CIVIC EARTH

Wrexham Gateway, Wrexham

Sites A and B (Application Site) Phase 1 Desk Study

3 July 2025

Wrexham County Borough Council

Contents

1. Introduction 4
2. Site Context 6
2.1. Site Location 6
2.2. Site Description 6
2.3. Proposed Development 7
3. Historical Development 8
3.1. Sources of Information 8
3.2. Site History 8
4. Anticipated Ground Conditions 12
4.1. Published Geology 12
4.2. Unpublished BGS Geology 14
4.3. Surface Mining and Ground Workings 15
4.4. Coal Mining 15
4.5. Railway Infrastructure 15
4.6. Hydrology and Hydrogeology 16
4.7. Ground Hazards 17
4.8. Unexploded Ordnance (UXO) 17
5. Environmental Setting 18
5.1. Environmental Disclosure Report 18
5.2. Radon 19
6. Preliminary Risk Assessment 20
6.1. Introduction 20
6.2. Preliminary Conceptual Site Model 20
7. Geotechnical Preliminary Risk Assessment 24
8. Conclusions and Recommendations 26
8.1. Conclusions 26
8.2. Recommendations 26

Plates

Plate 1: Site Plan (Modified Stephenson Hamilton Risley drawing number al(02)0001), the site predominantly occupies the green zone (Site A) and the blue zone (Site B). 4
Plate 2: Site plan (Modified Stephenson Hamilton Risley drawing number al(05)0001 P02). The blue boundary shows the extent of the site ownership boundary. The redline boundary shows the extent of the application site (referred to as “the site” within this report). 5
Plate 3: Approximate Site Location Plan (excerpt from Enviro + Geo Insight Report) 6
Plate 4: Proposed Development Layout (Modified Stephenson Hamilton Risley drawing number al(05)0010 P02) 7
Plate 5: Artificial and Made Ground (based on excerpt from Groundsure Enviro + Geo Insight Report) 12
Plate 6: Superficial Geology (based on excerpt from Groundsure Enviro + Geo Insight Report) 13
Plate 7: Bedrock Geology (based on excerpt from Groundsure Enviro + Geo Insight Report) 14
Plate 8: UXO Risk Mapping (Zetica Online) 17

Appendices

Appendix A: Site Walkover Record and Photographs
Appendix B: Historical Mapping
Appendix C: Groundsure Enviro + Geo Insight Report
Appendix D: Consultants Coal Mining Report
Appendix E: Risk Assessment Methodology

Sites A and C Sites A and B (Application Site) Phase 1 Desk Study

Prepared By	Joseph Foster MSci (Hons), FGS, GMICE
Approved By	Dan Matthews BEng, CSci, CEnv, MIEnvSc
Report Reference	51146-CE-XX-XX-R-G-1001
Issued	03/07/2025
Status	P01 – Issue 1

1. Introduction

Civic Earth Limited was appointed by Civic Engineers on behalf of Wrexham County Borough Council to undertake a Phase 1 Desk Study and preliminary risk assessment for an area of the Wrexham Gateway Development (known as the "application site") in Wrexham (herein referred to as the site).

It is understood that the wider Wrexham Gateway Area comprises 3 areas, Labelled Site A, Site B and Site C within the Plan presented in Plate 1. This report relates to a parcel of land within the extents of Sites A and B, known as the "application Site" (herein referred to as "the site").

The aim of this report is to evaluate potential human health, environmental and geotechnical risks and constraints associated with the proposed development, including:

- Information obtained from a review of available historical mapping and an environmental disclosure report for the site;
- A summary of the anticipated ground conditions and associated geotechnical and geoenvironmental constraints based on review of available published and unpublished records;
- A preliminary qualitative contamination source-pathway-receptor risk assessment based on the available desk study information and the current proposed redevelopment plans; and
- Recommendations for ground investigation and further assessment, if required.

This document is intended to support the planning application for the development and to inform the scope for further site investigation, if required. It is assumed that ecological, flooding and archaeological desk studies/assessments will be undertaken by others and fall outside the scope of this report.

Plate 1: Site Plan (Modified Stephenson Hamilton Risley drawing number al(02)0001), the site predominantly occupies the green zone (Site A) and the blue zone (Site B).

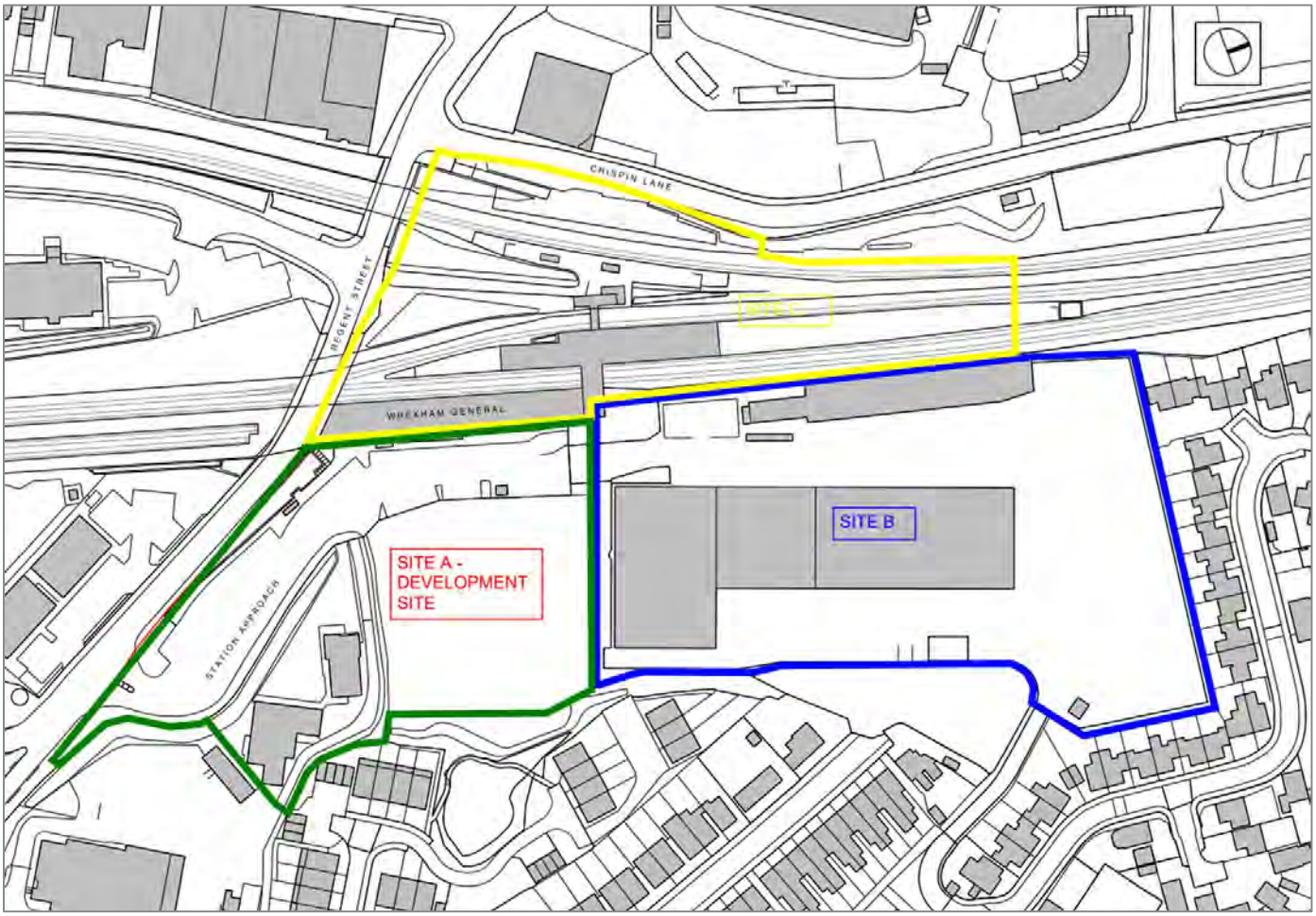
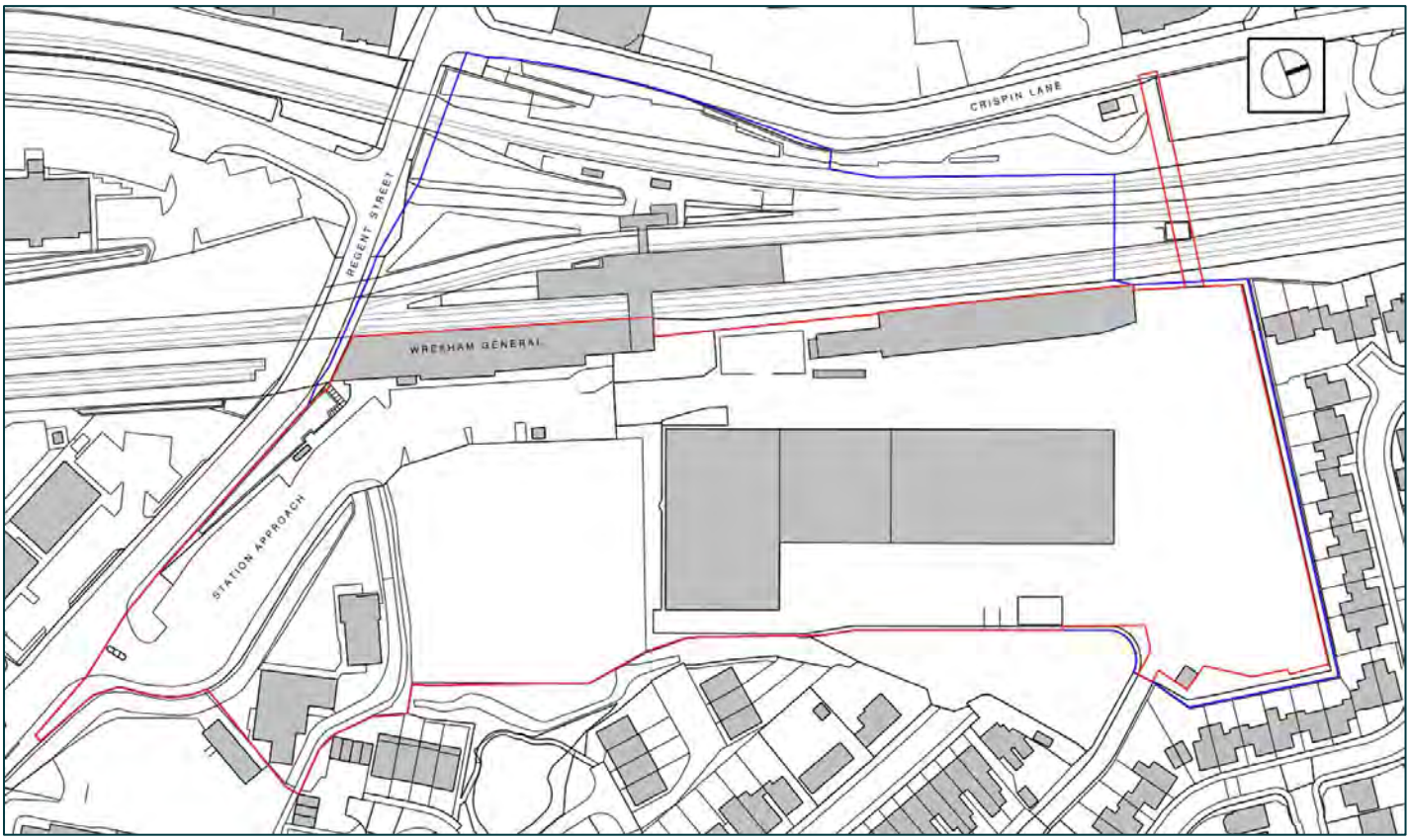


Plate 2: Site plan (Modified Stephenson Hamilton Risley drawing number al(05)0001 P02). The blue boundary shows the extent of the site ownership boundary. The redline boundary shows the extent of the application site (referred to as "the site" within this report).



2. Site Context

2.1. Site Location

The site is located off Regent Street (A541), to the West of Wrexham City Centre. The postcode for the site is LL11 2AA. The National Grid coordinates for the approximate centre of the site is 333026E 350853N and the site is approximately 2.85 ha in size. The site is bound to the north and northeast by residential housing along a road called Spring Gardens, to the east and southeast by a Royal Mail depot, residential housing and an unnamed pond along Grosvenor Gardens, to the south by Regent Street (A541) and a Royal Mail depot and to the west by part of Wrexham General Railway Station, the Shrewsbury to Chester Railway Line, the Borderlands Railway Line and associated earthworks and infrastructure. Beyond the railway to the west is Crispin Lane and the Racecourse Stadium (Wrexham Football Club). The site location is illustrated in Plate 3.

Plate 3: Approximate Site Location Plan (excerpt from Enviro + Geo Insight Report)

2.2. Site Description

A site walkover was carried out on 07 February 2025 by a consultant from Civic. Full details of the site walkover are included in the site walkover record and photographs included in Appendix A.

The southern portion of the site is occupied by areas of hardstanding and carparking associated with the Station Approach road, buildings to the southwest associated with Wrexham General Station and buildings, carparking and a public footpath to the southeast associated with Girlguiding and Scout groups. The central part of the site is occupied

to the west by hardstanding and carparking along Station Approach and Wrexham General Station buildings and to the east, it is occupied by cleared land (formerly a warehouse). The northern portion of the site is partially occupied by Network Rail/Transport for Wales land (northwest corner along location of proposed pedestrian footbridge), a former goods warehouse building to the west, warehouses formerly belonging to Jewson's builder's merchants and hardstanding used as a delivery/distribution yard and carparking. The site walkover also identified the presence of an above ground storage tank (AST) for UN1202 (gas oil/diesel), it is unknown if the tank is bunded, volume may potentially up to 1400L, it is possibly situated on top of either block paving or a concrete slab. The site layout is illustrated in Plate 3.

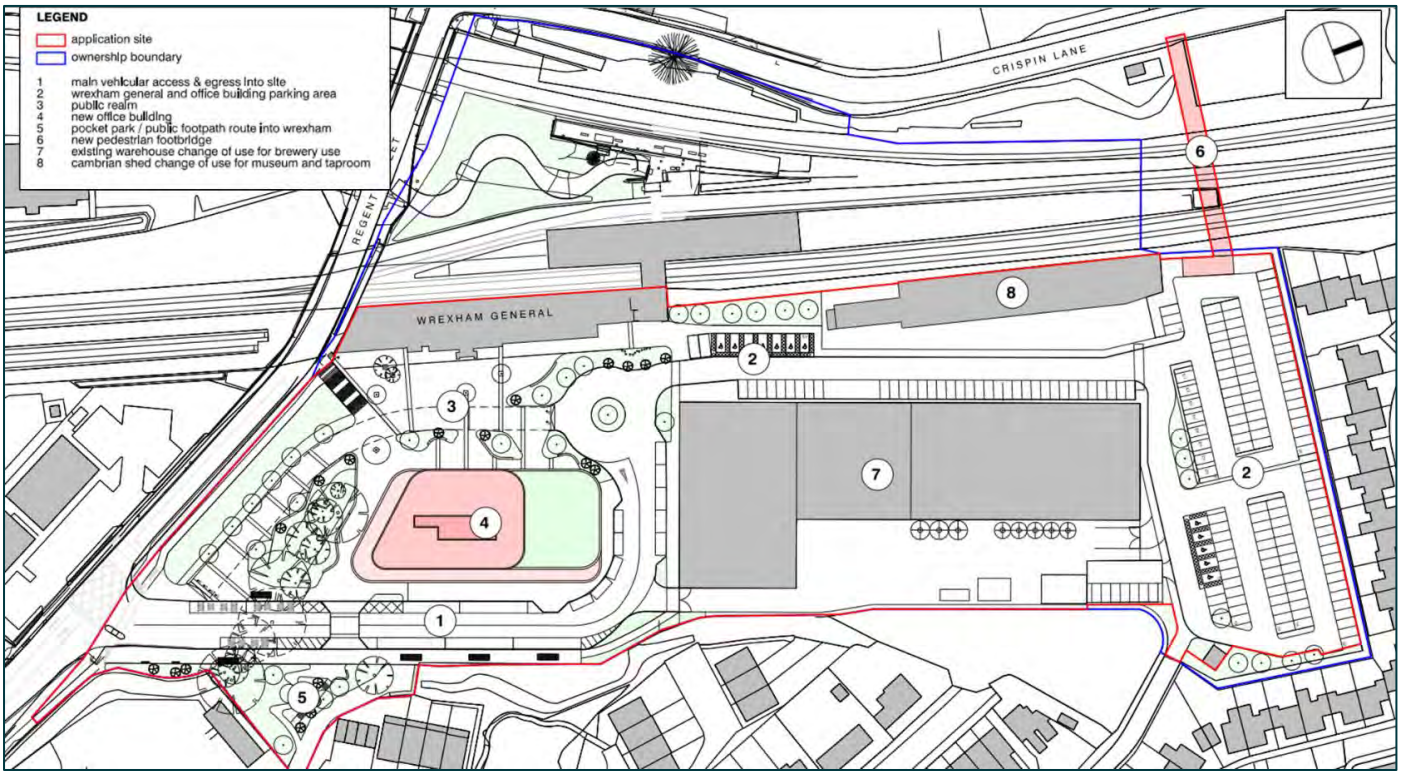
Several areas of worked ground exist across the site including a highways embankment supporting the A541, a ramp for the access road to the station entrance and an area in the east that is raised relative to the surrounding ground level.

The site is bounded to the north and northeast by the Shrewsbury to Chester and Borderlands railway lines and residential housing along Spring Gardens, to the east by residential buildings along Grosvenor Gardens and an unnamed pond and to the south by the A541 and associated highway embankment. The western boundary of the site is immediately bound by part of Wrexham General Station, the Shrewsbury to Chester and Borderlands railway lines, associated earthworks and Network Rail/Transport for Wales land.

2.3. Proposed Development

It is understood that the proposed development of Site A is to include the demolition of the on-site structures in the southeast corner (occupied by Girlguiding and Scout groups), the removal of some trees and some carparking, and the construction of a 4-storey high commercial building containing both offices and retail space, hardstanding in the form of new carparking, access roads and coach parking and the development of public open space. The proposed development of Site B is understood to consist of the conversion of the former Jewsons Warehouse into a brewery (with associated works including grain silos and apparatus) and the former Cambrian Sheds into a tap room/restaurant and museum for Wrexham Lager, with minimal external changes to the existing structures. Additionally, the current service yard for the former Jewsons Warehouse will be converted into carparking for both Wrexham General and Wrexham Lager, with a proposed pedestrian footbridge between the new carparking and Crispin Lane over the top of the railway line. The proposed site layout is illustrated in Plate 4. It is understood that some public realm development is proposed within Site C, the extent of which is currently unknown and outside the scope of this report.

