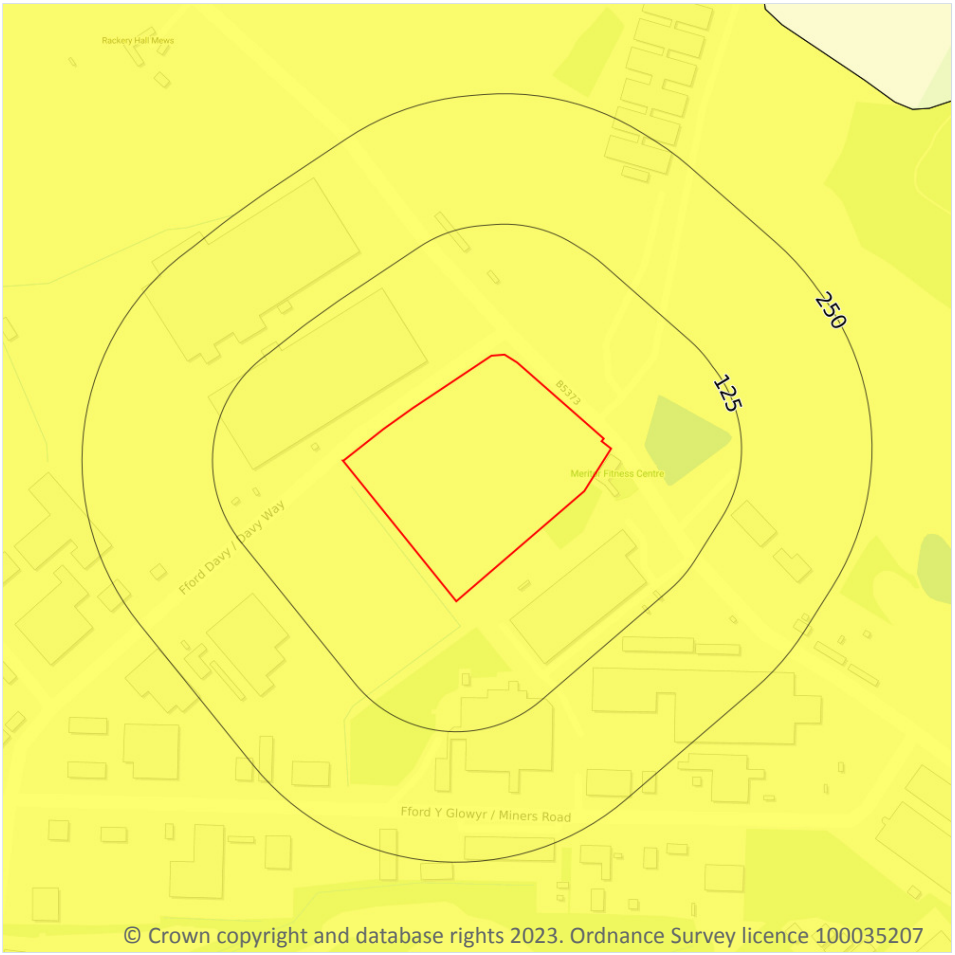
Features are displayed on the Boreholes map on **page 91 >**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	53m NW	332550 356860	LLAY IND. EST. PHASE 2 5	10.0	N	154573 ↗
A	76m E	332800 356700	LLAY, RACKERY LANE, E & L INST. 4	2.0	N	154584 ↗
A	76m E	332800 356700	LLAY, RACKERY LANE, E & L INST. 2	2.0	N	154582 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	76m E	332800 356700	LLAY, RACKERY LANE, E & L INST. 1	2.0	N	154581 ↗
A	76m E	332800 356700	LLAY, RACKERY LANE, E & L INST. 5	2.0	N	154585 ↗
A	76m E	332800 356700	LLAY, RACKERY LANE, E & L INST. 3	2.0	N	154583 ↗
2	87m NW	332490 356860	LLAY IND. EST. PHASE 2 4	10.0	N	154572 ↗
3	94m W	332400 356740	LLAY IND. EST. PHASE 2 6	10.0	N	154574 ↗
4	112m NW	332520 356910	LLAY IND. EST. PHASE 2 1	10.0	N	154569 ↗
5	126m NW	332440 356870	LLAY IND. EST. PHASE 2 3	8.0	N	154571 ↗
6	126m W	332370 356780	LLAY IND. EST. PHASE 2 7	10.0	N	154575 ↗
B	153m S	332700 356500	NO.1 WEST DRIFT LLAY	113.39	N	154610 ↗
7	159m NW	332450 356920	LLAY IND. EST. PHASE 2 10	15.0	N	154578 ↗
8	161m SW	332450 356550	LLAY, NW OF COLLIERY	24.0	N	154244 ↗
9	162m NW	332420 356900	LLAY IND. EST. PHASE 2 11	12.5	N	154579 ↗
B	175m S	332710 356480	LLAY MAIN 2A	-1.0	N	154550 ↗
10	191m NW	332410 356930	LLAY IND. EST. PHASE 2 12	10.0	N	154580 ↗
11	200m NW	332370 356910	LLAY IND. EST. PHASE 2 2	10.0	N	154570 ↗
12	209m NW	332450 356980	LLAY IND. EST. PHASE 2 9	10.0	N	154577 ↗
13	217m W	332300 356850	LLAY IND. EST. PHASE 2 8	10.0	N	154576 ↗
14	218m S	332600 356400	LLAYMAIN COLLIERY	-1.0	N	154309 ↗
15	227m SE	332790 356480	LLAY MAIN COLLIERY 1	827.3	N	154205 ↗

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

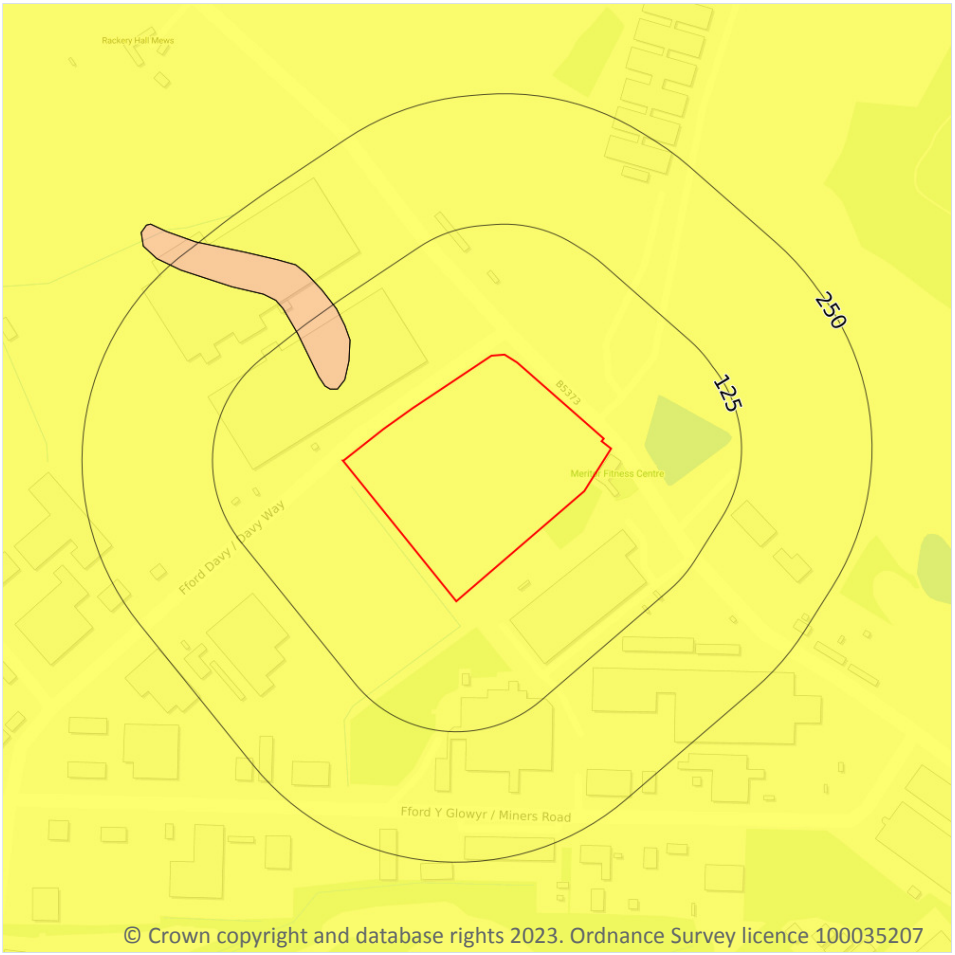
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 93 >**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

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

17.2 Running sands

Records within 50m	1

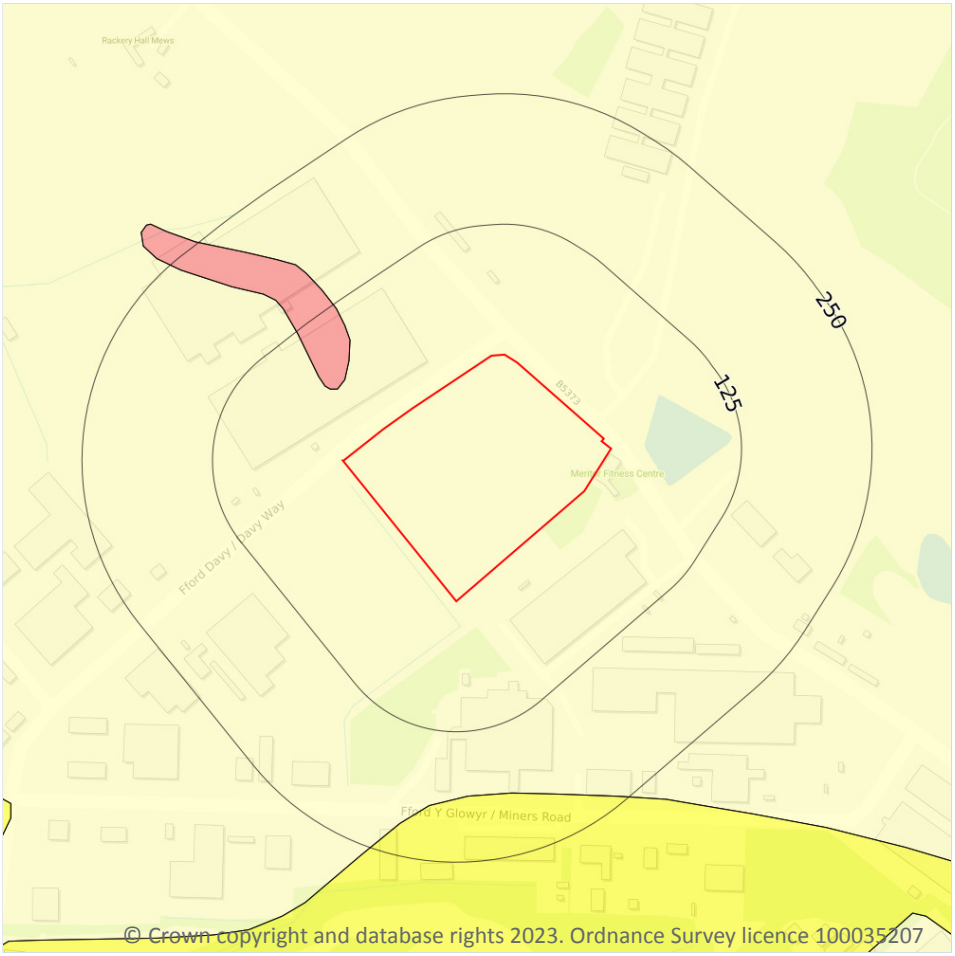
The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 94 >**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



Site Outline

Search buffers in metres (m)

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

17.3 Compressible deposits

Records within 50m	1

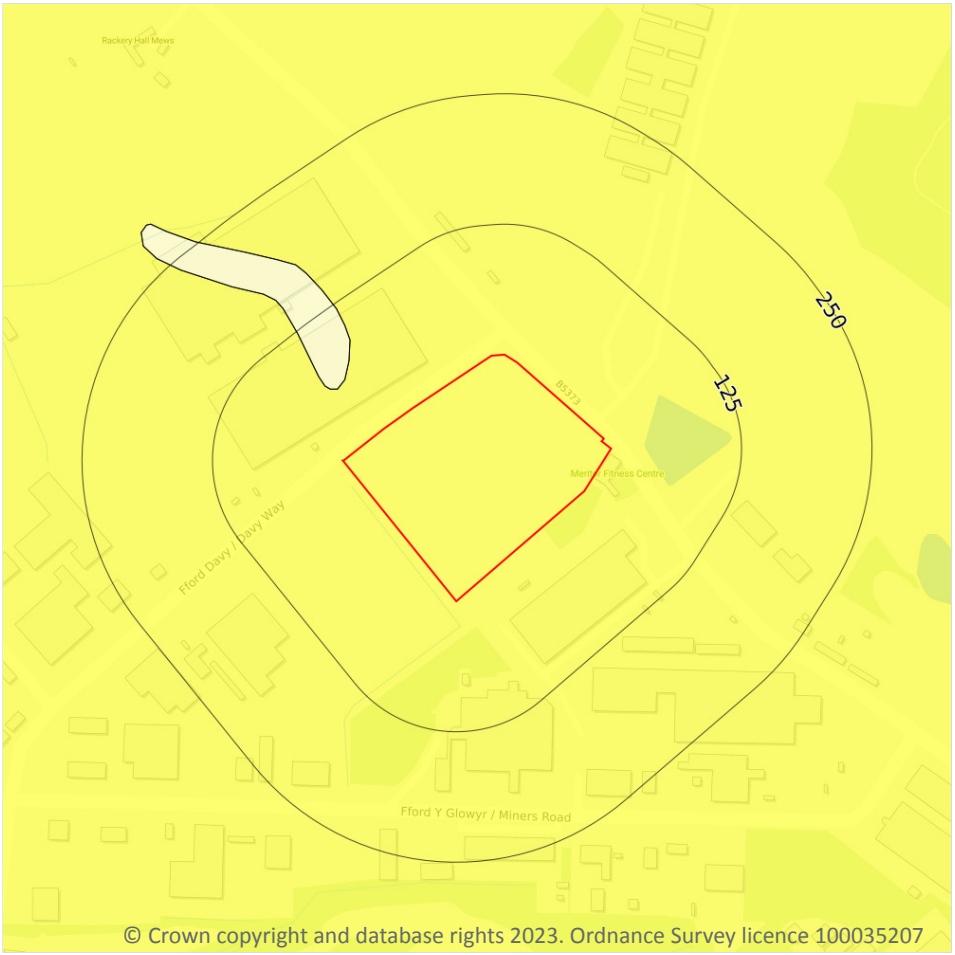
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 95 >**

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

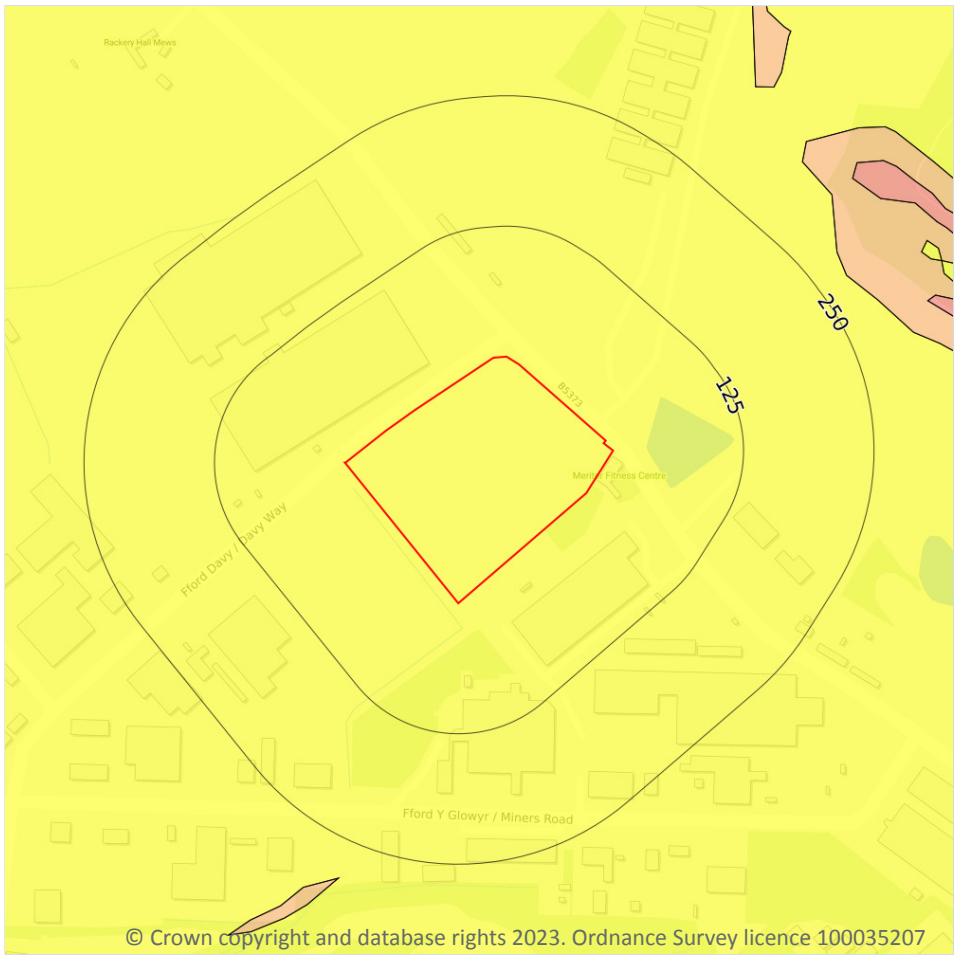
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 96 >**

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

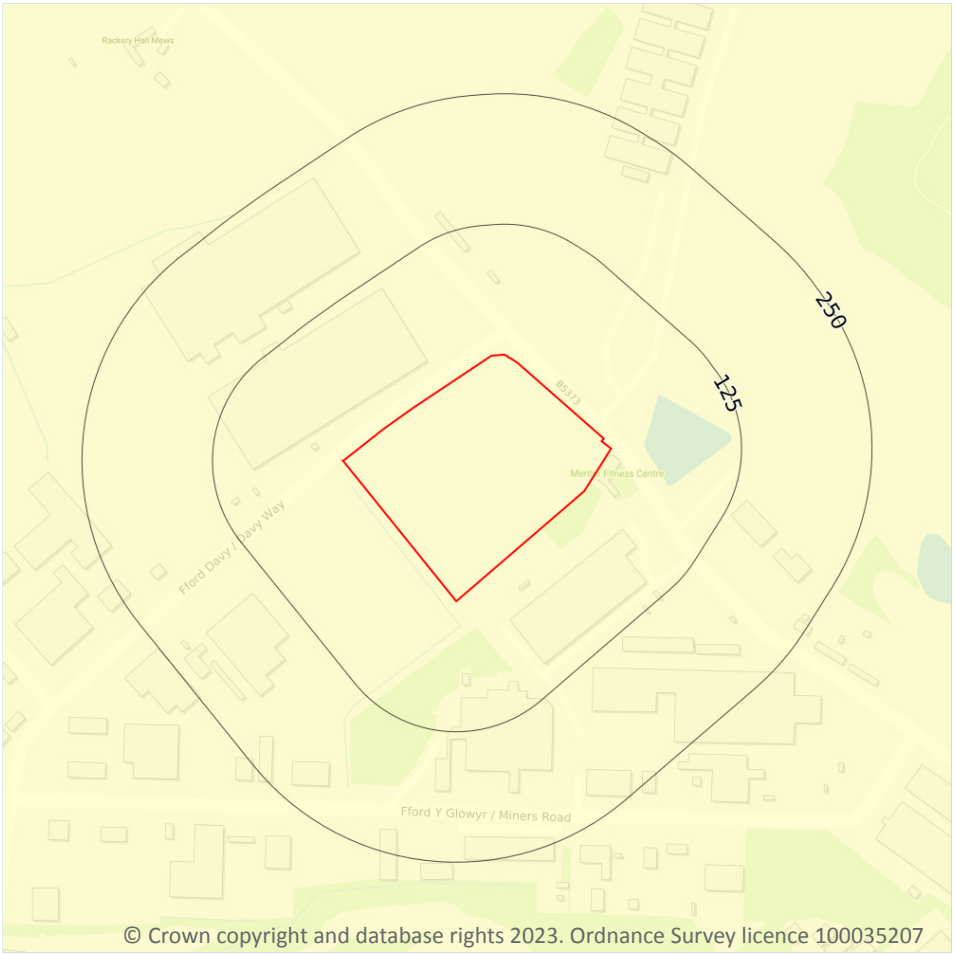
The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 97 >**

