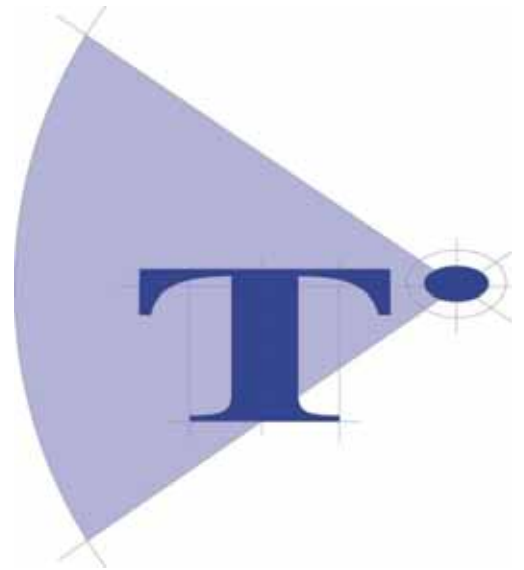




PHASE 1 PRELIMINARY RISK ASSESSMENT FOR NEW FOUNDRY BUILDINGS, JOHNSTOWN, WREXHAM

ISSUE 1.0

TE1085PRA

29 MARCH 2018

Prepared for:

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DOCUMENT CONTROL

Project No. : TE1085PRA
Report Status: FINAL
Issue No.: v1.0
Project Engineer: Naomi Giles
Date of Issue: 29/03/2018
Signature:



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Issue No.	Description of Issue / Revision	Date of Issue	Reviewed By	Author Initial
1.0	Final	29/03/2018	SL	NG



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EXECUTIVE SUMMARY

Introduction	Tier Environmental was commissioned by Watkin Jones & Son to undertake a Phase I Preliminary Risk Assessment for New Foundry Buildings, Johnstown, Wrexham, LL14 1LT (the "Site"). The purpose of the investigation was to determine the environmental setting of the Site, assess any potential sources of contamination and ground gas risk. It is understood that the current commercial building is to be retained and refurbished into residential properties.
Site Location	The site is located to the south off Gutter Hill, Johnstown, Wrexham, LL14 1LT. A site location plan is included in Drawing No. TE1085PRA1 in Appendix A. National Grid Reference (NGR): 329834, 346290.
Site History	Historical OS maps indicate that the Site has been developed since the 1900 with a series of unspecified buildings and railway tracks annotated. The current site layout appears on historic OS maps dating from 2002. Historical maps from 1900-1912, indicate that ground levels have been raised in the northern and central areas of the Site. Made Ground and ground gas producing materials are likely to be present on site. Pertinent surrounding land uses include a gas works, garages, electric substations and a factory.
Probable Ground Conditions	Made Ground is anticipated across the entire Site. The Site is indicated to be underlain by Glacial Till, Diamiction designated as an unproductive aquifer. The superficial deposits are shown to be underlain by the Pennine Lower Coal Measures generally comprising mudstone, siltstone and sandstone with coal seams. The Pennine Lower Coal Measures are classified as a Secondary (A) Aquifer – Permeable Layers.
Shallow Coal Workings and Mine Entries	The Coal Authority indicates that the central area of the Site is located within a 'development high risk area' due to 'past shallow coal mine workings'. 1 No. abandoned mine shaft has been recorded in south of the Site; and, 1 No. abandoned mine shaft has been recorded within 20m western site boundary. It is considered at this stage that these should not affect the proposed conversion of the existing building. Unrecorded mine entries, such as bell pits, may also be present within the Site.
Foundation Recommendations	The foundation of the existing building is not known at this stage. It is recommended that foundation inspection pits be excavated to confirm existing foundations if loadings are to be significantly increased during the refurbishing works. It is recommended that liaisons be undertaken with the Coal Authority and, Building Control to determine whether there are any historic records with regards to previous stabilisation of the potential shallow mine workings and the existing foundations.
Potential Contamination	There is a potential for localised ground gas generation related to Made Ground associated with raised ground levels on-site and from the historic inert landfill recorded in the southern area of the Site.
Potential for Gas Protection	There is a potential for soil and groundwater contamination related to Made Ground associated with raised ground levels on-site, from the historic inert landfill recorded in the southern area of the Site and the historic off-site gas works. Sub floor air vents have been installed at approximately 2m centres around the periphery of the building. Locally, some of the vents have been partially or completely blocked. In order to verify the quality of current protection measures, it is recommended to undertake gas and radon monitoring within the existing building and the subfloor to determine current gas levels within the existing building to confirm that the anticipated current gas protection measures are effective.
Clean Cover Soils	In the event that potentially significant risks to future site users are identified from the risk assessment, then there is a potential for the implementation of a suitable clean cover system in landscaped areas. This may also include the excavation and off-site disposal of impacted soils to accommodate the clean cover soils.
Radon	The Site is located within a radon affected area, therefore basic radon protection measures may be required, if not already installed within the existing building. Sub floor air vents have been installed at approximately 2m centres around the periphery of the building. Locally, some of the vents have been partially or completely blocked. In order to verify the quality of current protection measures, it is recommended to undertake gas and radon monitoring within the existing building and the subfloor to determine current gas levels within the existing building to confirm that the anticipated current gas protection measures are effective.



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Flood Risk	The Site is located in an area at very low risk of river and coastal flooding. The Site is in a high risk area of groundwater flooding.
Further Works	It is recommended that a Phase II intrusive site investigation is undertaken in order to assess the environmental impact of the Made Ground and confirm that the topsoil is suitable for reuse in the development. Exploratory holes undertaken to obtain soil samples for environmental testing and should include the installation of gas and groundwater monitoring wells. It is recommended to undertake ground gas and radon monitoring within the existing building and the subfloor void to determine gas levels within the existing building and to confirm that the anticipated current gas protection measures are operational. The investigation of potential shallow mine workings is also recommended, if not previously undertaken prior to the construction of the existing building.
Drainage	It is assumed at this stage that the existing drainage infrastructure will be utilised by the proposed conversion. Soakaways are unlikely to be suitable due to the anticipated presence of Made Ground underlain by low permeability cohesive Glacial Till.



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1. INTRODUCTION

Tier Environmental was commissioned by Watkin Jones & Son to produce a Phase 1 Preliminary Risk Assessment for an area of land referred to as New Foundry Buildings, Gutter Hill, Johnstown, Wrexham, LL14 1LT (the "Site").

It is understood that the existing building is to be converted from commercial offices (Class B1) to 12 No. residential apartments (Class C3), with external and internal alterations, associated landscaping and other ancillary works.

Taking into account the planned future use of the Site, the objectives of this appraisal were:

- To determine the land use history from review of available historical documentation and maps;
- To establish the environmental setting of the Site;
- To determine soil and groundwater conditions;
- To determine the potential risks posed by any ground contamination and provide recommendations on remedial measures to manage such risks;
- To determine risks posed to the Site from hazardous ground gases;
- To evaluate whether past mining or other extractive industries could have an influence on the Site;

The desk-study part of this investigation included the assessment of information provided by Groundsure.

This report, which was designed to meet the requirements of all relevant current guidance including CLR 11, presents the factual information available during this appraisal, interpretation of the data obtained and recommendations relevant to the defined objectives.

It is understood that the 1 No. commercial building on-site is to be retained and redeveloped from commercial offices (Class B1) into 12 No. residential apartments (Class C3), with associated areas of soft and hard landscaping. In addition, it is assumed that ground levels will not change significantly from those described in this report. If this is not the case, then amendments to the recommendations made in this report may be required.

Where the report refers to the potential presence of invasive plants (such as Japanese Knotweed) or asbestos-containing materials, such observations are for information only and should be verified by a suitably qualified expert.

The comments and opinions presented in this report are based on the findings of the desk study. There may be other conditions prevailing on the Site which have not been revealed by the investigation and which have not been taken into account by the report. 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 intermediate ground conditions should be undertaken if necessary.

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2. SITE DETAILS AND DESCRIPTION

Table 2.1. Current Site Overview.

Site name	New Foundry Buildings, Wrexham.
Site address	New Foundry Buildings, Gutter Hill, Johnstown, Wrexham, LL14 1LS. A site location plan is included as Drawing No. TE1085GIR1 within Appendix A.
National Grid Reference	329834, 346290.
Location description	The Site is situated on the western edge of Johnstown, approximately 5.5km southwest of Wrexham town centre. The Site consists of 1 No. commercial property car parking and a public path running along the western and southern boundary. The Site is bounded by Gutter Hill to the north and amenity grassland to the east, south and west.
Approximate Site area	0.28ha
Site shape	The Site is irregular in shape and elongate in a northeast-southwest orientation.
General topography and ground levels	The Site is generally flat lying with topography reducing in the south eastern area.
Current land use	The Site currently comprises of 1 No. office building in the central area of the Site with areas of associated car parking and hardstanding in the north and east of the Site.
Existing structures	1 No. commercial property with associated car parking areas.
Site ground surfaces	The majority of the Site is covered in hard standing with areas of soft landscaping.
Sub-surface structures	Man hole covers have been noted in the western area of the Site, presumably associated with the existing building. Unrecorded services may also be present.
Fly Tipping	No evidence of fly tipping was observed during the site walkover.
Invasive plant species	No invasive plant species have been reported by Tier Environmental geoenvironmental engineers, however; the presence/ absence of any invasive plant species should be confirmed by a suitable qualified specialist.



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3. ENVIRONMENTAL SETTING

3.1. Site History

Extracts of Ordnance Survey (OS) plans dated from 1873 to 2014 were reviewed. These were obtained as part of the GroundSure report for the Site, which is presented in Appendix F.

Table 3.1 presents a summary of the main aspects of the Site from 1873 to 2014 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.

Source (Map edition, scale)	On-Site features	Off-Site features
1873, 1:10,560	A railway line is shown to run along the western boundary of the Site. Railway bridge annotated immediately north of the Site. The eastern portion of the Site is shown to be undeveloped.	3 No. "Well" annotated approximately 150m northwest, 200m north and 200m west of the Site. "Tile Yard" annotated approximately 100m north of the Site.
1875, 1:2,500	No significant changes.	"Old Shaft (Coal)" annotated approximately 150m north and 200m south of the Site. 4 No. "Old shaft (Coal)" annotated between 100m to 300m west to southwest of the Site. "Old Lime Kiln" annotated approximately 50m north of the Site. A series of unspecified excavated pits annotated approximately 90m to 300m northwest to southeast of the Site. "Reservoir" annotated approximately 450m north of the Site. "Kilns" annotated approximately 200m north of the Site.
1898, 1:10,560, 1900, 1:2,500	Levels appear to have been raised in the north and central areas of the Site. An embankment can be seen running from east to west. Unspecified building now annotated on Site.	"Gas Works" annotated approximately 10m northwest of the Site. "Tank" annotated approximately 50m northeast of the Site. Many of the unspecified pits annotated west of the Site no longer shown, possibly infilled. "Old Shaft (Coal)" annotated north of the Site no longer shown. "Old Shaft (Coal)" annotated south of the Site no longer shown and unspecified pit is annotated. 2 No. "Well" annotated north of the Site no longer shown. Land north and east of the Site is becoming built up with a series of residential and commercial properties. "Old Shaft (Coal)" annotated approximately 150m northeast of the Site.
1910, 1:10,560, 1912, 1:2,500	A series of unspecified buildings annotated north/northwest of the Site. Levels appear to have been raised further south	"Cabinet Works" annotated approximately 250m northeast of the Site. Series of unspecified pit annotated



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	of the Site running southeast to southwest. Slope seen cutting from northeast to southwest across the Site. Railway tracks and bridge have been annotated leading from Gutter Road, towards the southern area of the Site.	west/southwest of the Site have been infilled and annotated as grassland.
1938, 1:10,560	No significant changes.	"Cyngorfail Estate" annotated approximately 200m southwest of the Site.
1949, 1:10,560	No significant changes.	No significant changes.
1959, 1:2,500	Railway tracks and bridge no longer shown. Railway tracks leading to the south of the Site no longer shown. 6 No of the unspecified buildings west of the Site have been removed, 1 No. new building has been annotated.	The railway line has been discontinued and tracks removed north of the Site. "Gas Works" annotated immediately north of the Site no longer shown. "Gas holder Station" annotated approximately 100m north of the Site. "Builders Yard" annotated approximately 20m northeast of the Site. Large "Pond" annotated approximately 80m southeast of the Site. Land surrounding the Site is becoming built up with a series of residential and commercial properties.
1962, 1:2,500, 1963, 1:2,500, 1964, 1:10,560	No significant changes.	Large "Pond" located southeast of the Site no longer shown. Small "Pond" now annotated 200m south of the Site. Unspecified "Works" annotated immediately north of the Site. "Water" annotated approximately 50m northwest of the Site.
1973, 1:2,500 1975, 1:2,500 1978, 1:2,500 1979, 1:10,000	No significant changes.	"Water" annotated northwest of the Site is no longer shown. "Garage" annotated approximately 120m southeast of the Site. "Works" annotated approximately 200m northeast of the Site has been removed and "Bus Depot" annotated. "Works" annotated 200m northwest of the Site has been removed and replaced with a fire station 3 No. "Old Shaft (Coal)" previously annotated within 750m southwest of the Site has been removed.
1982 1:2,500 1989, 1:2,500 1990, 1:2,500	No significant changes.	Large "Pond" previously annotated and removed has been reinstated.
1992, 1:2,500	No significant changes.	"Electric Sub Station" annotated 100m northwest of the Site.
1992, 1:10,000	Site not shown on map.	Western half of the map not shown.
1993, 1:2,500 1994, 1:2,500	No significant changes.	Large "Pond" annotated south of the Site has now been annotated as a marsh.
2002, 1:10,000	Previous structures on site have been removed and 1 No. unspecified building now shown.	No significant changes.
2010 1:10,000 2014, 1:10,000	No significant changes.	No significant changes.



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3.2. Geology

Table 3.2. Geological Summary.

Maps and publications referenced	BGS Geoindex BGS Borehole Scans SJ24NE/492, SJ24NE/27, SJ24NE/468-476 from the vicinity of the Site are presented in Appendix H. England and Wales: Wrexham Scale 1:50,000, Solid and Drift edition Series 5 Published 2005.
Made ground	Information obtained as part of the Groundsure report indicates that artificial ground is present on site. Made Ground is anticipated based on the Site history and existing topography on the Site. The historical OS plans indicate infilling of the Site to raise ground levels in the northern and central areas and within southern area due to the presence of a historic inert landfill.
Superficial geology	An unknown thickness of topsoil and subsoil should be anticipated based on the current site landforms. BGS information indicates that the Site is underlain by Glacial Till, Diamicton which is lithologically diverse, usually sandy, silty clay with pebbles, but can contain gravel rich or laminated sand layers; varied colour and consistency. A BGS Geoindex borehole situated 200m northwest of the Site indicates "grey brown shaley clay" to 2.20m bgl underlain by "brown sand with coal inclusions" to 5.30m bgl underlain by "grey brown shaley clay" to 6.00m bgl which in turn was underlain by the Lower Coal Measures comprising shales and siltstone with coal seams.
Bedrock geology	BGS information indicated that the Site is underlain by the Pennine Lower Coal Measures Formation – Mudstone, Siltstone. Nearby BGS logs indicate that this is to be in the region of 3.00m to 12.00m bgl.
Dip of solid strata	The BGS plan indicates that the solid strata in the vicinity of the Site dip in an easterly direction.
Faults	9 No. faults have been recorded within 500m of the Site boundary. The closest fault is 66m south of the Site and is a southwest trending fault.
Coal Seams	The Coal Authority website and BGS Geoindex does not indicate any coal seams to outcrop in the immediate vicinity of the Site. According to information obtained as part of the Groundsure report the Site <u>is</u> within an area at potential risk from historic or current coal mining activities.