Plate 4: Proposed Development Layout (Modified Stephenson Hamilton Risley drawing number al(05)0010 P02)



3. Historical Development

3.1. Sources of Information

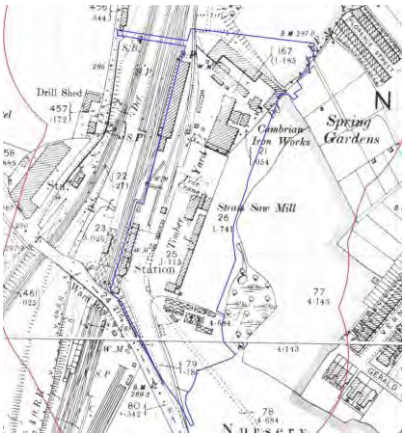
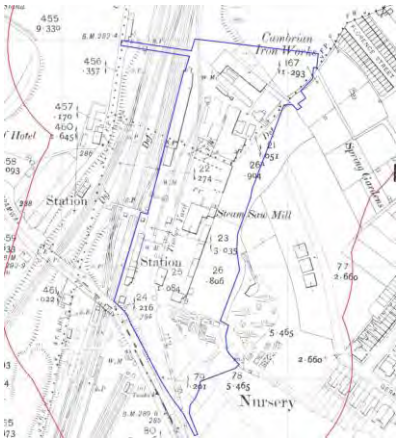
The historical development of the site has been traced from Ordnance Survey mapping (included in Appendix B) and historical satellite mapping included in the Groundsure Enviro + Geo Insight report (included in Appendix C). The distance stated are approximate.

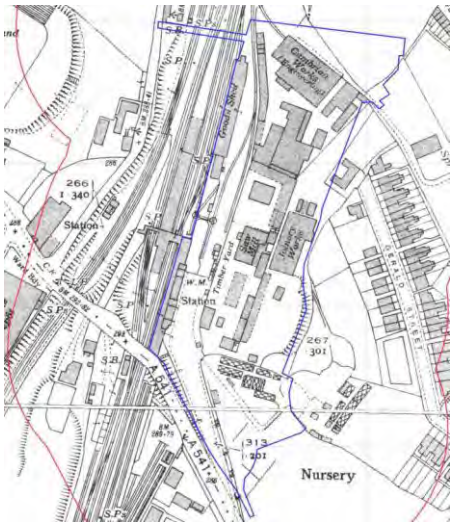
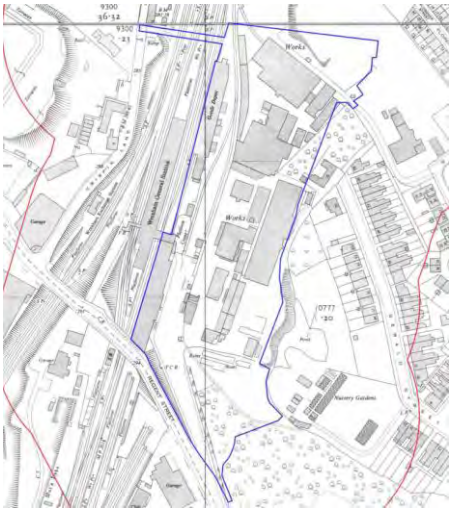
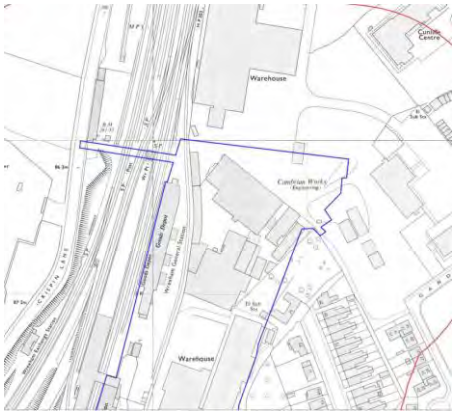
3.2. Site History

3.2.1. On-Site

The pertinent history of the site is summarised in **Error! Reference source not found.** along with relevant excerpts f rom historical maps and aerial photographs.

Table 1: Summary of Site History

1874 – 1:1,000	1899 – 1:2,500	1912 – 1:2,500
		
Earliest available mapping indicates the western half of the site consists predominantly of buildings, platforms, tracks and worked ground associated with *Wexham General Station*. Railway sidings are present, potentially also including a *turntable*, *Goods Shed* and a *travelling crane.* The eastern half of the site contains worked ground associated with the station approach and a *timber yard* and adjacent *steam saw mill.* A footpath crosses the southeastern portion of this area trending northwest to southeast, but the land is otherwise undeveloped, as is the land in the northeast of the site. What appears to be boggy ground with a watercourse and pond immediately bounds the eastern edge of the site.	By 1899, further buildings associated with the *steam saw mill* have been constructed along the eastern boundary of the *timber yard* (eastern side of the site). A previously undeveloped piece of land to the southeast of the site now contains a cluster of rectangular buildings, possibly associated with a *nursery*. Several buildings have been constructed on the previously undeveloped land in the northeast corner of the site associated with *Cambrian Iron Works*. The narrow section of the site boundary to the northwest associated with a proposed footbridge can be seen to be crossing railway sidings and tracks including earthworks associated with these, some small buildings are within the footprint of this area.	There is a new platform at Wrexham General, as well as a modification to the bridge linking the platforms, moving the bridge from the southern edge of the site along the A541, further north to the northern side of the station buildings. A tramway is shown along the A541/Regent Street.

1937 to 1939 – 1:2,500	1960 – 1:2,500	1963 to 1968 – 1:1,250 (Partial Coverage)
		
The number of buildings present within the timber yard has increased; this also shows the mapped extents of worked ground along the eastern boundary of the site. An additional building has been constructed in this area as well labelled *Joinery Works*. The number of buildings associated with *Cambrian Iron Works,* now *Cambrian Works (Engineering),* has increased and the configuration modified.	The number of buildings within the *timber yard* which has now been labelled as *Works* has increased. The buildings just south of this area previously assumed to be associated with a *nursery* are now labelled as *ruins*. The previous position of a possible turntable at the western edge of the site has been replaced by a *platform crane.* The number of buildings and their configuration at the location of *Cambrian Works (Engineering)* has been modified and the name *Cambrian Works (Engineering)* is no longer given. Some worked ground is now mapped in contact with the northern site boundary.	The ruins marked in the southeast corner of the site and some woodland has now been replaced by two new buildings marked as Scout and Guide HQ. The position of the footpath in this area has now been diverted north between the timber yard and new buildings. The area of worked ground associated with the station approach has been expanded/widened. A much larger building (possibly a warehouse) now occupies much of the former timber yard.
1968 to 1973 – 1:1,250 (Partial Coverage)	1989 to 1992 – 1:1,250 (Partial Coverage)	1992 to 1994 – 1:1,250 (Partial Coverage)
		
The former timber yard now appears to have been replaced by a larger building associated with a warehouse complex that is present within the northeast of the site. The number of railway sidings in this area appears to have decreased and the platform crane has now been removed. The extent of the station building appears to have been reduced along the central platform area. An *electrical substation* is now noted northeast of the *Warehouses*.	No notable changes from previous.	Sidings within the northeast of the site have now been removed. A number of buildings associated with the former *Cambrian Works* have now been removed and replaced with a building labelled *Depot*. An additional *Electrical Substation* is now present within the northeast corner of the site. The configuration of buildings adjacent to the northwest edge of the site have now changed.

2000 – Aerial Photography	2013 – Aerial Photography	2023 – Aerial Photography
		
Car parking can be seen to the south of the site along the edge of the station approach; the structures remain in a similar layout to previous mapping, with the exception of the warehouse buildings within the centre and north of the site, removal of the *Depot* building and Wrexham Exchange station building to the west of the site which has now been removed.	There appears to have been some modifications to the cut slope in the former location of the Wrexham Exchange station building.	The warehouse structure and yard present within the southeastern corner of the site has been demolished and removed.

3.2.2. Off-Site

The earliest available mapping from 1872 (1:10,560) indicates that the site is located within a semi-rural area on the northwestern edge of Wrexham, surrounded by farmland to the southwest and northwest, residential properties to the southeast, the *Racecourse Stand* and *Turf Hotel* to the west, railway tracks (part of the *Great Western Railway*) and sidings to the east and northeast and a *Nursery* and boggy ground to the southwest with a road running parallel to the south of the site (*Regent Street*). Immediately south of the road there are further railway tracks and sidings, beyond this approximately between 100m and 400m to the south and southeast is the edge of the centre of Wrexham with development along either side of *Regent Street (*trending roughly northwest to southeast*)* and either side of the *Great Western Railway (*trending roughly north to south*)*. This includes an *Infirmary*, churches and chapels, a *Militia Barracks*, a corn mill (*Cobden Mill*) and a *Union Workhouse*. There is also an unnamed watercourse running southeast to northwest approximately 250m south of the site. Approximately 5m north of the site there appears to be an unnamed pond, elongated north to south. East of this, approximately 10m northeast of the site, there is an area known as *Springfield* and *Spring Gardens* which appears to contain trees/orchards surrounding a building. Immediately east of this (~300m from the site) there is a *Cemetery*. A patch of marshy ground is present immediately adjacent to the eastern boundary of the site. Mapping from 1874 (1:2,500) shows railway sidings with two *Turntables* and a *Travelling Crane* associated with the *Steam Saw Mill*. This mapping also shows a small unnamed watercourse running roughly north to south and two unnamed ponds within the area of marshy ground immediately adjacent to the eastern boundary of the site.

By 1898-1899, additional housing/terraced housing along with new roads have been developed within 120m of the site, most notably, *Maesgwyn Road* to the west of the site, *Gerald Street* and *Vernon Street* to the east and *Florence Street*, *George Street* and *Garden Road* to the northeast. A church is now present approximately 200m northeast of the site, the *Cemetery* approximately 300m northeast of the site is now labelled *Disused*. Approximately 5m north of the northern boundary of the site the unnamed pond shown on previous mapping is now displayed as marshy ground, and worked ground is mapped to the west, between the boggy ground and railway line. A Drill Shed is now present along Crispin Lane within 60m of the western site boundary. A *Station* is now present approximately 50m west of the site (*Wrexham, Mold and Connahs Quay Railway).* Immediately south and southwest of Regent Road, along the southern edge of the site, occupying an area of land between the *Great Western Railway* and potentially new line for the *Wrexham, Mold and Connahs Quay Railway* worked ground has been marked, running north to south. A *Lager Beer Works* is present approximately 250m south of the site, with the position of additional railway lines and another brewery just beyond this, 400m southeast of the site. A *Fever Hospital* is present approximately 400m southwest of the site. The watercourse identified on previous mapping approximately 200m south of the site is now labelled as the *River Gwenfro*.

Mapping from between 1909-1910 and 1912 shows the surrounding land has been further developed. Approximately 60m to the east of the site, *Gerald Street* has been extended, with new housing being built along this. Beyond this, approximately 100m east of the site, a *Recreation Ground* has been added. The configuration and number of railway tracks immediately west of the site appear to have changed. *Oil Tanks* and a *Crane* are mapped within the railway sidings immediately south of *Regent Street* within approximately 30m of the southern boundary of the site. A *Tramway*

is present running along *Regent Street*. Two further *Tanks* are marked approximately between 200m and 250m southwest of the site. Beyond these, approximately 400m southwest of the site, a *Filter Bed* has been mapped next to the *Fever Hospital.* Approximately 90m east of the site, there is now a *Football Ground* near the *Racecourse*. The raised ground to the south of the site (approximately 30m distance) have now been labelled as part of *Wats Dyke*.

Mapping between 1937 and 1939 shows the development of further housing along the extension to *Gerald Street*, as well as new housing and roads *Windsor Drive* and *Belvedere Drive*, approximately 500m west of the site. 30m southwest of the site an *Omnibus Depot* is present, and buildings are being developed on *Wats Dyke* 30m south of the site. A *Printing Works* and *Technical Institute* are present 100m southeast of the site. The *Plas Maelor Institution* is present 500m southwest of the site. By 1949 the Fever Hospital has become the General Hospital. Further roads and residential housing have been built 60m west of the site and along *Gerald Street* and *Spring Gardens* east of the site. Larger *Stands* have been built at the *Football Ground*. Another *Omnibus Depot* is present 400m west of the site and a large building (labelled as *Works* on later mapping) has been constructed approximately 20m north of the site in an area previously mapped as worked ground.

Mapping between 1960 and 1964 shows the presence of Denbighshire Technical College *(Mining and Engineering Department)* approximately 200m west of the site. There is a *Garage* immediately west of the southwest corner of the site along Crispin Lane, another *Garage* approximately 50m south of the site on the area of worked ground labelled as *Wats Dyke*, two more *Garages*, a *Club* and a *Builders Yard* are present between 30 – 100m south of the site and a *Warehouse* is present approximately 90m southwest of the site. 100m south of the site there are further *Works* and a *Crane*. Between 100m and 200m southeast of the site there is a *Clinic*, *Surgery*, *Students Hostel*, *Scouts Hut* and the *North Wales Mine Workers Institute*. *Tanks* are labelled associated with the *Brewery* approximately 150m south of the site. By 1968 the *Sorting Office* immediately southeast of the site has been constructed and the *Printing Works* to the southeast has become a *Garage*. A *Fire Station* is present 230m southeast of the site and an *Electricity Sub Station* is marked approximately 170m southeast of the site along *Central Road*.

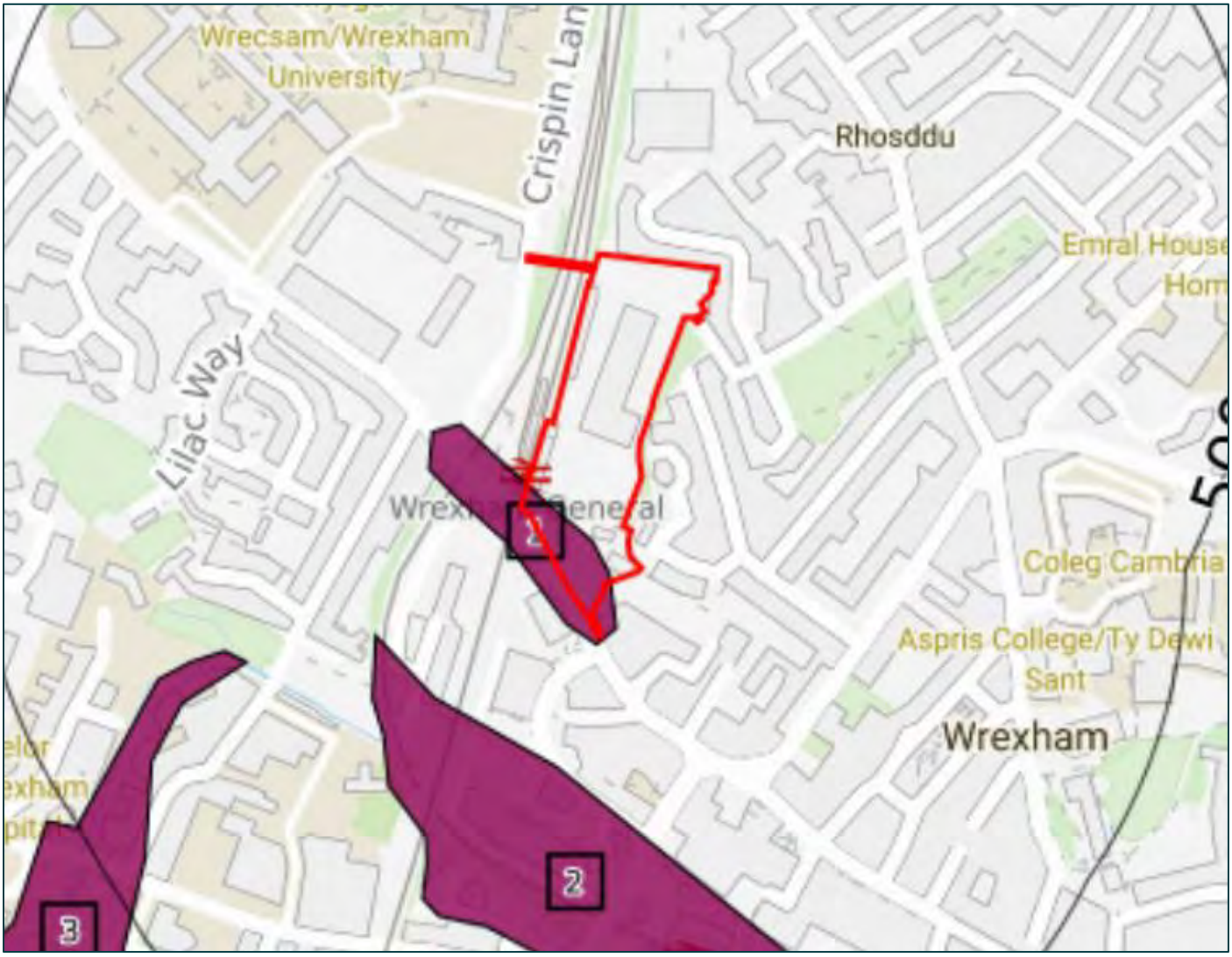
Post 1968, up to 1975 an *Electricity Sub Station* can be seen approximately 70m northeast of the site near *Springfield*. Immediately north of this there are two buildings labelled as the *Cunliffe Centre* and a *Warehouse*, the former has *Tanks* mapped adjacent to it. *Yale High School* has been constructed 150m north of the site adjacent to the railway. The *Warehouse* and *Omnibus Station* 60m southwest of the site have become an *Electrical Works* and a *Garage* respectively, the *Mines Rescue Station* is present just beyond this, 110m southwest of the site. An *Effluent Plant* with *Tanks* is present 230m southwest of the site and a site labelled *Works (Oil Compounds)* is present approximately 240m south of the site which contains multiple *Tanks*. The two *Tanks* mapped approximately 200m to 250m southwest of the site are no longer present. The *Denbighshire Technical College* is now the *North East Wales School of Art*. By 1988 and through to 1994, the Garage immediately present to the southeast corner of the site has now been labelled as a *Filling Station*. There is also an *Electricity Sub Station* at this location. The *Works (Oil Compounds)* site 230m south of the site is now labelled as *Disused*. Some Tanks and a Water Tower are present at the site of the *Maelor General Hospital* 250m southwest of the site. A *Scrap Yard* is now present on the site of the *Wats Dyke* worked ground approximately 50m south of the site.