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



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

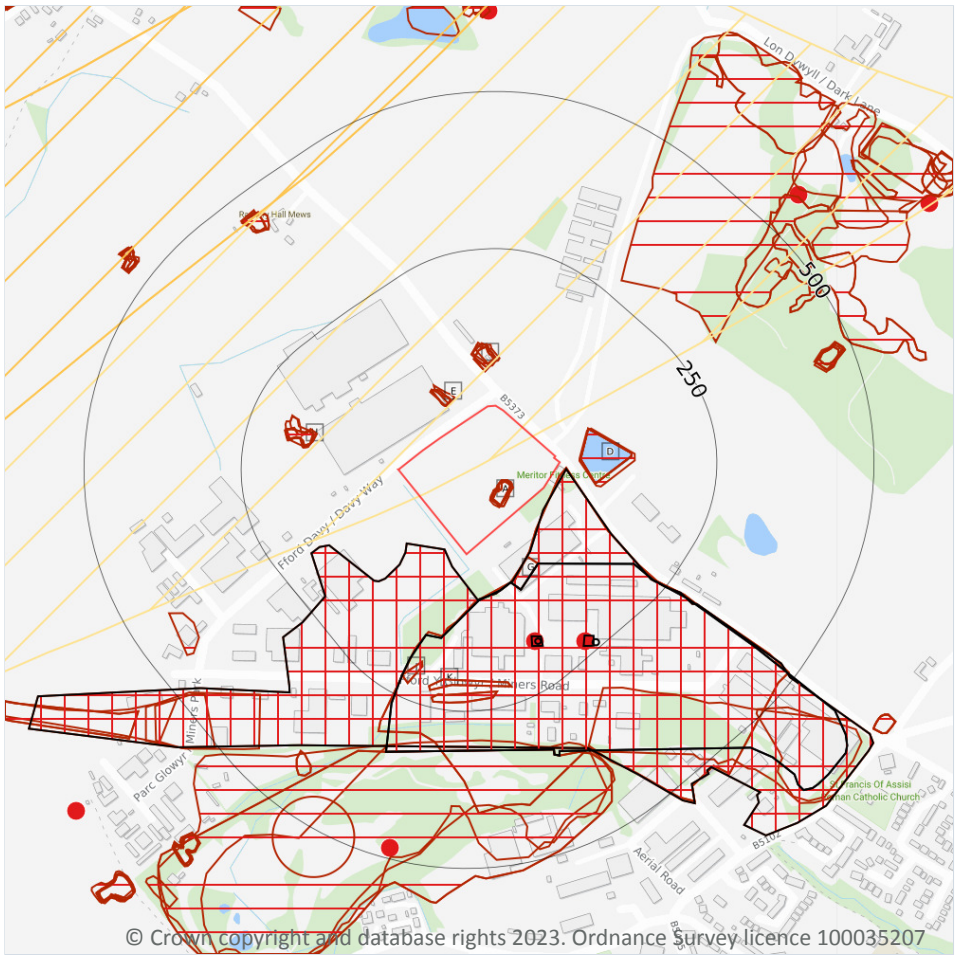
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 98 >**

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



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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	3

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

Features are displayed on the Mining and ground workings map on **page 100 >**

ID	Location	Details	Description
I	175m S	Name: Llay Main Colliery, No. 2 Shaft Address: Llay, WREXHAM, Clwyd Commodity: Coal, Deep Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
B	227m SE	Name: Llay Main Colliery, No. 1 Shaft Address: Llay, WREXHAM, Clwyd Commodity: Coal, Deep Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
L	483m S	Name: Llay Main Colliery Tip Address: Llay, WREXHAM, Clwyd Commodity: Colliery Spoil Status: Active	Type: Tip at a mine, quarry or other location from which mineral is being extracted. Working may be termed Slate Waste Tip, Shale Bing, Coal Tip or Coal Bing Status description: Site which is actively extracting mineral products, or in the case of wharfs and rail depots, is actively handing minerals

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m **44**

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 100** >

ID	Location	Land Use	Year of mapping	Mapping scale
A	**On site**	**Pond**	**1992**	**1:10000**
A	**On site**	**Pond**	**1968**	**1:10560**
A	**On site**	**Pond**	**1979**	**1:10000**
A	**On site**	**Pond**	**1960**	**1:10560**
A	**On site**	**Pond**	**1900**	**1:10560**

ID	Location	Land Use	Year of mapping	Mapping scale
A	**On site**	**Pond**	**1872**	**1:10560**
A	**On site**	**Pond**	**1938**	**1:10560**
A	**On site**	**Pond**	**1949**	**1:10560**
A	**On site**	**Pond**	**1909**	**1:10560**
B	11m E	Colliery	1938	1:10560
B	11m E	Colliery	1938	1:10560
C	15m E	Colliery	1949	1:10560
D	32m E	Reservoir	1949	1:10560
D	34m E	Pond	1992	1:10000
D	34m E	Pond	1968	1:10560
D	34m E	Pond	1979	1:10000
D	34m E	Pond	1960	1:10560
E	36m NW	Pond	1872	1:10560
E	37m NW	Pond	1968	1:10560
E	37m NW	Pond	1979	1:10000
E	37m NW	Pond	1960	1:10560
E	38m NW	Pond	1900	1:10560
F	56m N	Pond	1968	1:10560
F	56m N	Pond	1979	1:10000
F	56m N	Pond	1960	1:10560
F	61m N	Pond	1909	1:10560
F	62m N	Pond	1900	1:10560
F	64m N	Pond	1872	1:10560
G	67m SE	Ponds	1968	1:10560
G	67m SE	Ponds	1960	1:10560
F	67m N	Pond	1949	1:10560
H	141m W	Ponds	1900	1:10560
H	141m W	Ponds	1872	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
H	144m W	Ponds	1968	1:10560
H	144m W	Ponds	1979	1:10000
H	144m W	Ponds	1960	1:10560
H	145m W	Ponds	1938	1:10560
H	147m W	Ponds	1949	1:10560
J	185m S	Pond	1968	1:10560
J	185m S	Pond	1960	1:10560
K	201m S	Pond	1968	1:10560
K	201m S	Pond	1960	1:10560
K	221m S	Pond	1968	1:10560
K	221m S	Pond	1960	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m	**7**

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

Features are displayed on the Mining and ground workings map on **page 100 >**

ID	Location	Land Use	Year of mapping	Mapping scale
C	15m E	Colliery	1949	1:10560
B	75m S	Unspecified Mine	1968	1:10560
B	75m S	Unspecified Mine	1960	1:10560
I	167m S	Unspecified Disused Shafts	1979	1:10000
I	175m S	Unspecified Disused Shafts	1992	1:10000
B	221m SE	Unspecified Disused Shafts	1979	1:10000
B	235m SE	Unspecified Disused Shafts	1992	1:10000

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	3

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

Features are displayed on the Mining and ground workings map on **page 100 >**

ID	Location	Name	Commodity	Class	Likelihood
1	**On site**	**Not available**	**Vein Mineral**	**A**	**Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.**
6	457m NW	Not available	Iron Ore (Bedded)	B	Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
14	788m NW	Not available	Vein Mineral	B	Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.

This data is sourced from the British Geological Survey.

18.7 JPB mining areas

Records on site	0

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

This data is sourced from Johnson Poole and Bloomer.

18.8 The Coal Authority non-coal mining

Records within 500m	0

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

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m	0

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

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m	0

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

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m	0

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

This data is sourced from Groundsure.

18.12 Coal mining

Records on site	1

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

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

This data is sourced from the Coal Authority.

18.13 Brine areas

Records on site	0

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

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

18.14 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 Clay mining

Records on site	0

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

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

19 Ground cavities and sinkholes

19.1 Natural cavities

Records within 500m	0

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

This data is sourced from Stantec UK Ltd.

19.2 Mining cavities

Records within 1000m	0

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

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m	0

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

This data is sourced from Groundsure.

19.4 Historical incidents

Records within 500m	0

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

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

This data is sourced from Groundsure.

19.5 National karst database

Records within 500m	0

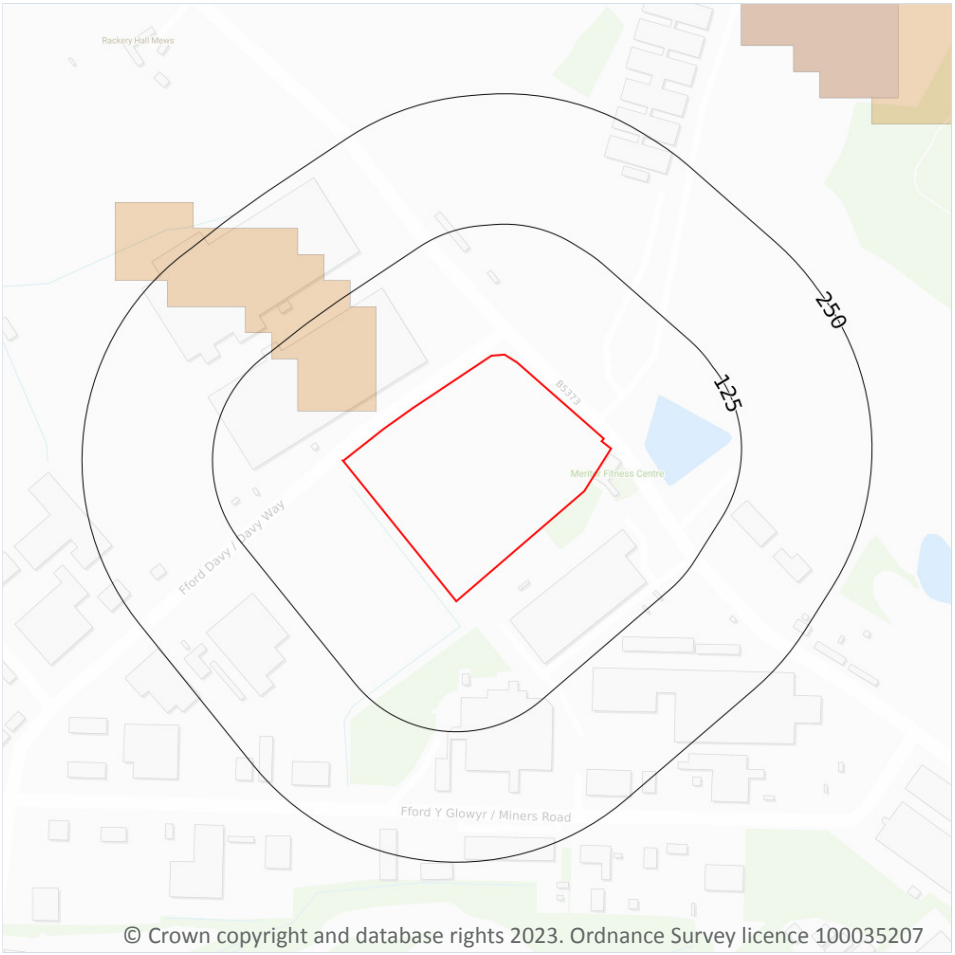
This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

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

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

This data is sourced from the British Geological Survey.

20 Radon



Site Outline

Search buffers in metres (m)

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

20.1 Radon

Records on site	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 110 >**

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	6

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 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 mg/kg**
On site	**15 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 mg/kg**
On site	**15 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 mg/kg**
On site	**15 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 mg/kg**
On site	**15 mg/kg**	**No data**	**300 - 600 mg/kg**	**240 - 360 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 mg/kg**
29m W	15 mg/kg	No data	300 - 600 mg/kg	240 - 360 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 mg/kg

This data is sourced from the British Geological Survey.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m	0

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

This data is sourced from the British Geological Survey.

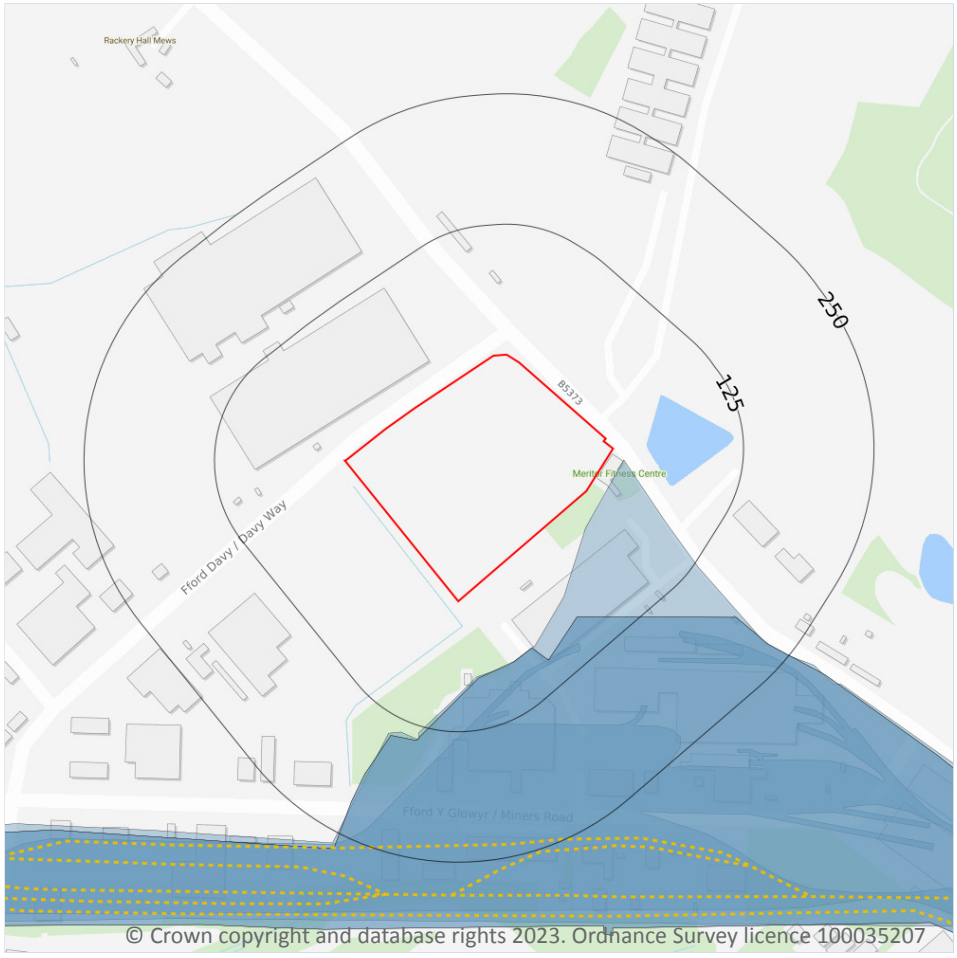
21.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

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

This data is sourced from the British Geological Survey.

22 Railway infrastructure and projects



Site Outline

Search buffers in metres (m)

- Crossrail 1 Stations
- Crossrail 1 Route
- Crossrail 2 Stations
- Crossrail 2 Route
- Crossrail 2 Worksites
- Crossrail 2 Safeguarding
- Crossrail 2 Headhouses
- Railway stations
- Active railways
- Active tunnels
- Abandoned railways
- Historic railways
- Historic tunnels
- Underground stations
- Underground Lines
- Royal Mail tunnels
- HS2 optimised route
- HS2 Stations
- HS2 Depots
- HS2 Surface Safeguarding
- HS2 Subsurface Safeguarding

22.1 Underground railways (London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

22.2 Underground railways (Non-London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

22.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 Historical railway and tunnel features

Records within 250m	4

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

Features are displayed on the Railway infrastructure and projects map on **page 114 >**

Location	Land Use	Year of mapping	Mapping scale
15m E	Railway Sidings	1949	10560
75m S	Railway Sidings	1968	10560
75m S	Railway Sidings	1960	10560
94m S	Mineral Railway Sidings	1961	2500

This data is sourced from Ordnance Survey/Groundsure.

22.5 Royal Mail tunnels

Records within 250m	0

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

This data is sourced from Groundsure/the Postal Museum.

22.6 Historical railways

Records within 250m	1

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

Features are displayed on the Railway infrastructure and projects map on **page 114 >**

Location	Description
234m S	Razed

This data is sourced from OpenStreetMap.

22.7 Railways

Records within 250m	0

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

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 1

Records within 500m	0

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

This data is sourced from publicly available information by Groundsure.

22.9 Crossrail 2

Records within 500m	0

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

This data is sourced from publicly available information by Groundsure.

22.10 HS2

Records within 500m	0

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

is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

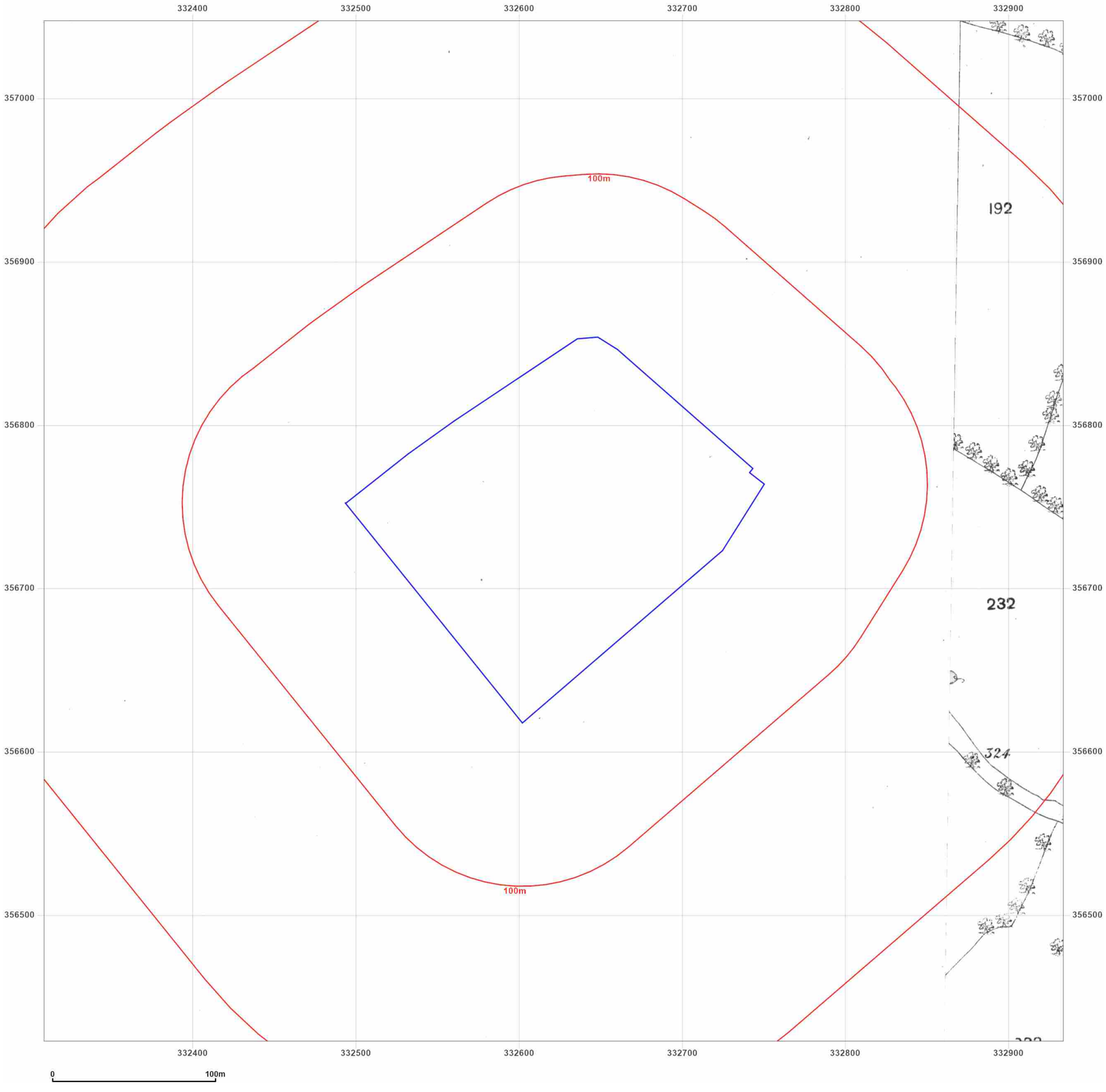
This data is sourced from HS2 ltd.