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3.3. Mining and Quarrying

Table 3.3. Coal Mining Activities.

	Yes/No	Comments
Is the Site in an area of potential shallow coal workings?	Yes	The Coal Authority website indicates that the Site is located within a 'development high risk area' due to 'past shallow coal mine workings'. The Coal Authority report (Appendix G) states that the property is in a surface area that could be affected by underground mining in 4 seams of coal at shallow to 130m, depth and last worked in 1868.
Are there any known shafts, adits, tips, lagoons, or opencast workings likely to affect the Site?	Yes	1 No. mine shaft recorded on site in the southern area of the Site. 1 No. mine shaft located within 20m of the western site boundary.
Is exploratory work required to investigate the potential risk from shallow mining or quarrying?	Yes	Investigation of potential shallow mine workings, assuming that such investigation and/or stabilisation works were not undertaken prior to the construction of the existing building.

Table 3.4. Other Extractive Industries.

	Yes/No	Comments
Superficial drift deposits		
Evidence of extraction on or within 250m of the Site?	Yes	Historical OS plans indicate a series of unspecified pits have been annotated from 100m southwest and northwest of the Site.
Action required?	No	
Solid Strata		
Any evidence of mineral extraction on or within 250m of the Site?	NR	
Action required?	No	

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

3.4. Hydrogeology

Table 3.5. Groundwater Occurrence and Abstraction.

	Presence/location	Comments
Depth(s)	Unknown.	
Aquifer designation	On Site	Glacial Till – Unproductive Pennine Lower Coal Measures – Secondary (A) Aquifer – Permeable Layers.
Direction of flow	Unknown	Likely to follow the topography, therefore in a north-easterly direction.
Licensed abstractions	None within 1km of the Site. No Potable Water Abstraction Licences identified within 1km of the Site.	
Private wells	No recorded potable water abstraction licences within 2km of the Site.	Numerous wells noted from historical OS plans within the vicinity of the Site. It is considered that the majority of these wells are likely



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		to be redundant.
Source Protection Zones	NR within 500m of the Site	
Soil Leaching Potential	On-site: Minor Aquifer/High Leaching Potential (HU)	Soil in urban areas and restored mineral workings. These soils are assumed to be highly permeable.
Springs	NR on Site	1 No spring identified on historical OS plans located 750m southeast of the Site. Springs may be present locally on Site due to the variable geology and sloping topography.
Risk of Groundwater Flooding	On-site	Groundwater flooding Susceptibility Areas – Clearwater Flooding or Superficial Deposits Flooding. Associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding) or unconfined aquifers (Clearwater Flooding). Groundwater Flooding Confidence Areas – High The emergence of groundwater at the ground surface or the rising of groundwater into man-made ground.

NR - none recorded.

For definition of Source Protection Zones, see Appendix D.

3.5. Hydrology

Table 3.6. Surface Water Features.

	Presence/location	Comments
Environment Agency GQA classified watercourses	NR within 500m	
Unclassified watercourse(s)	1 No. within 250m	The Aberderfyn River is a tertiary watercourse located approximately 80m northeast of the Site.
Licensed abstractions	NR within 1km	
Canals, ponds, lakes, etc.	1 No recorded 200m southeast of the Site.	1 No. large pond located approximately 200m southeast of the Site.
Flood risk status	On-Site	Risk of Flooding from Rivers and the Sea (RoFRaS) – Very Low Risk
Surface run-off and Site drainage	On-site	Man hole covers observed to the west of the main building. The direction of drainage is unknown at this stage.

NR - none recorded

Environment Agency GQA assessments: A = very good to E = poor



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3.6. Ecological Features

Table 3.7. Ecological Features.

	Presence/location	Comments
Designated locations	On-Site	Sites of Special Scientific Interest (SSSI) Special Areas of Conservation (SAC)
Other sensitive locations	1 No. recorded 750m southwest of site.	Ancient Woodland found annotated approximately 750m southwest of the Site.
Land use controls	NR	
Invasive plants	NR during site walkover	A survey by a qualified invasive plant consultant is required to confirm the absence or extent of invasive species.
Trees and shrubs	On-site	Trees and hedgerows along the western site boundary
Other features	NR	

NR - none recorded

3.7. Landfill and Waste Management Activity

Table 3.8. Waste Management Activities.

	Presence/location	Comments
Local Authority Landfill Records	NR within 1km	
BGS recorded landfills	NR within 1km	
Environmental Agency/ Natural Resources Wales historic landfill sites.	On Site	Site Address: Stryd Las, Stryd Las, Johnstown Waste Licence: Yes Site Reference: NOW-513-L, WMBC L75 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: WW1/L/WAT001- Licence Issue: 22-07-1993 Licence Surrendered: 17-09-2005 Licence Holder: Watkin Jones & Son First Recorded: 31-12-1984 Last Recorded: 31-12-1995
Other licensed waste management facilities within 250m	5 No. located within 200m 1 No. Recorded within 200m 4 No. located approximately 30m northwest of the Site.	Site Address: Aberderfyn Industrial Estate, Johnstown, Wrexham, Clwyd, LL14 Type of Site: Waste A 466 m2 waste transfer station situation Planning Application Reference: CB00286/96. Site Address: Stryd Las, Johnstown, Wrexham, LL14 2AN Type: Landfill taking Non-Biodegradable Wastes (Waste) Licence Number: WAT001 Operator: Watkin Jones & Sons Waste Management licence No: 37077 Annual Tonnage: 0.0 Issue Date: 22/07/1993 Surrendered Date: - Site Address: Stryd Las, Johnstown,



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		Wrexham, Clwyd, LL14 2AN Type: Landfill taking Non-Biodegradable Wastes (Waste) Licence Number: WAT001 Operator: Watkin Jones & Son Ltd Waste Management licence No: 37077 Issue Date: 22/07/1993 Status: Surrendered Site Address: Stryd Las, Johnstown, Wrexham, LL14 2AN Type: Landfill taking Non-Biodegradable Wastes (Waste) Licence Number: WAT001 EPR reference: - Operator: Watkin Jones & Sons Waste Management licence No: 37077 Issue Date: 22/07/1993 Effective Date: - Status: Surrendered Site Address: Stryd Las, Johnstown, Wrexham, Clwyd, LL14 2AN Type: Landfill taking Non-Biodegradable Wastes (Waste) Licence Number: WAT001 EPR reference: GP3694FY/S002 Operator: Watkin Jones & Son Ltd Waste Management licence No: 37077 Issue Date: 22/07/1993 Effective Date: - Modified: 31/03/2003 Status: Surrendered
Is there evidence of other landfilling on or within 250m of the Site?	Yes	Environmental Agency/ Natural Resources Wales indicate an historic inert landfill located on-site.
Walkover evidence of fly-tipping on Site?	NR	
Is a landfill/ground gas risk assessment required?	Yes	There is a potential for localised ground gas generation from potentially raised land within the Site. Potentially infilled land immediately north of the Site.

NR - none recorded



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3.8. Local Potentially Contaminative Activities

Other potentially contaminative activities are shown in Table 3.9. The entries relate to activities within *circa* 250m of the Site, with the exception of COMAH facilities where the assessment is extended to a distance of *circa* 500m from the Site.

Table 3.9. Other Potentially Contaminative Processes in the Locality.

	Location	Comments
Discharge Consents	NR within 250m	
Prosecutions relating to controlled waters	NR within 250m	
Substantiated pollution incidents	1 No. recorded within 250m	5m north of the Site. Incident Date: 06-07-2002 Incident Identification: 89736 Pollutant: Not identified Pollutant Description: Not identified Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
IPPC permits/air pollution controls	NR within 250m	
Registered radioactive substances	NR within 250m	
Prosecutions relating to authorised processes	NR within 250m	
Enforcement and prohibition notices	NR within 250m	
Planning - hazardous substances consents and enforcements	NR within 250m	
COMAH sites	NR within 500m	
NIHHS sites	NR within 500m	
Fuel station entries	1 No. within 250m	1 No. obsolete fuel station recorded 23m west of the Site.
Pertinent contemporary trade directory entries	6 No. within 250m	92m north: Garage
		98m northwest: Electricity Sub Station
		126m east: Electricity Sub station
		132m southeast: Garage
		189m southeast: Pest Control
		214m north: Factory

NR - none recorded

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



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3.9. Radon Risk

Table 3.10. Radon Risk Status.

	Radon protection measures required? (Yes/No)	Comments
BRE (1999), Report 211	Yes	The property <u>is</u> in a Radon Affected Area, as between 3 and 5% of properties are above the Action Level. Basic radon protective measures are required. The presence of air vents at 2m centres around the periphery of the building suggests that ground gas protection measures were installed when the existing building was constructed.

3.10. Summary

- The Site is currently comprised of an irregular shaped parcel of land south of Gutter Hill. The Site is comprised of 1 No. commercial building with associated car parking areas and soft landscaping.
- Historical OS maps indicate that the Site has been developed from the 1900 with a series of developments and raising of ground levels on Site.
- Historical OS maps indicate the ground level has been raised in northern section of the Site in historical maps dating from 1900 to 1912. A historic inert landfill has been registered by the Environment Agency in the southern area of the Site. Therefore, Made Ground and ground gas producing materials may be present on Site. Shallow coal seams and the mine shafts may also be potential source of hazardous ground gases.
- The Site is indicated to be underlain by Glacial Till, which is lithologically diverse with and composed of silty, sandy clay with pebbles, but can contain gravel-rich, or laminated sand layers. The Glacial Till is classified as an unproductive aquifer.
- The superficial deposits are shown to be underlain by the Pennine Lower Coal Measures generally comprising mudstone, siltstone and sandstone. The Pennine Lower Coal Measures are classified as a Secondary (A) Aquifer – Permeable Layers.
- Historical OS plans indicate 1 No. spring identified 750m southeast of the Site. Springs may be present locally on Site due to sloping topography.
- The Coal Authority indicates that the Site is located within a 'development high risk area' due to 'past shallow coal mine workings'.
- A recorded mine shaft is located within the southern area of the Site and another mineshaft is located within 20m of the western site boundary. Unrecorded mine entries, such as bell pits, may also be present within the Site.
- There is no recorded groundwater or surface water abstractions within the vicinity of the Site. The Site is not located within a Source Protection Zone.



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- The Site is located within a radon affected area. Basic radon protective measurements are required (if not already installed with the existing building).
- An unnamed tertiary watercourse is located 78m northeast of the Site.
- Very low risk of river and coastal flooding. There is a potential risk of Superficial Deposits Flooding; potential below surface means that given the geological conditions, there may be a groundwater flooding hazard to basements and other below surface infrastructure. The 1 No. large pond located southeast of the Site may be evidence of localised groundwater or surface water flooding.



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4. PREVIOUS INVESTIGATION FINDINGS

No previous desk study or site investigation reports pertaining to this Site have been made available. No construction details for the existing building have been provided.



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5. PROPOSED DEVELOPMENT

It is understood that the existing building on the Site is to be converted from commercial offices (Class B1) to 12 No. Residential apartments (Class C3), with external and internal alterations, associated landscaping and other ancillary works.



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6. PRELIMINARY CONCEPTUAL MODEL

Based on the desk study, 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 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.

The potential pollutant linkages identified and the qualitative risk assessment for these are presented in Table 6.1. The terms used in the preliminary qualitative risk assessment are defined in Appendix E.

6.1. Justification

The following factors are considered pertinent in defining the conceptual model.

Land Use

- The Site currently comprised of an irregular shaped parcel of land just to the south of Gutter Hill. The Site comprised of 1 No. commercial building with associated areas of car parking and soft landscaping.
- The majority of the Site is bounded by SSSI with the northern portion of the Site bounded by Gutter Hill Road.
- Historical OS maps indicate that the Site has been developed since 1900. The current site layout appears on maps dated from 2002.
- Historical OS maps indicate the ground level has been raised in the northern section of the Site in historical maps dating from 1900 to 1912. A historical inert landfill has been registered by the Environmental Agency in the southern area of the Site. Therefore, Made Ground and ground gas materials may be present on Site. Shallow coal seams and the mine shafts may also be potential sources of hazardous ground gases.
- The Site is indicated to be underlain by Glacial Till, Diamicton classified as an unproductive aquifer.
- The superficial deposits are shown to be underlain by the Pennine Lower Coal Measures generally comprising mudstone, siltstone and sandstone. The Pennine Lower Coal Measures are classified as a Secondary (A) Aquifer – Permeable Layers.
- Minor Aquifer/High Leaching Potential (HU) soils are located within the Site.
- There is no recorded groundwater or surface water abstractions within the vicinity of the Site. The Site is not located within a Source Protection Zone.
- The site is located within a radon affected area. Basic radon protective measures are required.
- The river Aberderfyn, a tertiary watercourse located approximately 80m northeast of the Site.

Potential Sources

- Possible localised metal, PAH, phenol, sulphate, asbestos and organic contamination of on-site Made Ground.



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- Possible localised hazardous gas generation from on-site Made Ground and radon bearing bedrocks and soils.
- Possible hazardous mine gas emissions from shallow coal seams and/or mine entries on-site and to the west of the Site.

Potential Pathways

- Dermal contact, ingestion and inhalation of contaminants on site.
- Migration of ground gas / explosion.
- Lateral and/or vertical migration of mobile contaminants.

Potential Receptors

- Future and adjacent users of the Site.
- Buildings, hardstanding and services.
- Site investigation and future underground service maintenance workers from hazardous short term exposure.
- Secondary (A) Aquifers beneath the Site.

6.2. Uncertainties

The following uncertainties exist in the preliminary conceptual model.

- Ground gas protection measures incorporated into the existing building.
- Presence and depth of any existing clean cover soils within landscaped areas.
- The presence of any features unrecorded by the historical maps.
- Any unrecorded geological features.
- Any unreported pollution events during the Site's history.



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Table 6.1. Preliminary Assessment of Potential Pollutant Linkages.

Pollutant linkage		Receptor(s)		Qualitative risk assessment
	Source	Pathway(s)		
1	Possible localised metal, PAH, phenol, sulphate, asbestos and organic contamination of on-site Made Ground associated raised ground level on-site.	Dermal contact, ingestion and inhalation of contaminants including contaminated dust migration during construction.	Future site users (residential)	Medium x Likely = Moderate Risk
			Current site users (site visitors, residents and farm workers)	Medium x Likely = Moderate Risk
			Site investigation and future maintenance workers	Medium x Likely = Moderate Risk
		Lateral and/or vertical migration of mobile contaminants.	Secondary (A) Aquifer located beneath the Site.	Medium x Low Likelihood = Moderate/Low Risk
2	Possible radon and localised hazardous gas generation from Made Ground on Site and from potentially historic inert landfill.	Lateral and/or vertical migration of mobile contaminants.	Tertiary River /watercourse	Medium x Unlikely = Low Risk
			Future site users (residential).	Medium x Likely = Moderate Risk
		Inhalation (indoor and outdoor)	Site investigation and future maintenance workers.	Medium x Likely = Moderate Risk
		Migration of ground gas / explosion	Future site users (residential).	Medium x Likely = Moderate Risk
3	Possible hazardous mine gas emissions from shallow coal seams and/or mine entries on-site and to the west of the Site.	Inhalation (indoor and outdoor)	Future site users (residential).	Medium x Likely = Moderate Risk
			Site investigation and future maintenance workers.	Medium x Likely = Moderate Risk
		Migration of ground gas / explosion	Future site users (residential).	Medium x Likely = Moderate Risk

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



7. POTENTIAL GEO-ENVIRONMENTAL DEVELOPMENT CONSTRAINTS

The potential development constraints are presented on Drawing No. TE1085PRA2 in Appendix A.