4. Anticipated Ground Conditions

4.1. Published Geology

With reference to the British Geological Survey (BGS) website[1], BGS Sheet 121[2] and the Groundsure Enviro + Geo Insight report obtained for the site (included in Appendix B*)*, artificial Made Ground (Undivided) deposits are mapped beneath the southern edge of the site, along the edge of the area of worked ground associated with the A541 as illustrated in Plate 5. Further Made Ground is anticipated across the site associated with current and previous development.

Plate 5: Artificial and Made Ground (based on excerpt from Groundsure Enviro + Geo Insight Report)

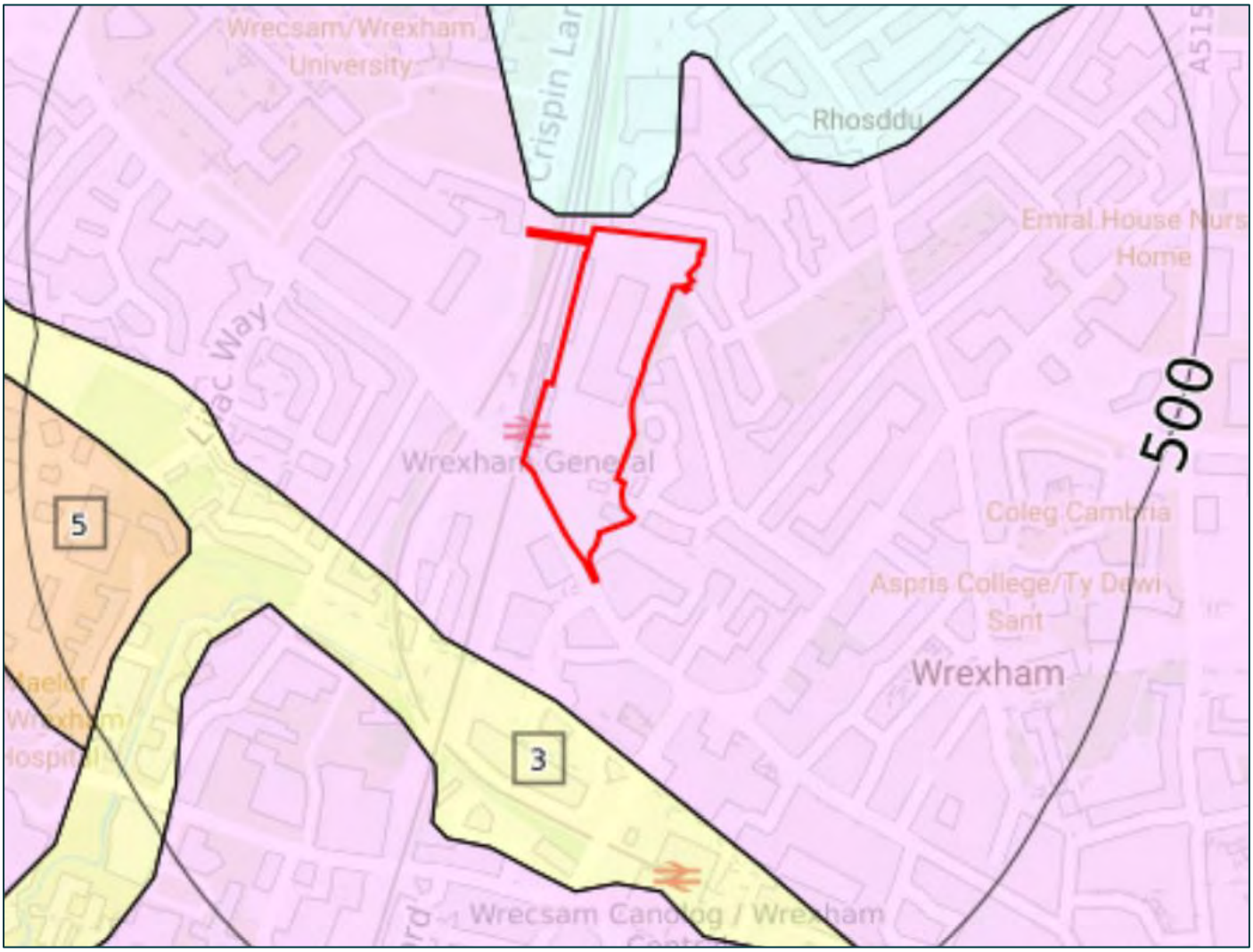


The site is mapped to be underlain by Devensian Glacifluvial Sheet Deposits. Within 500m of the site, there are additional superficial deposits including Devensian Glaciofluvial Till, Alluvium and River Terrace Deposits (undifferentiated). See Plate 6 below.

[1] British Geological Survey (BGS), www.bgs.ac.uk (Accessed February 2025)

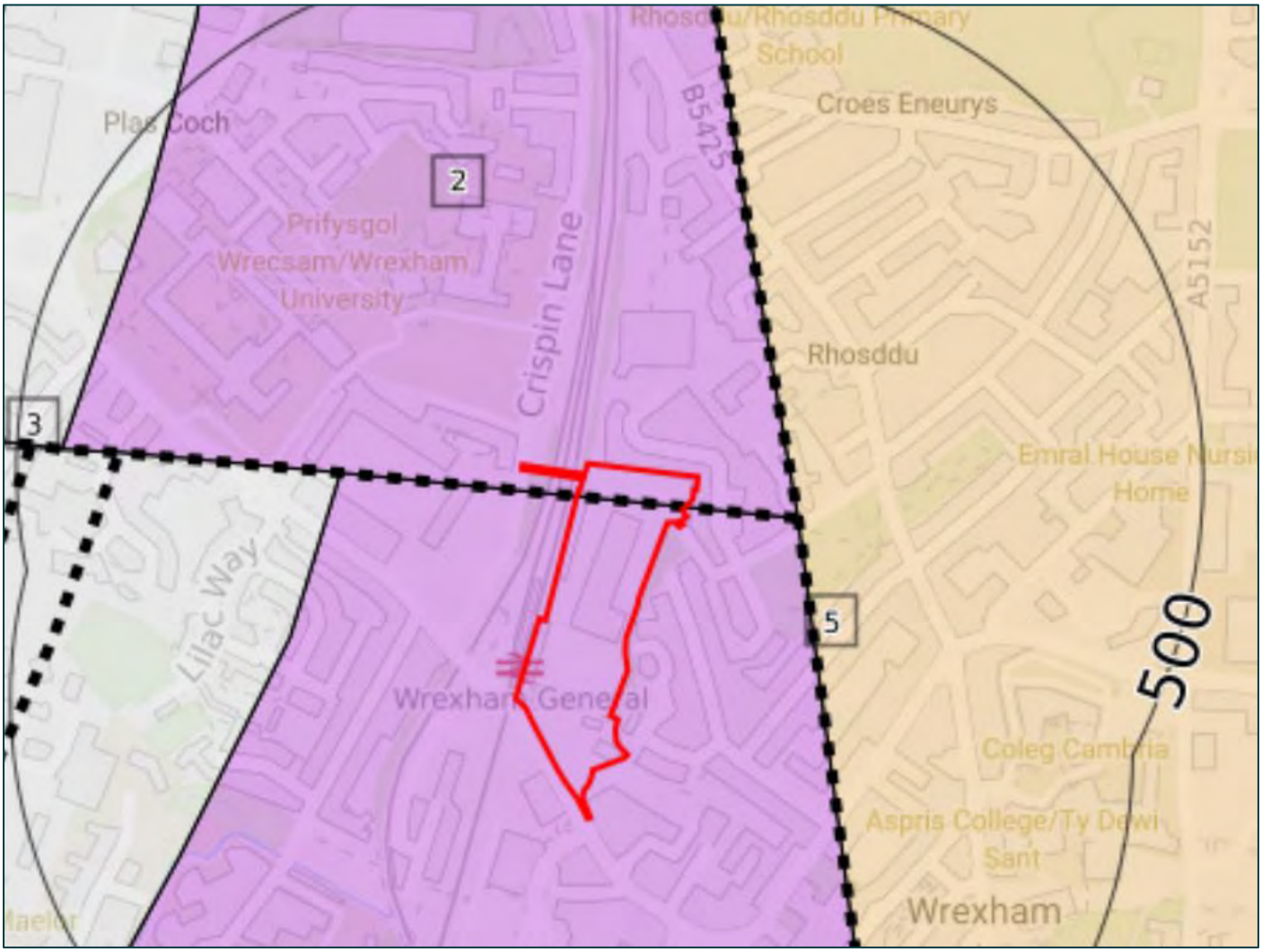
[2] BGS (1993) Wrexham, Sheet 121. Solid and Drift. 1:50,000.

Plate 6: Superficial Geology (based on excerpt from Groundsure Enviro + Geo Insight Report)



The superficial geology is mapped to be underlain by mudstone of the Etruria Formation (Westphalian in age). The Etruria Formation is then in turn underlain by the Pennine Lower Coal Measures Formation and Pennine Middle Coal Measures Formation (undifferentiated). Two faults pass on or within 500m of the site. The first trends east to west and is indicated to underly the northern portion of the site. This fault intersects a second fault approximately 190m east of the site which trends north to south. BGS 1:50,000 mapping[2] identifies this fault as the Wrexham Fault. The bedrock geology is illustrated in Plate 7.

Plate 7: Bedrock Geology (based on excerpt from Groundsure Enviro + Geo Insight Report)



With reference to the BGS Lexicon[1], the strata anticipated at the site are described as follows:

- **Made Ground**: Made Ground is an area where the pre-existing (natural or artificial) land surface is raised by artificial deposits. The purpose of the Made Ground is unspecified.
- **Glacifluvial Sheet Deposits:** Glacial sand and gravel.
- **Glacial Till Deposits:** Diamicton.
- **Etruria Formation:** Red, purple, brown, ochreous, green, grey and commonly mottled mudstone, with lenticular sandstones and conglomerates referred to as 'espleys'. Common pedogenic horizons, but coal seams are rare. Subordinate, lenticular sandstones and conglomerates commonly consist mostly of volcanic and lithic clasts.
- **Pennine Lower Coal Measures Formation and Pennine Middle Coal Measures Formation (undifferentiated):** Productive coal measures (mudstone, siltstone and sandstone), inferred outcrop of coal seams 375m west of the site.

With reference to the Groundsure Enviro + Geo Insight report obtained for the site, whilst deposits of artificial Made Ground (undivided) are indicated to be present along the southern edge of the site, Made Ground is anticipated to be more widespread across the development area given the historical development of the site. Whilst Glacial Till deposits are not indicated to outcrop within the boundary of the site, it is possible that these may underlie the Glaciofluvial Sheet deposits at depth, particularly to the north end of the site where the Till comes within 100m of the site boundary.

4.2. Unpublished BGS Geology

There are 16 historical BGS borehole records within 250m of the site (see Section 16.1 of the Groundsure report, Appendix C); five boreholes approximately 20m to 70m east and southeast of the site associated with Wrexham Post Office Sorting Office (all marked confidential), five boreholes approximately 20m to 50m south and southwest of the site (associated with the former *Filling Station* site), one borehole approximately 210m north of the site (former Yale School), one borehole approximately 240m south of the site and 4 boreholes approximately 220m to 240m west of the site (associated with previous residential development near *Maesgwyn Road*). The ground conditions recorded comprise a

variable thickness of Made Ground (containing obstructions) overlying 'Dense sands, gravels and cobbles' (considered likely to represent the Glaciofluvial Sheet Deposits) within the locations between approximately 20m and 50m south of the site. Within the locations between approximately 220m to 240m west of the site, the ground conditions comprise a variable thickness of Fill and Soil (potential Made Ground) overlying "Brown Clayey Sand and Gravel" over "Brown Sand and small to large Gravel" (considered likely to represent the Glaciofluvial Sheet Deposits). Two of the boreholes within this cluster of locations to the west identify "brown silty stoney clay" below approximately 3.3mbgl (considered likely to represent Glacial Till). None of the borehole records within 250m of the site have been drilled into bedrock, however, one borehole (the location approximately 207m north of the site) notes "Drift to 30'" (30 feet, approximately 9.144mbgl) and "Rockhead at <72.68mOD".

4.3. Surface Mining and Ground Workings

There are 30 records of historical surface ground workings relating to unspecified pits, cuttings, unspecified ground workings, unspecified heaps and ponds between 3m and 209m of the site. There are no records within 1000m of the site relating to historical underground workings. There are 9 records both on and within 1000m of the site for the potential for historical non-coal mining. The records for historical non-coal mining includes 2 records for vein minerals which considers underground mine workings to be uncommon and the potential for difficult ground conditions unlikely, the remaining 7 records are for iron ore (bedded) which states underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards, however, potential for difficult ground conditions are unlikely.

There are no recorded natural cavities or mining cavities within 500m of the site. There are two records of reported recent incidents. The first is of a sinkhole from media reports approximately 190m northeast of the site on Rhosddu Road dated 02/06/2021 with an estimated diameter of 0.5m. The record description reads "Sink hole appeared on Rhosddu Road, the council were quick to patch up the hole but continued to sink throughout the day.". The second is of a sinkhole from media reports approximately 440m east of the site on Foster Road dated 29/07/2024 of an unknown diameter. The record description reads "Repair works are taking place after a sinkhole emerged.".

4.4. Coal Mining

The site is located within a Coal mining Reporting Area as defined by the MRA[3]. A Consultants Coal Mining Report has been obtained for the extent of the site within Sites A and B, which is included in Appendix C. The report concludes that:

- There are two records of past underground mining related to the Quaker coal seam north and northwest of the site at depths of between approximately 325m and 350m depth. The seam was worked up until 1921.
- There are two records of past underground mining related to the Main coal seam to the west of the site and beneath the site at depths of approximately between 350m and 375m depth. The seam was worked up until 1917.
- There are no probable unrecorded shallow workings or spine roadways at shallow depth identified.
- There are no mine entries recorded within 100m of the site.
- There are no outcrops recorded within the site boundary.
- No opencast mines are recorded within 500m of the site.
- No MRA managed tips are recorded within 500m of the site.
- There are four abandoned mine plan catalogue numbers that intersect the site boundary.

Based on the information provided within the Consultants Coal Mining Report, it is considered that the potential risk from historical coal mining activity is likely to be low, noting that the worked seam recorded beneath the site is approximately 325m below ground level. However, given the presence of workings beneath the site and available abandonment plans t is recommended that a desk-based coal mining risk assessment is undertaken, including obtaining and reviewing the abandoned mine plans to evaluate the potential risk from mining.

4.5. Railway Infrastructure

4.5.1. Historical Railway Infrastructure

With reference to the Groundsure Enviro + Geo Insight report (Appendix C), there are 23 records of historical railways and railway sidings within the site boundary and a further 68 records within 250m of the site, the closest of which are located between 1m and 10m north and southwest of the site. There are 3 records for disused historical railways identified between 140m and 230m south of the site.

Additionally, there is one record of tramway sidings which has been identified 190m west of the site.

4.5.2. Network Rail Infrastructure

Active Network Rail assets are located within the site boundary within cuttings and with platforms and stairs relating to Wrexham General Station. It is noted that a Basic Asset Protection Agreement (BAPA) would likely be required for

[3] https://datamine-cauk.hub.arcgis.com/ (Accessed July 2025)

proposed site investigation works and the proposed construction works due to the presence and proximity of the Network Rail Infrastructure.

4.6. Hydrology and Hydrogeology

The Environment Agency (EA) has produced an aquifer designation system consistent with the requirements of the Water Framework Directive. The designations have been set for superficial and bedrock geologies and are based on the importance of aquifers for potable water supply and their role in supporting surface water bodies and wetland ecosystems. The Glaciofluvial Sheet Deposits are designated as a Secondary A aquifer unit. The Glacial Till is designated a Secondary Undifferentiated aquifer. The Etruria Formation and the Pennine Lower Coal Measures Formation and Pennine Middle Coal Measures Formation (undifferentiated) are designated as Secondary A aquifer units[4].

The site is not located within a groundwater Source Protection Zone (SPZ). There are 4 groundwater abstraction records reported within 2km of the site located approximately 320m west, 350m west, 350m west and 1540m east. The three abstractions to the west of the site are related to process water (most likely for brewing purposes) and was last updated in 1970 so are no longer deemed to be active. The abstraction to the east was related to the dewatering of the Salop Formation with the license expiring in March 2021. There are 8 surface water abstractions within 2km of the site, one relating to effluent/slurry dilution, one noted as unknown (impounding) and the remaining 6 relating to direct spray for irrigation, all of which were abstracted from the River Gwenfro or a tributary of the River Gwenfro between 480m and 1460m from the site.

The nearest surface water body to the site is Afon Gwenfro (River Gwenfro) which is located 195m south of the site. The catchment for the Gwenfro forms part of the Water Framework Directive (WFD) catchment for Clywedog – Dee and covers the site. The Dee Carboniferous Coal Measures WFD groundwater body is also present on site.

[4] https://magic.defra.gov.uk/MagicMap.html (Accessed July 2025)

4.7. Ground Hazards

The risks associated with potential geological hazards at the site have been assessed using the Enviro + Geo Insight report and are summarised in Table 2.