Data providers

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

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Client Ref: TE1798_PO_2871
Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

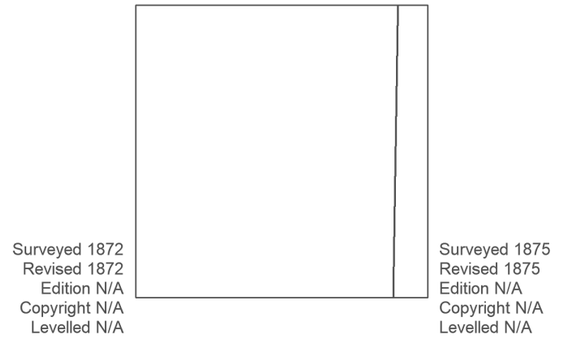
Map Name: County Series

Map date: **1872-1875**

Scale: 1:2,500

Printed at: 1:2,500

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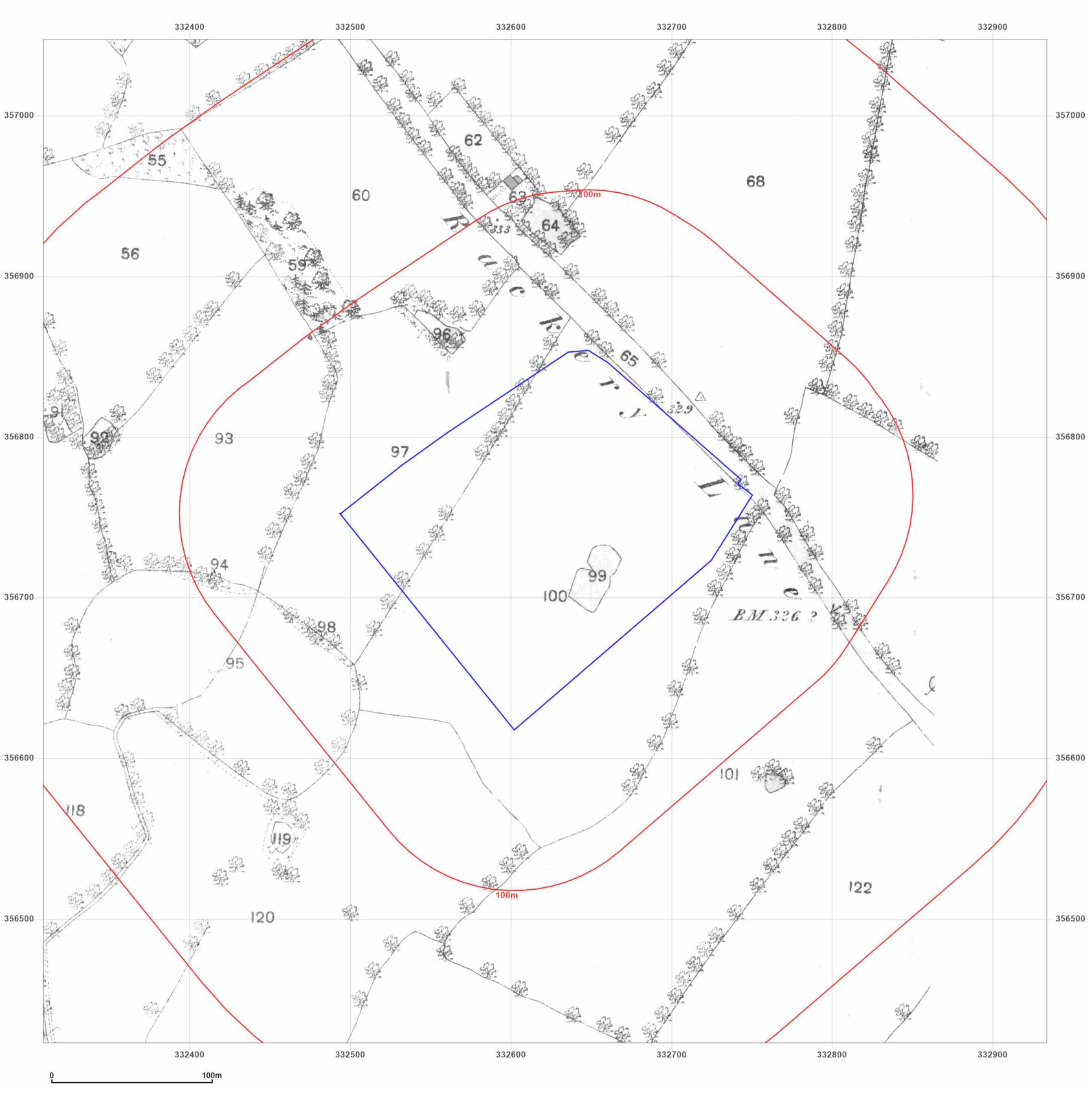
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Client Ref: TE1798_PO_2871
Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

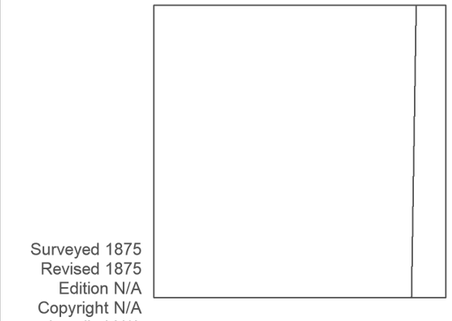
Map Name: County Series

Map date: **1875**

Scale: 1:2,500

Printed at: 1:2,500

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

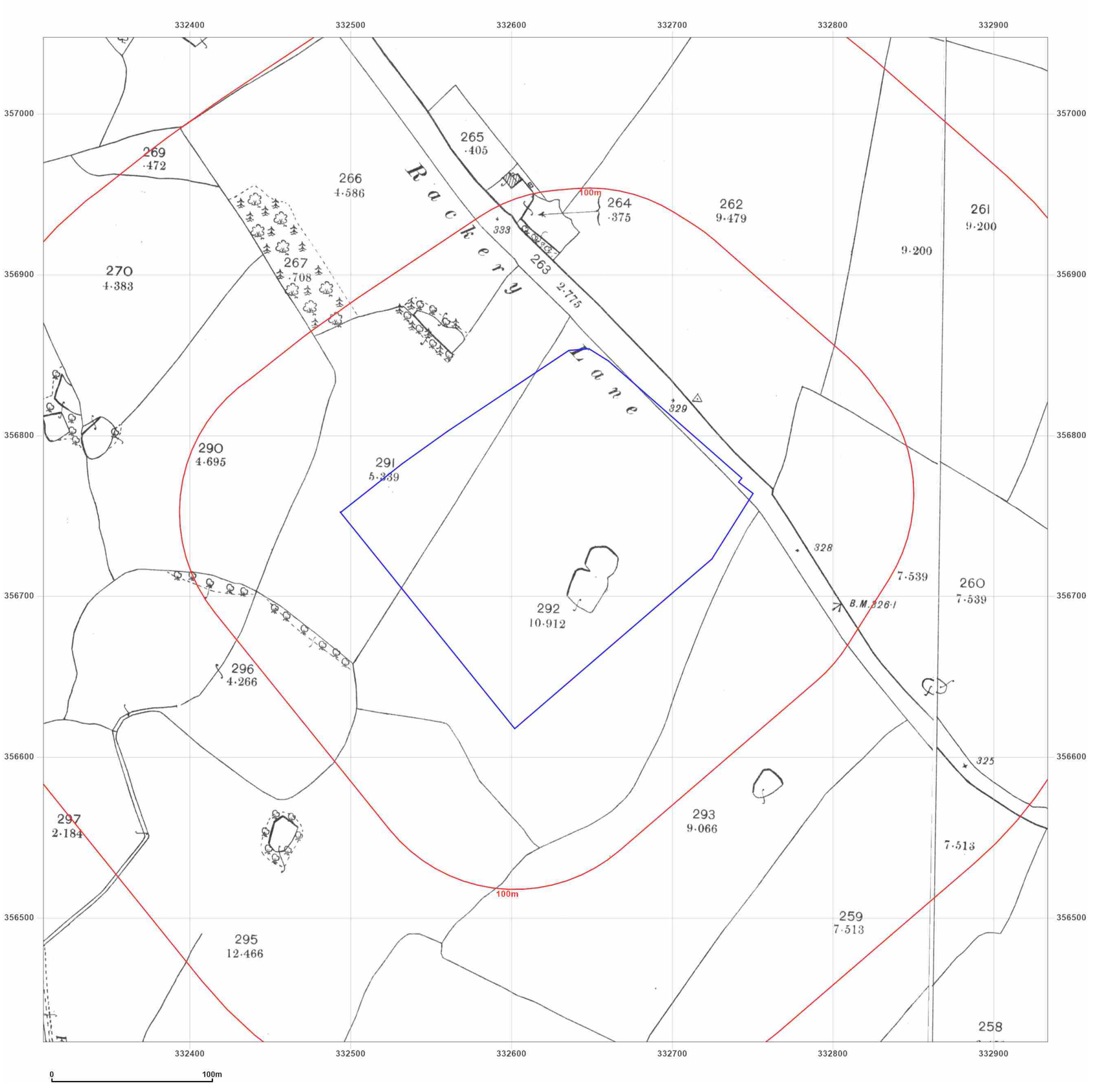
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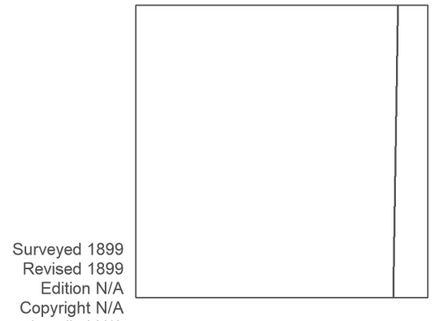
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LLAY, WREXHAM, LL12 0PB

Client Ref: TE1798_PO_2871
Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

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

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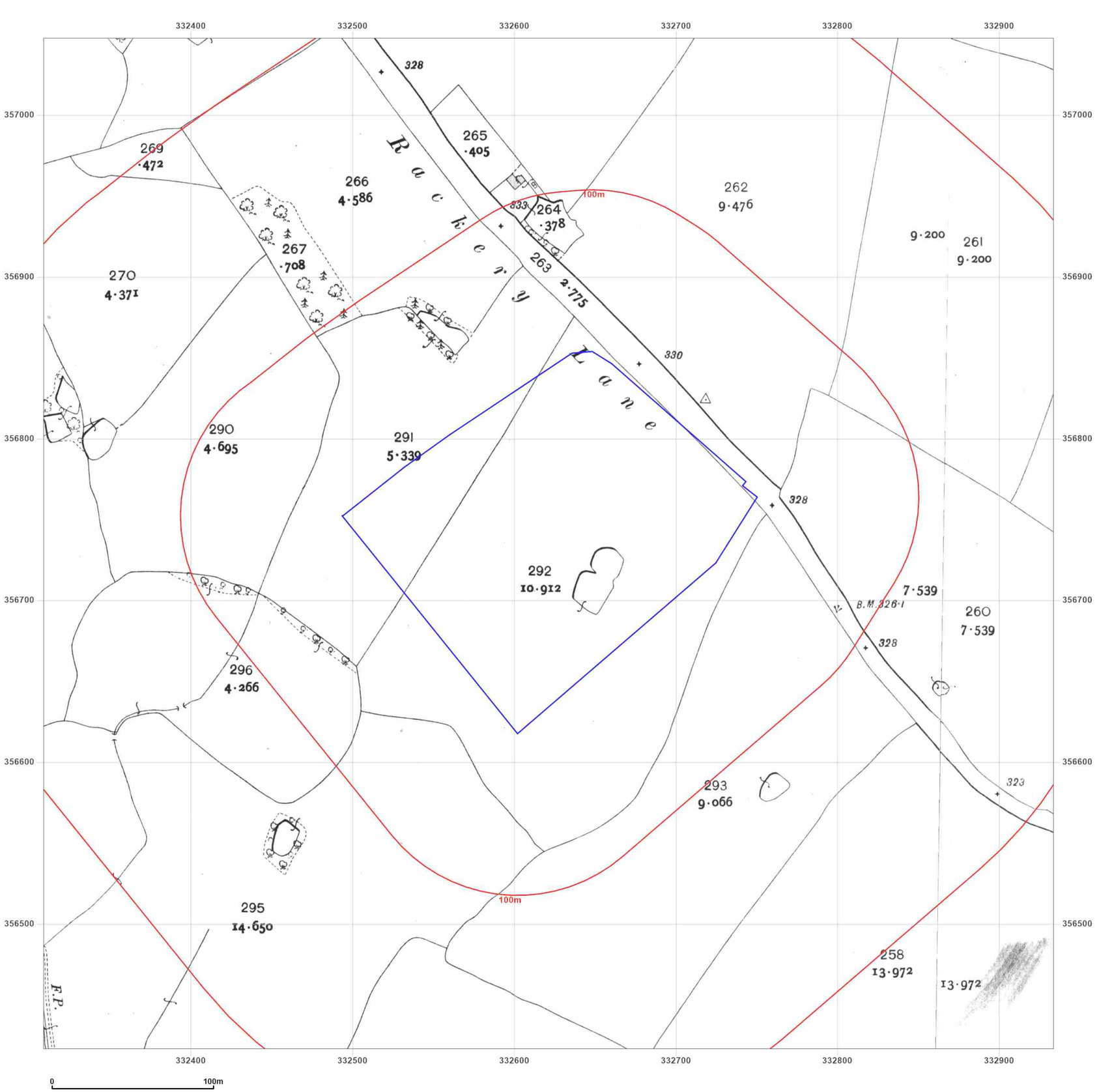
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Client Ref: TE1798_PO_2871
Report Ref: GS-D8U-XYH-PB6-A97
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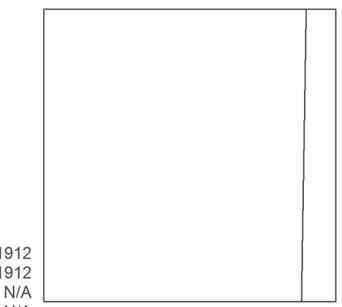
Map Name: County Series

Map date: **1912**

Scale: 1:2,500

Printed at: 1:2,500

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Revised 1912
Edition N/A
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Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

Map Name: National Grid

Map date: **1961**

Scale: 1:2,500

Printed at: 1:2,500

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

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

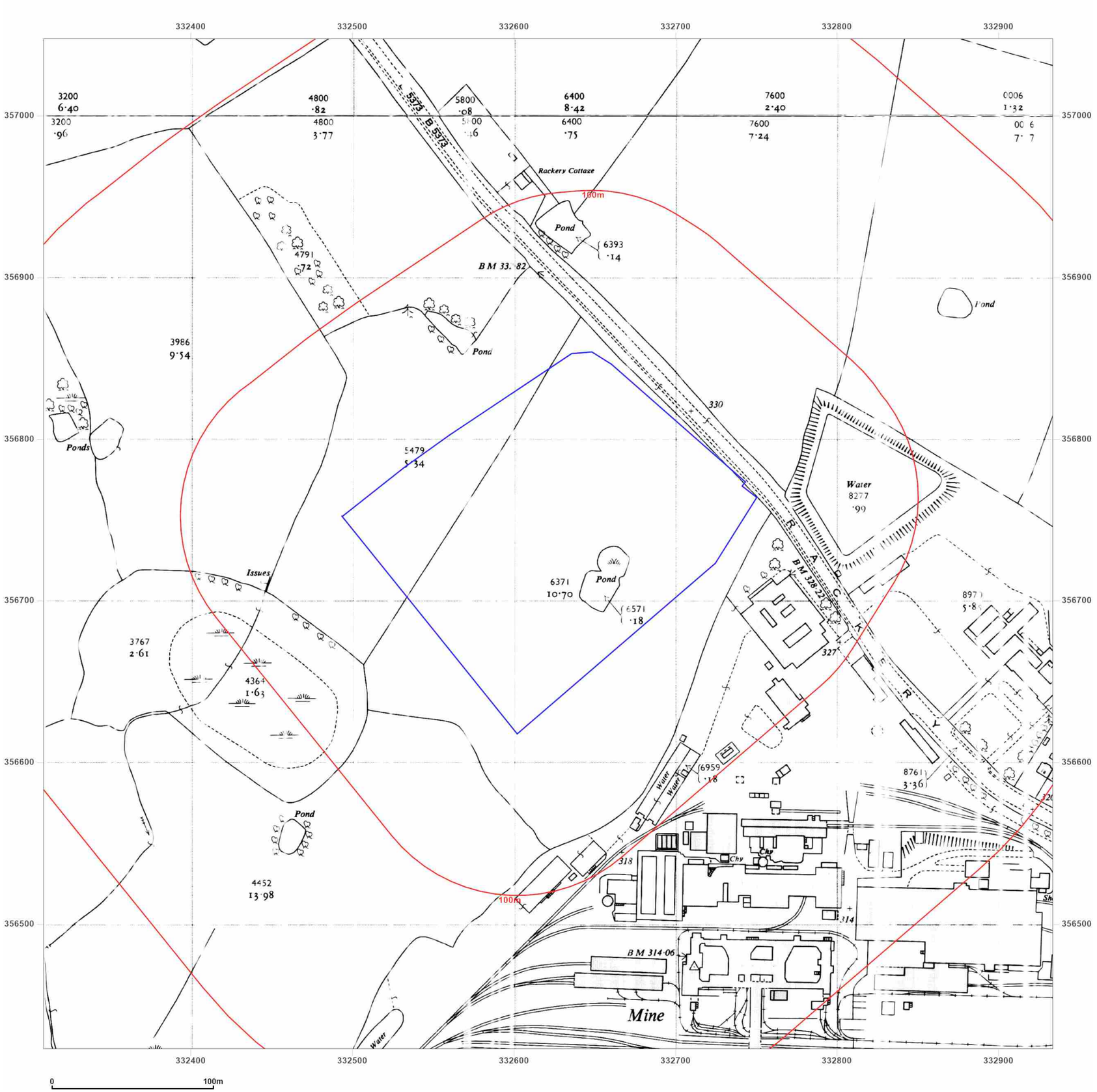
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Grid Ref: 332621, 356735