7.1. Potential Contamination Issues

There is a potential for ground gas generation and source of potential contamination associated with the on-site Made Ground that was likely imported to raise ground levels on-site. A site investigation, including the installation of ground gas monitoring wells and chemical testing may be required, subject to existing records of historic site investigations and construction details for the existing building.

The historic gas works to the north of Gutter Hill may be a potential source of significant gas and groundwater contamination.

7.2. Clean Cover System / Off-Site Disposal

There is potential for Made Ground, associated with raised ground levels on-site to be contaminated and present a potentially significant risk to human health. This would be established via site investigation works (or historic records, if available) that would include soil sampling for laboratory chemical analysis and human health/controlled waters risk assessment undertaken in accordance with current guidance. In the event that potentially significant risks to future site users are identified from the risk assessment, then there is a potential for an abnormal cost to be realised associated with the implementation of a localised suitable cover system in landscaped areas or excavation and off-site disposal of impacted soils to break potential direct contact and ingestion pathways.

7.3. Shallow Coal Workings

The Coal Authority stated that the property is in a surface area that could be affected by underground mining in 4 seams of coal at shallow to 130m depth, last worked in 1868. The Coal Authority also indicated that the central area of the Site is located within a 'development high risk area' due to 'past shallow coal mine workings'. Intrusive investigations may be required in the vicinity of the existing building to determine the presence of historic shallow mineworkings and unrecorded mine entries, assuming that stabilisation works were not undertaken prior to the construction of the existing building.

7.4. Mine Entries

The Coal Authority stated that there is 1 No. recorded mine shaft in the southern area of the Site and 1 No. mine shaft within 20m of the western site boundary.

The anticipated locations of these recorded mine shafts should not affect the proposed redevelopment/conversion of the existing building.

Unrecorded mine entries, such as bell pits, may also be present within the Site.



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7.5. Gas Protection Measures

There is a potential for hazardous ground gas generation related to radon bearing strata, on-site Made Ground associated with raised ground levels, the 2 No. disused mine shafts and potential shallow coal seams/workings.

If construction details for the existing building cannot confirm the presence of ground gas protection measures, a site investigation, including the installation of ground gas monitoring wells, should be undertaken to determine the presence of hazardous ground gas.

Gas protection measures may be required as specified in BS8485:2015 in order to reduce or mitigate the migration of ground gases at the surface. These protection measures may include passive systems such as venting or membrane systems dependant on the outcome of the ground gas assessment.

Sub floor air vents have been installed at approximate 2m centres around the periphery of the building. Locally, some of the vents have been partially or completely blocked. In order to verify the quality of current protection measures, it is recommended to undertake gas and radon monitoring within the existing building and the subfloor to determine current gas levels within the existing building to confirm that the anticipated current gas protection measures are effective.

Basic radon measurements are required (if not already installed in the existing building).

7.6. Foundations

The Site is anticipated to be underlain by Made Ground which in turn Glacial Till, inspection pits may be required to assess the depth and type of existing foundations if significant increased loadings are proposed.

7.7. Drainage

It is anticipated that the existing site drainage will be utilised during the redevelopment works. .

It is considered at this stage that soakaways are unlikely to be suitable at the Site due to the anticipated presence of Made Ground underlain by low permeability cohesive Glacial Till deposits.

The Local Authority, utility companies and the Environment Agency should be consulted with regard to the drainage solution for the proposed development.



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8. 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: e.g., local authority, Environment Agency, SEPA, NHBC 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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APPENDIX A - FIGURES AND DRAWINGS



Site Location Plan

Contract Number	TE1085
Contract	New foundry Buildings, Wrexham
Client	Watkin Jones & Son

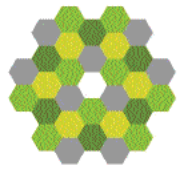


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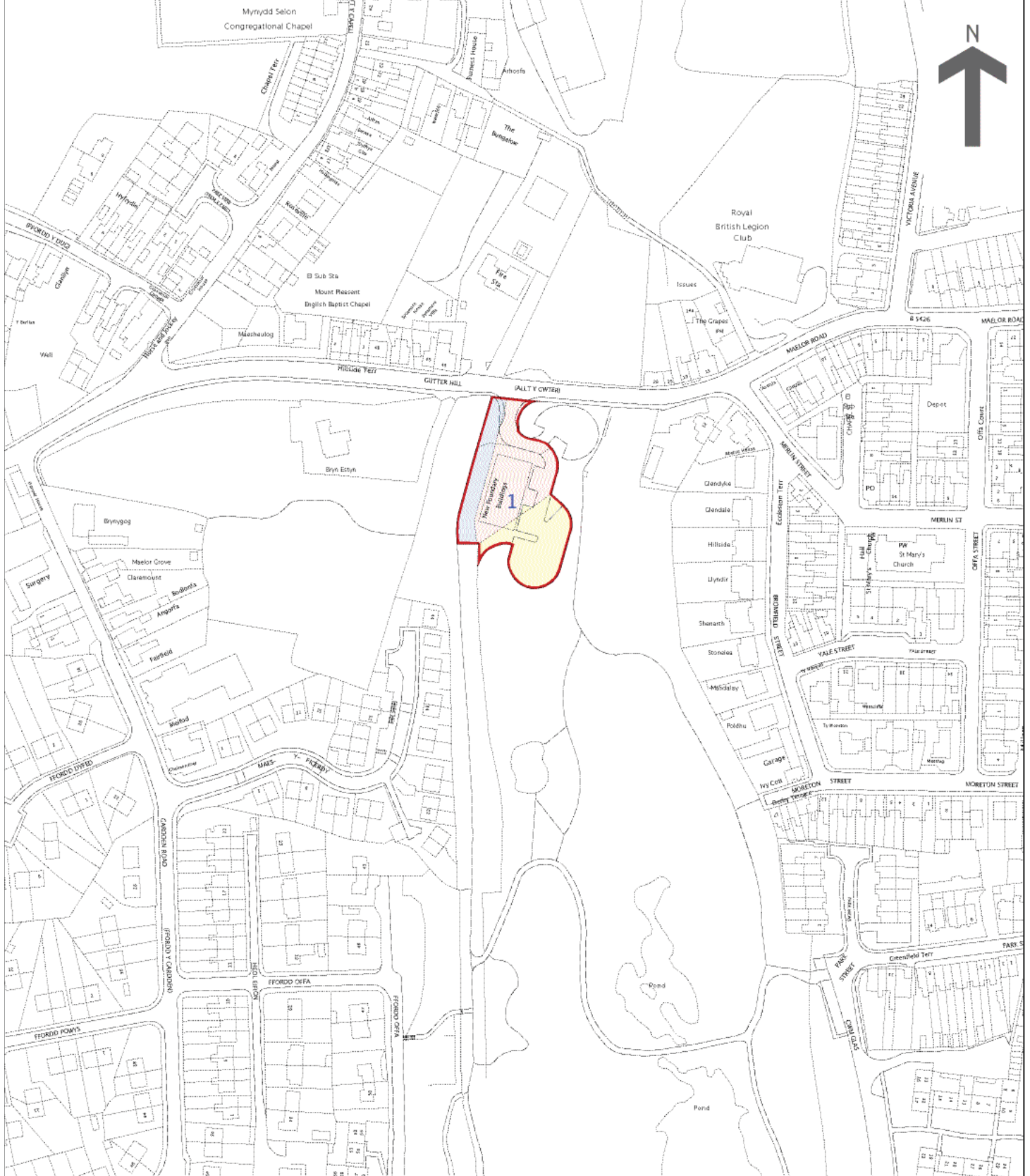
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Drawn by: NG	Approved: SL	
Drawing Number: TE1085PRA1		

Land Registry Current title plan

Title number **WA792262**
Ordnance Survey map reference **SJ2946SE**
Scale **1:2500**
Administrative area **WREXHAM / WRECSAM**



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This copy of the title plan is incomplete without the preceding notes page.

Mae'r copi hwn o'r cynllun teitl yn anghyflawn heb y dudalen nodiadau flaenorol.

APPENDIX B - 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 or 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 CLR7) 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 CLR7) 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 D)
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	95 th percentile estimate of the true mean value of a data population (also known as 95%UCL).
VOC	Volatile Organic Compound

APPENDIX C - PHOTOGRAPHS TAKEN DURING SITE WALKOVER

Photographs 1: Main building on site, looking north-westerly.



Photograph 2: Car parking area on site, looking north-easterly.



Photograph 3: Embankment southeast of the Site.



Photograph 4: Drainage cover situated in the north-western region of the building.



Photograph 5: Green space and public path situated in the southern area of the Site.



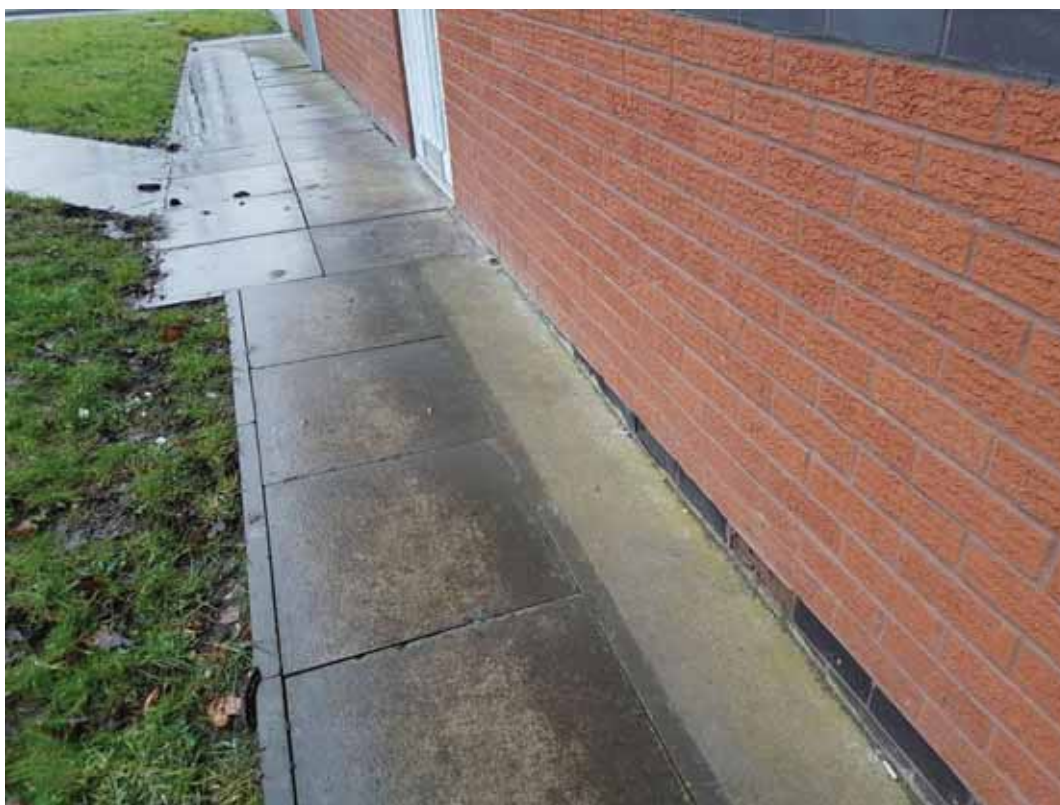
Photograph 6: Public path situated along the western boundary of the Site.



Photography 7: Air vents installed every 2.0m as seen along the base of the building.



Photograph 8: Partially blocked/ blocked air vents.



APPENDIX D - DEFINITION OF SOURCE PROTECTION ZONES AND GROUNDWATER VULNERABILITY ASSESSMENTS

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.

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

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	High	Moderate	Moderate/Low
	Likely	High	Moderate	Moderate/Low	Low
	Low Likelihood	Moderate	Moderate/Low	Low	Negligible
	Unlikely	Moderate/Low	Low	Negligible	Negligible

APPENDIX F - GROUNDSURE REPORTS



TIER ENVIRONMENTAL

SUIT 513, CHADWICK HOUSE, WARRINGTON
ROAD,
WARRINGTON, WA3 6AE

Groundsure
Reference:

GS-4811800

Your Reference:

PE02038_TE1085

Report Date

15 Mar 2018

Report Delivery
Method:

Email - pdf

Enviro Insight

Address: NEW FOUNDRY BUILDINGS, GUTTER HILL, JOHNSTOWN, WREXHAM, LL14 1LS

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Enviro Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above Groundsure reference number.

Yours faithfully,

A handwritten signature in black ink, appearing to be "Andy O.", written in a cursive style.

Managing Director
Groundsure Limited

Enc.
Groundsure Enviroinsight

Address: NEW FOUNDRY BUILDINGS, GUTTER HILL, JOHNSTOWN, WREXHAM, LL14 1LS
Date: 15 Mar 2018
Reference: GS-4811800
Client: TIER ENVIRONMENTAL

NW

N

NE

W

E



SW

S

SE

Aerial Photograph Capture date: 09-Jun-2013
Grid Reference: 329834,346290
Site Size: 0.28ha

Report Reference: GS-4811800
Client Reference: PE02038_TE1085

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Overview of Findings

For further details on each dataset, please refer to each individual section in the main report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	10	15	27	64
1.2 Additional Information – Historical Tank Database	0	13	23	0
1.3 Additional Information – Historical Energy Features Database	0	11	15	79
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	14	12
1.6 Potentially Infilled Land	1	0	17	66

Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	0	1
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	1	2
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	1	0	2
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites

On-site 0-50m 51-250 251-500 501-1000 1000-1500

3.1 Landfill Sites

3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	1	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	1	0	0	0	2	6
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	7
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	1	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	4	0	0	4	53

Section 4: Current Land Use

On-site 0-50m 51-250 251-500

4.1 Current Industrial Sites Data	0	0	10	Not searched
4.2 Records of Petrol and Fuel Sites	0	1	0	1
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology

5.1 Records of Artificial Ground and Made Ground present beneath the study site

Identified

5.2 Records of Superficial Ground and Drift Geology present beneath the study site

Identified

5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section

Section 6: Hydrogeology and Hydrology

0-500m

6.1 Records of Strata Classification in the Superficial Geology within 500m of the study site

Identified

6.2 Records of Strata Classification in the Bedrock Geology within 500m of the study site

Identified

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	1
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	1
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	1	0	1	0	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

0-500m

	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	No	No	No
6.10 Detailed River Network entries within 500m of the site	0	0	1	1	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	No	Yes	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Environment Agency Zone 2 floodplains within 250m of the study site	None identified					
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	None identified					
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	Very Low					
7.4 Flood Defences within 250m of the study site	None identified					
7.5 Areas benefiting from Flood Defences within 250m of the study site	None identified					
7.6 Areas used for Flood Storage within 250m of the study site	None identified					
7.7 Maximum BGS Groundwater Flooding susceptibility within 50m of the study site	Potential at Surface					
7.8 BGS confidence rating for the Groundwater Flooding susceptibility areas	High					

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	1	0	0	1	3	1
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	1	0	0	1	3	1
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	2	27
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	0	0	0	0	0	0
8.14 Records of Green Belt land	0	0	0	0	0	0

Section 9: Natural Hazards

9.1 Maximum risk of natural ground subsidence

Very Low

9.1.1 Maximum Shrink-Swell hazard rating identified on the study site

Very Low

9.1.2 Maximum Landslides hazard rating identified on the study site

Very Low

9.1.3 Maximum Soluble Rocks hazard rating identified on the study site

Negligible

9.1.4 Maximum Compressible Ground hazard rating identified on the study site

Very Low

9.1.5 Maximum Collapsible Rocks hazard rating identified on the study site

Very Low

9.1.6 Maximum Running Sand hazard rating identified on the study site

Very Low

9.2 Radon

9.2.1 Radon Affected Area rating

The site is in a Radon Affected Area, as between 3 and 5% of properties are above the Action Level.