Table 2: Geological Hazards

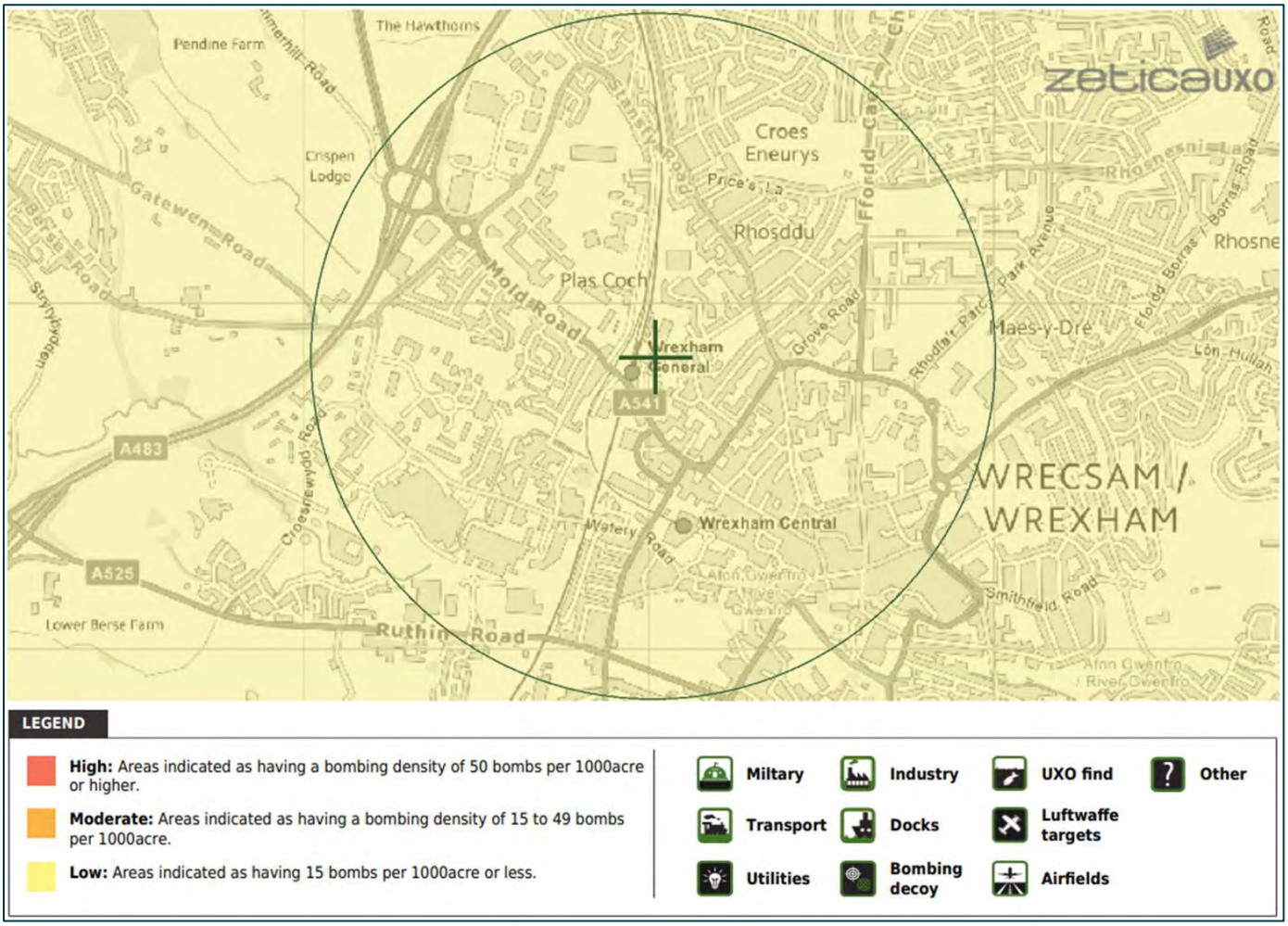
Hazard	Risk
Shrink-swell clays	Negligible (very low if Till is encountered)
Running Sands	Very low
Compressive Deposits	Very low
Collapsible Deposits	Very low
Landslides	Very low
Ground Dissolution	Negligible

4.8. Unexploded Ordnance (UXO)

A review of publicly available risk mapping[5] indicates that the site is located within an area of low hazard from Unexploded Bombs (UXB) due to WWII bombardment, as illustrated in Plate 8.

During WWI the Cambrian Iron Works to the north of the site was used to manufacture munitions. Therefore, it is recommended that Preliminary UXO Risk Assessment be undertaken[6].

Plate 8: UXO Risk Mapping (Zetica Online)



[5] https://zeticauxo.com/guidance/risk-maps/ (Accessed July 2025)

[6] https://historypoints.org/index.php?page=powell-motorbike-factory-site-wrexham (Accessed February 2025)

5. Environmental Setting

5.1. Environmental Disclosure Report

The Groundsure Enviro + Geo Insights report (included in Appendix B) has been used to provide information on the environmental setting of the site, to assist in identifying possible sources of ground contamination. A summary of the pertinent records generally within 500m from the site is provided below in Table 3. For full details the Groundsure Enviro + Geo Insights reports should be referred to. The records generally reflect the key pertinent features identified on the historical mapping. It is noted that the distances stated are approximate.

Table 3: Summary of Pertinent Information from the Environmental Disclosure Report

Environmental Record	Record Details	Distance from Site
Historical Industrial Land Uses	43 records of historical industrial land uses including unspecified commercial/industrial, unspecified factory, unspecified works, steam saw mill, timber yard, railway sidings, railway building, railway station, iron works, sawmill, goods shed, nursery. 188 records within 500m including unspecified commercial/industrial, unspecified depot, unspecified ground workings, unspecified pit, unspecified heap, unspecified works, unspecified tank, railway station, railway sidings and buildings, railway land, unspecified depot, brewery/beer works, barracks, infirmary, nursery, iron works, cuttings, fire station, corn mill, hospital, omnibus depot, unspecified mill, fever hospital, general hospital, unspecified workhouse, union workhouse, cemetery, disused cemetery, rope walk, goods yard, bus station/depot, filter bed, locomotive works, malthouse, carriage shed, refuse heap, unspecified factory, junction station, drill shed, brick field and police station.	On site Various within 500m
Historical Tanks	50 records of tanks and unspecified tanks, the closest of which is recorded 100m south of the site. 5 records of oil tanks and pump and tank, the closest of which is recorded 23m south of the site	Various within 500m Various within 500m
Historical Energy Features	2 records of electricity substations between 1968 – 1990 and 1988 – 1990. 28 records of an electricity substation, the closest of which are recorded 37m south of the site.	On site Various within 500m
Historical Petrol Station	1 record of a filling station 11m south of the site.	11m
Historical Garages	35 records of a garage, the closest of which are recorded 9m southwest of the site. 16 records of an unspecified depot, omnibus depot, bus depot, bus station, a carriage shed and locomotive works, the closest of which is recorded 11m north of the site.	Various within 500m Various within 500m
Historical or Active Landfills	No records identified within 500m of the site.	-
Historical Waste Sites	2 records of a scrap yard dated 1989 and 1992.	34m W
Licensed Waste Sites	4 records of a Metal Recycling Site (Vehicle Dismantler) and 2 records of an unknown waste site.	44m W
Waste Exemptions	10 records of using waste exemptions for use of waste for a specified purpose, use of waste in construction, spreading of plant matter to confer benefit, use of mulch, spreading waste on non-agricultural land to confer benefit. 6 records of treating waste exemptions for sorting and de-naturing of controlled drugs for disposal and for the treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising. 1 record of a storing waste exemption for storage of waste in secure containers.	Various within 500m Various within 500m 455m E
Recent Industrial Land Uses	2 records of public transport, stations and infrastructure and infrastructure and facilities on site. 32 records of industrial land uses relating to infrastructure and facilities, industrial features, industrial products, repair and servicing, motoring and consumer products.	On site. Various within 250m

Environmental Record	Record Details	Distance from Site
Current or Recent Petrol Stations	1 record of a Shell petrol station. 2 records of obsolete petrol stations. (It is noted that an above ground gas oil/diesel tank was observed in the Site B area during the site walkover).	311m W 12m SW, 191m NE On site
Control of Major Accident Hazards (COMAH)	No records identified within 500m of the site.	-
Hazardous Substance Storage / Usage	No records identified within 500m of the site.	-
Licensed Pollutant Releases	1 record of unloading petrol into storage at a service station. 2 records of dry cleaning.	312m W 296m E, 367m SE
Radioactive Substance Authorisations	1 record for the keeping and use of radioactive materials. 2 records of disposal of radioactive waste.	272m W
Licensed Discharge Consent to Controlled Waters	3 records of unspecified discharges – into an unnamed tributary of the River Gwenfro and the River Gwenfro. 4 records of unspecified discharges and trade discharges – unspecified – Wrexham Lager Brewery into the River Gwenfro 2 records of sewage discharges – pumping station – water company into the River Gwenfro 1 record of a sewage discharge – stw storm overflow/storm tank – water company into the River Gwenfro 1 record of a miscellaneous discharge – emergency discharge – into the River Gwenfro	246m W, 299m SW, 412m W 201m SW 270m SW, 279m SW 270m SW 279m SW
Pollution Incidents to Controlled Waters	1 record of a multiple pollutants – 2 pollutants including smoke pollution incident in 2014 resulting in an unspecified impact to water. 1 record of atmospheric pollutants and effects – smoke pollution incident in 2002 resulting in minor impact to water.	196m SE 492m SE
Environmental Designations	The site is located within an SSSI Impact Risk Zone – further details are included within the Groundsure Enviro + Geo Insights report.	-

5.2. Radon

With reference to the Groundsure Enviro + Geo Insights report, the site lies within an area where between 1% and 3% of properties are estimated to have a radon level at or above the action level. No radon protective measures are therefore considered necessary. It is noted however that if new basements are proposed which shall be occupied or part occupied, current guidance requires monitoring for radon, irrespective of the initial risk assessment. This should be considered in terms of the lower ground floor levels and whether they constitute basements.

6. Preliminary Risk Assessment

6.1. Introduction

Historical contamination of land may present harm to human health and the environment. Current UK legislation stipulates that the risk associated with potential land contamination is assessed and remediated, if necessary. Under the Town and Country Planning Act 1990 (as amended), potential land contamination is a "material planning consideration" together with the National Planning Policy Framework[7] (revised in July 2023), which means that a planning authority must consider contamination when they prepare development plans or consider individual applications for planning permission. It is the responsibility of the developer to carry out the remediation where it is required and satisfy the Local Authority that the remediation has been carried out as agreed.

Additionally, Part 2A of the Environmental Protection Act 1990 requires that a significant source-pathway-receptor linkage exists to determine a site as contaminated land. This means that there has to be a contaminant present, a receptor that could be harmed by this contaminant, and a pathway linking the two. Part 2A deals with the contamination risk from a site in its current use, however, the planning system requires that the proposed use is considered. Where remediation is carried out under the planning system, it should be ensured that the site is in such a condition that it would still not meet the definition of contaminated land under Part 2A.

6.2. Preliminary Conceptual Site Model

A preliminary conceptual model has been compiled for the site with respect to the proposed development to identify the potential sources of contamination and the associated potential contaminant linkages. This model also informs the potential need for further investigation at the site.

6.2.1. Potential Sources

Potential contamination sources can include both current and historical activities on-site and off-site in the surrounding area. The potential sources outlined in Table 4 have been identified at the site.

Table 4: Potential Sources

Hazard	Description
Historical and current land uses – On-site	Historical mapping indicates the site was primarily occupied by railway stations and associated infrastructure (including sidings, platforms, bridges, tracks, cut slopes), steam saw mill, timber yards, drill shed, iron works (which was also used to manufacture munitions during WWII), unspecified commercial /industrial buildings and/or warehouses, groundworks, carparking, goods sheds, a joinery, electrical substations, a nursery and Girl Guiding and Scouts huts. Site walkovers have also noted the presence of an above ground storage tank for gas oil/diesel within Site B. These current and historical activities may be potential sources of a wide range of contaminants including heavy metals, hydrocarbons and asbestos containing materials.
Historical and current land uses – Off-site	Historical and current off-site industrial uses include breweries, oil tanks, unspecified tanks, railway lines and stations, locomotive works and carriage sheds, goods sheds, railway sidings, electrical substations, unspecified factories, joineries, unspecified works, steam saw mills, fire stations, petrol stations and garages, omnibus and bus depots, unspecified depots, fever and general hospitals, union workhouse, corn mill, unspecified ground workings and pits, unspecified heaps, malthouse, unspecified commercial/industrial, cemeteries and disused cemeteries and filter beds. These historical industries and uses could be potential sources of a wide range of contaminants including heavy metals, hydrocarbons, asbestos containing materials and PCBs.
Made Ground – On-site and Off-site	Potential for Made Ground to be present due to historical development on and off-site, and a number of cuttings and embankments, ground workings and pits and heaps which could be a potential source of a wide range of contaminants including heavy metals, hydrocarbons and asbestos.
Ground gases / vapour	Made Ground, contaminants from former land uses and ground workings identified above, and natural soil and rock can be a source of ground gas where an appreciable organic content is present. If present, degradation of hydrocarbons/organic chemicals can also produce organic vapours and ground gases.
Groundwater	Perched water in the Made Ground and Glaciofluvial Sheet Deposits may be a source of contamination resulting from impacts from the previous on and off-site sources. Potential contaminants in water would be similar to those potentially present in the soils, as discussed above.

6.2.2. Potential Pathways

The potential migration pathways that may be present are outlined in Table 5, considering a proposed commercial and public open space end use.

[7] Ministry of Housing, Communities and Local Government (2023). National Planning Policy Framework

Table 5: Potential Pathways

Hazard	Description
Ingestion and inhalation	Contamination within the Made Ground can result in the ingestion or inhalation of contaminated soils (and asbestos fibres if present) where soil is exposed and inhalation of ground gases/vapours.
Direct / dermal contact	Direct/dermal contact with contaminated soils or shallow groundwater can result in the uptake of contaminants through the skin (where soil is exposed) or permeation of contaminants through structures.
Root uptake	Uptake of phytotoxic contaminants by plants and vegetation within areas of soft landscaping.
Lateral and vertical migration	Leaching from potential contamination in the soils may impact the water in the Made Ground and natural soil and rock. It is noted the nearest identified surface water receptor is the River Gwenfro some 195m south of the site, a portion of which is understood to be within a culvert/underground.
Ground gas / vapour migration	Lateral migration of ground gases and/or vapours through the soil matrix could lead to accumulation within buildings, posing a risk of asphyxiation or explosion.
Drainage and services	Could provide a preferential pathway for dissolved phase contaminant migration and/or ground gases/vapour transport.
Foundations (shallow, piled)	Could provide a preferential pathway for dissolved phase contaminant migration and/or ground gases/vapour transport.

6.2.3. Potential Receptors

The potential receptors have been identified based on the proposed commercial and public open space end use of the site and are outlined in Table 6.

Table 6: Potential Receptors

Hazard	Description
Future site users	Users and occupiers are considered to be at risk from possible contamination associated within shallow soils and groundwater, if source and pathway are present.
Construction workers	Considered to be at risk from potential contamination within soils and groundwater during groundworks. Such persons are likely to be in close contact with potentially contaminated materials on site associated with the current and historical uses of the site and surrounding area.
Off-site residents	Potentially at risk from potential contaminants in wind-blown dust and potential odours/vapours generated during development works.
Controlled waters	Considered to be at risk from the leaching and vertical/lateral migration of contaminants from potentially contaminated soils and groundwater. These include the River Gwenfro (part of the Water Framework Directive (WFD) catchment for Clywedog – Dee) and the Secondary A and Undifferentiated aquifers of the Dee Glaciofluvial Sheet Deposits, Till Deposits, Etruria Formation and Pennine Lower Coal Measures Formation and Pennine Middle Coal Measures Formation (undifferentiated). Migration may be reduced in the event that cohesive horizons in the Made Ground and cohesive Glacial Till are present and are both laterally and vertically extensive.
Buildings / Infrastructure / services	Potentially at risk from ground gas migration, aggressive ground conditions and contaminants that may permeate through underground services such as water supply pipes.
Plants and vegetation	Primarily at risk from phototoxic contaminants such as boron, copper, nickel and zinc.

6.2.4. Preliminary Risk Assessment

A preliminary qualitative risk assessment has been undertaken for the site based on the findings of the conceptual site model and the potential contaminant linkages that may exist at the site in accordance with the October 2020 Land Contamination Risk Management Guidance (LCRM)[8]. The magnitude of the risks associated with potential contaminant linkages has been assessed using criteria broadly based on those presented in CIRIA Report C552[9], and are summarised in Table 7. The risk assessment methodology is presented in Appendix E.

[8] Environment Agency (2020). Land Contamination Risk Management (LCRM).

[9] CIRIA (2001) Contaminated Land Risk Assessment. A guide to good practice. C552

Table 7. Preliminary Qualitative Risk Assessment

Potential Source/Medium	Potential Exposure Route	Potential Receptor	Severity	Probability	Risk Rating	Comments
Explosive/ asphyxiating gases/vapours from underlying soils and bedrock (Made Ground, the Etruria Formation, Coal Measures) and potential on and off-site sources	Migration of gases and vapours through the surface via permeable soils and drainage & services	Internal building spaces & future occupiers	Medium	Likely	Moderate	Variable thicknesses of Made Ground anticipated to be present from previous phases of development/historical development and land usage. *Further assessment of underlying geology and ground gas monitoring recommended to assess current ground gas regime.*
Organic/ inorganic contaminants within underlying soils and perched groundwater within the Made Ground associated with current and historical on-site developments including railway land, ground works and industrial land uses.	Direct/indirect ingestion of soil and dust, inhalation of particle vapours and asbestos fibres and dermal contact	Construction workers	Medium	Likely	Moderate	Potential for shallow soils to be impacted with asbestos and/or contaminants due to past commercial/industrial use, groundworks and development. Anticipated that risk could be mitigated by appropriate site practices including the use of appropriate PPE. *Further chemical analysis and assessment of shallow soils required to assess risk.*
		Future site users	Medium	Likely	Moderate	Potential for shallow soils to be impacted with asbestos and/or contaminants due to past commercial/industrial use, groundworks and development. *Chemical analysis and assessment of shallow soils required to assess risk.*
		Off-site residents/users	Medium	Low likelihood	Moderate/low	Potential for shallow soils to be impacted with asbestos and/or contaminants due to past commercial/industrial use, groundworks and development. Anticipated that appropriate practices can be adopted to prevent dust generation during construction e.g., dampening down and covering stockpiles etc.
	Direct contact with underground structures and services	Buildings and structures, buried services	Mild	Likely	Moderate/low	Buried concrete to be designed as appropriate for ground conditions. Potential for contamination within Made Ground where new buried water supply pipes will be laid. *Chemical assessment of soils required to assess risk.*
	Root uptake	Plants and vegetation	Minor	Likely	Low	Potential for shallow soils to be impacted with asbestos and/or contaminants. It is assumed that a suitable growth medium will be required for new areas of soft landscaping to mitigate risks to receptors. *Chemical analysis and assessment of shallow soils required to assess risk.*
	Vertical and lateral migration, pathways created during construction activities	Local surface water bodies (*River Gwenfro)*	Medium	Low likelihood	Moderate/Low	Potential for shallow soils and perched water to be impacted with contaminants. The nearest identified surface water receptor is the River Gwenfro, approximately 195m south. It is understood that a portion of the River Gwenfro is culverted/underground which may limit contaminant migration. In addition, the current and proposed buildings and hardstanding across some of the site may limit leaching potential. *Analysis and assessment of soils and groundwater required to assess risk.*

Potential Source/Medium	Potential Exposure Route	Potential Receptor	Severity	Probability	Risk Rating	Comments
		Secondary A aquifer and Secondary Undifferentiated aquifer (*Glaciofluvial Sheet Deposits and Glacial Till*)	Medium	Likely	Moderate	Potential for shallow soils and perched water to be impacted with contaminants. *Analysis and assessment of soils and groundwater required to assess risk.*
		Secondary A aquifer (Etruria Formation, Pennine Lower Coal Measures Formation and Pennine Middle Coal Measures Formation (undifferentiated))	Medium	Low Likelihood	Moderate/low	Potential for shallow soils and perched water to be impacted with contaminants; Anticipated that piled foundations will be terminated within the Etruria Formation and/or a suitable piling technique (e.g. CFA piling) will be adopted to prevent creation of new potential pathways for contamination. *Analysis and assessment of soils and groundwater required to assess risk.*

7. Geotechnical Preliminary Risk Assessment

Based on the desk study review of the ground model for the proposed development of the site, the potential geotechnical risks are outlined in Table 8.