Map Name: National Grid

Map date: **1962**

Scale: 1:2,500

Printed at: 1:2,500

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

Surveyed N/A
Revised N/A
Edition N/A
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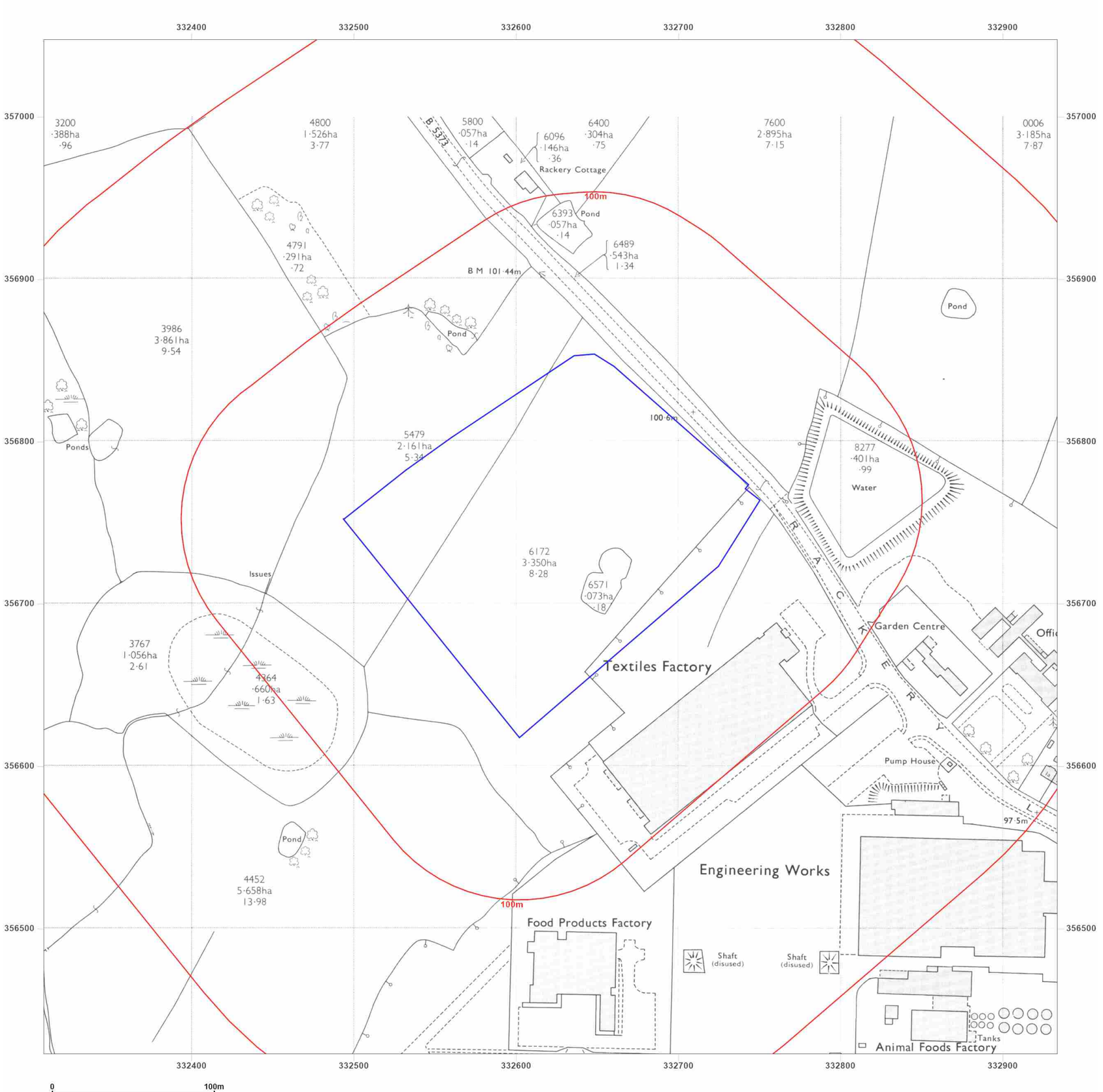
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Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

Map Name: National Grid

Map date: **1974**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1974
Revised 1974
Edition N/A
Copyright 1975
Levelled 1959

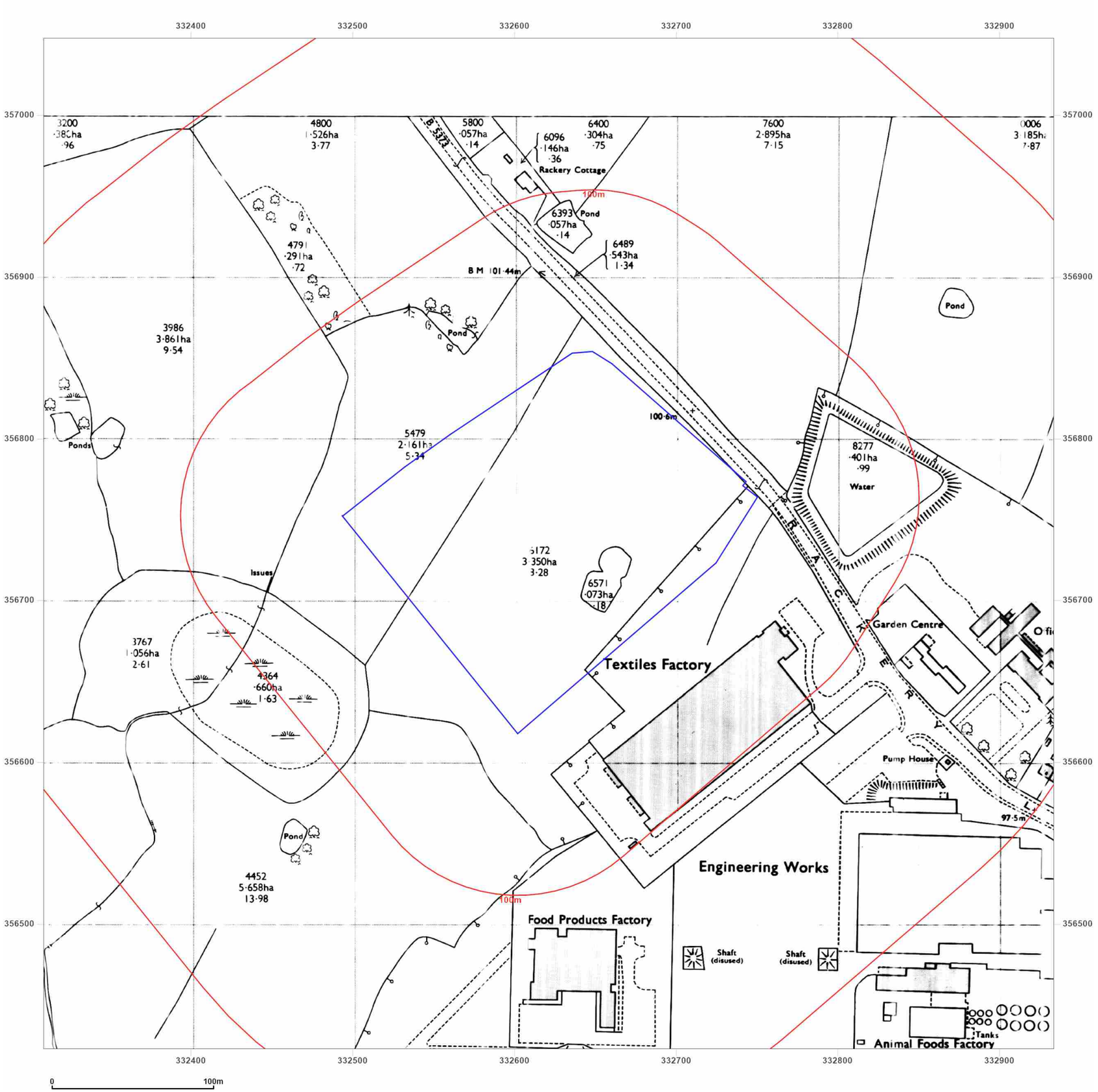
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Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

Map Name: National Grid

Map date: **1975**

Scale: 1:2,500

Printed at: 1:2,500

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

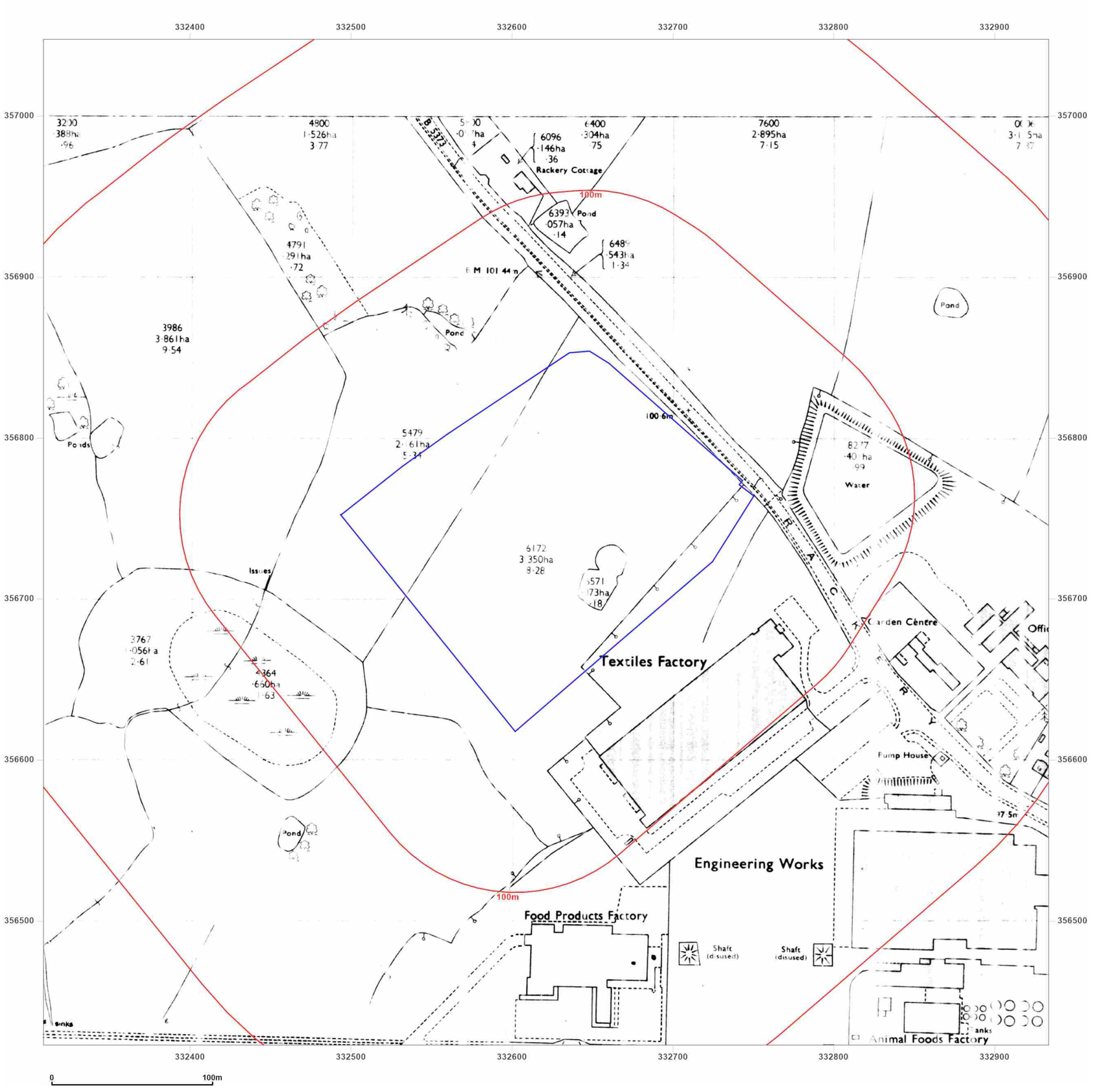
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Client Ref: TE1798_PO_2871
Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

Map Name: National Grid

Map date: **1980**

Scale: 1:2,500

Printed at: 1:2,500

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

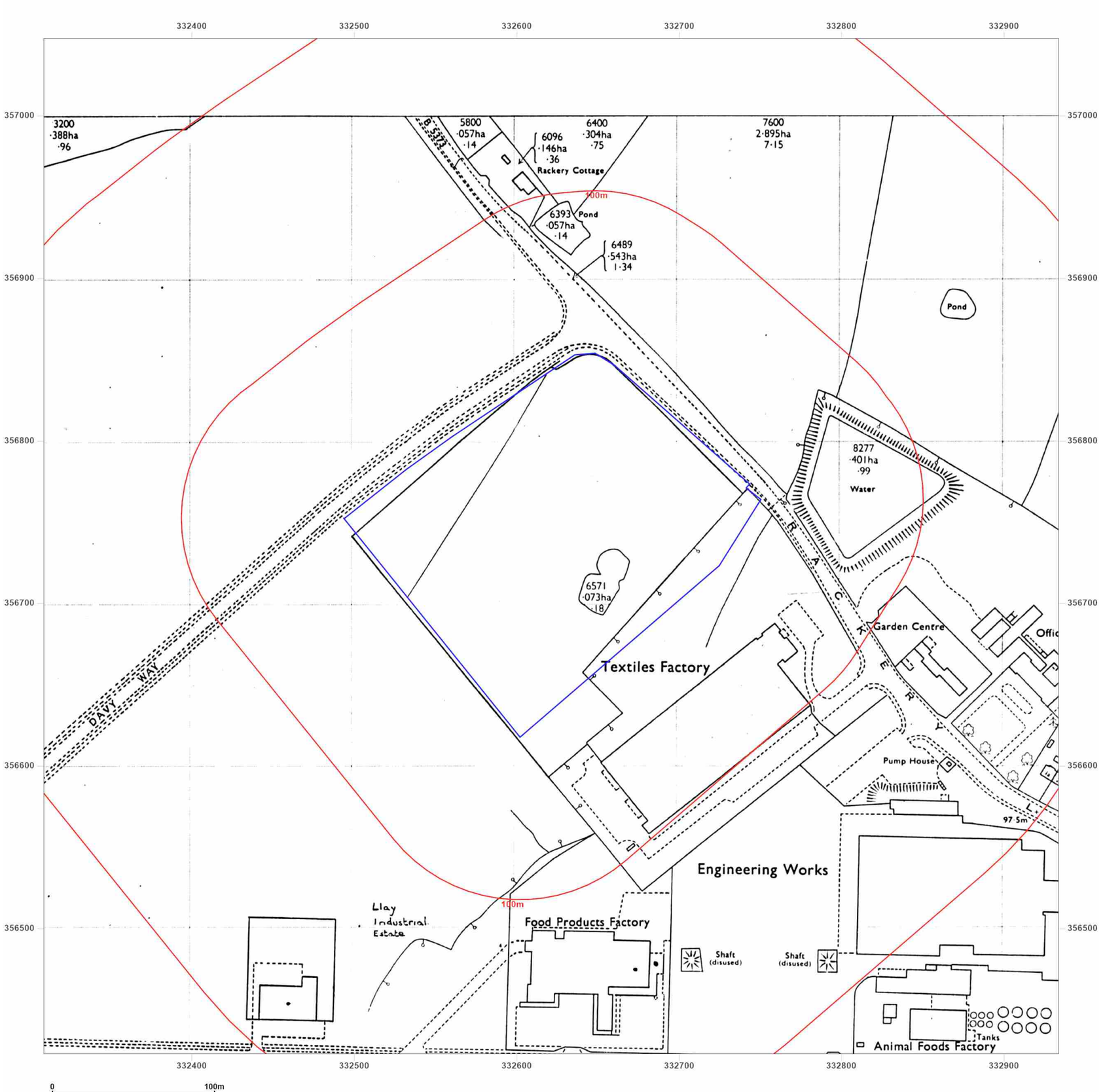
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Client Ref: TE1798_PO_2871
Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

Map Name: National Grid

Map date: **1984**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1959
Revised 1984
Edition N/A
Copyright 1984
Levelled 1959

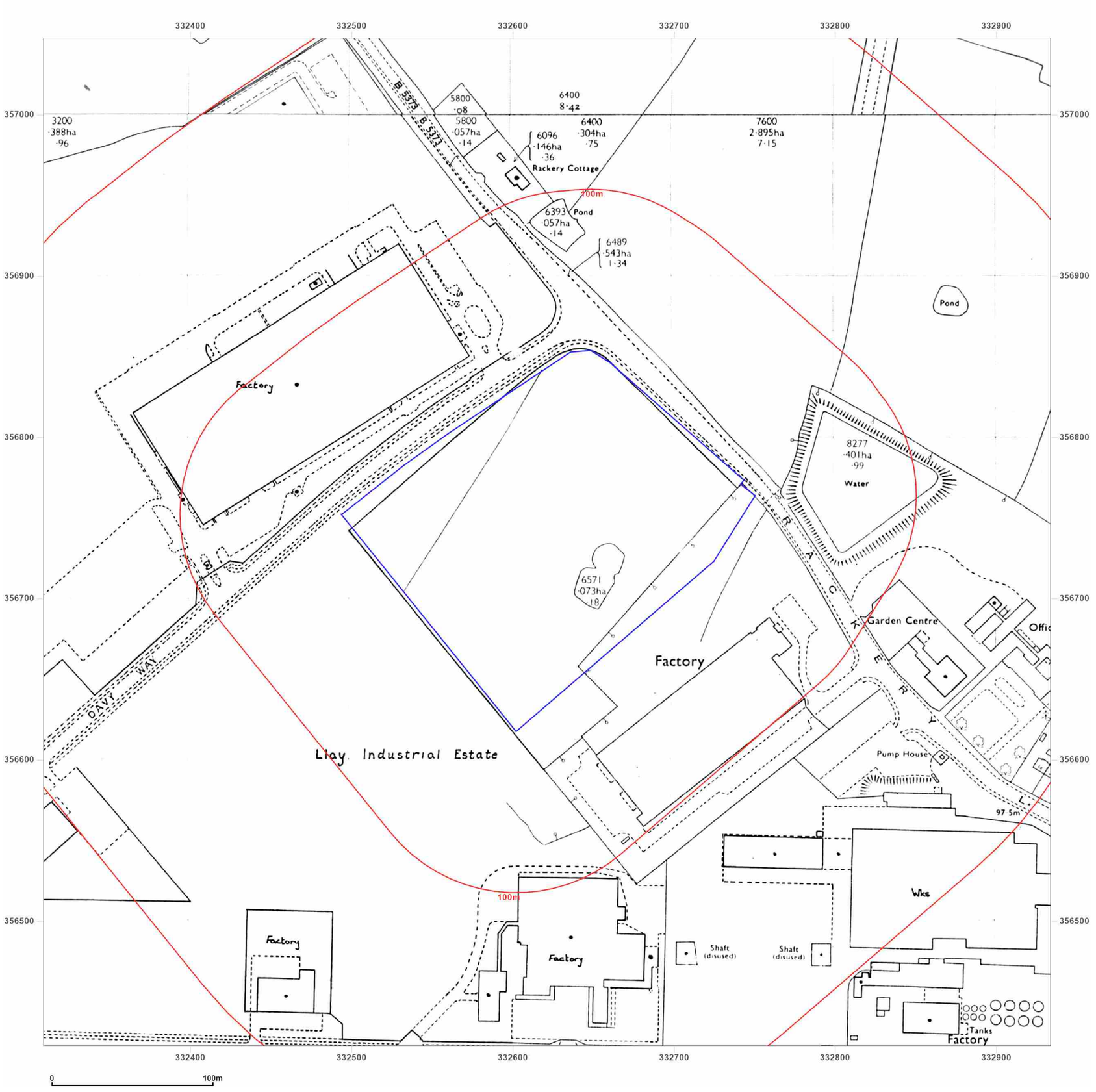
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Client Ref: TE1798_PO_2871
Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

Map Name: National Grid

Map date: **1986-1990**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1990
Levelled 1959

Surveyed 1959
Revised 1986
Edition N/A
Copyright 1986
Levelled 1959

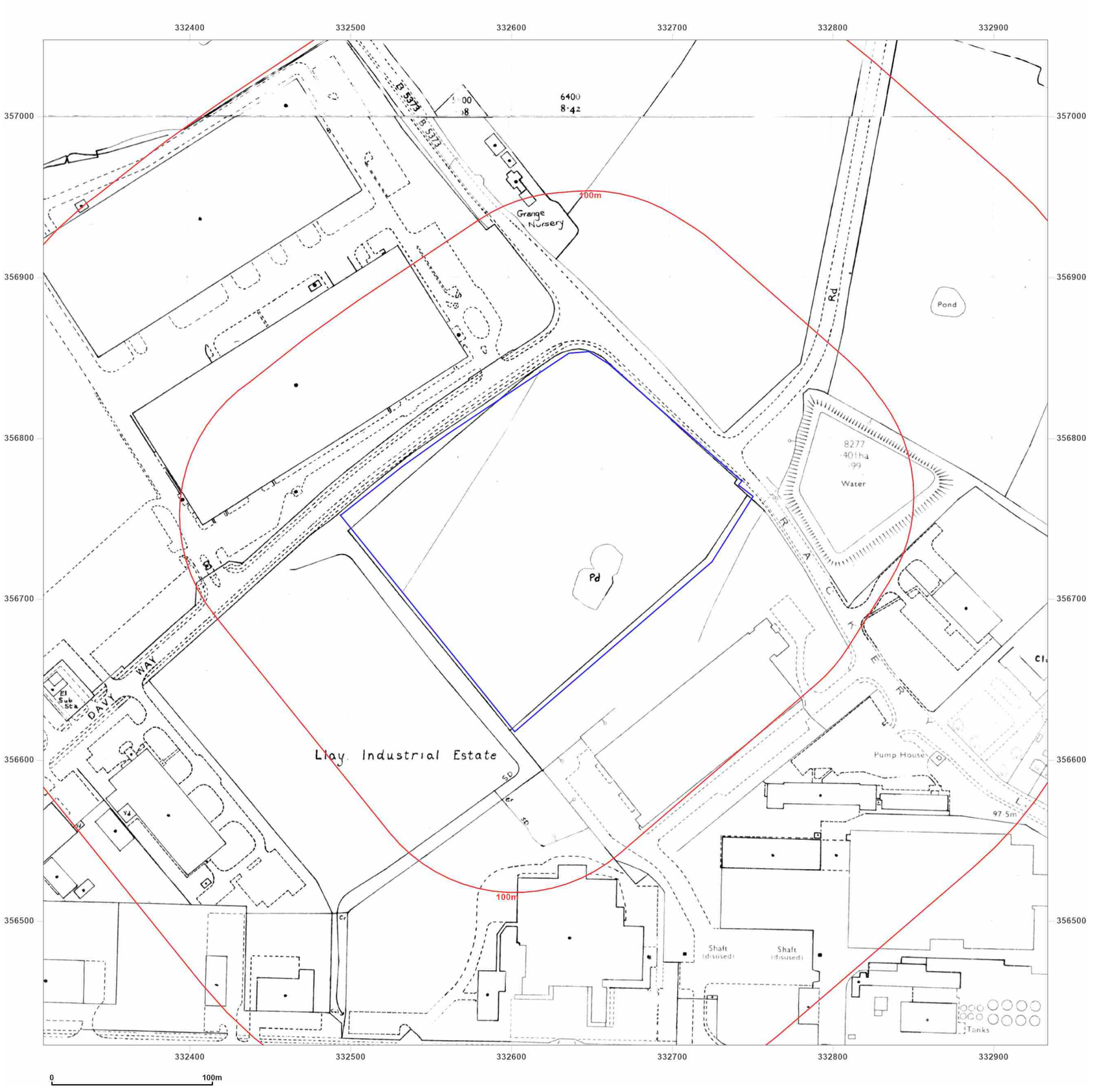
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Client Ref: TE1798_PO_2871
Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