9.2.2 Radon protection measures requirements

Basic radon protective measures are necessary.

Section 10: Mining

10.1 Coal mining areas within 75m of the study site

Identified

10.2 Non-Coal Mining areas within 50m of the study site boundary

Identified

10.3 Brine affected areas within 75m of the study site

None identified



Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between Groundsure and the Client. The document contains the following sections:

1. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

2. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

3. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

4. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure gas pipelines and underground electricity transmission lines.

5. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

6. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licenses, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

7. Flooding

Provides information on river and coastal flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

8. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

9. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence and radon..

10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

11. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, Groundsure provide a free Technical Helpline (08444 159000) for further information and guidance.

Note: Maps

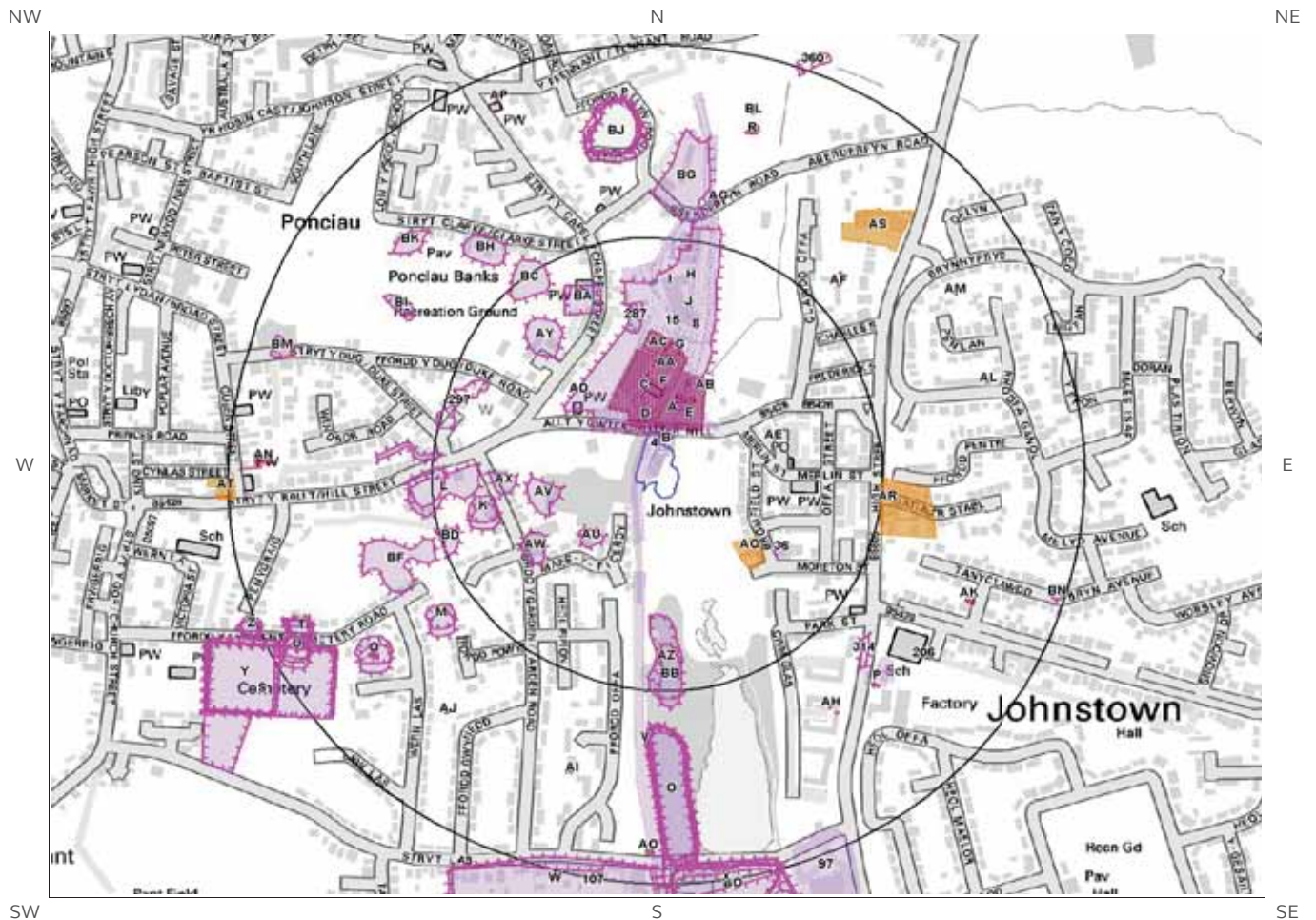
Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier "A" on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

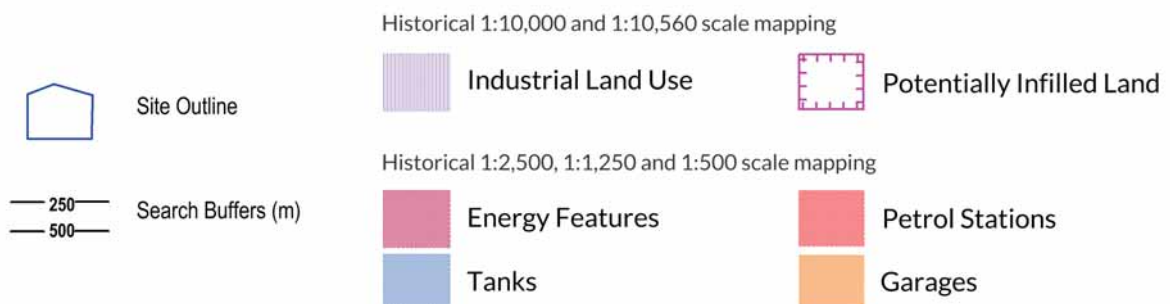
All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.



1. Historical Land Use



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1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 116

ID	Distance [m]	Direction	Use	Date
1G	0	On Site	Railway Sidings	1949
2B	0	On Site	Railway Buildings	1898
3AC	0	On Site	Brick and Tile Works	1873
4	0	On Site	Railway Buildings	1949
5A	0	On Site	Railway Sidings	1898
6F	0	On Site	Tile Yard	1873
7J	0	On Site	Railway Sidings	1938
8	0	On Site	Railway Sidings	1873
9A	0	On Site	Railway Sidings	1909
10B	0	On Site	Railway Building	1909
11C	6	N	Unspecified Works	1960
12C	6	N	Gas Works	1949
13C	6	N	Gas Works	1898
14E	8	NE	Railway Building	1949
15	10	NW	Cabinet Works	1938
16C	10	NW	Gas Works	1909
17D	11	N	Gasometer	1949
18D	11	N	Gasometer	1898
19E	13	NE	Railway Building	1898
20D	14	N	Unspecified Tanks	1960
21D	17	NW	Unspecified Tanks	1938
22D	18	N	Gasometers	1909
23F	22	N	Fire Station	1974
24C	33	N	Gasometer	1898
25C	33	N	Gasometer	1949
26AU	77	SW	Unspecified Heap	1873
27AV	93	W	Unspecified Heap	1873
28V	99	S	Railway Sidings	1949
29G	106	N	Unspecified Tank	1938
30H	121	N	Unspecified Works	1960
31H	123	N	Bus Depot	1974
32H	123	N	Cabinet Works	1909
33I	124	N	Disused Potteries	1898
34I	124	N	Cabinet Works	1949



35AW	132	SW	Unspecified Heap	1873
36	134	SE	Police Station	1974
37AX	146	W	Unspecified Heap	1873
38AY	150	NW	Unspecified Heap	1873
39J	151	N	Unspecified Kilns	1873
40AZ	152	S	Unspecified Heap	1898
41J	160	N	Unspecified Kilns	1873
42BA	165	N	Grave Yard	1873
43K	174	W	Unspecified Heap	1898
44K	174	W	Unspecified Heap	1873
45BB	189	S	Unspecified Heap	1873
46L	193	W	Unspecified Heap	1873
47H	195	N	Unspecified Tank	1873
48H	208	N	Unspecified Tank	1873
49BC	220	NW	Unspecified Heap	1873
50BD	225	W	Unspecified Heap	1873
51L	234	W	Unspecified Heap	1898
52BE	239	W	Unspecified Ground Workings	1909
53BF	260	W	Unspecified Heap	1873
54BG	273	N	Unspecified Heap	1873
55M	277	SW	Unspecified Heap	1898
56BH	283	NW	Unspecified Heap	1873
57M	284	SW	Unspecified Heap	1873
58O	292	S	Unspecified Heap	1909
59N	295	S	Unspecified Heaps	1938
60N	295	S	Unspecified Heaps	1938
61O	296	S	Unspecified Heap	1949
62O	296	S	Unspecified Heap	1898
63O	297	S	Unspecified Heap	1974
64O	297	S	Unspecified Heap	1960
65O	304	S	Unspecified Heap	1873
66BI	325	NW	Unspecified Heap	1873
67P	331	SE	Smithy	1938
68P	332	SE	Smithy	1898
69P	332	SE	Smithy	1949
70P	335	SE	Smithy	1909
71P	341	SE	Smithy	1873
72Q	367	SW	Unspecified Heap	1898
73BK	367	NW	Unspecified Heap	1873
74Q	373	SW	Unspecified Heap	1873
75Q	385	SW	Unspecified Disused Shaft	1974
76Q	386	SW	Unspecified Old Shaft	1898
77Q	389	SW	Old Coal Shaft	1909
78R	400	N	Unspecified Disused Shaft	1974
79R	403	N	Old Coal Shaft	1938



80R	404	N	Old Coal Shaft	1949
81R	404	N	Unspecified Old Shaft	1960
82R	405	N	Unspecified Old Shafts	1898
83R	405	N	Old Coal Shaft	1909
84S	426	SW	Cemetery	1974
85S	426	SW	Cemetery	1960
86BL	426	N	Unspecified Old Shafts	1898
87S	430	SW	Cemetery	1949
88T	437	SW	Unspecified Heap	1960
89T	438	SW	Unspecified Heaps	1909
90T	438	SW	Unspecified Heap	1949
91T	438	SW	Unspecified Heap	1873
92T	439	SW	Unspecified Heap	1938
93T	439	SW	Unspecified Heap	1938
94BM	444	W	Unspecified Heap	1873
95U	452	SW	Unspecified Heap	1898
96U	458	SW	Unspecified Heap	1873
97	469	SE	Unspecified Disused Works	1992
98V	474	S	Unspecified Disused Pits	1909
99W	475	S	Sewage Works	1898
100W	475	S	Sewage Works	1949
101X	476	S	Unspecified Disused Pits	1898
102X	476	S	Unspecified Disused Pits	1949
103W	478	S	Sewage Works	1938
104W	478	S	Sewage Works	1938
105X	480	S	Unspecified Heap	1974
106X	480	S	Unspecified Heap	1960
107	483	S	Unspecified Works	1960
108Y	484	SW	Cemetery	1898
109BN	485	E	Unspecified Heap	1873
110BO	490	S	Unspecified Pits	1873
111X	490	S	Unspecified Heap	1873
112Y	492	SW	Cemetery	1938
113Y	493	SW	Cemetery	1909
114Z	494	W	Unspecified Heap	1898
115Z	494	W	Unspecified Heap	1949
116Z	498	W	Unspecified Heap	1960

1.2 Additional Information – Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.



Records of historical tanks within 500m of the search boundary:

36

ID	Distance (m)	Direction	Use	Date
117F	4	N	Gas Works	1900
118F	5	N	Gas Works	1912
119D	13	NW	Gasometer	1900
120D	13	NW	Gasometer	1912
121AA	15	N	Gas Holder Station	1973
122D	16	N	Unspecified Tank	1962
123AA	16	N	Gasholder Station	1989
124AA	16	N	Gasholder Station	1988
125AA	16	N	Gasholder Station	1959
126AA	16	N	Gasholder Station	1989
127C	33	N	Gasometer	1912
128C	33	N	Gasometer	1900
129C	37	N	Unspecified Tank	1962
130AB	70	NE	Unspecified Tank	1912
131AB	70	NE	Unspecified Tank	1900
132AC	98	N	Unspecified Tank	1962
133AC	98	N	Gas Holder	1973
134AC	99	N	Unspecified Tank	1996
135AC	99	N	Unspecified Tank	1993
136AC	99	N	Unspecified Tank	1994
137AC	100	N	Gasholder	1959
138AC	100	N	Gasholder	1989
139AC	100	N	Gasholder	1988
140AC	100	N	Gasholder	1989
141I	188	N	Unspecified Tank	1912
142I	189	N	Unspecified Tank	1996
143I	189	N	Unspecified Tank	1994
144I	189	N	Unspecified Tank	1999
145I	189	N	Unspecified Tank	1993
146I	189	N	Unspecified Tank	1962
147I	189	N	Unspecified Tank	1973
148I	190	N	Unspecified Tank	1989
149I	190	N	Unspecified Tank	1988
150I	190	N	Unspecified Tank	1989
151I	190	N	Unspecified Tank	1992
152I	190	N	Unspecified Tank	1959

1.3 Additional Information – Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.



Records of historical energy features within 500m of the search boundary:

105

ID	Distance (m)	Direction	Use	Date
153C	4	N	Gas Works	1900
154C	5	N	Gas Works	1912
155D	13	NW	Gasometer	1912
156D	13	NW	Gasometer	1900
157AA	15	N	Gas Holder Station	1973
158AA	16	N	Gasholder Station	1959
159AA	16	N	Gasholder Station	1989
160AA	16	N	Gasholder Station	1989
161AA	16	N	Gasholder Station	1988
162C	33	N	Gasometer	1912
163C	33	N	Gasometer	1900
164AC	98	N	Gas Holder	1973
165AD	99	NW	Electricity Substation	1992
166G	100	N	Gasholder	1959
167G	100	N	Gasholder	1989
168G	100	N	Gasholder	1989
169G	100	N	Gasholder	1988
170AD	101	NW	Electricity Substation	1996
171AD	101	NW	Electricity Substation	1999
172AD	101	NW	Electricity Substation	1994
173AD	101	NW	Electricity Substation	1993
174AE	121	E	Electricity Substation	1992
175AE	123	E	Electricity Substation	1999
176AE	123	E	Electricity Substation	1994
177AE	123	E	Electricity Substation	1996
178AE	123	E	Electricity Substation	1993
179AF	281	NE	Electricity Substation	1986
180AF	295	NE	Electricity Substation	1981
181AF	295	NE	Electricity Substation	1967
182AF	295	NE	Electricity Substation	1999
183AF	295	NE	Electricity Substation	1992
184AF	295	NE	Electricity Substation	1996
185AF	295	NE	Electricity Substation	1978
186AG	301	N	Electricity Substation	1973
187AG	302	N	Electricity Substation	1999
188AG	302	N	Electricity Substation	1996
189AG	302	N	Electricity Substation	1993
190AG	302	N	Electricity Substation	1994
191AG	304	N	Electricity Substation	1989
192AG	304	N	Electricity Substation	1988