Table 8. Preliminary Geotechnical Risk Assessment

Geotechnical Hazard	Consequence and Impacted Parties	Risk Rating	Description
Third party infrastructure – NR land including buried services and buried and overhead services	Access restrictions for ground investigation, proposed below ground infrastructure and damage to third party infrastructure	High	Operational NR railway lines and land located within the site boundary and adjacent to the site. Proposed site investigation works and construction works likely to require Network Rail liaison and Basic Asset Protection Agreement (BAPA) for the works. Ground movement assessment may be required to confirm construction works will not have a detrimental impact on third-party infrastructure.
Historical and existing buildings and structures, retaining walls, voids	Access restrictions for ground investigation and below ground obstructions including existing and historical foundations and retaining structures.	Moderate	Existing and historical structures and foundations including the current structure along with its foundations. If still present, obstructions may affect activities such as piling, excavations and earthworks as well as the design and construction for the proposed structures. Hard material could potentially be processed and reused as engineered fill. In addition, the existing and historical structures and foundations provide a constraint for ground investigation. Depending on the findings and proposed development plans with respect to formation levels, further analysis/assessment may be required.
Variable thickness of Made Ground	Damage to proposed structures through settlement, insufficient bearing capacity, potential for differential settlement	Moderate	Various construction and demolition of buildings has historically taken place within the site and there is therefore the potential for a variable thickness of Made Ground that will need to be considered in terms of foundation and pavement design as well as compression / heave associated with the cohesive deposits. Potential for variable thickness and composition of Made Ground that will need to be considered. Investigation required to obtain geotechnical data on underlying ground conditions to determine geotechnical design parameters for proposed structures, pavements, car parks and roads.
Slope stability	Modification to existing raised earth and embankments, cuttings and associated drainage from proposed development/construction leading to instability of existing and/or modified slopes	Moderate	Existing raised earth/embankment identified beneath development area within Site A. Ground level under extent of former timber yard is raised compared to the land adjacent to Gerald Street, east of the site. There is a pond located at the toe of this earthwork and loading the earthwork and/or modifying existing drainage patterns towards this pond may disturb the equilibrium of the slope stability leading to failure. Additionally, highways embankments exist along the Station Approach Road, A541 and cuttings within the existing Network Rail land. Site investigation to determine ground conditions, soil properties and groundwater will be required, followed by a slope stability assessment.
Aggressive ground conditions	Structural damage to foundations	Moderate	Investigation recommended to obtain soil and groundwater samples for sulphate and pH analysis, to allow concrete design assessment to be undertaken.
Unknown ground and groundwater conditions	Damage to infrastructure, unsafe or uneconomic design, reduced bearing capacity of shallow foundations / piled foundations.	Moderate	The thickness and variability of the ground and groundwater conditions is unknown. Investigation of shallow and deep soils and groundwater level required to obtain information for geotechnical design.
Shallow groundwater	Dewatering possibly required during construction if encountering a shallow water table.	Moderate/Low	Investigation of shallow groundwater conditions required to confirm groundwater profile.
Unexploded Ordnance	Damage to infrastructure, utilities and loss of life.	Moderate/Low	Zetica Risk Map suggests low risk from UXO. However, it is understood that the Cambrian Iron Works in the northern part of the site was used to manufacture munitions during WWI. A Preliminary UXO Risk Assessment is recommended, which may require further assessment/mitigation during site investigation and earthworks/construction activities.

Geotechnical Hazard	Consequence and Impacted Parties	Risk Rating	Description
Surface mining and coal mining	Introduction of difficult ground conditions from historical mine workings for both coal and non-coal mining.	Low/Moderate	Site is within a coal mining reporting area. Based on the information provided within the Consultants Coal Mining Report, it is considered that the potential risk from historical coal mining activity is likely to be low, noting that the worked seam recorded beneath the site is approximately 325m below ground level. However, given the presence of workings beneath the site and available abandonment plans It is recommended that a desk-based coal mining risk assessment is undertaken, including obtaining and reviewing the abandoned mine plans to evaluate the potential risk from mining. Strata containing vein minerals and iron ore (bedded) are identified within the site, however, no shallow workings related to these have been identified and the Groundsure report indicates that the potential for difficult ground conditions is unlikely.

8. Conclusions and Recommendations

8.1. Conclusions

This Phase 1 Desk Study Report has been produced to evaluate the potential risks to human health and the environment, and to identify potential geotechnical constraints associated with the proposed development.

The preliminary qualitative risk assessment indicates there is a low to moderate risk to identified receptors from potential contaminants associated with the current and former uses of the site and surrounding area and potential Made Ground associated with former ground workings and the former development of the site. In addition, the assessment has identified a number of potential geotechnical constraints associated with the potential for below ground obstructions, variable thickness of Made Ground, aggressive ground conditions, nearby Network Rail infrastructure and ground workings within and immediately adjacent to the site.

8.2. Recommendations

Based on the findings of this report, it is recommended that an intrusive ground investigation is undertaken to assess for the identified contaminants of concern, to evaluate the potential contaminant linkages through soil, leachate and groundwater sampling, and enable a remediation strategy to be developed, if required. This investigation should include laboratory analysis of soil and groundwater samples for the identified contaminants of concern and a ground gas and ground water monitoring programme to confirm the ground gas and groundwater regimes at the site.

In addition, the ground investigation can be used to obtain information to evaluate the potential geotechnical risks and inform the geotechnical design of the project.

It is recommended that a coal mining risk assessment is undertaken to evaluate the potential risk from mining. In addition, it is understood that the Cambrian Iron Works in the northern part of the site was used to manufacture munitions during WWI. A Preliminary UXO Risk Assessment is recommended, which may require further assessment/mitigation during site investigation and earthworks/construction activities.

Appendix A

Site Walkover Record and Photographs

Project Name:	Wrexham Gateway – Site A		
Address:	Station Approach, LL11 2AA	Job Number:	
Date:	07/02/2025	Engineer:	
Weather:	Clear, dry underfoot		

Site Layout Plan

Site Access

Pedestrian Access	Access via footpaths from Regent Street to Station Approach. Steps also lead from Regent Street to station approach further north. A single gate was observed in the north-east of the Wrexham Gateway development area which appears to be unused. A footpath leads from Grosvenor Gardens in the east to Station Approach.
Vehicular Access	Access via Station Approach from Regent Street.
Parking Arrangements	Plenty of car parking spaces at Station Approach.
Restrictions	Inaccessible footpath in the east of the site.

Access for Site Investigation (Drilling Rigs, Excavators etc.)	Good access for standard drilling rigs etc.
Surface Covering	
Type of Cover	Mostly concrete with flagged pavement close to Wrexham General Station. Areas of landscaping to the south-west and north-east of Station Approach. North-west vacant plot comprises gravel, grass and demolition material throughout and along edges.
Quality of Cover	Poor in areas, evidence of resurfacing.
Evidence of Existing Boreholes	None observed.
Topography	
Flat / Sloping / Stepped etc.	Slightly slopes from Station Approach to railway station and again east towards the guide and scout huts. North-west area generally flat, although cut out in north-west corner.
Evidence of Subsistence	None observed.
Significant Slopes	Landscaping between Regent Street and Station Approach, and Station Approach and south-east corner reflect slopes.
Local Depressions	None observed.
Vegetation	
Trees (Type & Estimated Height)	Semi-mature to mature trees in various parts of the site. Single tree in pathway at entrance to Station Approach.
Other Vegetation	Bushes and shrubs in the south-west of Station Approach and bordering the north-east area of the guide and scout huts.
Japanese Knotweed	None observed.
Giant Hogweed	None observed.
Himalayan Balsam	None observed.
Signs of Stressed Vegetation / Poor Growth / Disease	Evidence of tree cutting along the northern border of the south-east of the area (the location of the scout and guide huts).
Services	
Location and Details of Manhole Covers, Wells, Marker Pegs	Manholes in the centre of Station Approach, on the footpath to the north-east and the pathway in front of Wrexham General Station. Manhole covers also to the north-west of the girl guide building. Two manhole covers in the north-west of the north-eastern vacant plot
Utility Scar Features	Tarmac utility scars along the pedestrian footpath on the south-west side of Station Approach. Utility scar in a roughly north-east to south-west alignment in hard-standing in front of the scout and guide huts.

Overhead Services	None observed.
Water Supply	Drains at Station Approach
Buildings and Structures	
Number, Height, Construction Material, Roof Construction Material	1960's single storey brick building with flat roof and 1960s two-storey building with flat roof.
Current Uses	Scout and girl guide huts.
Evidence of Subsistence / Cracking / Water Damage	Evidence of broken pipe on northern elevation of girl guide hut, with water dripping. Some cracking to southern elevation of girl guide building.
Presence of Potential Asbestos Containing Material (ACM)	None observed.
Existing Foundations	None observed.
Existing Basements / Cellars	None observed.
Surface Water and Groundwater	
Evidence of Flooding	None observed.
Evidence of High Water Table	None observed.
Rivers, Springs, Wells, Ponds, Ditches, Streams (incl. Flow Direction and Size)	None observed.
Potential Sources of Contamination	
Fly Tipped Material	Wooden pallets and bricks, and some general waste stored to the north of the scout building. Cones and general waste in the north-east vacant plot with two wooden pallets.
Evidence of Filled Ground	None observed.
Evidence of Tanks (USTs, ASTs, Interceptors, Pipework) incl. Fuel Spillages	None observed.
Stored Substances	None observed.
Electricity Substations	None observed.
Other Identified Potential Sources	None observed.
Surrounding Land Use	

Residential / Commercial / Industrial incl. Type of Industry / Commercial Activity	The former commercial (Jewsons warehouse) and industrial (goods shed) forming Site B to the north. Residential to the east. Commercial to the south and industrial (railway) to the west of Site A, forming Site C.
Railways / Viaducts / Bridges	National Rail lines are to the west of the site, within Site C. A bridge carrying Regent Street over the railway lines is to the west of Site A.
Tunnels	None observed.
Other Identified Pertinent Uses	None observed.
Anecdotal Information	
Tenants / Landowners / Client	
Neighbours / Locals	
Other Comments	

Project Name:	**Wrexham Gateway – Site B**		
Address:	Station Approach, LL11 2AA	Job Number:	
Date:	07/02/2025	Engineer:	
Weather:	Clear, dry underfoot		

Site Layout Plan

Site Access

Pedestrian Access	Access via vehicular gates from Station Approach. The gates were blocked by concrete barriers
Vehicular Access	Access via vehicular gates from Station Approach. The gates were blocked by concrete barriers at the stime of the Site walkover, so vehicular access was not possible.
Parking Arrangements	No car parking available at the time of the Site walkover. Car parking was available in Site A.
Restrictions	Internal areas of the buildings were inaccessible.

Access for Site Investigation (Drilling Rigs, Excavators etc.)	Good access for standard drilling rigs etc once concrete blocks have been removed.
Surface Covering	
Type of Cover	Block paving
Quality of Cover	Generally good, evidence of vegetation growing through
Evidence of Existing Boreholes	None observed
Topography	
Flat / Sloping / Stepped etc.	Flat
Evidence of Subsistence	None observed
Significant Slopes	None observed
Local Depressions	None observed
Vegetation	
Trees (Type & Estimated Height)	Trees bordering the north, east and west of the area
Other Vegetation	Some vegetation amongst trees at the border. Dense vegetation to the south of the warehouse
Japanese Knotweed	None observed
Giant Hogweed	None observed
Himalayan Balsam	None observed
Signs of Stressed Vegetation / Poor Growth / Disease	Evidence of branch snapping along borders
Services	
Location and Details of Manhole Covers, Wells, Marker Pegs	Manhole covers within yard area
Utility Scar Features	None observed
Overhead Services	None observed
Water Supply	Drain to the north of the warehouse
Buildings and Structures	

Number, Height, Construction Material, Roof Construction Material	The Cambrian Works building comprises a modern orange/red-brick warehouse with grey cladding. The west face of the building is mostly open, providing double-height access into a covered bay for loading and unloading goods. The 19th-century goods shed/ Cambrian Sheds is a rectangular building of multiple phases, comprising a brick range, a stone single-storey range, a further brick single-storey range and a red brick two-storey range.
Current Uses	Both buildings are currently unoccupied
Evidence of Subsistence / Cracking / Water Damage	Some cracks visible in stone and brickwork
Presence of Potential Asbestos Containing Material (ACM)	None observed
Existing Foundations	None observed
Existing Basements / Cellars	None observed
Surface Water and Groundwater	
Evidence of Flooding	None observed
Evidence of High Water Table	None observed
Rivers, Springs, Wells, Ponds, Ditches, Streams (incl. Flow Direction and Size)	None observed
Potential Sources of Contamination	
Fly Tipped Material	Some waste and fly tipped items along the borders of the area and east of the warehouse (consisting of plastic containers and steel drums of unknown substances and a possible fridge).
Evidence of Filled Ground	None observed
Evidence of Tanks (USTs, ASTs, Interceptors, Pipework) incl. Fuel Spillages	Above ground storage tank for UN1202 (gas oil/diesel) noted in eastern service yard, possibly up to 1400L (unconfirmed) with a locked cover. Not possible to confirm if it is bunded so assumed not to be bunded. Tank is sat on top of concrete slabs.
Stored Substances	Potential stored substances in the east of the yard, although the Site is unoccupied so this may not be in use
Electricity Substations	None observed
Other Identified Potential Sources	None observed
Surrounding Land Use	
Residential / Commercial / Industrial incl. Type of Industry / Commercial Activity	Sites A and C are to the south and west, and comprise industrial and commercial land associated with the railway, and a scout and guide hut. Industrial (railway lines) are to the west, residential is to the north and east

Railways / Viaducts / Bridges	National Rail lines are to the west of the site, within Site C
Tunnels	None observed
Other Identified Pertinent Uses	None observed
Anecdotal Information	
Tenants / Landowners / Client	
Neighbours / Locals	
Other Comments	

CIVIC EARTH

Site Walkover Record

Project Name:
Wrexham
Gateway – Site A

Address:	Station Approach, LL11 2AA	Job Number:	51146
Date:	07/02/2025	Engineer:	NP
Weather:	Clear, Dry Underfoot		

Photo Location Plan

Site Photos

1. Entrance to guide and scout huts, facing east.

2. Brick structure south of scout hut, facing east.

3. Entrance to guide and scout huts, facing west.

4. Car Park in north of site area, facing south.

5. Inaccessible path to north of scout hut, facing east.

6. Pathway, facing east.

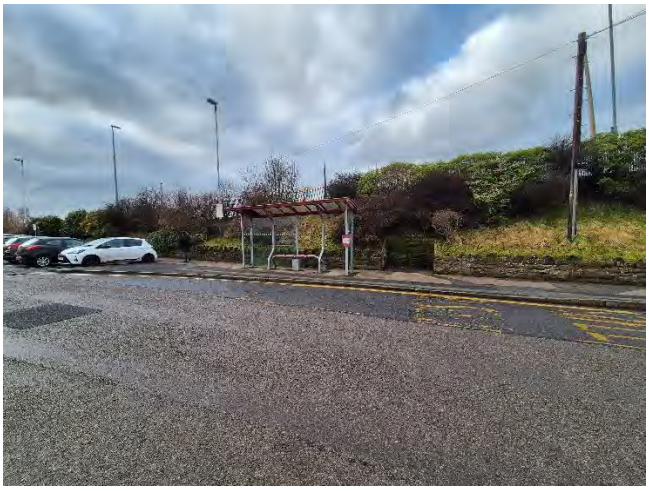
Site Photos

7. North elevation of scout hut, facing south.

8. North side of guide hut, facing east.

9. Northwest of scout and guide huts, facing northwest.

10. Car park in north of site area, facing south.



11. Station Approach bus stop, facing southwest.

12. Station Approach car park, facing northeast.

Site Photos

13. Station approach car park, facing west.

14. Station approach landscaping and pedestrian access, facing west.

15. Vacant plot from entrance, facing northeast.

16. Vacant plot northern border, facing east.

17. Vacant plot showing demolition material and vegetation on west edge, facing southwest.

18. Vacant plot view across area from SE corner, facing northwest.

CIVIC EARTH

Site Walkover Record

Project Name:
Wrexham
Gateway – Site B

Address:	Station Approach, LL11 2AA	Job Number:	51146
Date:	07/02/2025	Engineer:	NP
Weather:	Clear, Dry Underfoot		

Photo Location Plan

Site Photos

1. Entrance to former Jewsons Builders Merchants and former goods sheds, facing north.

2. View facing northeast showing former Jewsons warehousing and delivery bays, hardstanding etc.

3. View showing extent and condition of former goods shed buildings, facing west.

4. View of northern site boundary and area near proposed pedestrian footbridge, facing north.

5. View back towards entrance to Site B, facing south.

6. Northern end of goods shed, near location of proposed footbridge, facing south.

Site Photos

7. Extent of service yard/hardstanding across the north of the site in proposed parking area, facing east.

8. North side of former Jewsons builders merchants, building is 2 storeys, facing south.

9. Northeast corner of Site B, facing south along the eastern edge of the site. Service/delivery bays visible as well as bicycle storage and a former gated compound.