Map Name: National Grid

Map date: **1990-1991**

Scale: 1:2,500

Printed at: 1:2,500

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

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1990
Levelled 1959

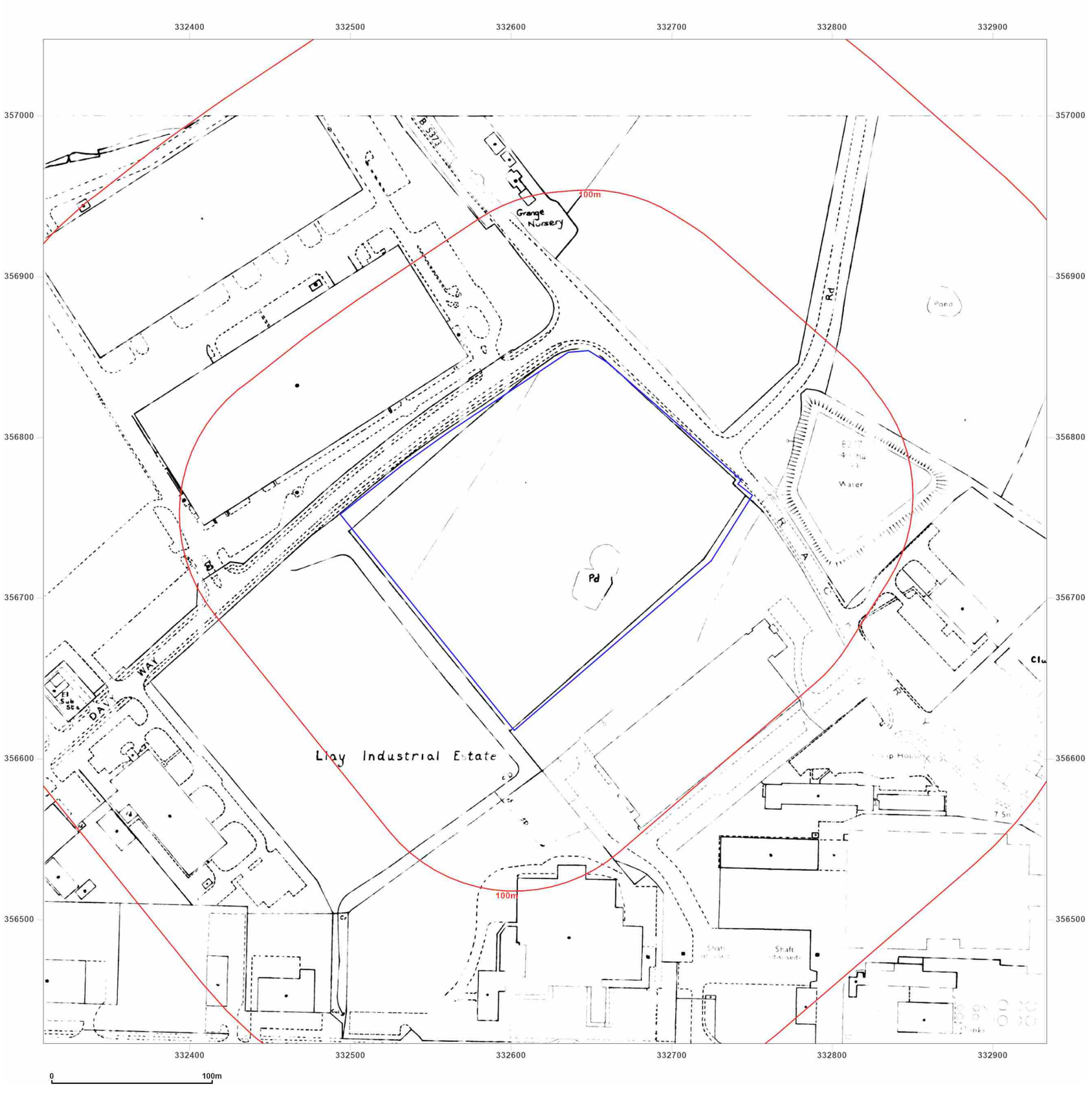
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Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

Map Name: National Grid

Map date: **1991**

Scale: 1:2,500

Printed at: 1:2,500

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

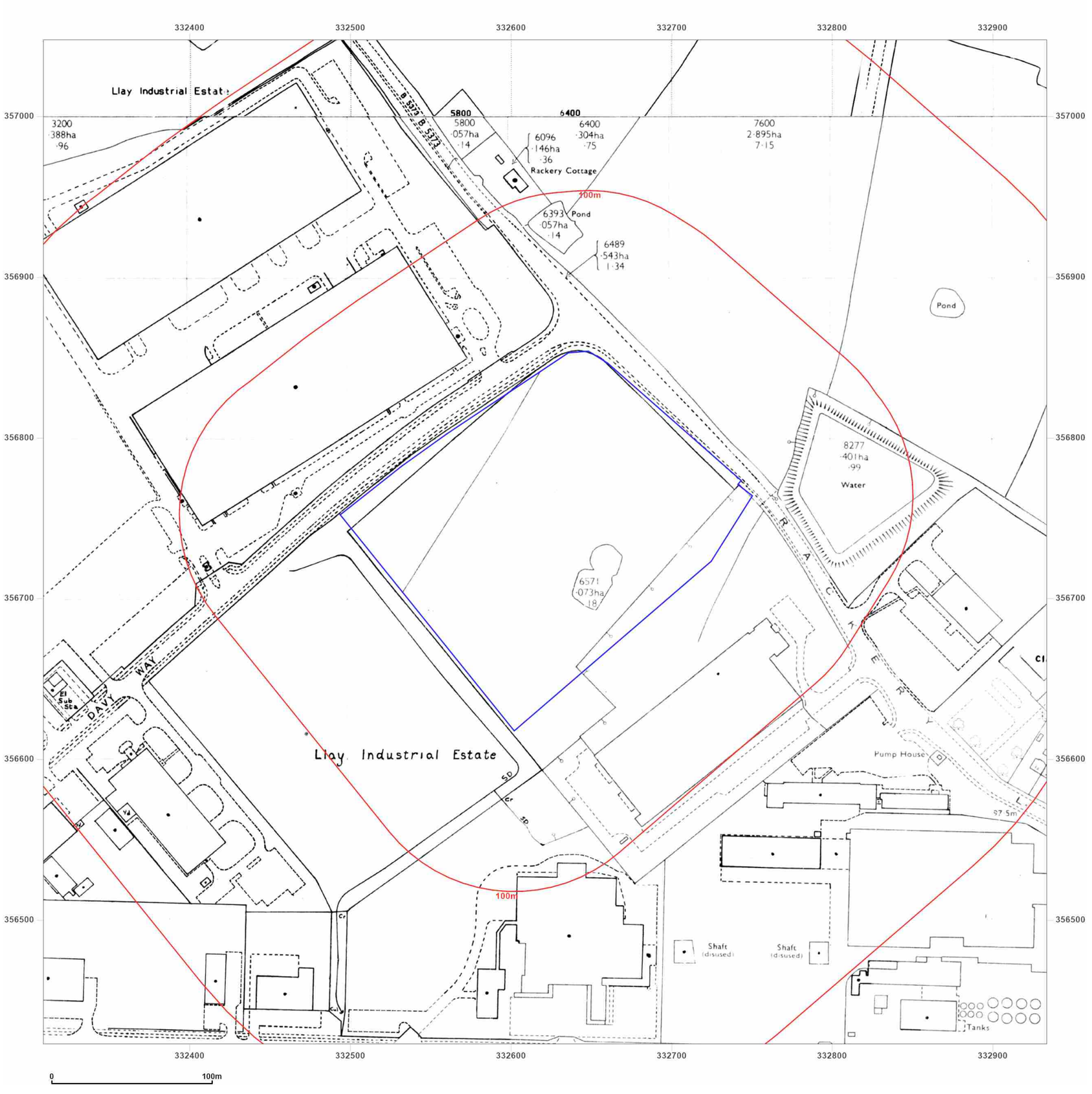
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Client Ref: TE1798_PO_2871
Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

Map Name: National Grid

Map date: **1990-1993**

Scale: 1:2,500

Printed at: 1:2,500

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

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

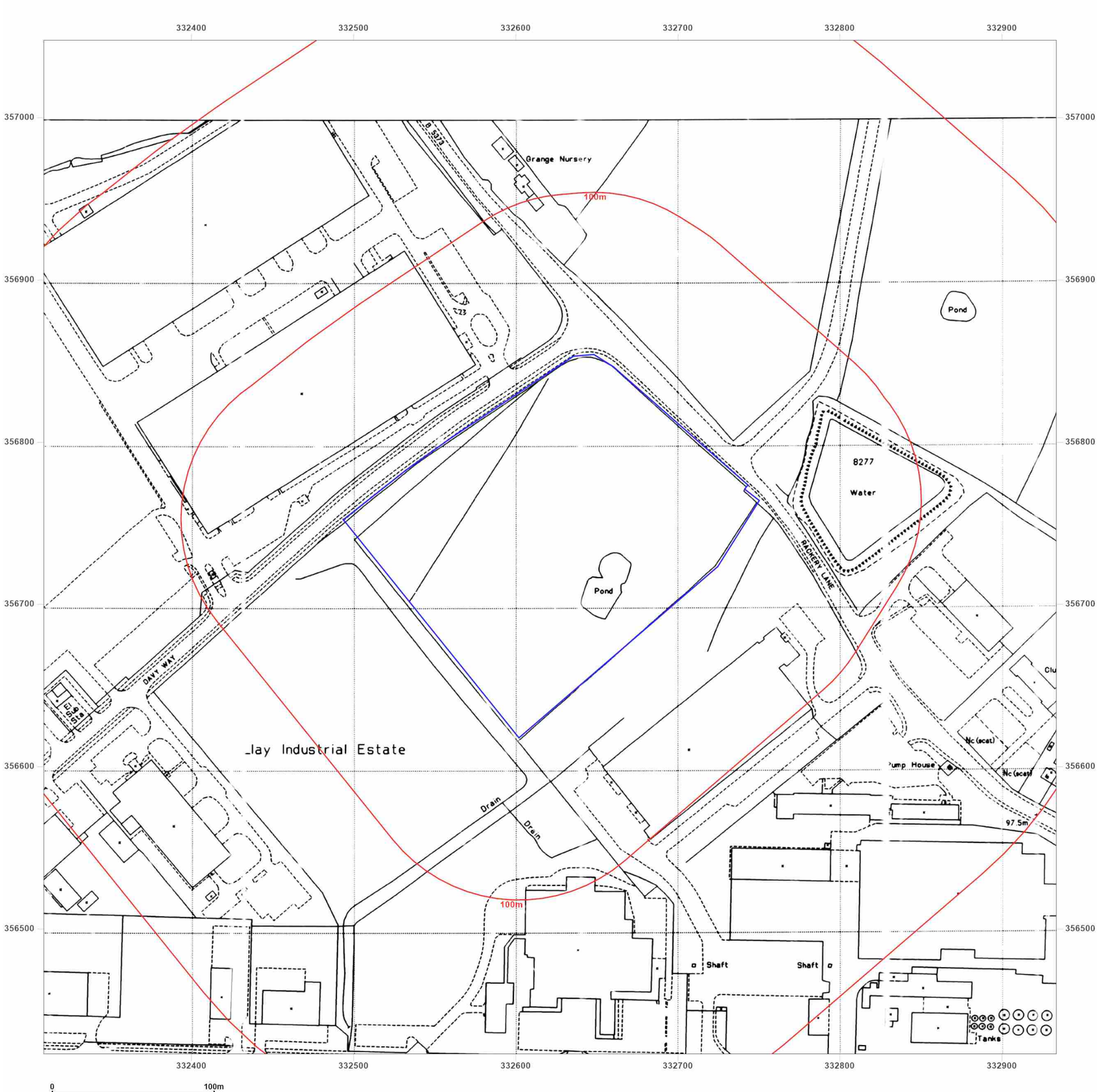
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Client Ref: TE1798_PO_2871
Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

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

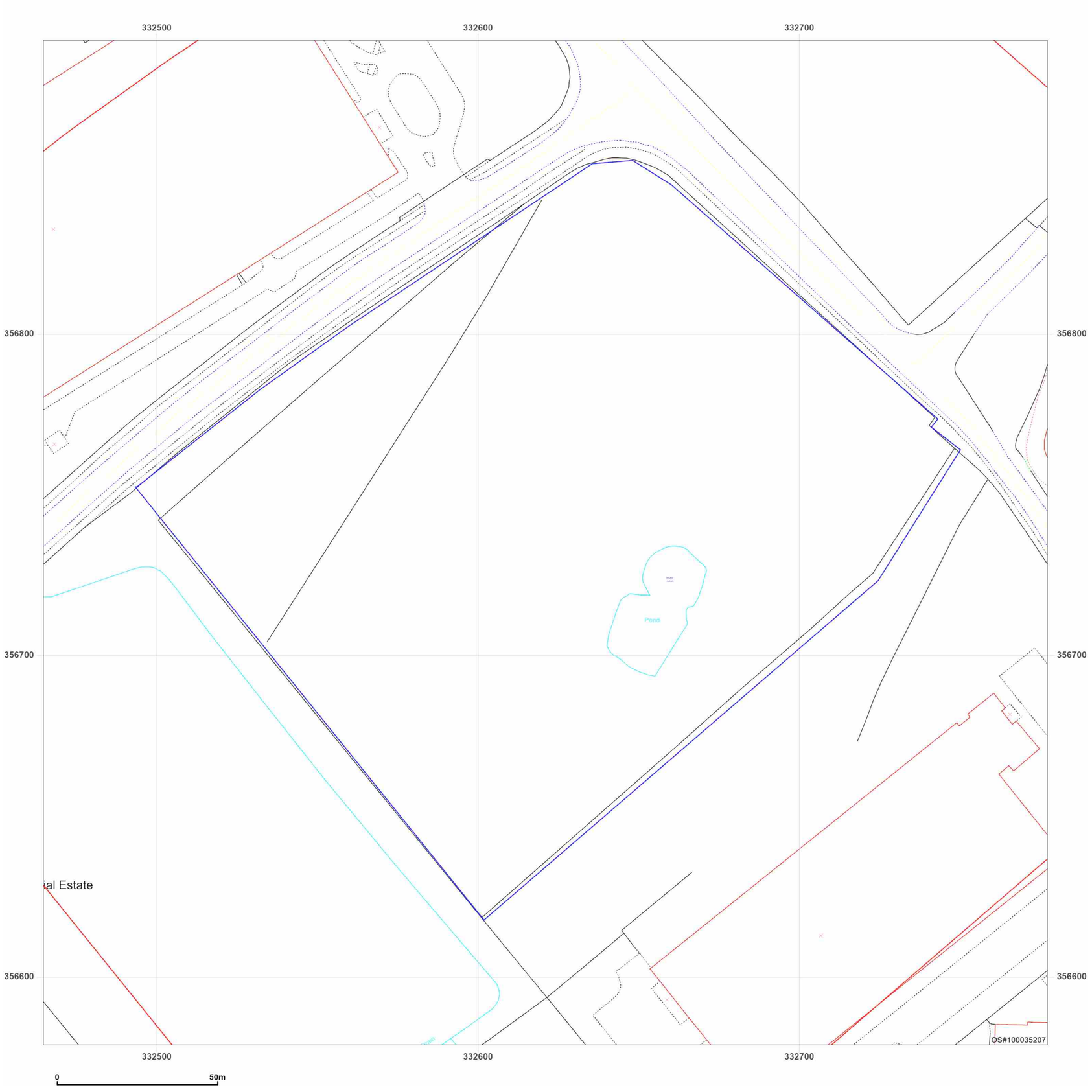
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Client Ref: TE1798_PO_2871
Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

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

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2003

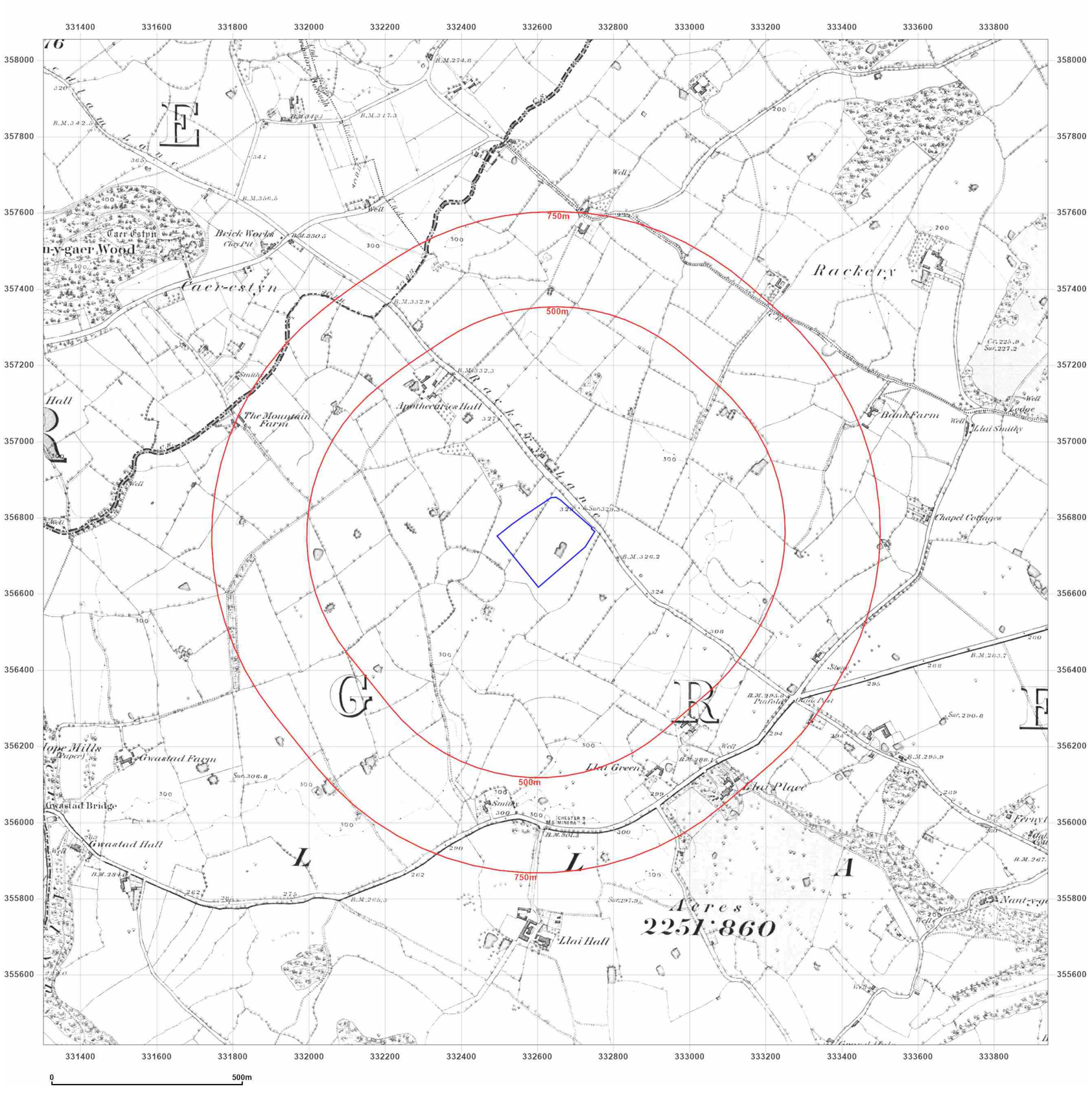
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Client Ref: TE1798_PO_2871
Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