193AG	304	N	Electricity Substation	1959
194AG	304	N	Electricity Substation	1989
195AG	304	N	Electricity Substation	1992
196AH	332	SE	Electricity Substation	1999
197AH	332	SE	Electricity Substation	1992
198AH	332	SE	Electricity Substation	1997
199AH	333	SE	Electricity Substation	1973
200AH	344	SE	Electricity Substation	1989
201P	345	SE	Electricity Substation	1986
202P	346	SE	Electricity Substation	1992
203P	346	SE	Electricity Substation	1999
204P	346	SE	Electricity Substation	1996
205P	351	SE	Electricity Substation	1981
206	365	SE	Electricity Substation	1981
207AI	369	S	Electricity Substation	1990
208AI	371	S	Electricity Substation	1989
209AI	371	S	Electricity Substation	1989
210AI	371	S	Electricity Substation	1959
211AJ	371	SW	Electricity Substation	1990
212AJ	371	SW	Electricity Substation	1975
213AJ	373	SW	Electricity Substation	1959
214AJ	373	SW	Electricity Substation	1989
215AJ	373	SW	Electricity Substation	1989
216AK	383	E	Electricity Substation	1981
217AK	383	E	Electricity Substation	1978
218AK	383	E	Electricity Substation	1992
219AK	383	E	Electricity Substation	1996
220AK	383	E	Electricity Substation	1999
221AK	383	E	Electricity Substation	1967
222AK	383	E	Electricity Substation	1986
223AL	393	E	Electricity Substation	1981
224AL	393	E	Electricity Substation	1999
225AL	393	E	Electricity Substation	1992
226AL	393	E	Electricity Substation	1996
227AM	395	NE	Electricity Substation	1981
228AM	396	NE	Electricity Substation	1992
229AM	396	NE	Electricity Substation	1996
230AM	396	NE	Electricity Substation	1999
231AL	396	E	Electricity Substation	1986
232AM	397	NE	Electricity Substation	1986
233AN	445	W	Electricity Substation	1959
234AN	445	W	Electricity Substation	1989
235AN	445	W	Electricity Substation	1988
236AN	445	W	Electricity Substation	1989
237AN	445	W	Electricity Substation	1992
238AO	446	S	Electricity Substation	1959



239AO	446	S	Electricity Substation	1989
240AO	446	S	Electricity Substation	1989
241AO	446	S	Electricity Substation	1975
242AO	448	S	Electricity Substation	1990
243AN	459	W	Electricity Substation	1994
244AN	459	W	Electricity Substation	1996
245AN	459	W	Electricity Substation	1993
246AN	459	W	Electricity Substation	1999
247AN	460	W	Electricity Substation	1973
248AP	464	NW	Electricity Substation	1996
249AP	464	NW	Electricity Substation	1999
250AP	464	NW	Electricity Substation	1994
251AP	464	NW	Electricity Substation	1993
252AP	466	NW	Electricity Substation	1973
253AP	467	NW	Electricity Substation	1989
254AP	467	NW	Electricity Substation	1988
255AP	467	NW	Electricity Substation	1959
256AP	467	NW	Electricity Substation	1989
257AP	467	NW	Electricity Substation	1992

1.4 Additional Information – Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 26

ID	Distance (m)	Direction	Use	Date
258AQ	95	SE	Garage	1973
259AQ	113	SE	Garage	1959
260AQ	113	SE	Garage	1989
261AQ	113	SE	Garage	1988
262AQ	113	SE	Garage	1989
263AQ	113	SE	Garage	1992
264AQ	114	SE	Garage	1996



265AQ	114	SE	Garage	1999
266AQ	114	SE	Garage	1994
267AQ	114	SE	Garage	1993
268AR	246	E	Garage	1967
269AR	246	E	Garage	1960
270AR	250	E	Garage	1992
271AR	250	E	Garage	1996
272AR	251	E	Garage	1986
273AR	254	E	Garage	1981
274AS	329	NE	Garage	1981
275AS	331	NE	Garage	1986
276AS	355	NE	Garage	1960
277AS	362	NE	Garage	1967
278AT	492	W	Garage	1996
279AT	492	W	Garage	1999
280AT	492	W	Garage	1993
281AT	492	W	Garage	1994
282AT	492	W	Garage	1962
283AT	492	W	Garage	1973

1.6 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 84

The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

ID	Distance(m)	Direction	Use	Date
284AC	0	On Site	Brick and Tile Works	1873
285AU	77	SW	Unspecified Heap	1873
286AV	93	W	Unspecified Heap	1873
287	128	N	Pond	1873
288AW	132	SW	Unspecified Heap	1873
289AX	146	W	Unspecified Heap	1873
290AY	150	NW	Unspecified Heap	1873
291AZ	152	S	Unspecified Heap	1898
292BA	165	N	Grave Yard	1873
293K	174	W	Unspecified Heap	1898
294K	174	W	Unspecified Heap	1873
295BB	189	S	Unspecified Heap	1873
296L	193	W	Unspecified Heap	1873
297	206	W	Ponds	1898
298BC	220	NW	Unspecified Heap	1873
299BD	225	W	Unspecified Heap	1873
300L	234	W	Unspecified Heap	1898
301BE	239	W	Unspecified Ground Workings	1909



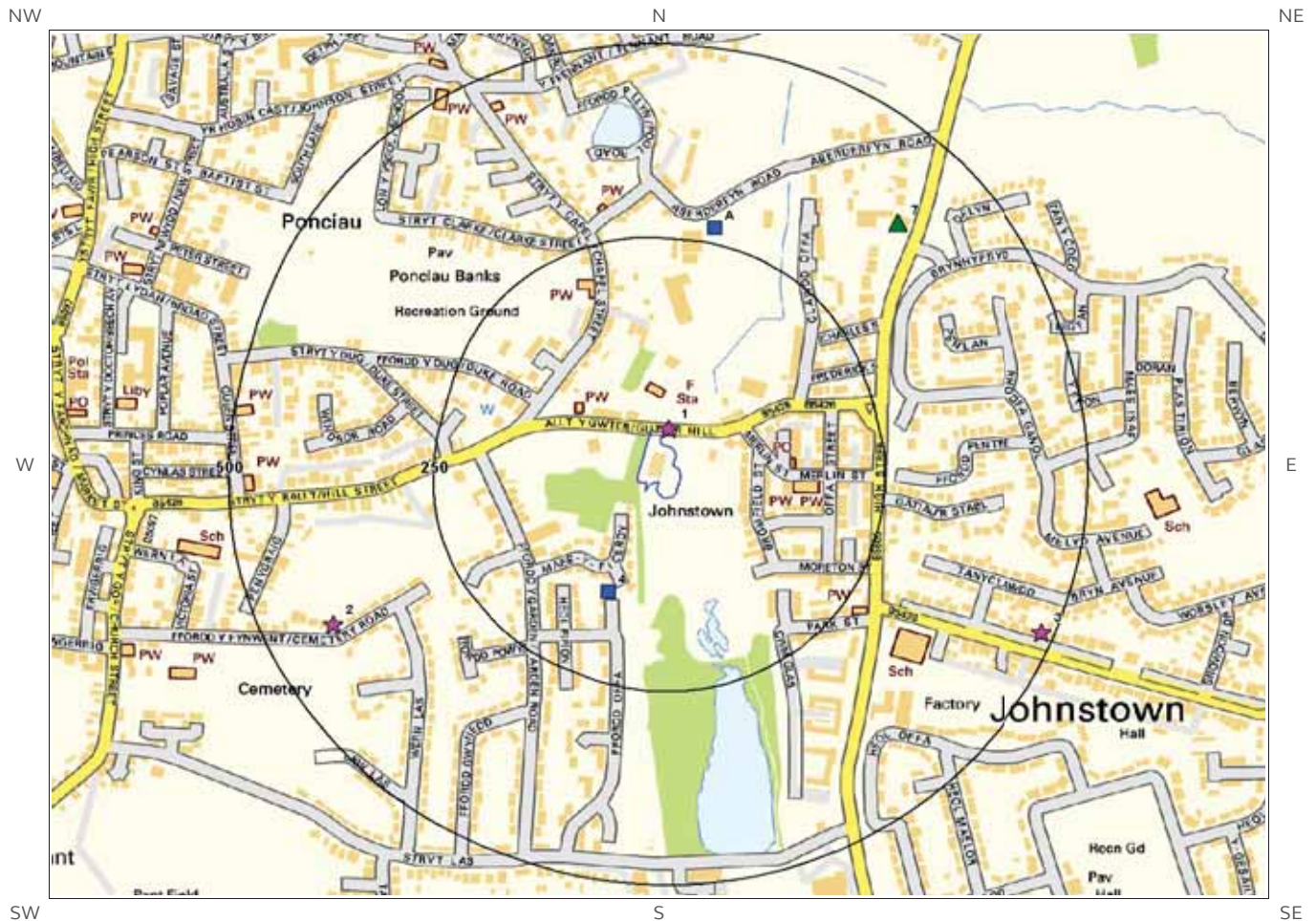
302BF	260	W	Unspecified Heap	1873
303BG	273	N	Unspecified Heap	1873
304M	277	SW	Unspecified Heap	1898
305BH	283	NW	Unspecified Heap	1873
306M	284	SW	Unspecified Heap	1873
307O	292	S	Unspecified Heap	1909
308N	295	S	Unspecified Heaps	1938
309N	295	S	Unspecified Heaps	1938
310O	296	S	Unspecified Heap	1949
311O	296	S	Unspecified Heap	1898
312O	297	S	Unspecified Heap	1974
313O	297	S	Unspecified Heap	1960
314	297	SE	Pond	1873
315O	304	S	Unspecified Heap	1873
316BI	325	NW	Unspecified Heap	1873
317BJ	349	N	Pond	1873
318BJ	360	N	Pond	1974
319BJ	360	N	Pond	1960
320BJ	360	N	Reservoir	1938
321BJ	361	N	Reservoir	1949
322BJ	361	N	Reservoir	1898
323BJ	362	N	Reservoir	1909
324Q	367	SW	Unspecified Heap	1898
325BK	367	NW	Unspecified Heap	1873
326Q	373	SW	Unspecified Heap	1873
327Q	385	SW	Unspecified Disused Shaft	1974
328Q	386	SW	Unspecified Old Shaft	1898
329Q	389	SW	Old Coal Shaft	1909
330R	400	N	Unspecified Disused Shaft	1974
331R	403	N	Old Coal Shaft	1938
332R	404	N	Old Coal Shaft	1949
333R	404	N	Unspecified Old Shaft	1960
334R	405	N	Unspecified Old Shafts	1898
335R	405	N	Old Coal Shaft	1909
336S	426	SW	Cemetery	1974
337S	426	SW	Cemetery	1960
338BL	426	N	Unspecified Old Shafts	1898
339S	430	SW	Cemetery	1949
340T	437	SW	Unspecified Heap	1960
341T	438	SW	Unspecified Heaps	1909
342T	438	SW	Unspecified Heap	1949
343T	438	SW	Unspecified Heap	1873
344T	439	SW	Unspecified Heap	1938
345T	439	SW	Unspecified Heap	1938
346BM	444	W	Unspecified Heap	1873
347U	452	SW	Unspecified Heap	1898



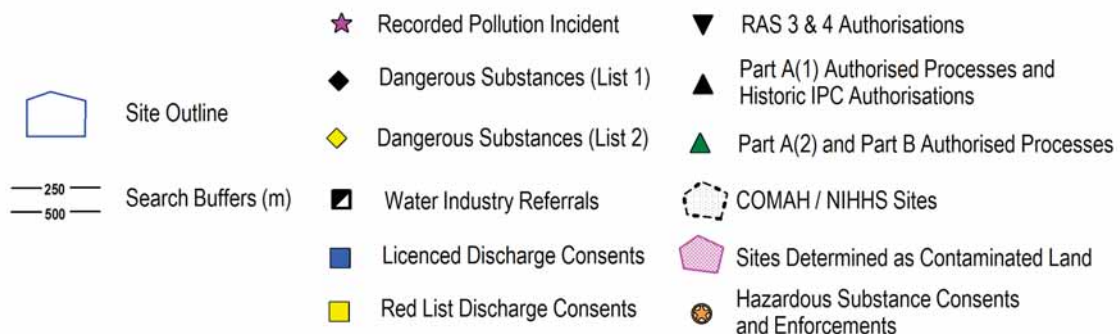
348U	458	SW	Unspecified Heap	1873
349V	474	S	Unspecified Disused Pits	1909
350W	475	S	Sewage Works	1949
351W	475	S	Sewage Works	1898
352X	476	S	Unspecified Disused Pits	1949
353X	476	S	Unspecified Disused Pits	1898
354W	478	S	Sewage Works	1938
355W	478	S	Sewage Works	1938
356X	480	S	Unspecified Heap	1974
357X	480	S	Unspecified Heap	1960
358Y	484	SW	Cemetery	1898
359BN	485	E	Unspecified Heap	1873
360	490	N	Pond	1992
361X	490	S	Unspecified Heap	1873
362BO	490	S	Unspecified Pits	1873
363Y	492	SW	Cemetery	1938
364Y	493	SW	Cemetery	1909
365Z	494	W	Unspecified Heap	1898
366Z	494	W	Unspecified Heap	1949
367Z	498	W	Unspecified Heap	1960



2. Environmental Permits, Incidents and Registers Map



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2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency/Natural Resources Wales and Local Authorities reveal the following information:

2.1.1 Records of historic IPC Authorisations within 500m of the study site:

0

Database searched and no data found.

2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

0

Database searched and no data found.

2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:

0

Database searched and no data found.

2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:

0

Database searched and no data found.



2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

1

The following Part A(2) and Part B Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
7	388	NE	330124 346604	Address: Snax 24, Wrexham Road, Johnstown, Wrexham, LL14 1PA Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B Enforcement: No Enforcement Notified. Date of Enforcement: No Enforcement Notified. Comment: No Enforcement Notified.

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

2.1.8 Records of Licensed Discharge Consents within 500m of the study site:

3

The following Licensed Discharge Consents records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
4	138	S	329770 346130	Address: FFORDD OFFA RHOSLANERCHRUGOG ,, FFORDD OFFA RHOSLANERCHRUGOG ,, RHOSLANERCHRUGOG ,, RHOSLANERCHRUGOG ,, RHOSLANERCHRUGOG ,, Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: CG0359501 Permit Version: 1 Receiving Water: UNNAMED WATERCOURSE Status: Effective Issue date: 21/07/1994 Effective Date: 21-Jul-1994 Revocation Date: -
5A	271	N	329900 346600	Address: RHOSLLANERCHGRUGOG ABERDERFYN, RHOSLLANERCHGRUGOG ABERDERFYN, UNKNOWN, UNKNOWN, UNKNOWN, LL14 1SN Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: CM0176101 Permit Version: 1 Receiving Water: ABERDERFYN Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 20/10/1989 Effective Date: 20-Oct-1989 Revocation Date: 07/09/2010



ID	Distance (m)	Direction	NGR	Details
6A	271	N	329900 346600	Address: RHOSLLANERCHGRUGOG ABERDERFYN, RHOSLLANERCHGRUGOG ABERDERFYN, UNKNOWN, UNKNOWN, UNKNOWN, LL14 1SN Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: CM0176101 Permit Version: 2 Receiving Water: ABERDERFYN Status: Effective Issue date: 08/09/2010 Effective Date: 08-Sep-2010 Revocation Date: -

2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:

0

Database searched and no data found.

2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site:

0

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

3

The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
1	5	N	329844 346340	Incident Date: 06-Jul-2002 Incident Identification: 89736 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)



ID	Distance (m)	Direction	NGR	Details	
2	416	SW	329434 346087	Incident Date: 06-Aug-2014 Incident Identification: 1265526 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
3	484	E	330302 346077	Incident Date: 16-Aug-2013 Incident Identification: 1148585 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)

2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

0

Database searched and no data found.