10. View of former gated compound, facing east.

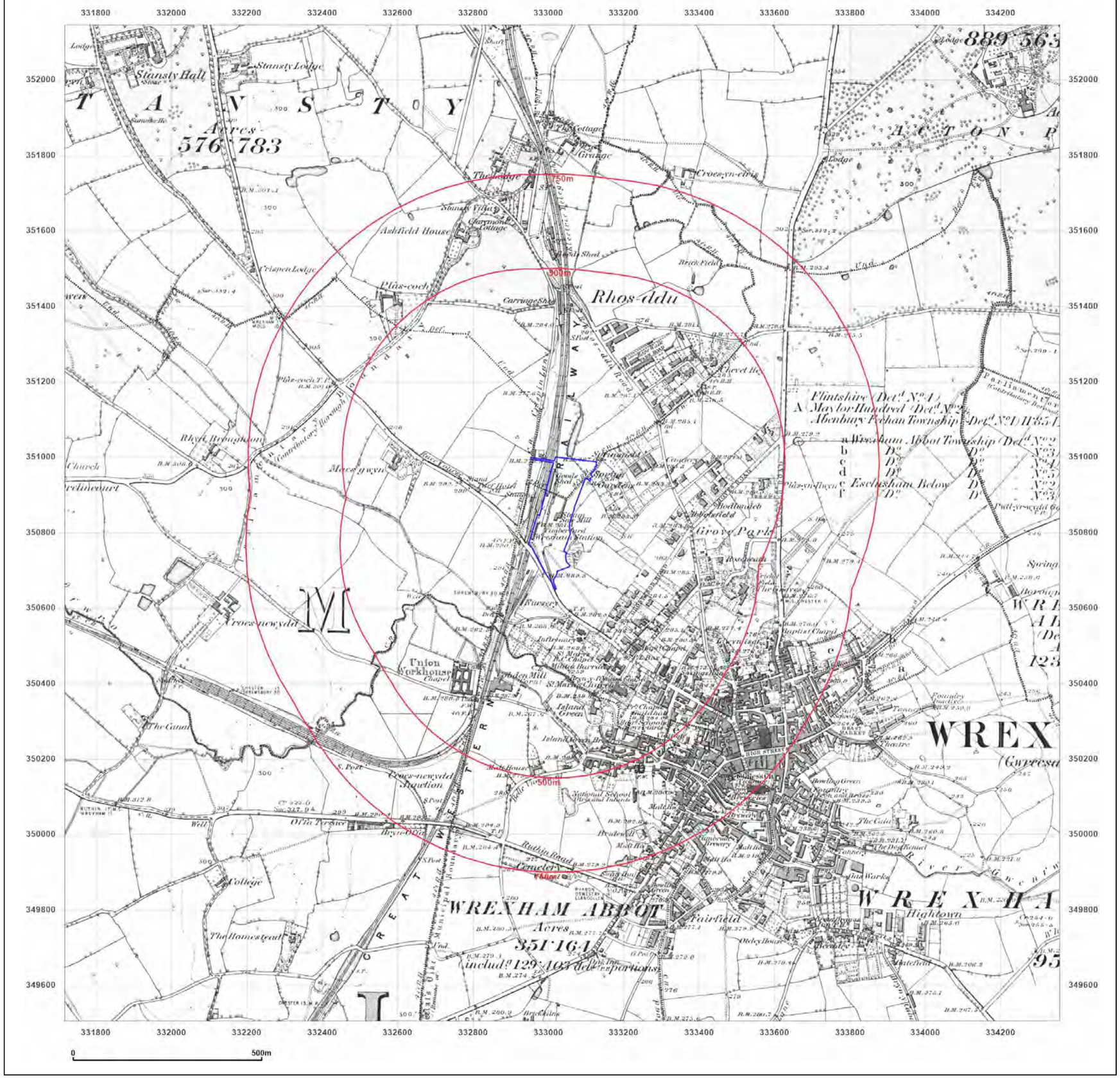
11. Former area of unknown purpose containing metal and wooden fencing, a water pipe, plastic and metal drums of unknown materials/chemicals, an above ground storage tank for UN1202 (gas oil/diesel) with a lock, possibly up to 1400L but unconfirmed, facing east.	12. View back across service yard towards above ground storage tank (assumed to not be bunded), blue metal container of unknown substance is present facing northeast.

Site Photos

	
13. View along southeastern edge of former Jewsons warehouses with potential fly tipped fridge visible. Damage to external elements of building visible including the exposure of pink coloured foam assumed to be insulation and damage to the top of the frame around shutter doors, facing south.	14. View across service/delivery bay area towards former goods sheds, facing west.

Appendix B

Historical Mapping



Groundsure INSIGHTS

Site Details:

Wrexham General Latest

Client Ref: 51146
Report Ref: GS-52O-D9L-WE3-S5C
Grid Ref: 333036, 350825

Map Name: County Series

Map date: **1872**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

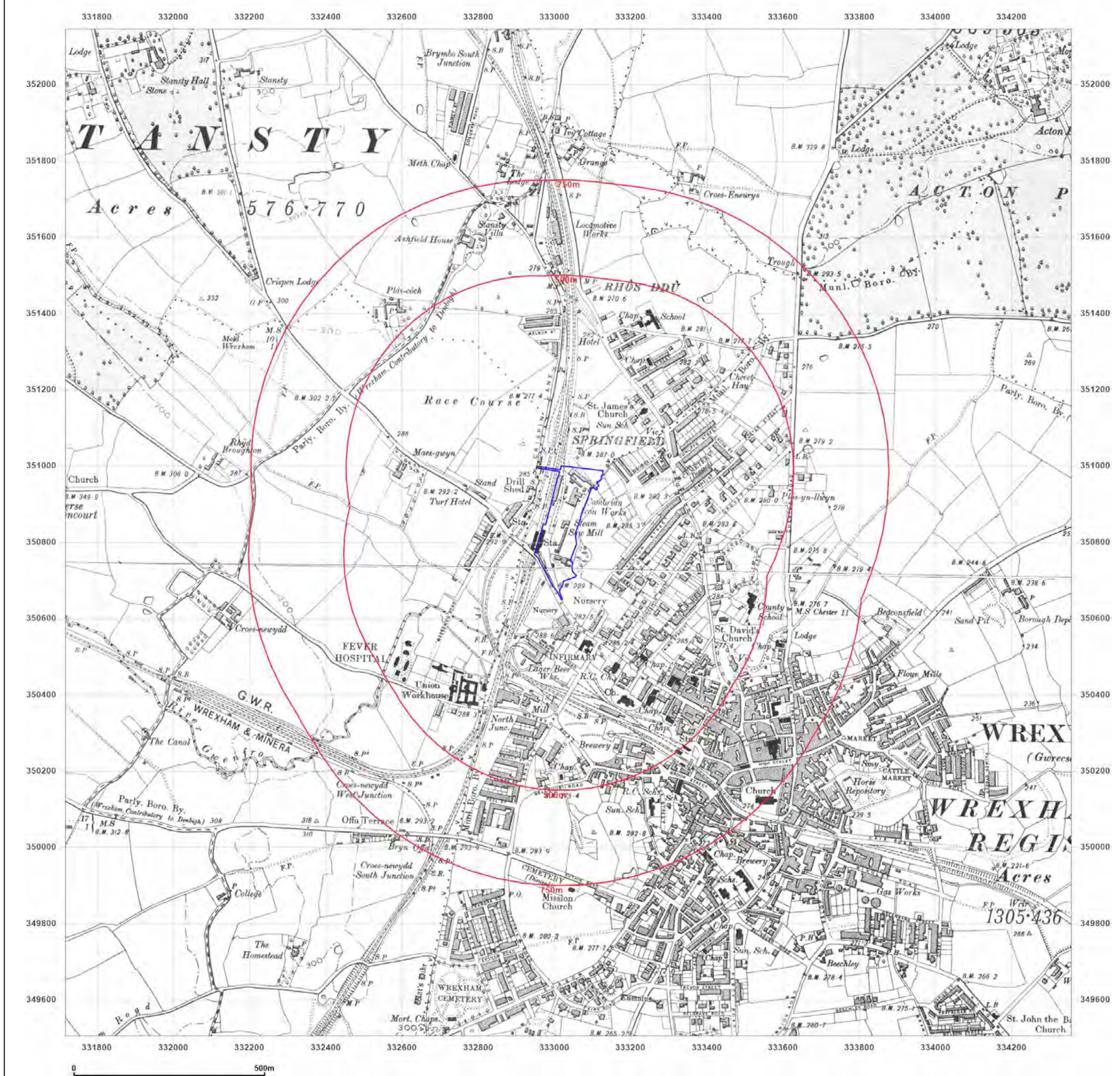
Surveyed 1872
Revised 1872
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

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

Production date: 30 June 2025

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



Groundsure INSIGHTS

Site Details:

Wrexham General Latest

Client Ref: 51146
Report Ref: GS-52O-D9L-WE3-S5C
Grid Ref: 333036, 350825

Map Name: County Series

Map date: **1898**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1877
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

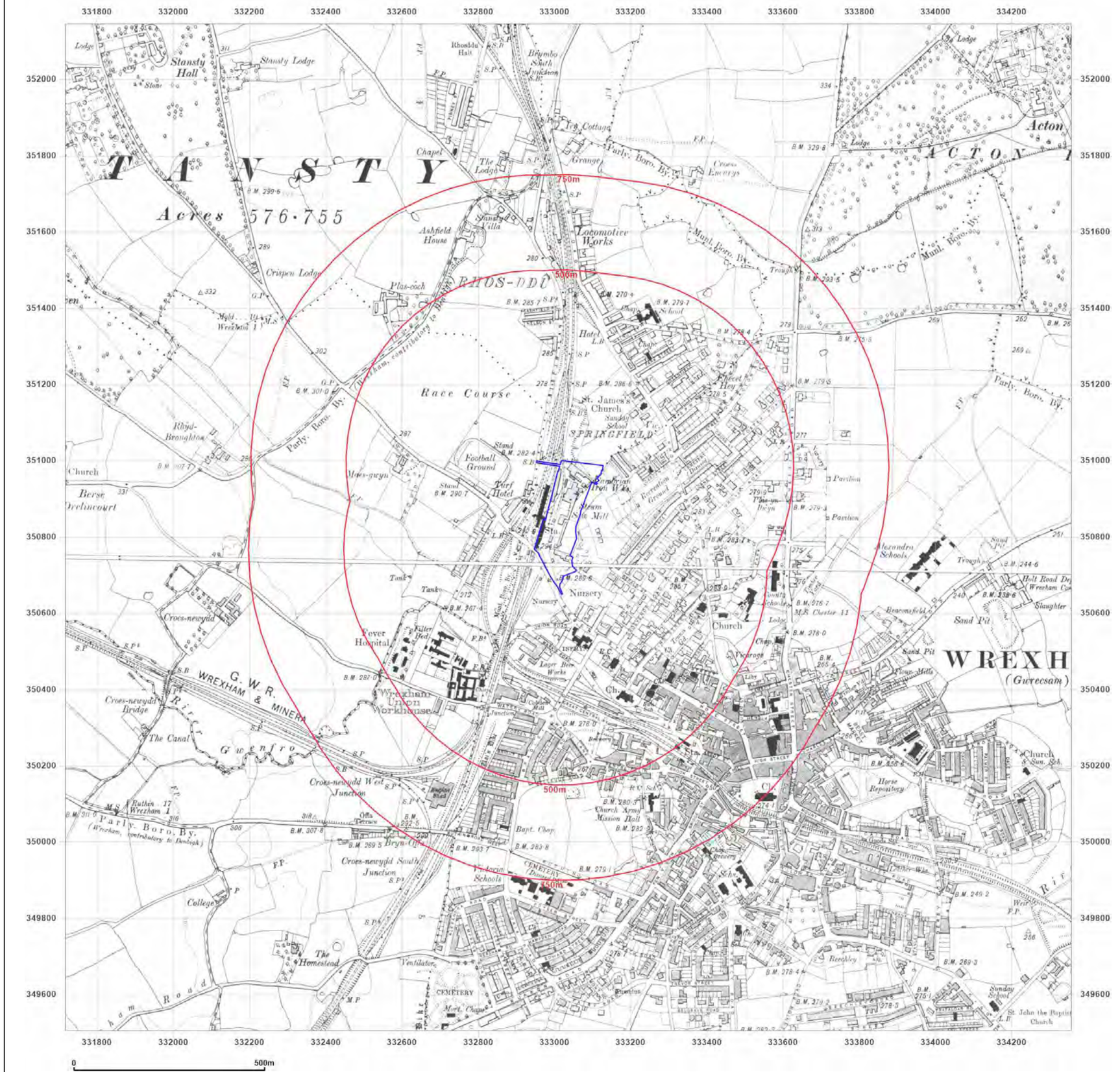
Surveyed 1871
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Powered by

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

Production date: 30 June 2025

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



Groundsure INSIGHTS

Site Details:

Wrexham General Latest

Client Ref: 51146
Report Ref: GS-52O-D9L-WE3-S5C
Grid Ref: 333036, 350825

Map Name: County Series

Map date: **1909-1910**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

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

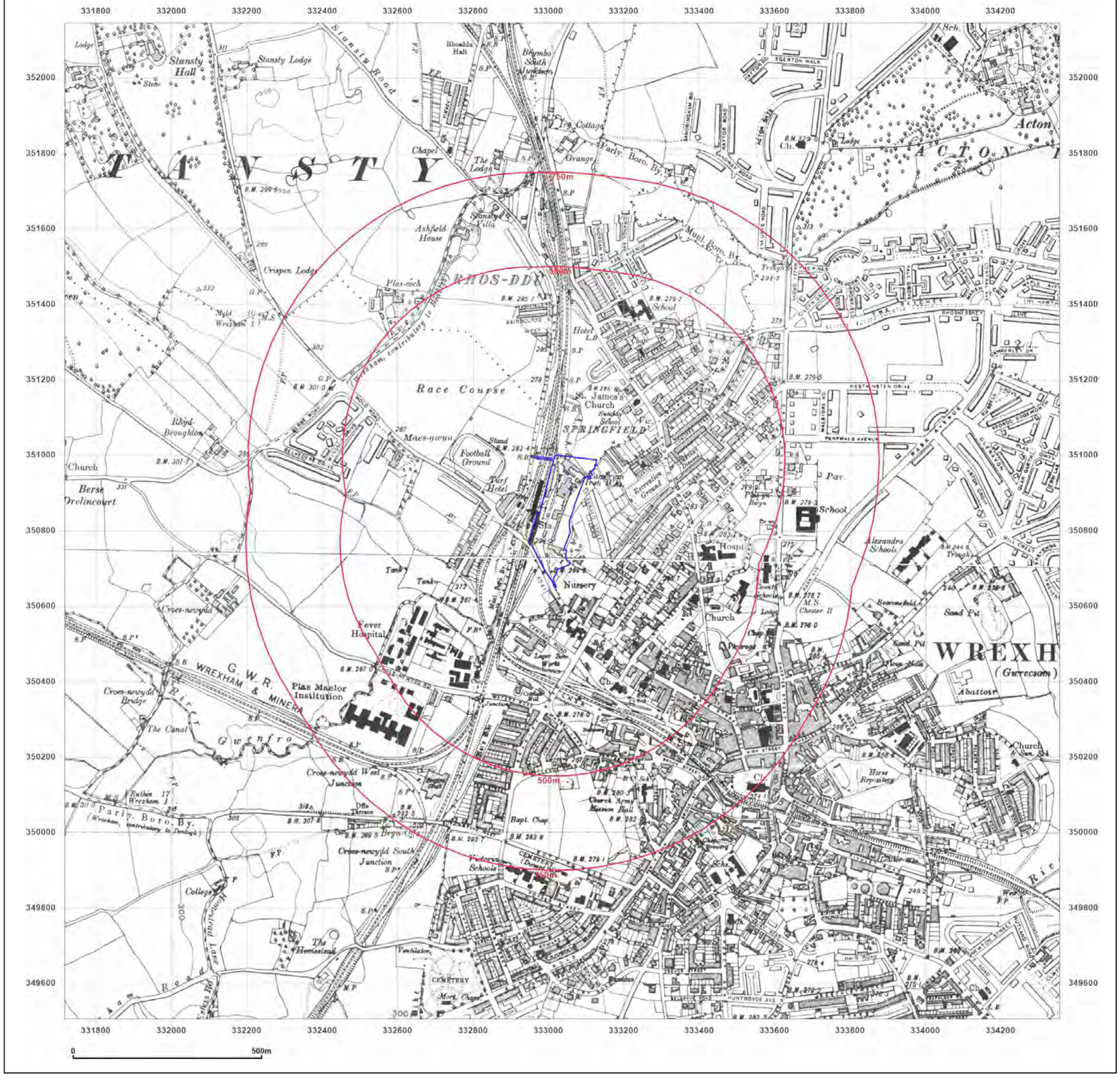
Surveyed 1871
Revised 1910
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

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

Production date: 30 June 2025

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



Groundsure INSIGHTS

Site Details:

Wrexham General Latest

Client Ref: 51146
Report Ref: GS-52O-D9L-WE3-S5C
Grid Ref: 333036, 350825

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

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

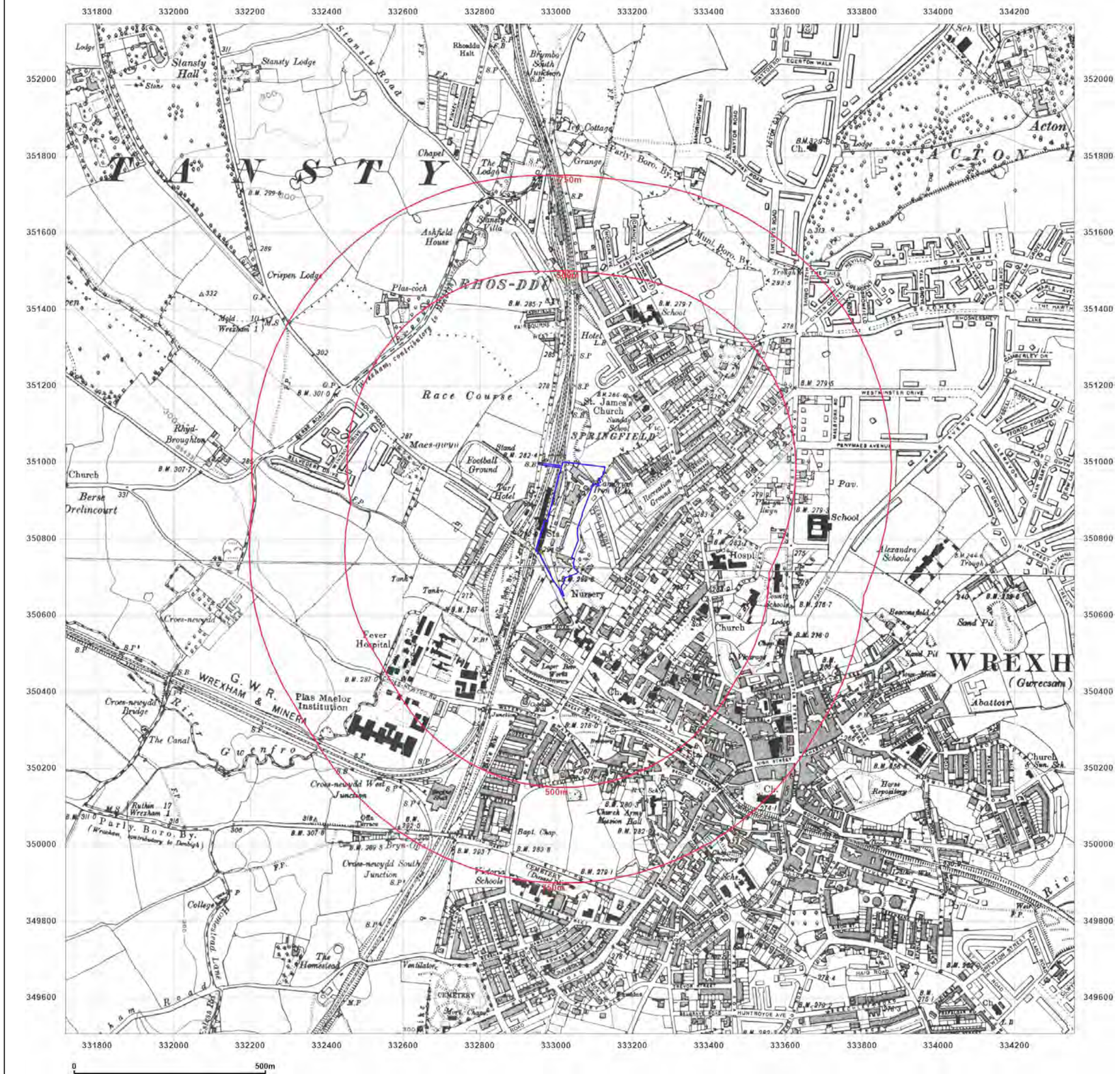
Surveyed 1871
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

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

Production date: 30 June 2025

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



Groundsure INSIGHTS

Site Details:

Wrexham General Latest

Client Ref: 51146
Report Ref: GS-52O-D9L-WE3-S5C
Grid Ref: 333036, 350825

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

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

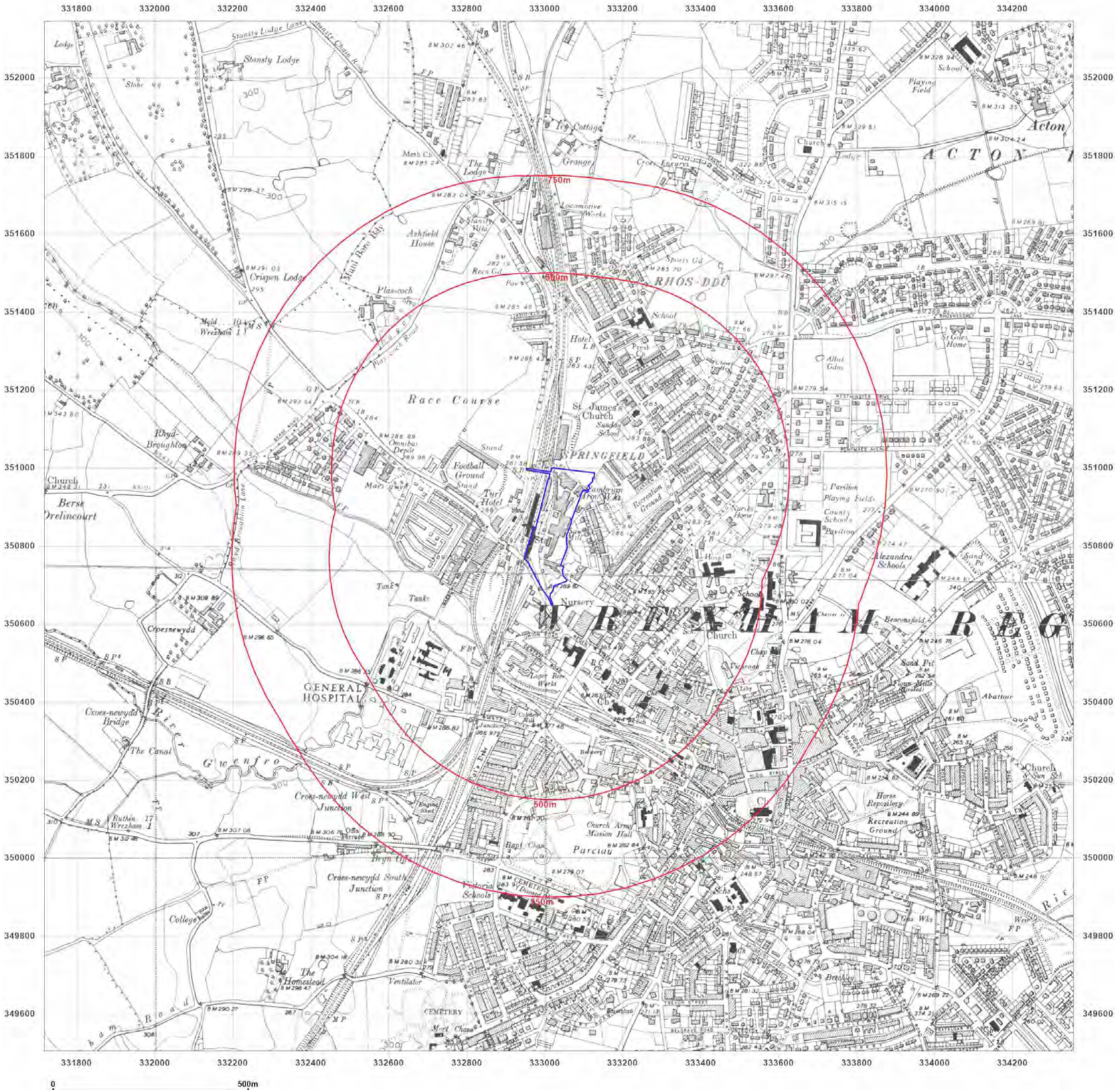
Surveyed 1871
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

Powered by OS

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

Production date: 30 June 2025

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



Groundsure INSIGHTS

Site Details:

Wrexham General Latest

Client Ref: 51146
Report Ref: GS-52O-D9L-WE3-S5C
Grid Ref: 333036, 350825

Map Name: County Series

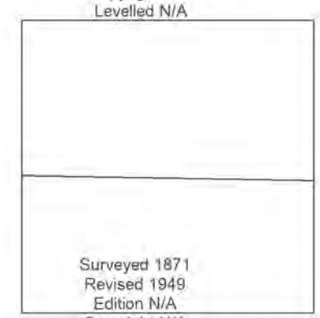
Map date: **1949**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

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



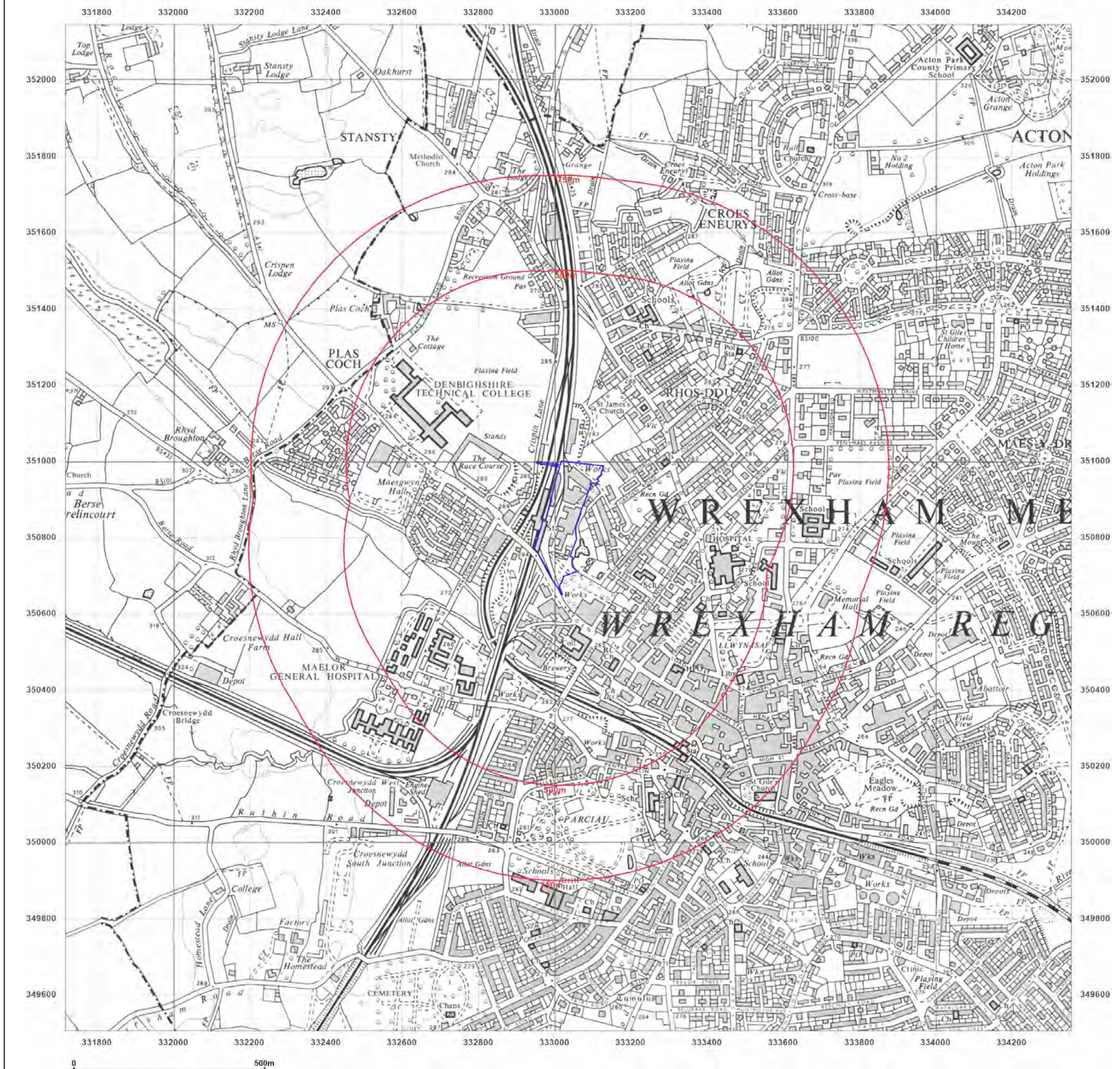
Surveyed 1871
Revised 1949
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

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

Production date: 30 June 2025

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



Groundsure INSIGHTS

Site Details:

Wrexham General Latest

Client Ref: 51146
Report Ref: GS-52O-D9L-WE3-S5C
Grid Ref: 333036, 350825

Map Name: Provisional

Map date: **1964**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

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

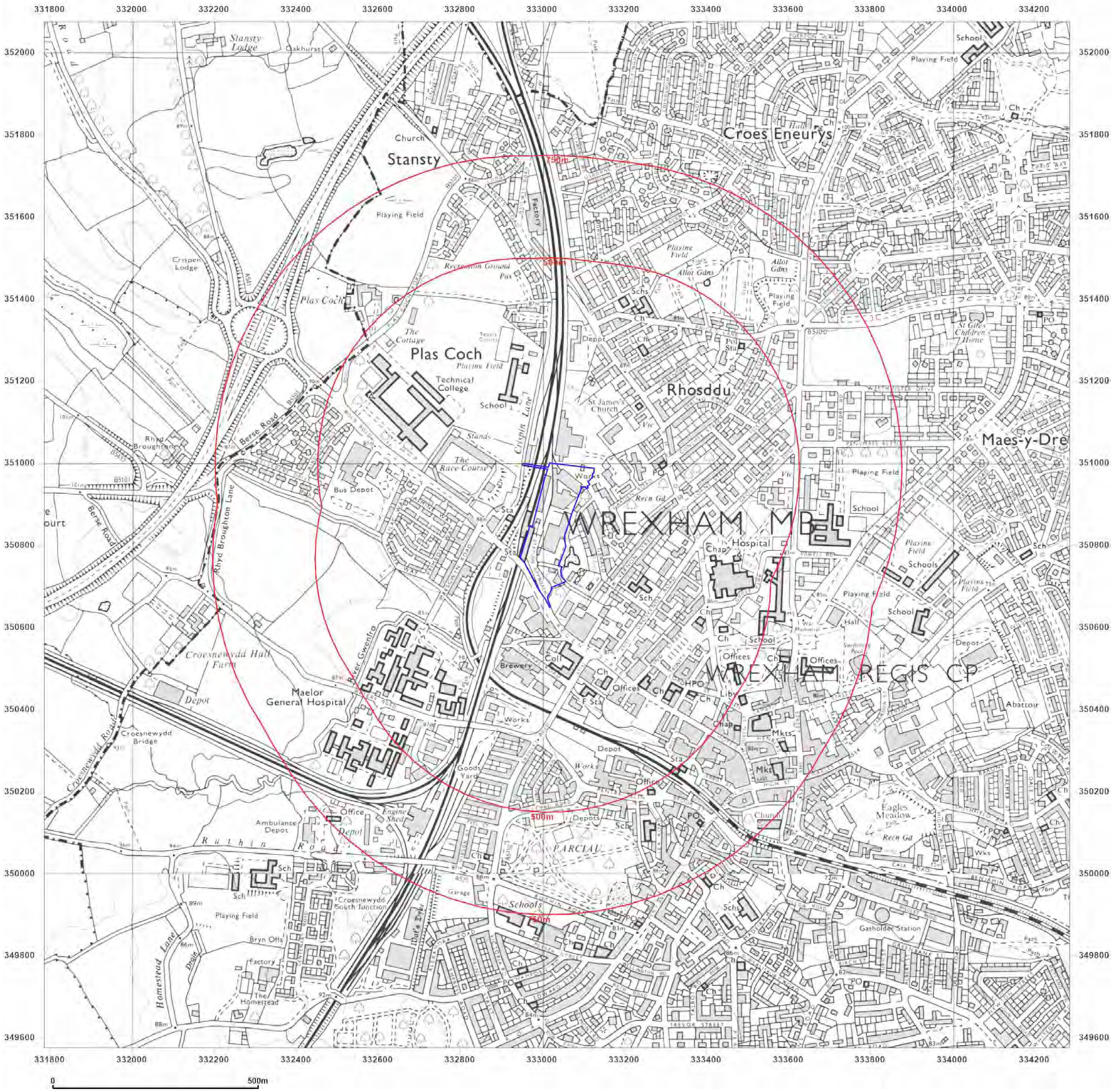
Surveyed 1964
Revised 1964
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

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

Production date: 30 June 2025

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



Groundsure INSIGHTS

Site Details:

Wrexham General Latest

Client Ref: 51146
Report Ref: GS-52O-D9L-WE3-S5C
Grid Ref: 333036, 350825

Map Name: National Grid

Map date: **1974-1979**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1972
Revised 1974
Edition N/A
Copyright 1974
Levelled 1969

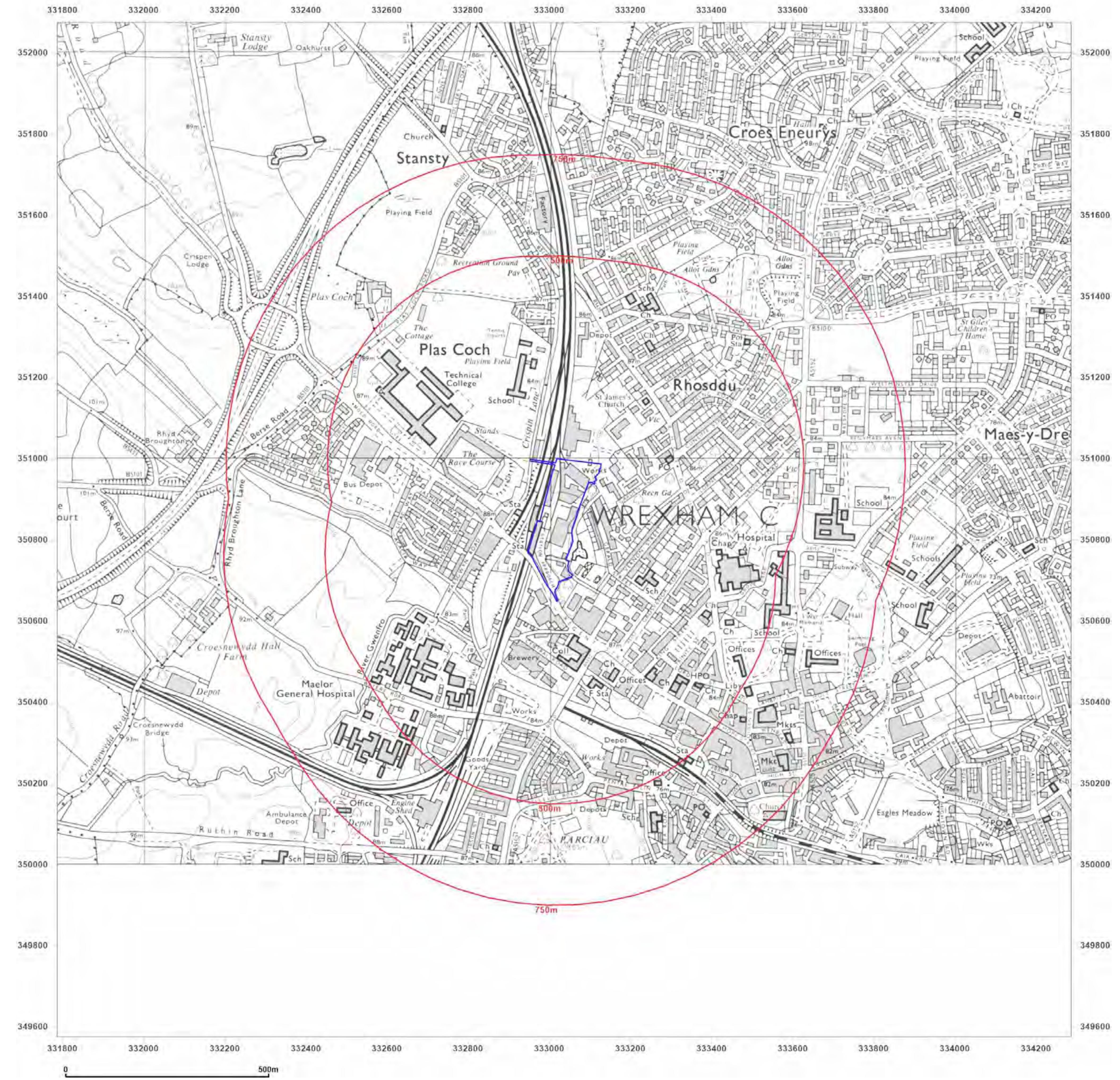
~~Surveyed 1975~~
Revised 1979
Edition N/A
Copyright 1979
Levelled 1977