Map Name: County Series

Map date: **1872**

Scale: 1:10,560

Printed at: 1:10,560

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

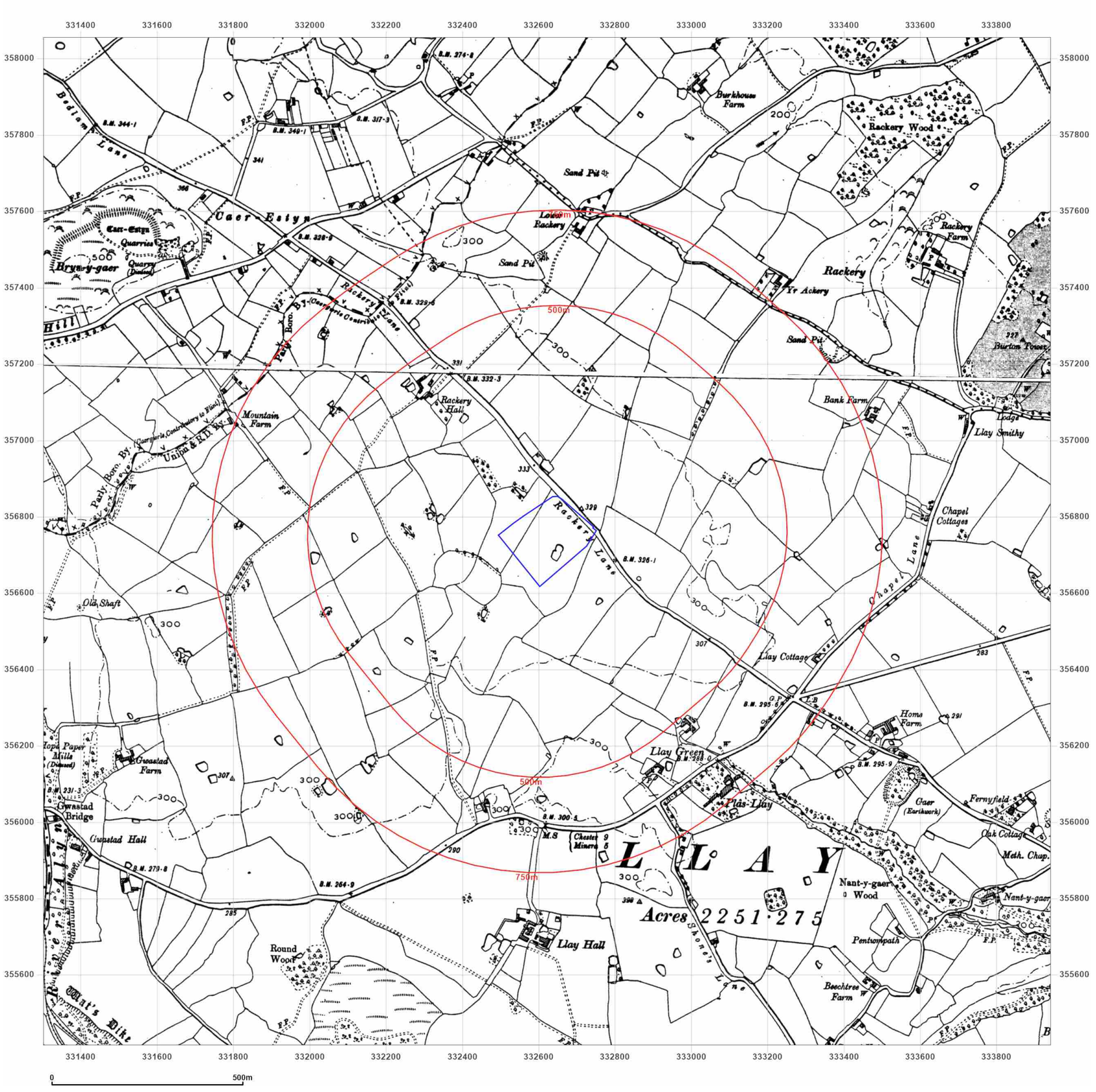
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Groundsure INSIGHTS

Site Details:

LAND AT, RACKERY LANE,
LLAY, WREXHAM, LL12 0PB

Client Ref: TE1798_PO_2871
Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

Map Name: County Series

Map date: **1900**

Scale: 1:10,560

Printed at: 1:10,560

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

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
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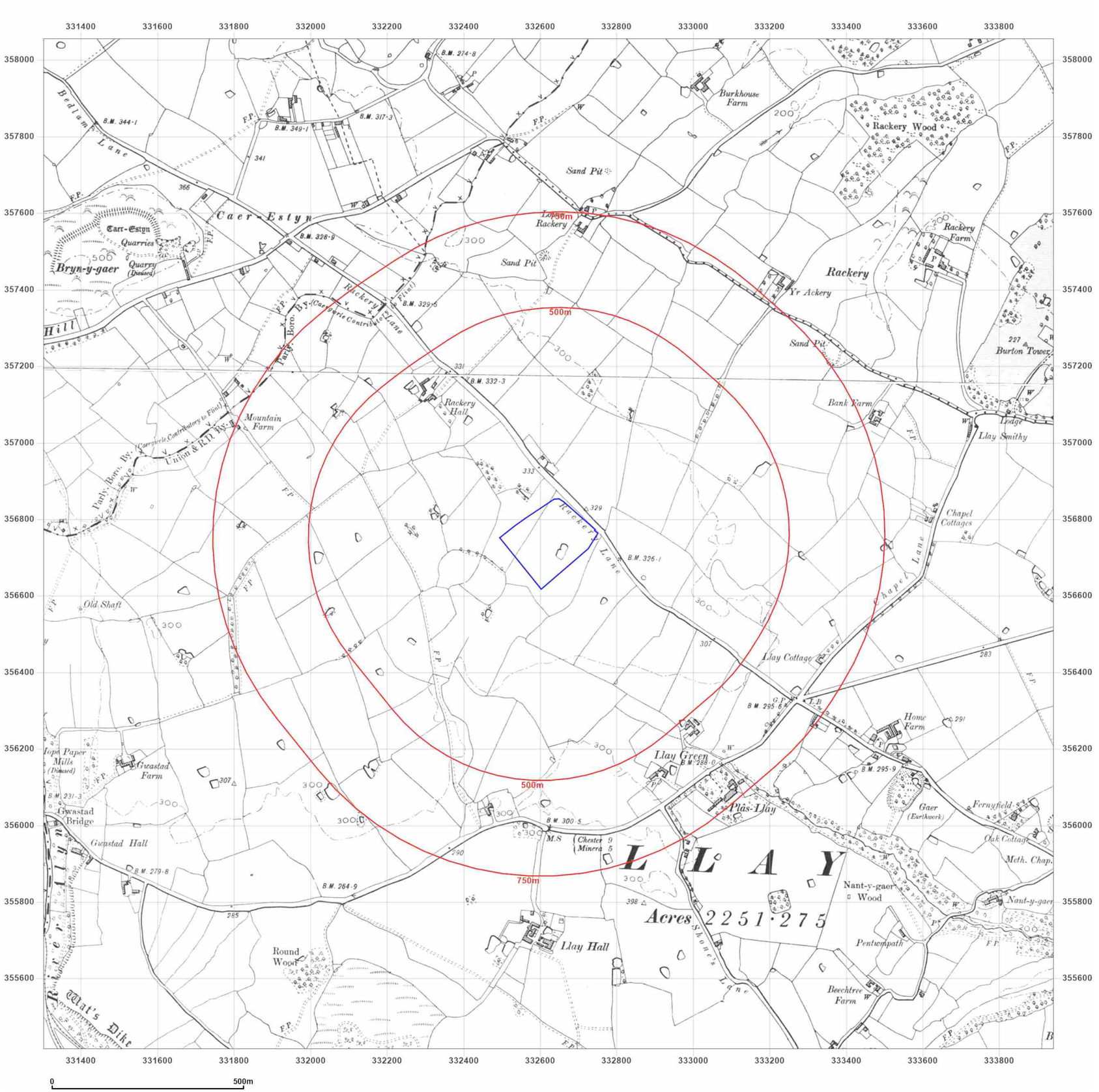
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LLAY, WREXHAM, LL12 0PB

Client Ref: TE1798_PO_2871
Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

Map Name: County Series

Map date: **1900**

Scale: 1:10,560

Printed at: 1:10,560

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

Surveyed 1871
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

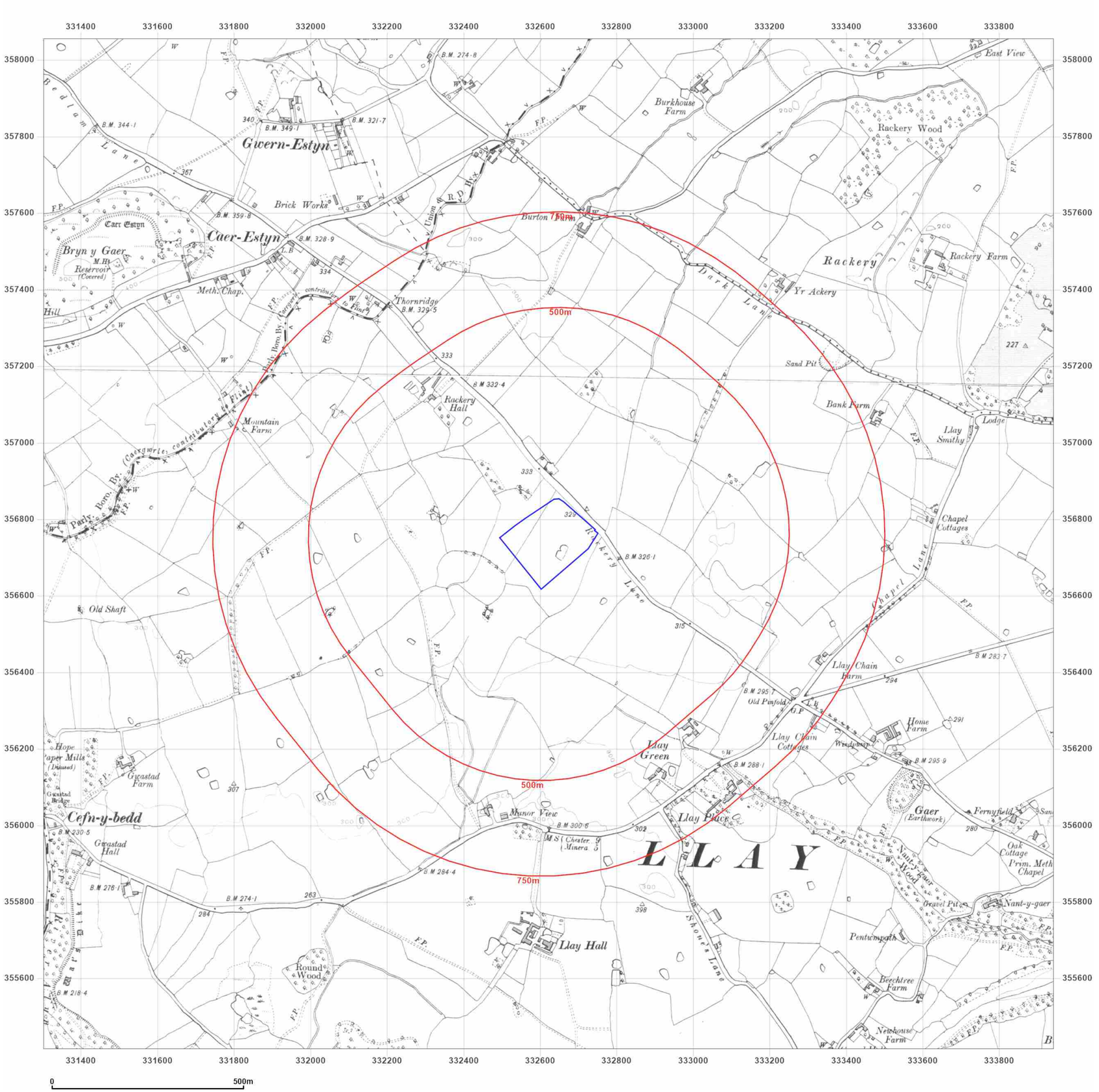
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Site Details:

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Client Ref: TE1798_PO_2871
Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

Map Name: County Series

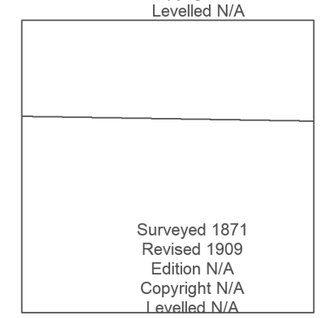
Map date: **1909**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1871
Revised 1909
Edition N/A
Copyright N/A
Levelled N/A



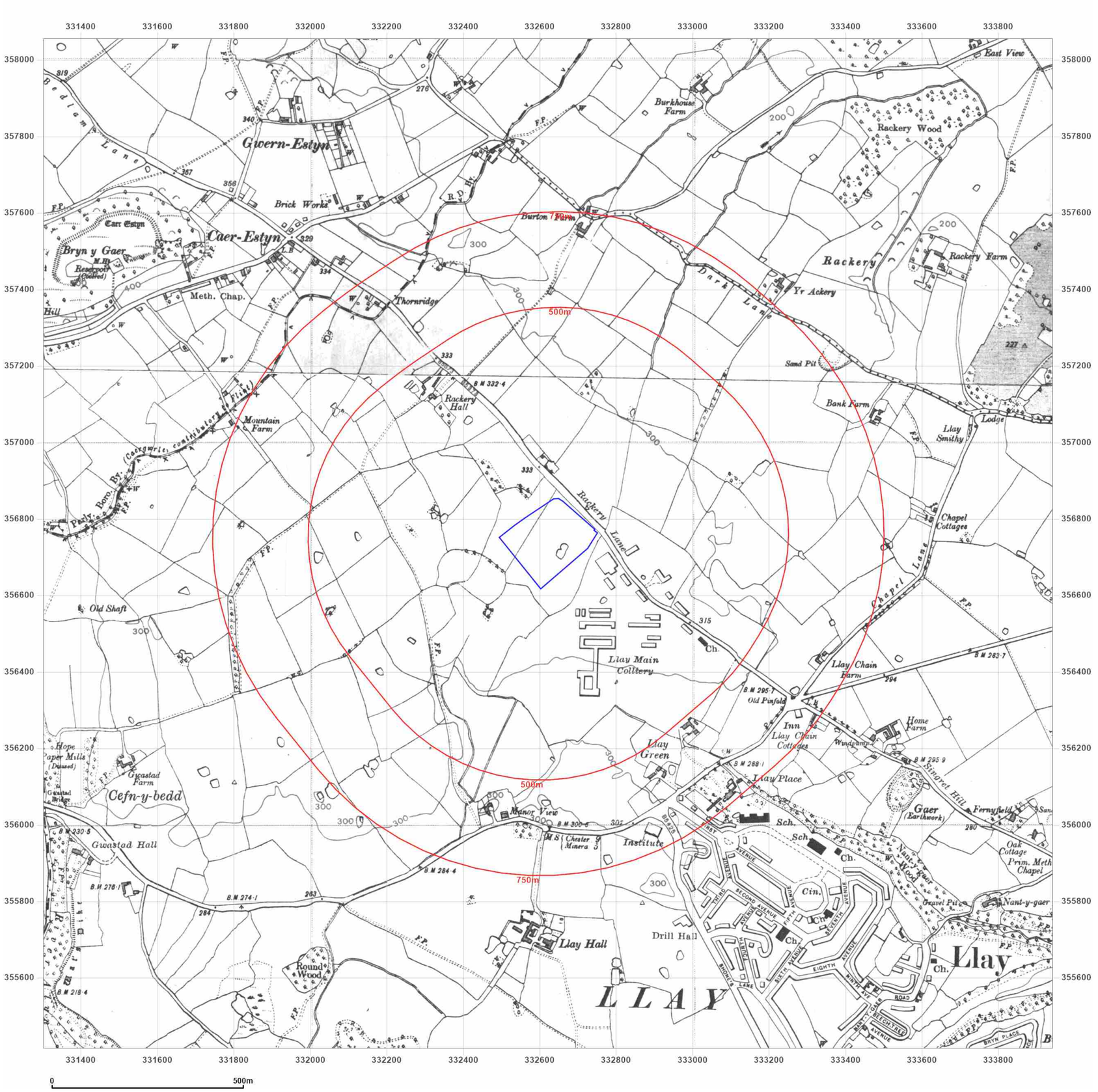
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Production date: 17 November 2023

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Groundsure INSIGHTS

Site Details:

LAND AT, RACKERY LANE,
LLAY, WREXHAM, LL12 0PB

Client Ref: TE1798_PO_2871
Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

Map Name: County Series

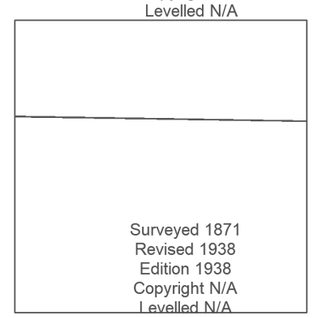
Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1871
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A



Surveyed 1871
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

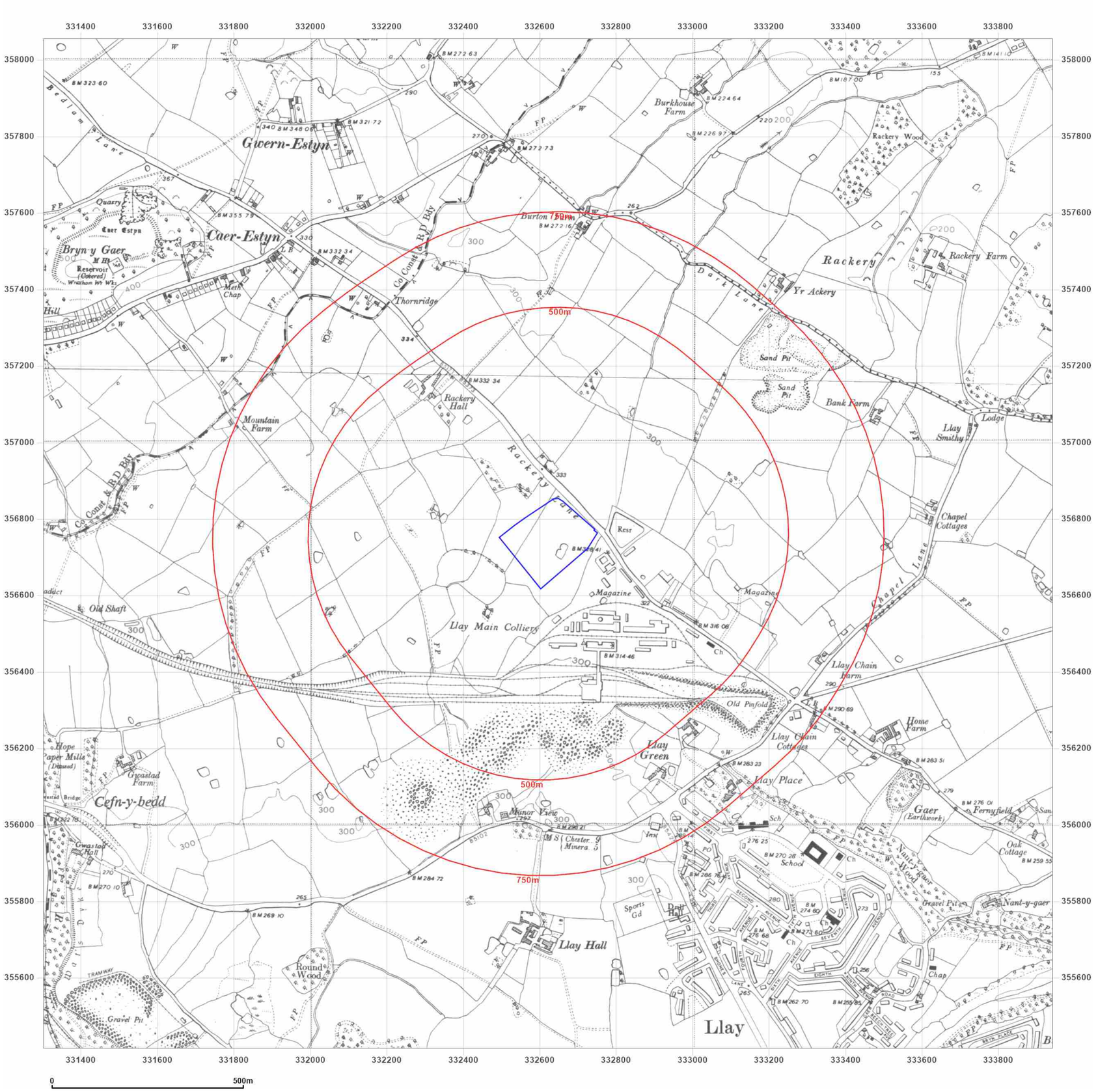
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LLAY, WREXHAM, LL12 0PB