2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

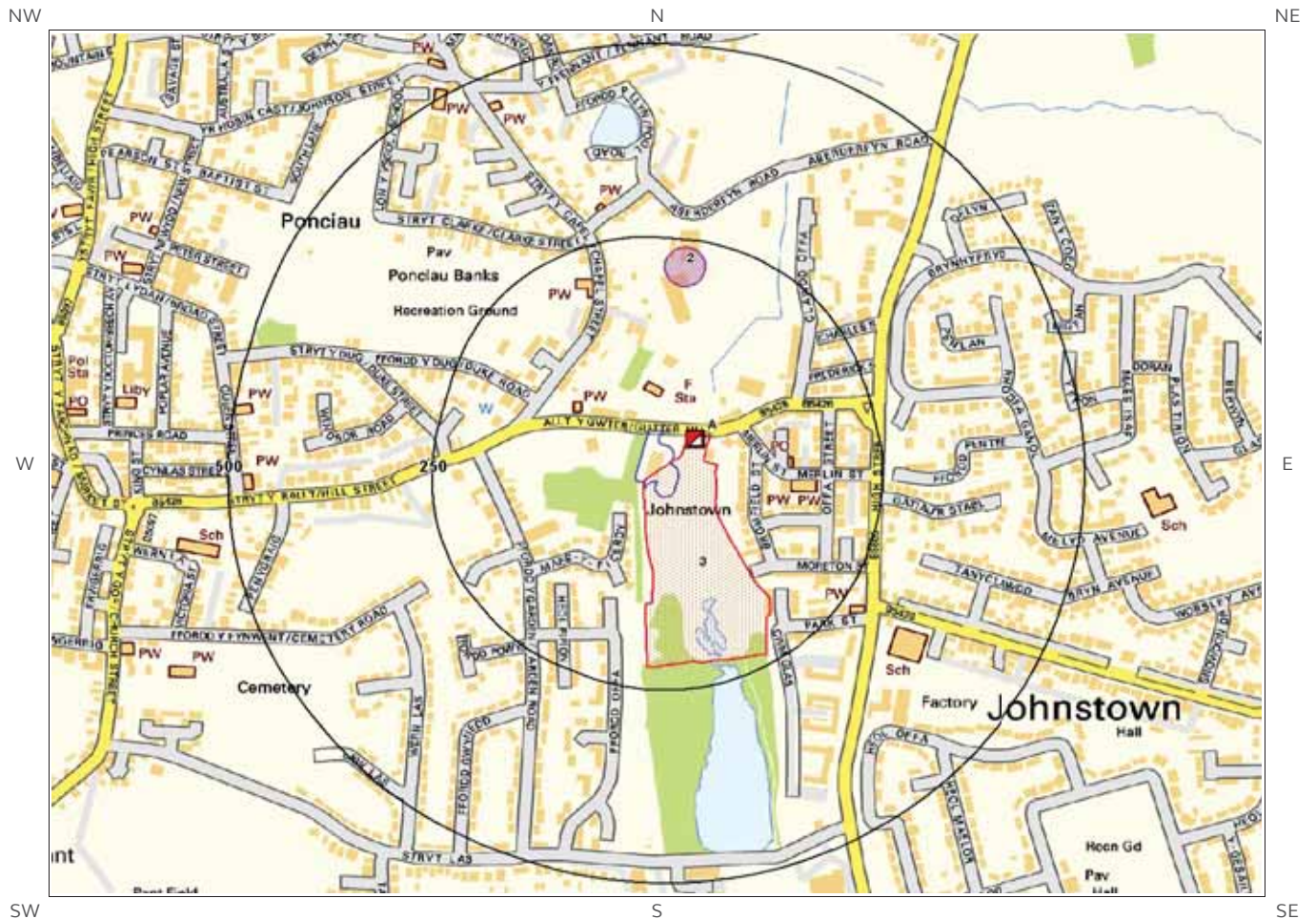
Records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site

0

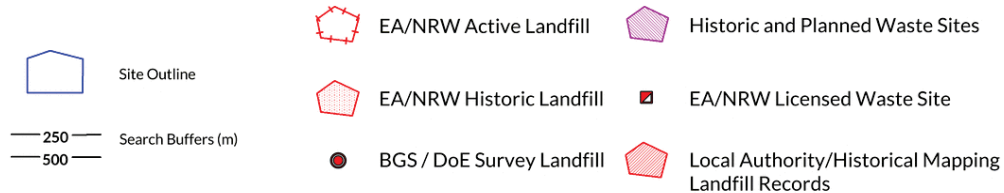
Database searched and no data found.



3. Landfill and Other Waste Sites Map



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3. Landfill and Other Waste Sites

3.1 Landfill Sites

3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site:

1

The following Environment Agency/Natural Resources Wales landfill records are represented as polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details
Not shown	867	E	331114 345752	Address: Bangor Road, Johnstown, Wrexham, Clwyd, LL14 6ET Landfill Reference: 37286.0 Environmental Permitting Regulations (Waste) Reference: SWM002 Landfill Type: A4 : Household, Commercial & Industrial Waste Landfill Operator: Cory Environmental (Central) Ltd Status: To PPC IPPC Reference: EPR Reference:

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

9

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details
3	0	On Site	329800 346100	Site Address: Stryt Las, Stryd Las, Johnstown, Wrexham Waste Licence: Yes Site Reference: NOW-513-L, WMBC L75 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: WW1/L/WAT001 Licence Issue: 22-Jul-1993 Licence Surrendered: 17-Aug-2005 Licence Holder Address: - Operator: - Licence Holder: Watkin Jones and Son Limited First Recorded: 31-Dec-1993 Last Recorded: 31-Dec-1995
Not shown	862	E	330800 345500	Site Address: Hafod Quarry, Bangor Road, Johnstown, Wrexham Waste Licence: Yes Site Reference: - Waste Type: - Environmental Permitting Regulations (Waste) Reference: WW1/L/SWM001 Licence Issue: 30-Apr-1999 Licence Surrendered: 23-May-2005 Licence Holder Address: - Operator: - Licence Holder: Sita Uk First Recorded: - Last Recorded: -



ID	Distance (m)	Direction	NGR	Details	
Not shown	965	NW	329000 347000	Site Address: Cae Dwr Old Tip, Cae Dwr Waste Licence: - Site Reference: - Waste Type: Inert, Industrial, Commercial, Household, Special Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: 31-Dec-1930 Last Recorded: 31-Dec-1941
Not shown	1250	NW	328800 347200	Site Address: Railway Cutting Fill, Cae Dwr Waste Licence: - Site Reference: - Waste Type: Industrial, Special Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: 31-Dec-1984 Last Recorded: 31-Dec-1985
Not shown	1363	NW	328800 347300	Site Address: Llwyneinion Acid Tar Lagoon, Llwyneinion Waste Licence: - Site Reference: - Waste Type: Industrial, Special, Liquid sludge Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: Llwyneinion Shale Brick Company First Recorded: 01-Jun-1961 Last Recorded: 01-Mar-1972
Not shown	1391	NW	328900 347500	Site Address: Llwyneinion Old Refuse Tip No.1, Llwyneinion Waste Licence: - Site Reference: - Waste Type: Inert, Industrial, Commercial, Household, Special Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: 31-Dec-1920 Last Recorded: 31-Dec-1940
Not shown	1460	NW	328800 347500	Site Address: Cae Dwr Brickworks, Cae Dwr Waste Licence: Yes Site Reference: - Waste Type: Industrial, Commercial, Household Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: Clwyd County Council First Recorded: 01-Jun-1980 Last Recorded: 31-Dec-1985
Not shown	1473	S	330100 344500	Site Address: Gardden Clay Pit, Gardden Lodge, Tatham Road, Ruabon, Wrexham, Clywd Waste Licence: Yes Site Reference: WMBC L/23, WMBC L82 Waste Type: Industrial, Commercial, Household Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 01-Apr-1977 Licence Surrendered: Licence Holder Address: A8 Edinburgh Road, Coatbridge, Lanarkshire Operator: - Licence Holder: Shanks and McEwan Northern Limited First Recorded: 31-Dec-1977 Last Recorded: 31-Aug-1984
Not shown	1478	NW	328700 347300	Site Address: Llwyneinion Brick Works Small Quarry, Llwyneinion Waste Licence: - Site Reference: - Waste Type: Inert, Industrial, Commercial, Household Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: 31-Dec-1964 Last Recorded: 31-Dec-1968



3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

0

Database searched and no data found.

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

7

The following landfill records are represented as points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Site Address	Source	Data Type
Not shown	1363	NW	328848 347377	Refuse Tip	1962 mapping	Polygon
Not shown	1363	NW	328848 347377	Refuse Tip	1962 mapping	Polygon
Not shown	1379	SW	328832 345185	Refuse Tip	1975 mapping	Polygon
Not shown	1409	NW	328986 347581	Refuse Tip	1962 mapping	Polygon
Not shown	1409	NW	328986 347581	Refuse Tip	1962 mapping	Polygon
Not shown	1478	NW	328706 347354	Refuse Tip	1962 mapping	Polygon
Not shown	1478	NW	328706 347354	Refuse Tip	1962 mapping	Polygon



3.2 Other Waste Sites

3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

1

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
2	190	N	329866 346548	Type of Site: Waste Transfer Station Conversion Site Address: Aberderfyn Industrial Estate, Johnstown, WREXHAM, Clwyd, LL14 Planning Application Reference: CB00286/96 Date: -	Further Details: Project comprises the change of use from a store to a waste transfer station of 466 sqm. An application (ref: CB00286/96) for Detailed Planning permission was submitted to Wrexham B.C. on 3rd June 1996. Data Source: Historic Planning Application Data Type: Point

3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

61

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
12A	30	NE	329878 346325	Site Address: Stryd Las, Johnstown, Wrexham, LL14 2AN Type: Landfill taking Non-Biodegradable Wastes Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WAT001 EPR reference: - Operator: Watkin Jones & Sons Waste Management licence No: 37077 Annual Tonnage: 0.0	Issue Date: 22/07/1993 Effective Date: - Modified: 31/03/2003 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Stryd Las Correspondence Address: Unit 21, Llandegai Ind Est, Bangor, Gynedd, LL57 4YH
13A	30	NE	329878 346325	Site Address: Stryd Las, Johnstown, Wrexham, Clwyd, LL14 2AN Type: Landfill taking Non-Biodegradable Wastes Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WAT001 EPR reference: EA/EPR/GP3694FY/S002 Operator: Watkin Jones & Son Ltd Waste Management licence No: 37077 Annual Tonnage: 150000.0	Issue Date: 22/07/1993 Effective Date: - Modified: 31/03/2003 Surrendered Date: 17/08/2005 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: Stryd Las Correspondence Address: Stryd Las, Johnstown, Wrexham, Clwyd, LL14



ID	Distance (m)	Direction	NGR	Details	
14A	30	NE	329878 346325	Site Address: Stryd Las, Johnstown, Wrexham, LL14 2AN Type: Landfill taking Non-Biodegradable Wastes Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WAT001 EPR reference: - Operator: Watkin Jones & Sons Waste Management licence No: 37077 Annual Tonnage: 0.0	Issue Date: 22/07/1993 Effective Date: - Modified: 31/03/2003 Surrendered Date: 17/08/2005 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: Stryd Las Correspondence Address: Unit 21, Llandegai Ind Est, Bangor, Gynedd, LL57 4YH
15A	31	NE	329879 346326	Site Address: Stryd Las, Johnstown, Wrexham, Clwyd, LL14 2AN Type: Landfill taking Non-Biodegradable Wastes Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WAT001 EPR reference: GP3694FY/S002 Operator: Watkin Jones & Son Ltd Waste Management licence No: 37077 Annual Tonnage: 150000.0	Issue Date: 22/07/1993 Effective Date: - Modified: 31/03/2003 Surrendered Date: 2.00508e+016 Expiry Date: 0 Cancelled Date: 0 Status: Surrendered Site Name: Stryd Las Correspondence Address: Stryd Las, Johnstown, Wrexham, Clwyd, LL14
Not shown	857	S	330150 345450	Site Address: Brother Industries (U K) Ltd, Vauxhall Industrial Estate, Ruabon, Wrexham, Clwyd, LL14 6HA Type: Material Recycling Treatment Facility Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: BRO197 EPR reference: FB3234AY/A001 Operator: Brother Industries (U K) Ltd Waste Management licence No: 103896 Annual Tonnage: 0.0	Issue Date: 06/08/2012 Effective Date: - Modified: - Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: Issued Site Name: Brother Industries (U K) Ltd Correspondence Address: Brother Industries (U K) Ltd, Vauxhall Industrial Estate, Ruabon, Wrexham, Clwyd, LL14
Not shown	888	S	330100 345400	Site Address: Brother Industries (U K) Ltd, Brother Industries (U K) Ltd, Vauxhall Industrial Estate, Ruabon, Wrexham, Wrexham, LL14 6HA Type: - Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: FB3234AY EPR reference: - Operator: Brother Industries (U K) Ltd Waste Management licence No: 0 Annual Tonnage: 300.0	Issue Date: 06/08/2012 Effective Date: 06/08/2012 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective Site Name: - Correspondence Address: Brother Industries (U K) Ltd, Brother Industries (U K) Ltd, Vauxhall Industrial Estate, Ruabon, Wrexham, Wrexham, LL14
Not shown	888	S	330100 345400	Site Address: Brother Industries (U K) Ltd, Vauxhall Industrial Estate, Ruabon, Wrexham, Clwyd, LL14 6HA Type: Material Recycling Treatment Facility Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: BRO197 EPR reference: EA/EPR/FB3234AY/A001 Operator: Brother Industries (U K) Ltd Waste Management licence No: 103896 Annual Tonnage: 300.0	Issue Date: 06/08/2012 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Brother Industries (U K) Ltd Correspondence Address: Brother Industries (U K) Ltd, Vauxhall Industrial Estate, Ruabon, Wrexham, Clwyd, LL14



ID	Distance (m)	Direction	NGR	Details	
Not shown	888	S	330100 345400	Site Address: Brother Industries (U K) Ltd, Brother Industries (U K) Ltd, Vauxhall Industrial Estate, Ruabon, Wrexham, Clwyd, LL14 6HA Type: Material Recycling Treatment Facility Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: FB3234AY EPR reference: - Operator: - Waste Management licence No: 103896 Annual Tonnage: 300.0	Issue Date: 06/08/2012 Effective Date: 06/08/2012 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective Site Name: - Correspondence Address: Brother Industries (U K) Ltd, Brother Industries (U K) Ltd, Vauxhall Industrial Estate, Ruabon, Wrexham, Clwyd, LL14
Not shown	1208	S	330097 345070	Site Address: H K Motors, Gardden Industrial Estate, Ruabon, Wrexham, Clwyd, LL14 6RG Type: Metal Recycling Site (Vehicle Dismantler) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: HKM002 EPR reference: AP3194FU/V002 Operator: Williams H K; K; D H; A K; C A; I J And N G Williams Waste Management licence No: 37231 Annual Tonnage: 4999.0	Issue Date: 28/03/2003 Effective Date: - Modified: 10/12/2003 Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: Modified Site Name: H K Motors, Ruabon Correspondence Address: H K Motors, Gardden Industrial Estate, Ruabon, Wrexham, Clwyd, LL14
Not shown	1208	S	330096 345069	Site Address: H K Motors, Ruabon, Ruabon, Wrexham, Clwyd, LL14 6RG Type: Metal Recycling Site (Vehicle Dismantler) Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: AP3194FU EPR reference: - Operator: - Waste Management licence No: 37231 Annual Tonnage: 0.0	Issue Date: 28/03/2003 Effective Date: 28/03/2003 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective Site Name: - Correspondence Address: H K Motors, Ruabon, Ruabon, Wrexham, Clwyd, LL14
Not shown	1208	S	330096 345069	Site Address: H K Motors, Ruabon, Ruabon, Wrexham, Wrexham, LL14 6RG Type: - Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: AP3194FU EPR reference: - Operator: Williams H K; K; D H; A K; C A; I J And N G Williams Waste Management licence No: 0 Annual Tonnage: 0.0	Issue Date: 28/03/2003 Effective Date: 28/03/2003 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective Site Name: - Correspondence Address: H K Motors, Ruabon, Ruabon, Wrexham, Wrexham, LL14
Not shown	1246	E	331099 346403	Site Address: Hafod Yard, Johnstown, Wrexham, Clwyd, LL14 2AT Type: Metal Recycling Site (Vehicle Dismantler) Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: NB3339RH EPR reference: - Operator: - Waste Management licence No: 100343 Annual Tonnage: 20001.0	Issue Date: 14/03/2017 Effective Date: 14/03/2017 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective Site Name: - Correspondence Address: Hafod Yard, Johnstown, Wrexham, Clwyd, LL14