Powered by

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

Production date: 30 June 2025

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



Site Details:

Wrexham General Latest

Client Ref: 51146
Report Ref: GS-52O-D9L-WE3-S5C
Grid Ref: 333036, 350825

Map Name: National Grid

Map date: **1980**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

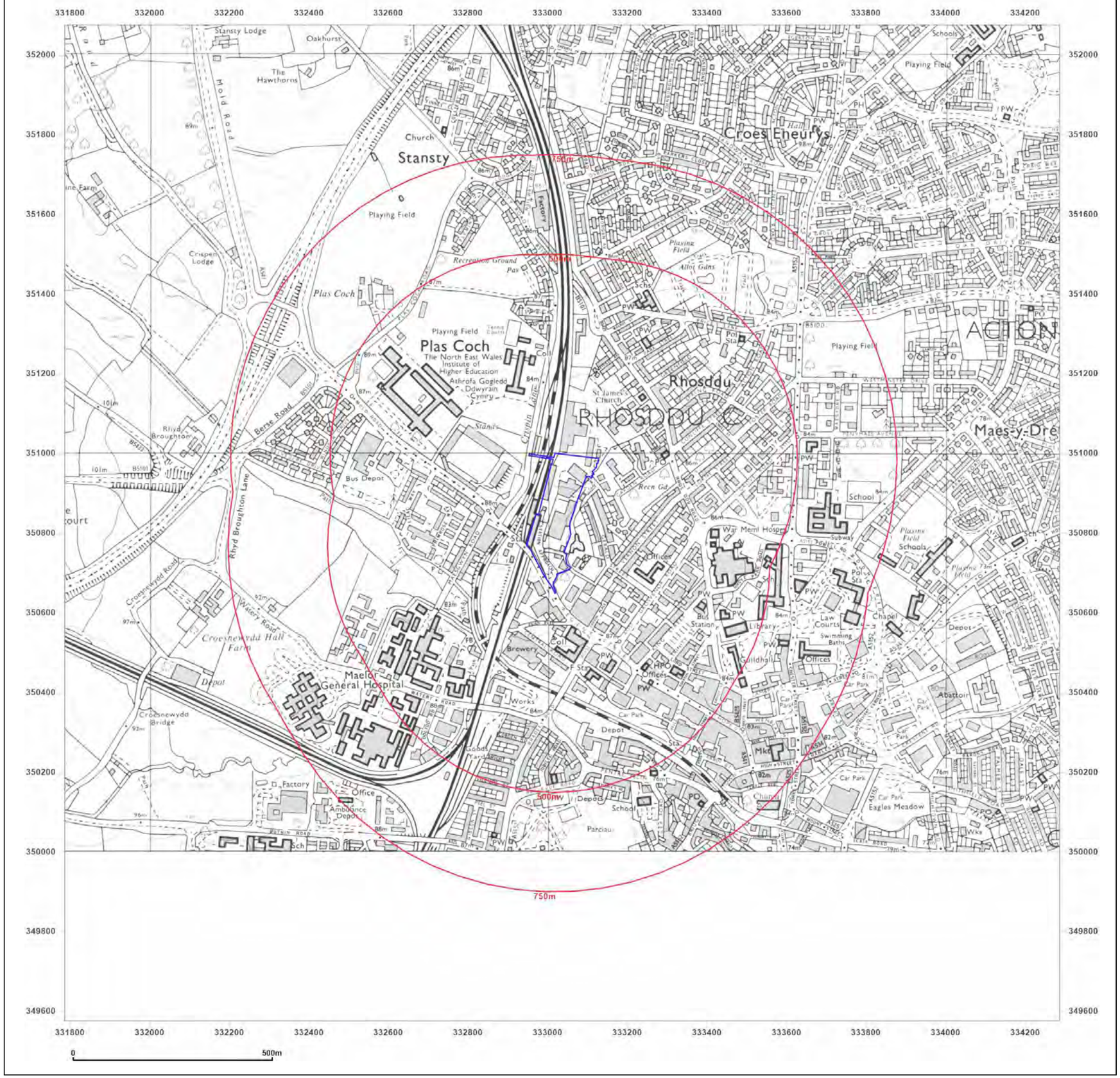
Surveyed 1980
Revised 1980
Edition N/A
Copyright N/A
Levelled N/A

Powered by

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

Production date: 30 June 2025

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



Groundsure INSIGHTS

Site Details:

Wrexham General Latest

Client Ref: 51146
Report Ref: GS-52O-D9L-WE3-S5C
Grid Ref: 333036, 350825

Map Name: National Grid

Map date: **1985**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

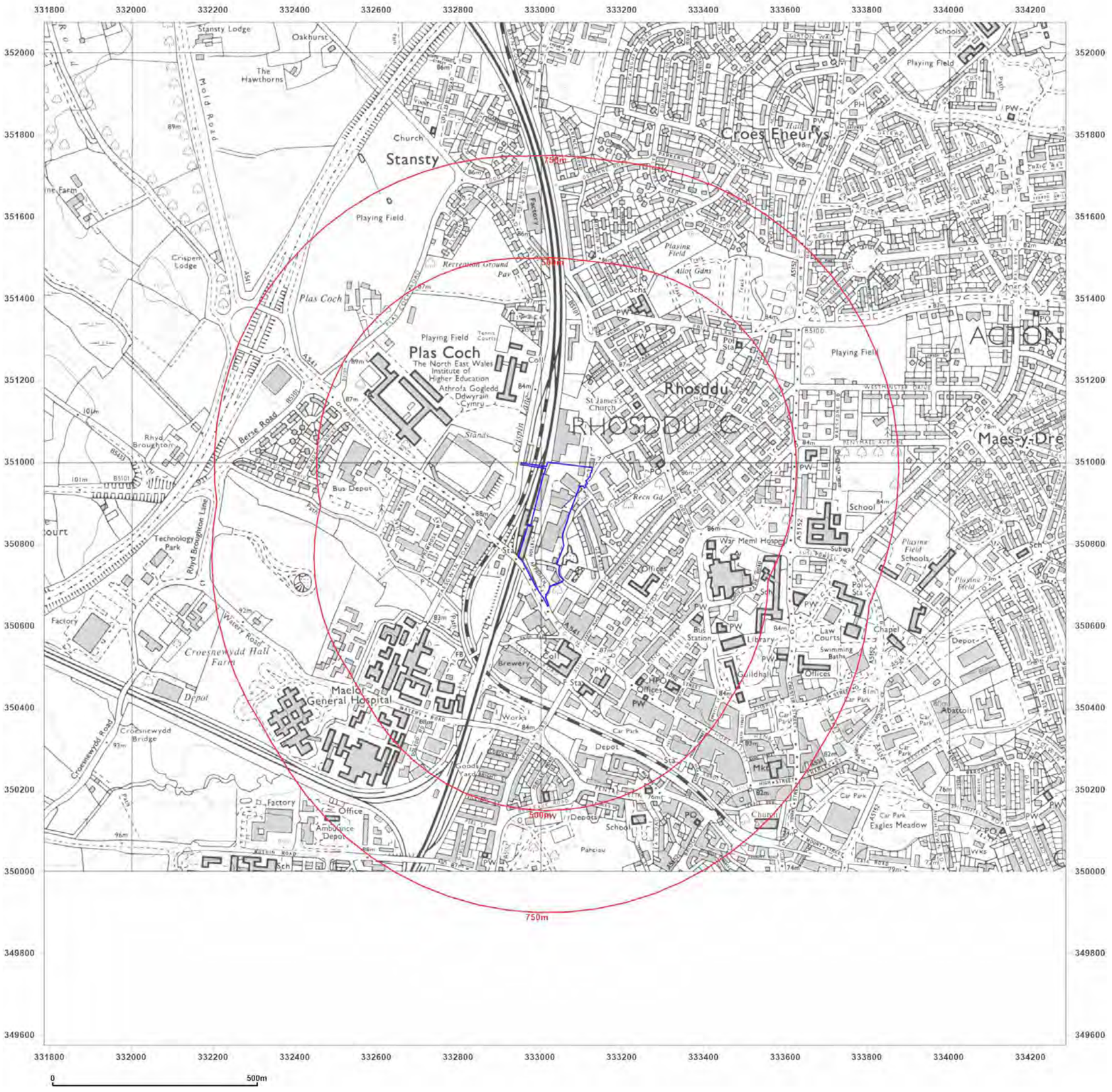
Surveyed 1985
Revised 1985
Edition N/A
Copyright N/A
Levelled N/A

Powered by

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

Production date: 30 June 2025

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



Groundsure INSIGHTS

Site Details:

Wrexham General Latest

Client Ref: 51146
Report Ref: GS-52O-D9L-WE3-S5C
Grid Ref: 333036, 350825

Map Name: National Grid

Map date: **1989**

Scale: 1:10,000

Printed at: 1:10,000

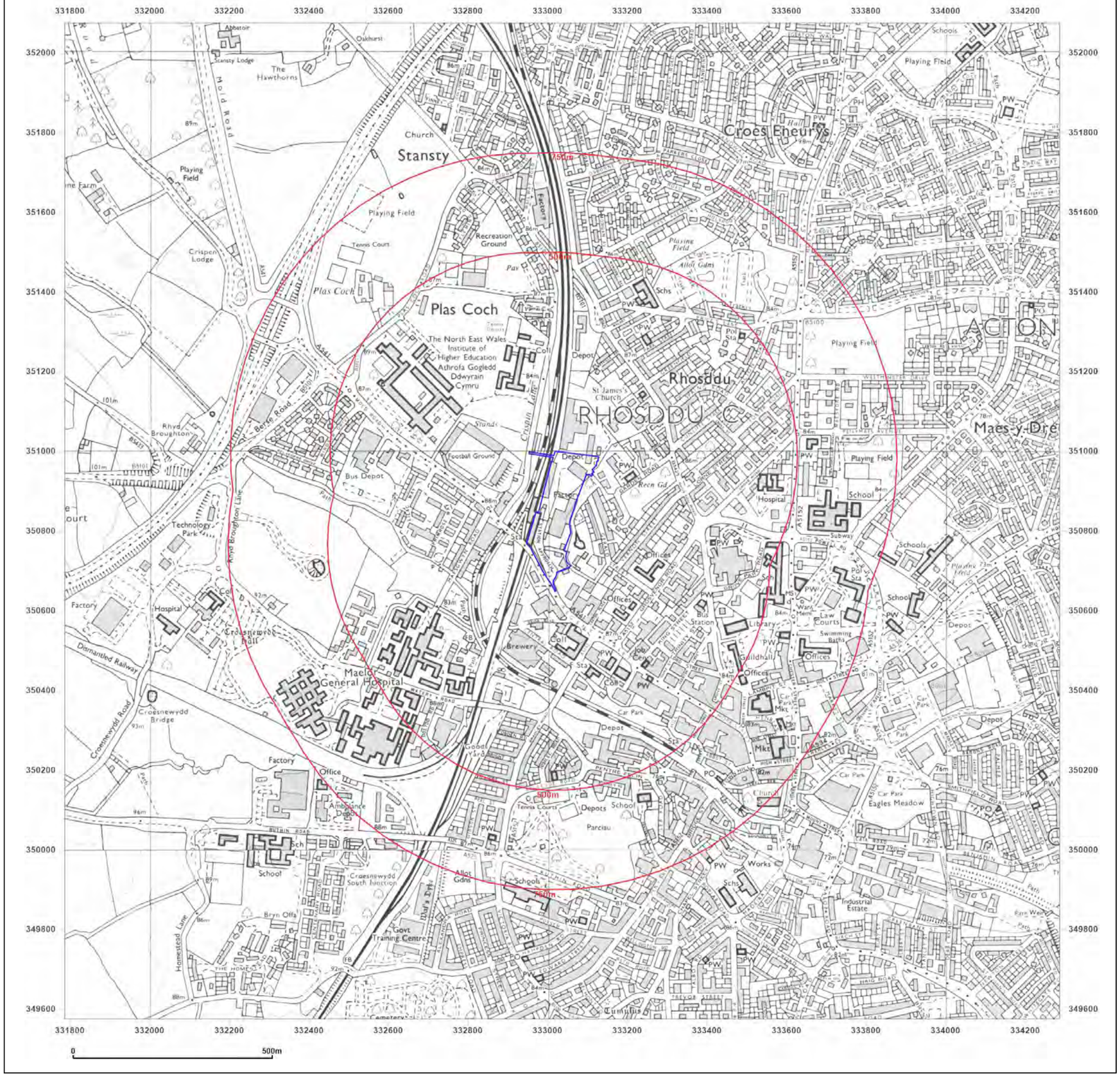
N
W E
S

Surveyed 1965
Revised 1989
Edition N/A
Copyright N/A
Levelled N/A

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

Production date: 30 June 2025

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



Groundsure INSIGHTS

Site Details:

Wrexham General Latest

Client Ref: 51146
Report Ref: GS-52O-D9L-WE3-S5C
Grid Ref: 333036, 350825

Map Name: National Grid

Map date: **1992**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

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

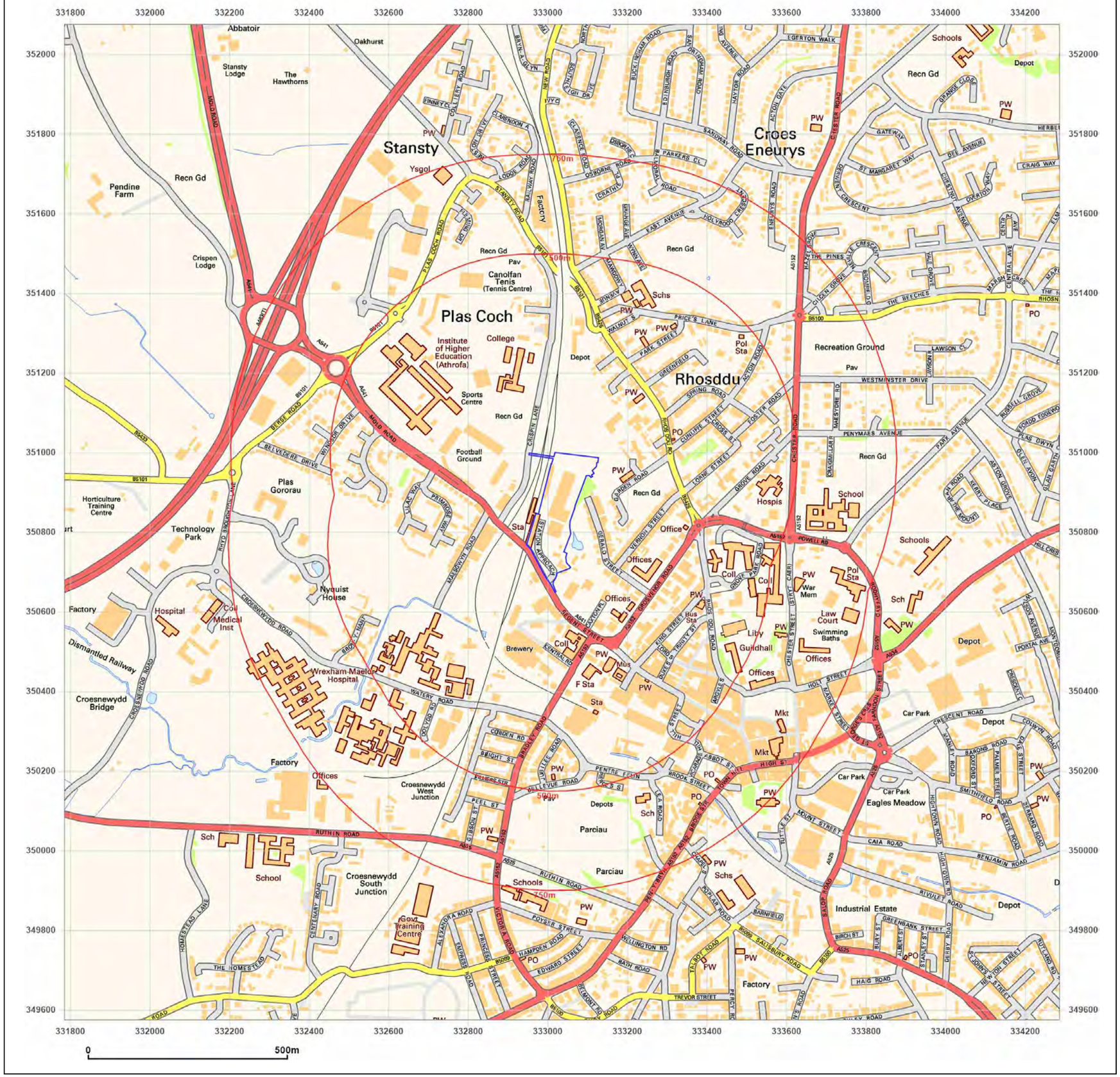
~~Surveyed 1987~~
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

Powered by OS

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

Production date: 30 June 2025

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



Groundsure INSIGHTS

Site Details:

Wrexham General Latest

Client Ref: 51146
Report Ref: GS-52O-D9L-WE3-S5C
Grid Ref: 333036, 350825

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Powered by

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

Production date: 30 June 2025

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