Client Ref: TE1798_PO_2871
Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

Map Name: County Series

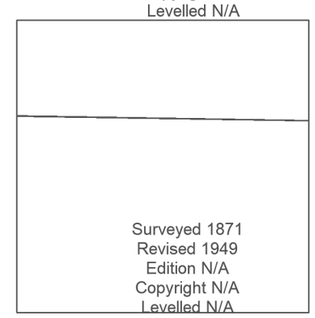
Map date: **1949**

Scale: 1:10,560

Printed at: 1:10,560

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



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

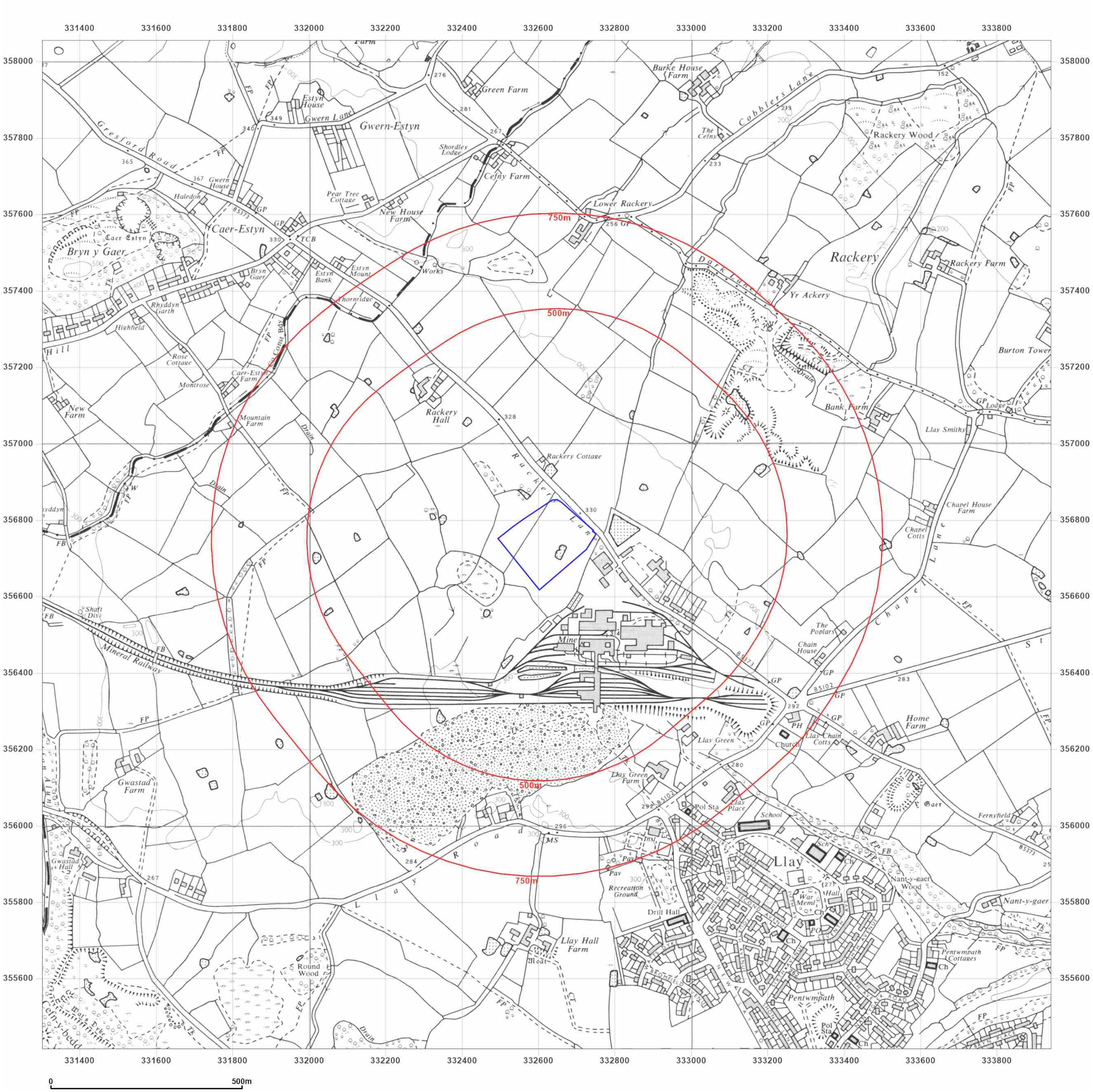
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Groundsure INSIGHTS

Site Details:

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LLAY, WREXHAM, LL12 0PB

Client Ref: TE1798_PO_2871
Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

Map Name: Provisional

Map date: **1960**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1871
Revised 1960
Edition N/A
Copyright N/A
Levelled N/A

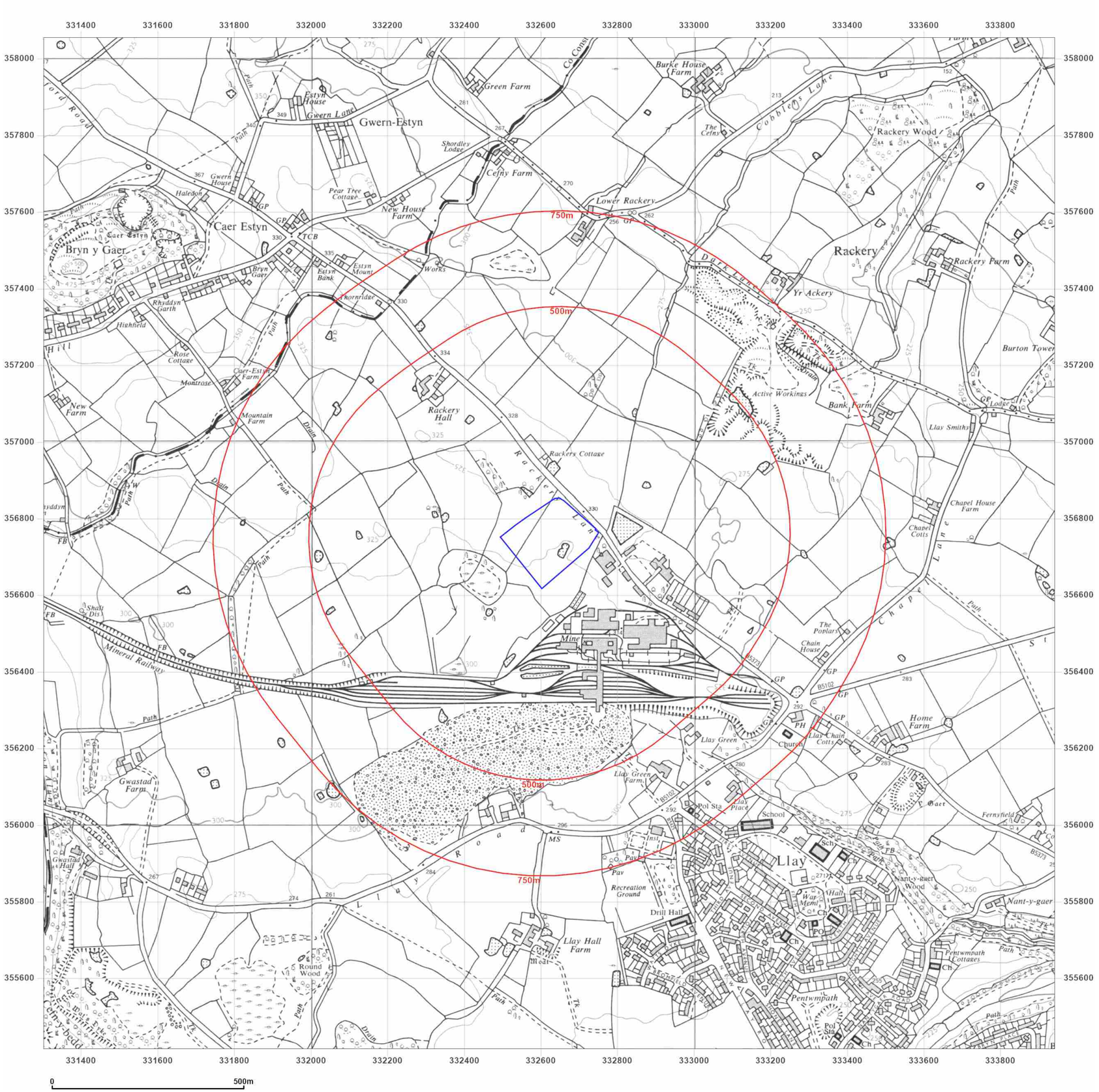
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Groundsure INSIGHTS

Site Details:

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LLAY, WREXHAM, LL12 0PB

Client Ref: TE1798_PO_2871
Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

Map Name: Provisional

Map date: **1968**

Scale: 1:10,560

Printed at: 1:10,560

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

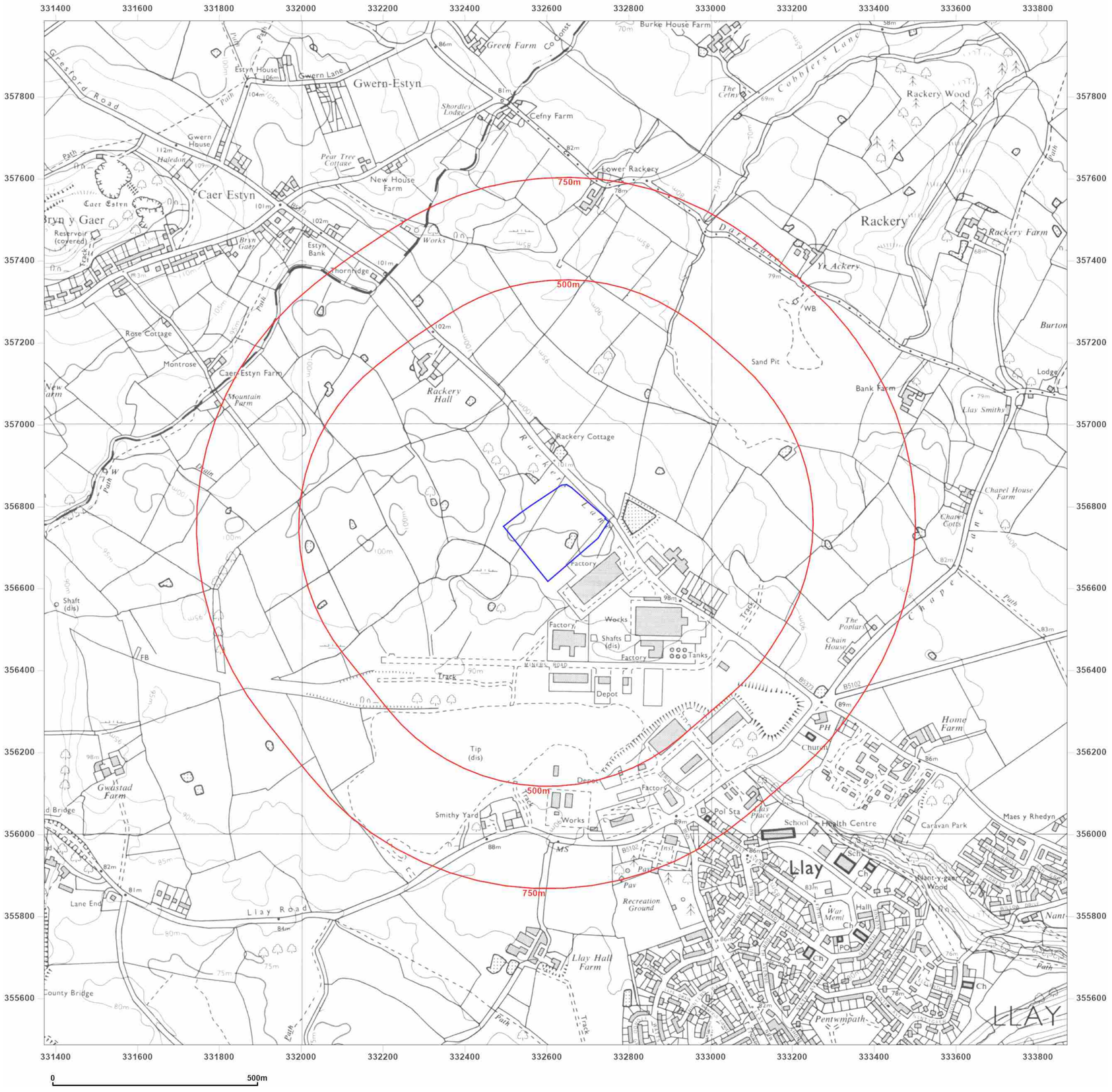
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Site Details:

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LLAY, WREXHAM, LL12 0PB

Client Ref: TE1798_PO_2871
Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

Map Name: National Grid

Map date: **1981**

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1974
Revised 1981
Edition N/A
Copyright 1981
Levelled 1976

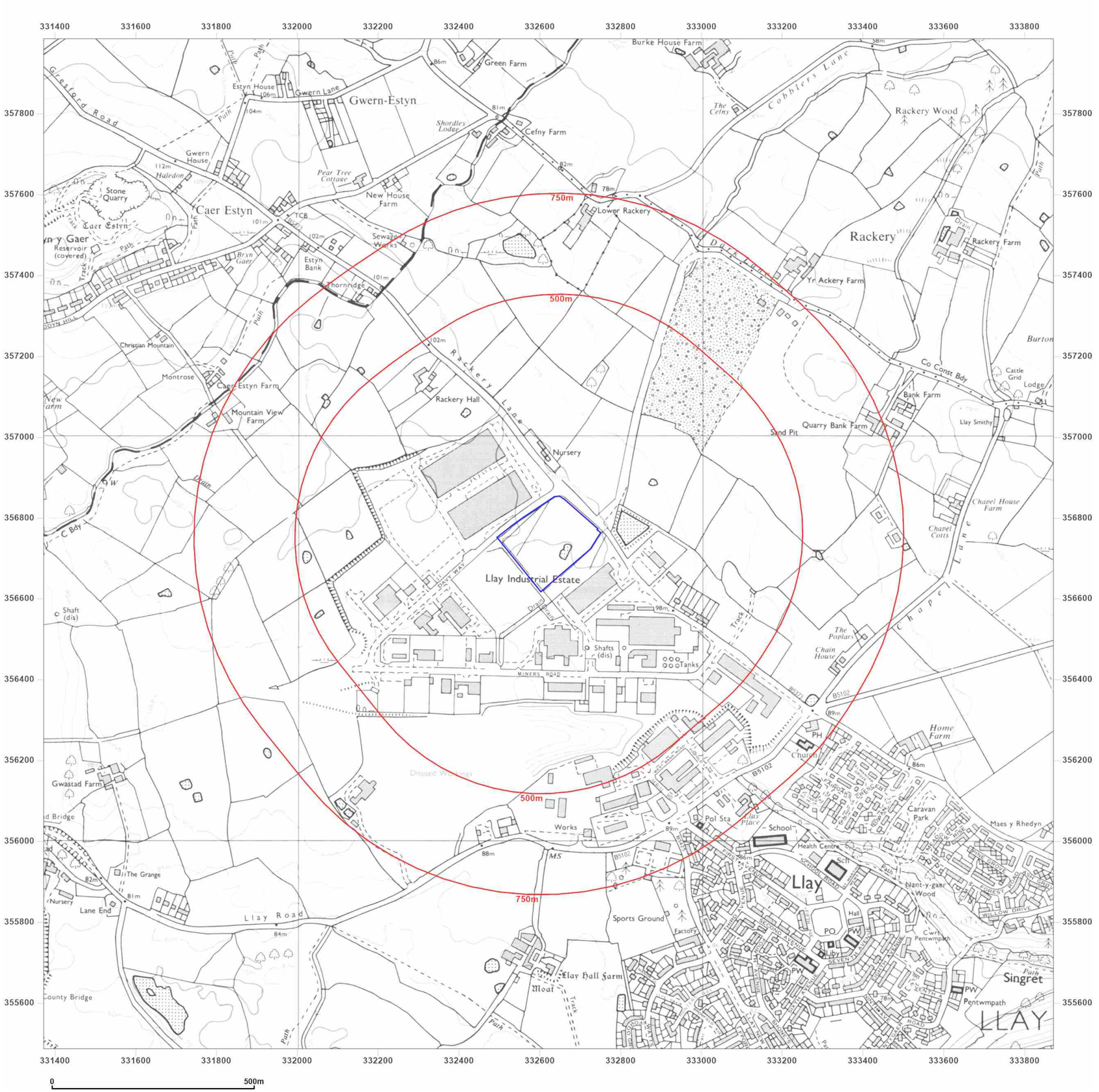
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Groundsure INSIGHTS

Site Details:

LAND AT, RACKERY LANE,
LLAY, WREXHAM, LL12 0PB

Client Ref: TE1798_PO_2871
Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

Map Name: National Grid

Map date: **1992**

Scale: 1:10,000

Printed at: 1:10,000

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

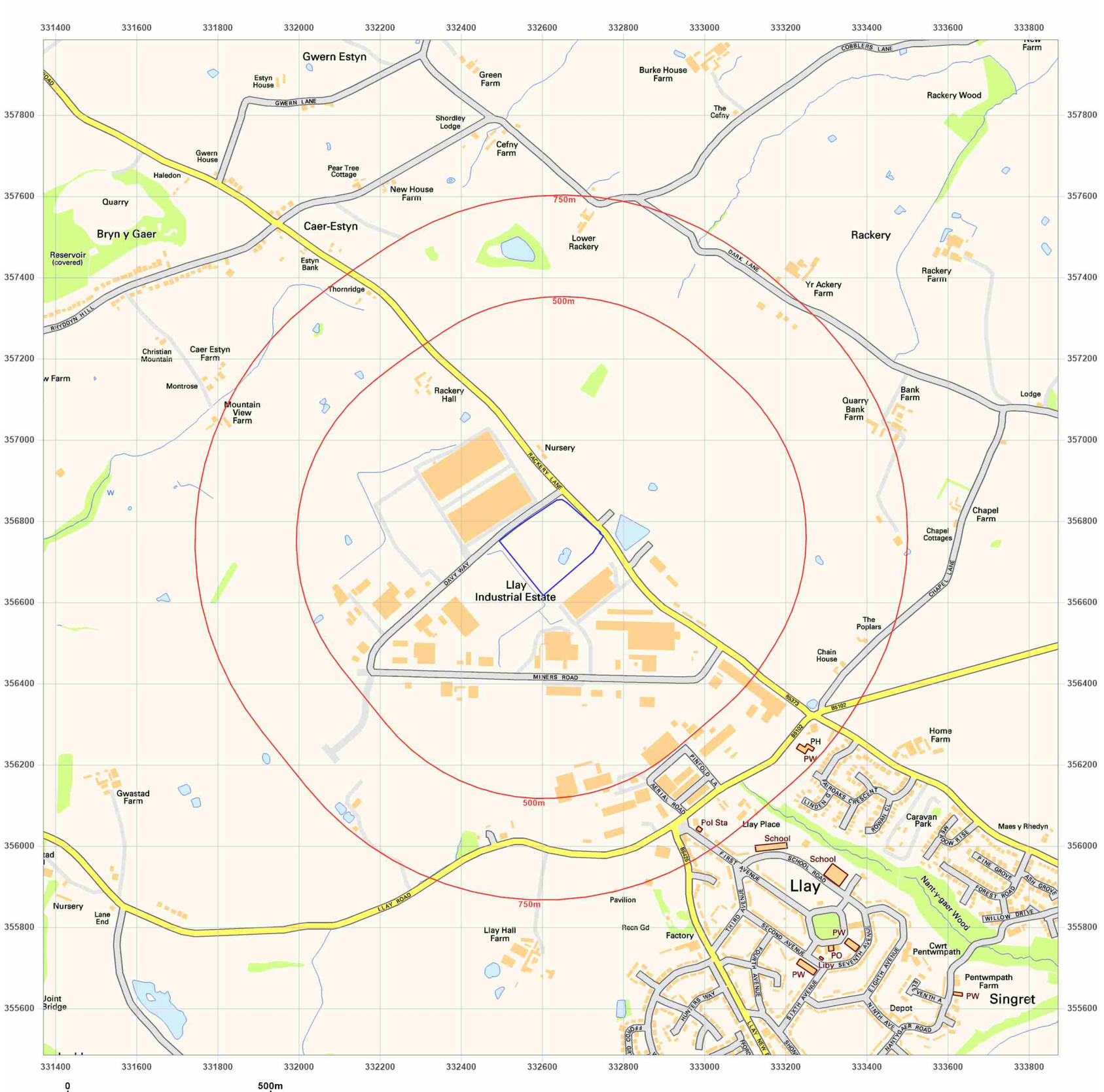
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Groundsure INSIGHTS

Site Details:

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Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

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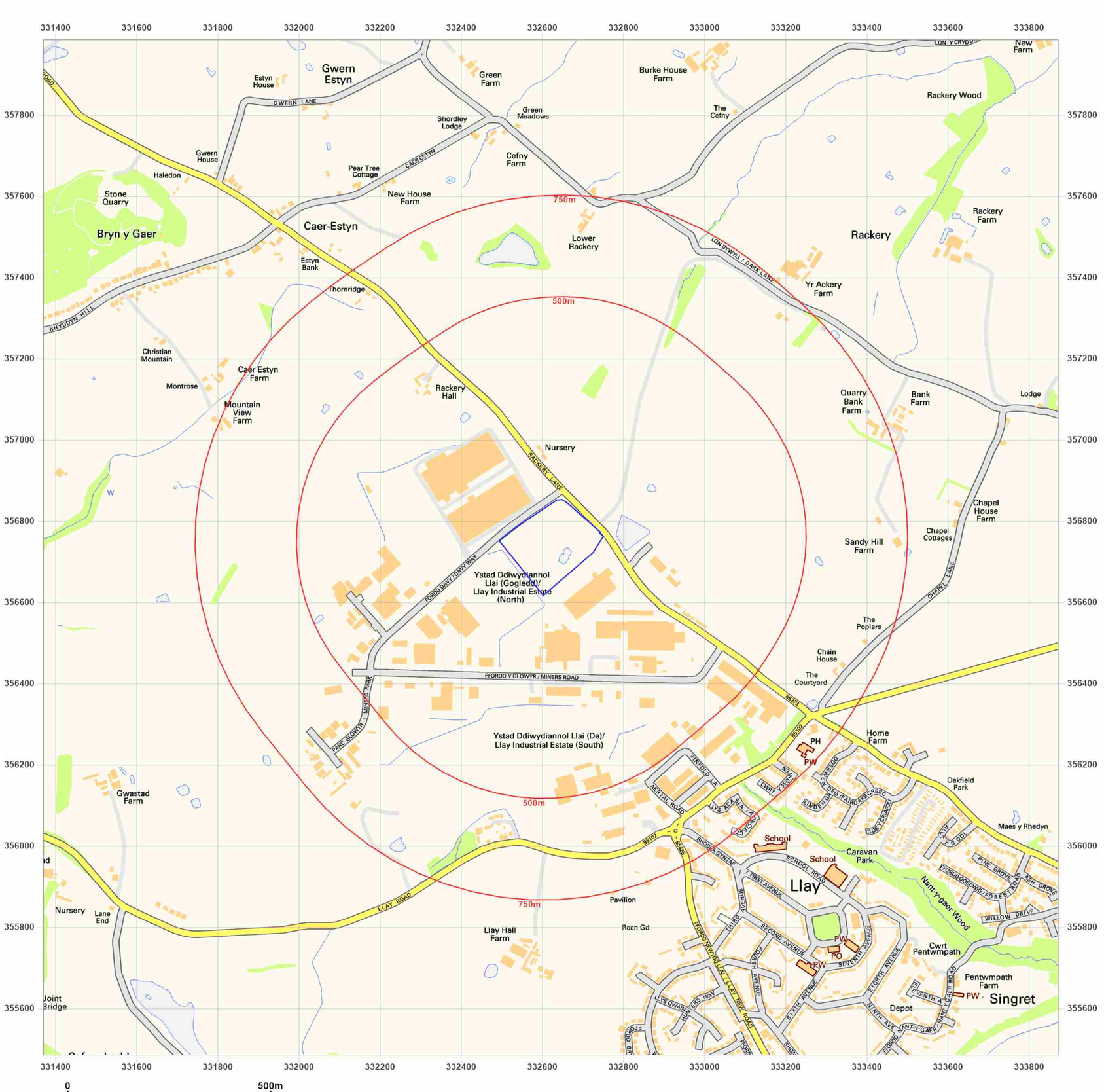
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Production date: 17 November 2023

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Groundsure INSIGHTS

Site Details:

LAND AT, RACKERY LANE,
LLAY, WREXHAM, LL12 0PB

Client Ref: TE1798_PO_2871
Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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2010

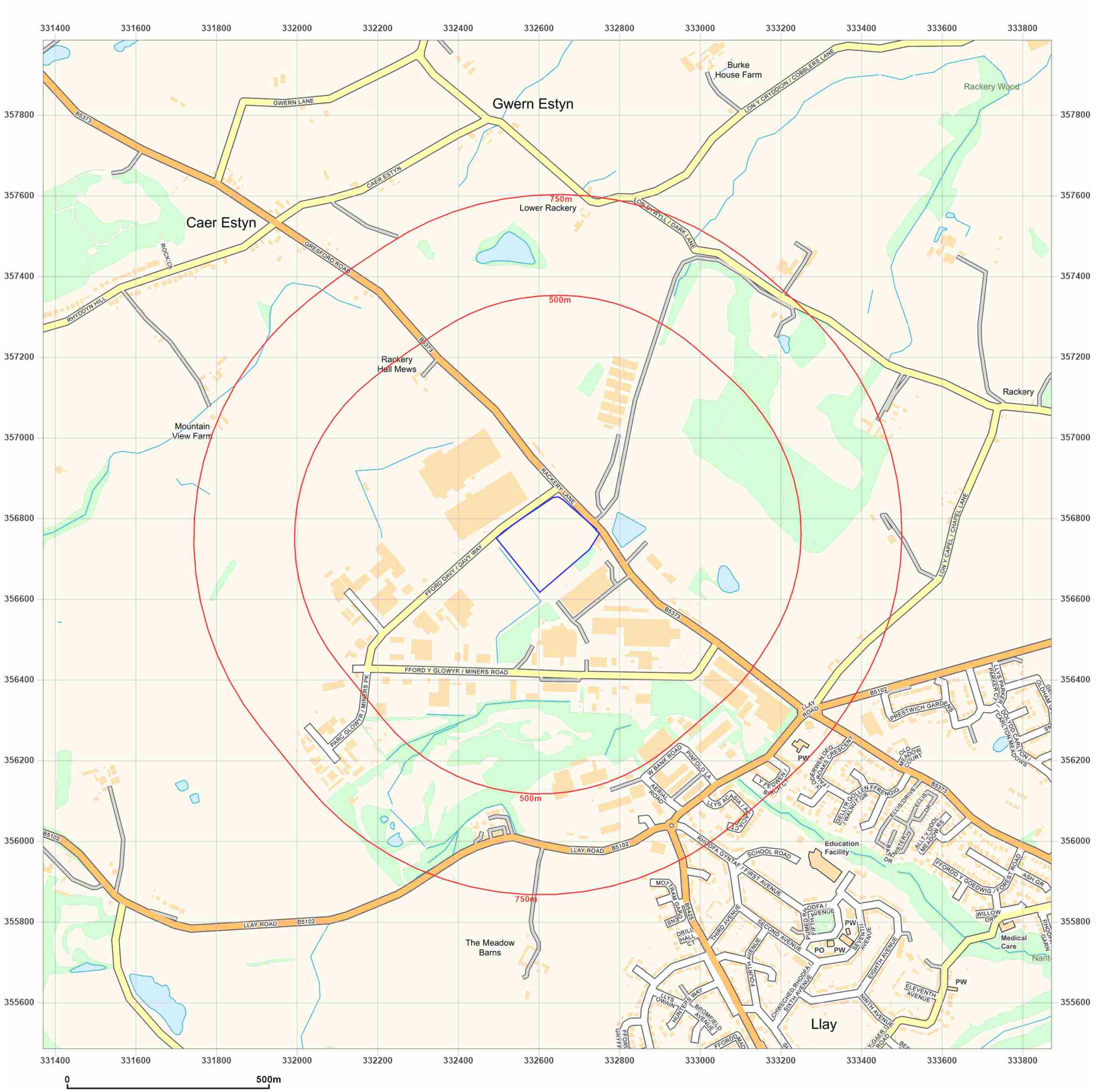
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Groundsure INSIGHTS

Site Details:

LAND AT, RACKERY LANE,
LLAY, WREXHAM, LL12 0PB

Client Ref: TE1798_PO_2871
Report Ref: GS-D8U-XYH-PB6-A97
Grid Ref: 332621, 356735

Map Name: National Grid
Map date: **2023**
Scale: 1:10,000
Printed at: 1:10,000

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Production date: 17 November 2023

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APPENDIX C - COAL AUTHORITY COAL MINING REPORT

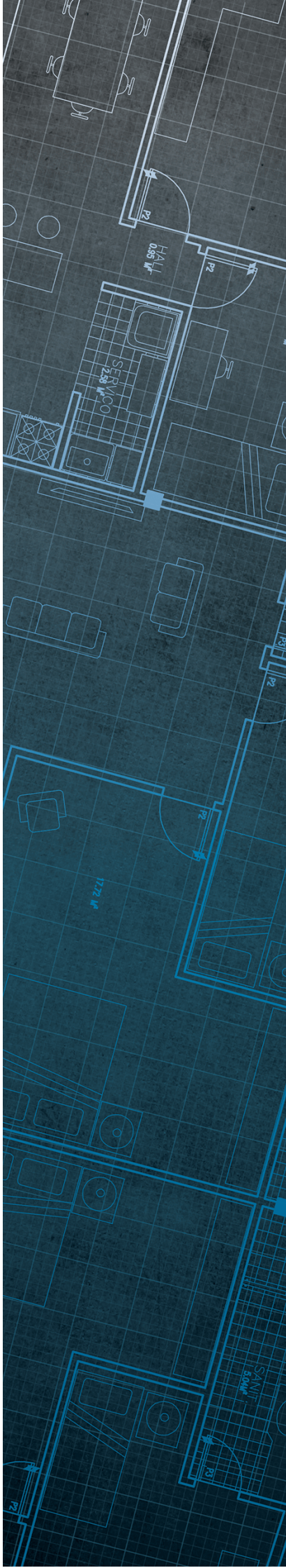
The Coal Authority

Consultants

Coal Mining Report

Land At, Rackery Lane, Llay,
Wrexham, Ll12 0pb
Wrexham

Date of enquiry:	**17 November 2023**
Date enquiry received:	**17 November 2023**
Issue date:	**17 November 2023**
Our reference:	**51003390108001**
Your reference:	**GS-2GB-J62-BDH-869**



Consultants
Coal Mining Report

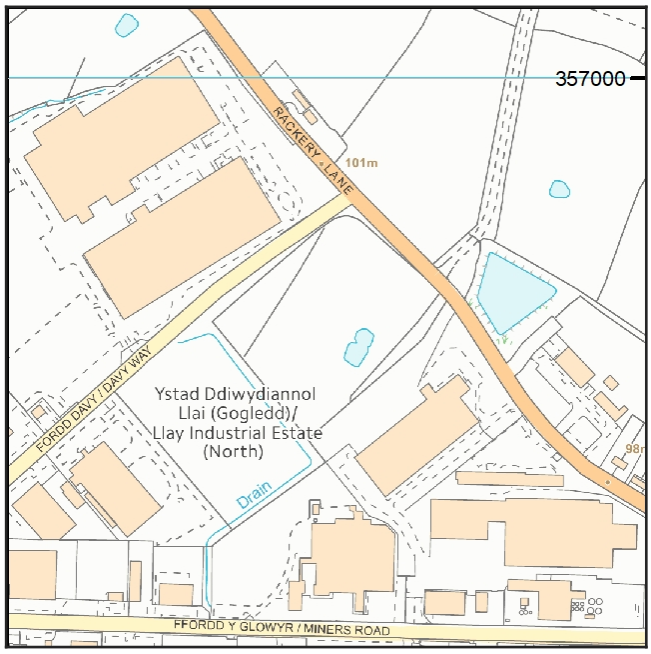
This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

GROUNDSURE LIMITED

Enquiry address

Land At, Rackery Lane, Llay, Wrexham, Ll12 0pb
Wrexham



Approximate position of property

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How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

@coalauthority
/company/the-coal-authority
/thecoalauthority
/thecoalauthority

Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	MAIN	Coal	39Y0	686	South-East	13.4	South-East	200	1960
unnamed	TWO YARD	Coal	3A5Y	691	South-West	13.8	East	150	1932
unnamed	CROWN	Coal	3AD7	703	South-West	24.8	East	120	1959
unnamed	TWO YARD	Coal	3A61	711	East	10.0	East	150	1923
unnamed	MAIN	Coal	39XX	720	South-West	15.0	East	200	1960
unnamed	QUAKER	Coal	3A4S	737	East	17.0	East	180	1962
unnamed	WALL AND BENCH	Coal	3A28	761	South	20.7	North-East	80	1941
unnamed	RUABON YARD (SOFT 5 QTRS)	Coal	3A4V	766	South	21.3	North-East	100	1966
unnamed	MAIN	Coal	39Y7	786	East	8.0	North-East	230	1960
unnamed	MAIN	Coal	39Y6	827	East	8.0	North-East	230	1960
unnamed	RUABON YARD (SOFT 5 QTRS)	Coal	3A58	922	East	8.9	East	100	1962

Probable unrecorded shallow workings

None.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

None recorded within 100 metres of the enquiry boundary.

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Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

14285	13239	NW530
11815	12911	NW528
NW550	NW529	

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

No outcrops recorded.

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

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Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations
None recorded within 50 metres of the enquiry boundary.

Remediated sites
None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence
The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas
None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes
None recorded within 500 metres of the enquiry boundary.

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Section 3 – Licensing and future mining activity

Future underground mining
None recorded.

Coal mining licensing
None recorded within 200 metres of the enquiry boundary.

Court orders
None recorded.

Section 46 notices
No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices
The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land
The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

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Section 4 – Further information

The following potential risks have been identified and as part of your risk assessment should be investigated further.

Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority.

MINE GAS: Please note, if there are no recorded instances of mine gas within 500m of the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

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Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk.**

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

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Opencast mines
Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips
Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations
Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites
Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence
Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas
Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission. Please note, if there are no recorded instances of mine gas reported, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded.

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Mine water treatment schemes
Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining
Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing
Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders
Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices
Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices
Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

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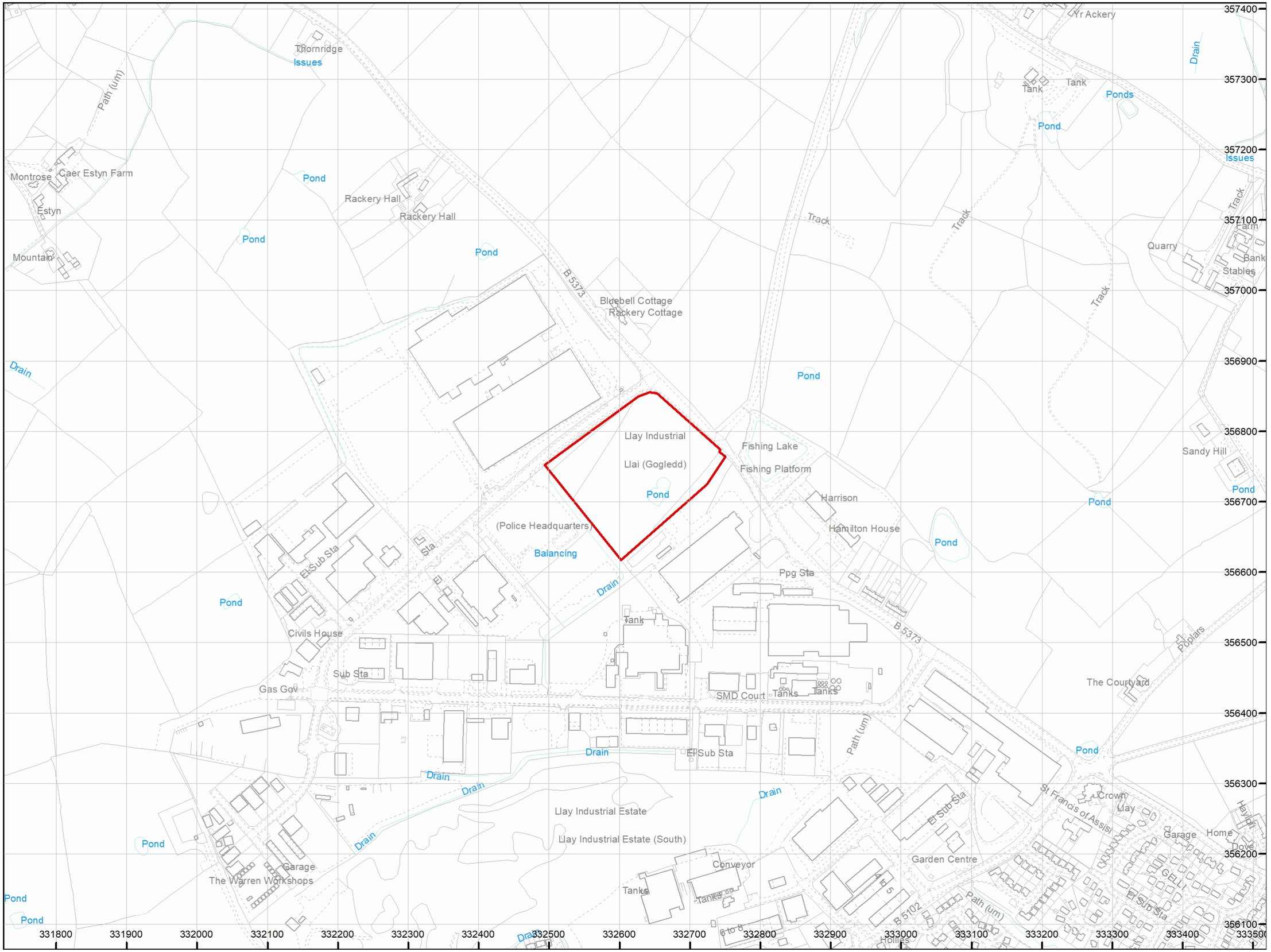
Summary of findings

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Map data

The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

Approximate position of the enquiry boundary shown



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APPENDIX D - PREVIOUS REPORTS (AVAILABLE AS A SEPARATE DOCUMENT)

APPENDIX E - 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 F - 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:



Increasing levels of protection

Water Protection Zones

Safeguard Zones

Source Protection Zones

Principal Aquifers

Secondary Aquifers

APPENDIX G - 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.