ID	Distance (m)	Direction	NGR	Details	
Not shown	1246	E	331099 346403	Site Address: Enviroclear Site Services Limited, Hafod Yard, Johnstown, Wrexham, Clwyd, LL14 2AT Type: Special Waste Transfer Station Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: NB3339RH EPR reference: - Operator: Enviroclear Site Services Limited Waste Management licence No: 100343 Annual Tonnage: 20001.0	Issue Date: 08/01/2016 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective Site Name: Hafod Yard Correspondence Address: Enviroclear Site Services Limited, Hafod Yard, Johnstown, Wrexham, Clwyd, LL14
Not shown	1246	E	331099 346403	Site Address: Hafod Yard, Hafod Road, Johnstown, Wrexham, Clwyd, LL14 6HF Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: DAV097 EPR reference: EA/EPR/CB3133RG/T002 Operator: Davies Michael Waste Management licence No: 100343 Annual Tonnage: 24999.0	Issue Date: 03/12/2008 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Part-Tran Site Name: M & J T Davies Group Correspondence Address: Hafod Yard, Hafod Road, Johnstown, Wrexham, Clwyd, LL14
Not shown	1246	E	331099 346403	Site Address: Hafod Yard, Hafod Road, Johnstown, Wrexham, Clwyd, LL14 2AT Type: 75kte HCI Waste TS + treatment + asbestos Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: DAV097 EPR reference: /A001 Operator: Davies Michael Waste Management licence No: 100343 Annual Tonnage: 0.0	Issue Date: 03/12/2008 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: M & J T Davies Group Correspondence Address: Hafod Yard, Hafod Road, Johnstown, Wrexham, Clwyd, LL14
Not shown	1246	E	331099 346403	Site Address: Hafod Yard, Hafod Road, Johnstown, Wrexham, Clwyd, LL14 6HF Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: DAV097 EPR reference: EA/EPR/CB3133RG/T002 Operator: Davies Michael Waste Management licence No: 100343 Annual Tonnage: 24999.0	Issue Date: 03/12/2008 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Part-Tran Site Name: M & J T Davies Group Correspondence Address: Hafod Yard, Hafod Road, Johnstown, Wrexham, Clwyd, LL14
Not shown	1246	E	331099 346403	Site Address: Hafod Yard, Hafod Road, Johnstown, Wrexham, Clwyd, LL14 2AT Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ENV992 EPR reference: EA/EPR/NB3339RH/T001 Operator: Enviroclear Site Services Limited Waste Management licence No: 100343 Annual Tonnage: 20001.0	Issue Date: 03/12/2008 Effective Date: 01/02/2013 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Hafod Yard Correspondence Address: Hafod Yard, Hafod Road, Johnstown, Wrexham, Clwyd, LL14
Not shown	1246	E	331099 346403	Site Address: Hafod Yard, Johnstown, Wrexham, Clwyd, LL14 2AT Type: Special Waste Transfer Station Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: NB3339RH EPR reference: - Operator: - Waste Management licence No: 100343 Annual Tonnage: 20001.0	Issue Date: 14/03/2017 Effective Date: 14/03/2017 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective Site Name: - Correspondence Address: Hafod Yard, Johnstown, Wrexham, Clwyd, LL14



ID	Distance (m)	Direction	NGR	Details	
Not shown	1246	E	331099 346403	Site Address: Hafod Yard, Johnstown, Wrexham, Wrexham, LL14 2AT Type: - Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: NB3339RH EPR reference: - Operator: Enviroclear Site Services Limited Waste Management licence No: 0 Annual Tonnage: 20001.0	Issue Date: 08/01/2016 Effective Date: 08/01/2016 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective Site Name: - Correspondence Address: Hafod Yard, Johnstown, Wrexham, Wrexham, LL14
Not shown	1247	E	331100 346404	Site Address: Hafod Yard, Hafod Road, Johnstown, Wrexham, Clwyd, LL14 2AT Type: Special Waste Transfer Station Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ENV992 EPR reference: NB3339RH/V002 Operator: Enviroclear Site Services Limited Waste Management licence No: 100343 Annual Tonnage: 20001.0	Issue Date: 03/12/2008 Effective Date: 01/02/2013 Modified: 18/12/2013 Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: Modified Site Name: Hafod Yard Correspondence Address: Hafod Yard, Hafod Road, Johnstown, Wrexham, Clwyd, LL14
Not shown	1282	S	330083 344991	Site Address: I Hayward Ltd, Gardden Ind Est, Ruabon, Wrexham, Clwyd, LL14 6RG Type: Metal Recycling Site (mixed MRS's) Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: HAY001 EPR reference: EP3794FY/V003 Operator: I Hayward Limited Waste Management licence No: 37162 Annual Tonnage: 0.0	Issue Date: 31/03/1999 Effective Date: - Modified: 31/01/2013 Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: Modified Site Name: I Hayward Ltd Correspondence Address: I Hayward Ltd, Gardden Ind Est, Ruabon, Wrexham, Clwyd, LL14
Not shown	1283	S	330082 344990	Site Address: I Hayward Limited, I Hayward Ltd, I Hayward Ltd, Wrexham, Clwyd, LL14 6RG Type: Metal Recycling Site (mixed MRS's) Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: EP3794FY EPR reference: - Operator: I Hayward Limited Waste Management licence No: 37162 Annual Tonnage: 24999.0	Issue Date: 30/04/1999 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective Site Name: I Hayward Ltd Correspondence Address: I Hayward Limited, I Hayward Ltd, I Hayward Ltd, Wrexham, Clwyd, LL14
Not shown	1283	S	330082 344990	Site Address: I Hayward Ltd, I Hayward Ltd, Gardden Ind Est, Ruabon, Wrexham, Wrexham, LL14 6RG Type: - Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: EP3794FY EPR reference: - Operator: I Hayward Limited Waste Management licence No: 0 Annual Tonnage: 24999.0	Issue Date: 30/04/1999 Effective Date: 30/04/1999 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective Site Name: - Correspondence Address: I Hayward Ltd, I Hayward Ltd, Gardden Ind Est, Ruabon, Wrexham, Wrexham, LL14
Not shown	1283	S	330082 344990	Site Address: Gardden Ind Est, Ruabon, Wrexham, LL14 6RG Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: HAY001 EPR reference: - Operator: Haywards I Waste Management licence No: 37162 Annual Tonnage: 0.0	Issue Date: 31/03/1999 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: I Haywards Ltd Correspondence Address: Gardden Ind Est, Ruabon, Wrexham, LL14 6RG



ID	Distance (m)	Direction	NGR	Details	
Not shown	1283	S	330082 344990	Site Address: I Hayward Ltd, Gardden Ind Est, Ruabon, Wrexham, Clwyd, LL14 6RG Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: HAY001 EPR reference: EA/EPR/EP3794FY/V003 Operator: I Hayward Limited Waste Management licence No: 37162 Annual Tonnage: 24999.0	Issue Date: 31/03/1999 Effective Date: - Modified: 31/01/2013 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: I Hayward Ltd Correspondence Address: I Hayward Ltd, Gardden Ind Est, Ruabon, Wrexham, Clwyd, LL14
Not shown	1283	S	330082 344990	Site Address: I Hayward Ltd, I Hayward Ltd, Gardden Ind Est, Ruabon, Wrexham, Clwyd, LL14 6RG Type: Metal Recycling Site (mixed MRS's) Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: EP3794FY EPR reference: - Operator: - Waste Management licence No: 37162 Annual Tonnage: 24999.0	Issue Date: 30/04/1999 Effective Date: 30/04/1999 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective Site Name: - Correspondence Address: I Hayward Ltd, I Hayward Ltd, Gardden Ind Est, Ruabon, Wrexham, Clwyd, LL14
Not shown	1310	S	330054 344958	Site Address: Gardden Industrial Estate, Ruabon, Wrexham, Clwyd, LL14 6RG Type: 75kte Vehicle Depollution Facility Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: CLW002 EPR reference: NP3290VM/V002 Operator: Clwyd Breakers Ltd Waste Management licence No: 102006 Annual Tonnage: 0.0	Issue Date: 07/10/2010 Effective Date: - Modified: 17/05/2015 Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: Modified Site Name: Clwyd Breakers Ltd Correspondence Address: Gardden Industrial Estate, Ruabon, Wrexham, Clwyd, LL14
Not shown	1311	S	330053 344957	Site Address: Clwyd Breakers Ltd, Ruabon, Wrexham, Wrexham, LL14 6RG Type: - Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: NP3290VM EPR reference: - Operator: Clwyd Breakers Ltd Waste Management licence No: 0 Annual Tonnage: 74999.0	Issue Date: 07/10/2010 Effective Date: 07/10/2010 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective Site Name: - Correspondence Address: Clwyd Breakers Ltd, Ruabon, Wrexham, Wrexham, LL14
Not shown	1311	S	330053 344957	Site Address: Gardden Industrial Estate, Ruabon, Wrexham, Clwyd, LL14 6RG Type: 75kte Vehicle Depollution Facility Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CLW002 EPR reference: EA/EPR/NP3290VM/A001 Operator: Clwyd Breakers Ltd Waste Management licence No: 102006 Annual Tonnage: 74999.0	Issue Date: 07/10/2010 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Clwyd Breakers Ltd Correspondence Address: Gardden Industrial Estate, Ruabon, Wrexham, Clwyd, LL14
Not shown	1311	S	330053 344957	Site Address: Clwyd Breakers Ltd, Ruabon, Wrexham, Clwyd, LL14 6RG Type: 75kte Vehicle Depollution Facility Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: NP3290VM EPR reference: - Operator: - Waste Management licence No: 102006 Annual Tonnage: 74999.0	Issue Date: 07/10/2010 Effective Date: 07/10/2010 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective Site Name: - Correspondence Address: Clwyd Breakers Ltd, Ruabon, Wrexham, Clwyd, LL14



ID	Distance (m)	Direction	NGR	Details	
Not shown	1330	S	330084 344943	Site Address: Land / Premises At, Gardden Ind Est, Ruabon, Wrexham, Clwyd, LL14 6RG Type: Metal Recycling Site (mixed MRS's) Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: BEN001 EPR reference: VP3394FX/A001 Operator: Bennett D Waste Management licence No: 37163 Annual Tonnage: 30000.0	Issue Date: 31/03/1999 Effective Date: - Modified: - Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: Expired Site Name: Clwyd Car Breakers Correspondence Address: Land / Premises At, Gardden Ind Est, Ruabon, Wrexham, Clwyd, LL14
Not shown	1331	S	330083 344942	Site Address: Clwyd Car Breakers, Ruabon, Wrexham, Wrexham, LL14 6RG Type: - Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: VP3394FX EPR reference: - Operator: D Bennett Waste Management licence No: 0 Annual Tonnage: 0.0	Issue Date: 31/03/1999 Effective Date: 31/03/1999 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Expired Site Name: - Correspondence Address: Clwyd Car Breakers, Ruabon, Wrexham, Wrexham, LL14
Not shown	1331	S	330083 344942	Site Address: Land / Premises At, Gardden Ind Est, Ruabon, Wrexham, Clwyd, LL14 6RG Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: BEN001 EPR reference: EA/EPR/VP3394FX/A001 Operator: Bennett D Waste Management licence No: 37163 Annual Tonnage: 30000.0	Issue Date: 31/03/1999 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Expired Site Name: Clwyd Car Breakers Correspondence Address: Land / Premises At, Gardden Ind Est, Ruabon, Wrexham, Clwyd, LL14
Not shown	1331	S	330083 344942	Site Address: Clwyd Car Breakers, Ruabon, Wrexham, Clwyd, LL14 6RG Type: Metal Recycling Site (mixed MRS's) Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: VP3394FX EPR reference: - Operator: D Bennett Waste Management licence No: 37163 Annual Tonnage: 0.0	Issue Date: 31/03/1999 Effective Date: 31/03/1999 Modified: - Surrendered Date: - Expiry Date: 25/07/2010 Cancelled Date: - Status: Expired Site Name: - Correspondence Address: Clwyd Car Breakers, Ruabon, Wrexham, Clwyd, LL14
Not shown	1343	E	331190 346464	Site Address: Former A R C Conblock Yard, Off Old Hafod Road, Hafod, Wrexham, LL13 0YH Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ROB001 EPR reference: - Operator: Roberts Hayden Waste Management licence No: 37150 Annual Tonnage: 0.0	Issue Date: 30/09/1997 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Hayden Roberts Skip Hire Correspondence Address: Hill Crest, Bangor Road, Gyfelia, Wrexham, LL13 0YH
Not shown	1356	E	331110 345749	Site Address: Bangor Road, Johnstown, Wrexham, Clwyd, LL14 6ET Type: Co-Disposal Landfill Site Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SWM001 EPR reference: EA/EPR/VP3094FP/S002 Operator: Sita U K Ltd Waste Management licence No: 37201 Annual Tonnage: 300000.0	Issue Date: 30/04/1999 Effective Date: - Modified: - Surrendered Date: 23/05/2005 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: Hafod Quarry Correspondence Address: Bangor Road, Johnstown, Wrexham, Clwyd, LL14



ID	Distance (m)	Direction	NGR	Details	
Not shown	1356	E	331110 345749	Site Address: Bangor Road, Johnstown, Wrexham, LL14 6ET Type: Other Landfill Site taking Special Waste Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: SWM001 EPR reference: - Operator: Shropshire Waste Management Ltd Waste Management licence No: 37201 Annual Tonnage: 105000.0	Issue Date: 30/04/1999 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Hafod Quarry Correspondence Address: 107 Longden Road, Shrewsbury, Shropshire, SY3 9DS
Not shown	1356	E	331110 345749	Site Address: Bangor Road, Johnstown, Wrexham, LL14 6ET Type: Co-Disposal Landfill Site Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SWM001 EPR reference: - Operator: Shropshire Waste Management Ltd Waste Management licence No: 37201 Annual Tonnage: 105000.0	Issue Date: 30/04/1999 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Hafod Quarry Correspondence Address: 107 Longden Road, Shrewsbury, Shropshire, SY3 9DS
Not shown	1356	E	331110 345749	Site Address: Bangor Rd, Johnstown, Wrexham, LL14 6ET Type: Co-Disposal Landfill Site Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SWM002 EPR reference: - Operator: Sita Uk Waste Management licence No: 37286 Annual Tonnage: 0.0	Issue Date: 08/03/2005 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: IPPC Site Name: Hafod Quarry Correspondence Address: Packington House, Packington Rd, Little Packington, Meliden, Coventry, CV7 7HN
Not shown	1356	E	331110 345749	Site Address: Bangor Rd, Johnstown, Wrexham, LL14 6ET Type: Co-Disposal Landfill Site Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SWM002 EPR reference: - Operator: Sita Uk Waste Management licence No: 37286 Annual Tonnage: 0.0	Issue Date: 08/03/2005 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: IPPC Site Name: Hafod Quarry Correspondence Address: Packington House, Packington Rd, Little Packington, Meliden, Coventry, CV7 7HN
Not shown	1356	E	331110 345749	Site Address: Bangor Road, Johnstown, Wrexham, LL14 6ET Type: Co-Disposal Landfill Site Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SWM001 EPR reference: - Operator: Sita Uk Waste Management licence No: 37201 Annual Tonnage: 0.0	Issue Date: 30/04/1999 Effective Date: - Modified: - Surrendered Date: 23/05/2005 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: Hafod Quarry Correspondence Address: Packington House, Packington Lane, Little Packington, Meriden, Coventry, CV7 7HN



ID	Distance (m)	Direction	NGR	Details	
Not shown	1356	E	331110 345749	Site Address: Bangor Road, Johnstown, Wrexham, LL14 6ET Type: Co-Disposal Landfill Site Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SWM001 EPR reference: - Operator: Sita Uk Waste Management licence No: 37201 Annual Tonnage: 105000.0	Issue Date: 30/04/1999 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Hafod Quarry Correspondence Address: Packington House, Packington Lane, Little Packington, Meriden, Coventry, CV7 7HN
Not shown	1356	E	331110 345749	Site Address: Bangor Road, Johnstown, Wrexham, Clwyd, LL14 6ET Type: Co-Disposal Landfill Site Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SWM001 EPR reference: EA/EPR/VP3094FP/S002 Operator: Sita U K Waste Management licence No: 37201 Annual Tonnage: 300000.0	Issue Date: 30/04/1999 Effective Date: - Modified: - Surrendered Date: 23/05/2005 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: Hafod Quarry Correspondence Address: Bangor Road, Johnstown, Wrexham, Clwyd, LL14
Not shown	1356	E	331111 345750	Site Address: Bangor Road, Johnstown, Wrexham, Clwyd, LL14 6ET Type: Co-Disposal Landfill Site Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SWM001 EPR reference: VP3094FP/S002 Operator: Sita U K Ltd Waste Management licence No: 37201 Annual Tonnage: 300000.0	Issue Date: 30/04/1999 Effective Date: - Modified: - Surrendered Date: 2.00505e+016 Expiry Date: 0 Cancelled Date: 0 Status: Surrendered Site Name: Hafod Quarry Correspondence Address: Bangor Road, Johnstown, Wrexham, Clwyd, LL14
Not shown	1358	E	331114 345752	Site Address: Hafod Quarry Landfill, Wrexham, Wrexham, LL14 6ET Type: - Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: JP3294FV EPR reference: - Operator: Cory Environmental (Central) Ltd Waste Management licence No: 0 Annual Tonnage: 0.0	Issue Date: 08/03/2005 Effective Date: 08/03/2005 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Expired Site Name: - Correspondence Address: Hafod Quarry Landfill, Wrexham, Wrexham, LL14
Not shown	1358	E	331114 345752	Site Address: Hafod Quarry, Bangor Rd, Johnstown, Wrexham, LL14 6ET Type: Co-Disposal Landfill Site Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SWM002 EPR reference: - Operator: M W H Associates Limited Waste Management licence No: 37286 Annual Tonnage: 0.0	Issue Date: 08/03/2005 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: IPPC Site Name: Hafod Quarry Correspondence Address: 2nd Floor, Port Of Liverpool Building, Pier Head, Liverpool, L3 1BY
Not shown	1358	E	331114 345752	Site Address: Bangor Road, Johnstown, Wrexham, Clwyd, LL14 6ET Type: Household, Commercial & Industrial Waste Landfill Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SWM002 EPR reference: EA/EPR/JP3294FV/A001 Operator: Cory Environmental (Central) Ltd Waste Management licence No: 37286 Annual Tonnage: 500000.0	Issue Date: 08/03/2005 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: To PPC Site Name: Hafod Quarry Landfill Correspondence Address: Bangor Road, Johnstown, Wrexham, Clwyd, LL14



ID	Distance (m)	Direction	NGR	Details	
Not shown	1358	E	331114 345752	Site Address: Bangor Road, Johnstown, Wrexham, Clwyd, LL14 6ET Type: Household, Commercial & Industrial Waste Landfill Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SWM002 EPR reference: EA/EPR/JP3294FV/A001 Operator: Cory Environmental Central Ltd Waste Management licence No: 37286 Annual Tonnage: 500000.0	Issue Date: 3/8/2005 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: IPPC Site Name: Hafod Quarry Landfill Correspondence Address: Greyfriars Business Park, 3-6, Frank Foley Way, Greyfriars, Stafford, Staffordshire, ST16 2ST
Not shown	1358	E	331114 345752	Site Address: - Type: Co-Disposal Landfill Site Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SWM002 EPR reference: - Operator: M W H Associates Ltd Waste Management licence No: 37286 Annual Tonnage: 500000.0	Issue Date: 08/03/2005 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: IPPC Site Name: Hafod Quarry Correspondence Address: 2nd Floor, Port Of Liverpool Building, Pier Head, Liverpool, L3 1BY
Not shown	1358	E	331114 345752	Site Address: Bangor Road, Johnstown, Wrexham, LL14 6ET Type: Household, Commercial & Industrial Waste Landfill Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SWM002 EPR reference: - Operator: M W H Associates Ltd Waste Management licence No: 37286 Annual Tonnage: 500000.0	Issue Date: 08/03/2005 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: IPPC Site Name: Hafod Quarry Landfill Correspondence Address: 2nd Floor, Port Of Liverpool Building, Pier Head, Liverpool, L3 1BY
Not shown	1358	E	331114 345752	Site Address: Hafod Quarry Landfill, Wrexham, Clwyd, LL14 6ET Type: Household, Commercial & Industrial Waste Landfill Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: JP3294FV EPR reference: - Operator: - Waste Management licence No: 37286 Annual Tonnage: 0.0	Issue Date: 08/03/2005 Effective Date: 08/03/2005 Modified: - Surrendered Date: - Expiry Date: 08/10/2004 Cancelled Date: - Status: Expired Site Name: - Correspondence Address: Hafod Quarry Landfill, Wrexham, Clwyd, LL14
Not shown	1359	E	331115 345753	Site Address: Bangor Road, Johnstown, Wrexham, Clwyd, LL14 6ET Type: Household, Commercial & Industrial Waste Landfill Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SWM002 EPR reference: JP3294FV/A001 Operator: Cory Environmental (Central) Ltd Waste Management licence No: 37286 Annual Tonnage: 500000.0	Issue Date: 08/03/2005 Effective Date: - Modified: - Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: To PPC Site Name: Hafod Quarry Landfill Correspondence Address: Bangor Road, Johnstown, Wrexham, Clwyd, LL14



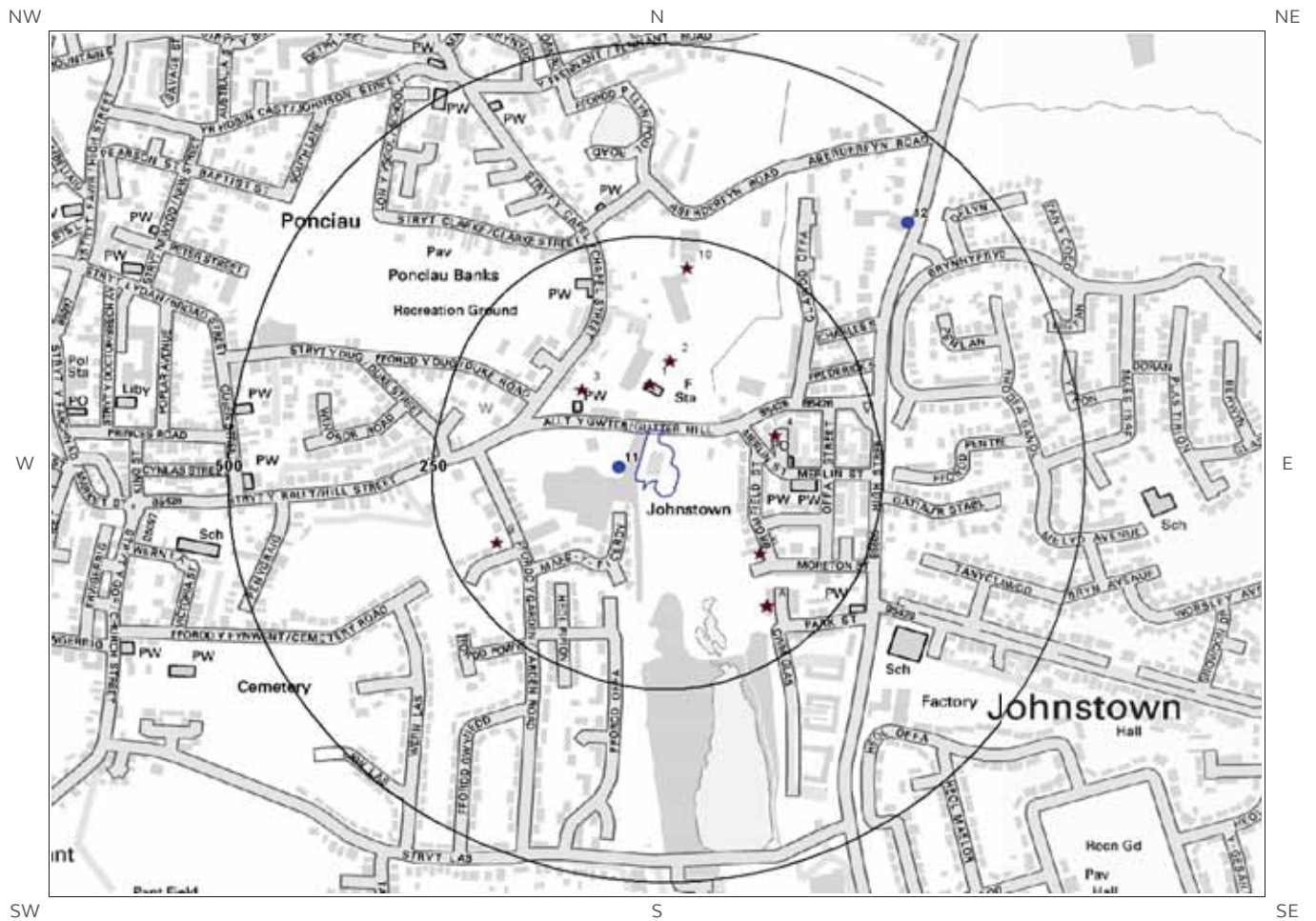
ID	Distance (m)	Direction	NGR	Details	
Not shown	1361	E	331209 346455	Site Address: Enviroclear Site Services Limited, Ruabon, Wrexham, LL14 6HF Type: - Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: EB3390HL EPR reference: - Operator: Enviroclear Site Services Limited Waste Management licence No: 0 Annual Tonnage: 4999.0	Issue Date: 02/08/2011 Effective Date: 02/08/2011 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective Site Name: - Correspondence Address: Enviroclear Site Services Limited, Ruabon, Wrexham, Wrexham, LL14
Not shown	1361	E	331209 346455	Site Address: Hafod Yard, Hafod Road, Johnstown, Wrexham, Clwyd, LL14 6HF Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: HAR221 EPR reference: EA/EPR/WP3990VL/T001 Operator: Harper Nigel Waste Management licence No: 102687 Annual Tonnage: 4999.0	Issue Date: 02/08/2011 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Tran Part Site Name: N J Skip Hire, Hafod Yard Correspondence Address: Hafod Yard, Hafod Road, Johnstown, Wrexham, Clwyd, LL14
Not shown	1361	E	331209 346455	Site Address: Enviroclear Site Services Limited, Ruabon, Wrexham, Clwyd, LL14 6HF Type: Household, Commercial & Industrial Waste T Stn Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: EB3390HL EPR reference: - Operator: - Waste Management licence No: 102687 Annual Tonnage: 4999.0	Issue Date: 02/08/2011 Effective Date: 02/08/2011 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective Site Name: - Correspondence Address: Enviroclear Site Services Limited, Ruabon, Wrexham, Clwyd, LL14
Not shown	1362	E	331210 346456	Site Address: Hafod Yard, Hafod Road, Ruabon, Wrexham, Clwyd, LL14 6HF Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ENV000 EPR reference: EB3390HL/ Operator: Enviroclear Site Services Limited Waste Management licence No: 102687 Annual Tonnage: 4999.0	Issue Date: 02/08/2011 Effective Date: 16/10/2015 Modified: - Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: Transferred Site Name: Enviroclear Site Services Limited Correspondence Address: Hafod Yard, Hafod Road, Ruabon, Wrexham, Clwyd, LL14
Not shown	1364	E	331213 346446	Site Address: F B Skips Ltd, Hafod, Wrexham, Wrexham, LL14 6HF Type: - Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: DP3691SB EPR reference: - Operator: F B Skips Ltd Waste Management licence No: 0 Annual Tonnage: 24999.0	Issue Date: 30/09/1997 Effective Date: 30/09/1997 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Expired Site Name: - Correspondence Address: F B Skips Ltd, Hafod, Wrexham, Wrexham, LL14



ID	Distance (m)	Direction	NGR	Details	
Not shown	1364	E	331213 346446	Site Address: Former A R C Conblock Yard, Off Old Hafod Road, Hafod, Wrexham, Clwyd, LL14 6HF Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: FBS002 EPR reference: EA/EPR/DP3691SB/T001 Operator: F B Skips Ltd Waste Management licence No: 37150 Annual Tonnage: 24999.0	Issue Date: 30/09/1997 Effective Date: 06/01/2009 Modified: 10/12/2003 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Expired Site Name: F B Skips Ltd Correspondence Address: Former A R C Conblock Yard, Off Old Hafod Road, Hafod, Wrexham, Clwyd, LL14
Not shown	1364	E	331213 346446	Site Address: Former A R C Conblock Yard, Off Old Hafod Road, Hafod, Wrexham, Clwyd, LL14 6HF Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ROB001 EPR reference: - Operator: Roberts Haydn Waste Management licence No: 37150 Annual Tonnage: 2544.0	Issue Date: 9/30/1997 Effective Date: - Modified: 12/10/2003 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Hayden Roberts Skip Hire Correspondence Address: Former A R C Conblock Yard, Off Old Hafod Road, Hafod, Wrexham, Wrexham, LL14 6HF
Not shown	1364	E	331213 346446	Site Address: F B Skips Ltd, Hafod, Wrexham, Clwyd, LL14 6HF Type: Household, Commercial & Industrial Waste T Stn Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: DP3691SB EPR reference: - Operator: - Waste Management licence No: 37150 Annual Tonnage: 24999.0	Issue Date: 30/09/1997 Effective Date: 30/09/1997 Modified: - Surrendered Date: - Expiry Date: 14/02/2012 Cancelled Date: - Status: Expired Site Name: - Correspondence Address: F B Skips Ltd, Hafod, Wrexham, Clwyd, LL14
Not shown	1365	E	331214 346447	Site Address: Former A R C Conblock Yard, Off Old Hafod Road, Hafod, Wrexham, Clwyd, LL14 6HF Type: Household, Commercial & Industrial Waste T Stn Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: FBS002 EPR reference: DP3691SB/T001 Operator: F B Skips Ltd Waste Management licence No: 37150 Annual Tonnage: 0.0	Issue Date: 30/09/1997 Effective Date: 06/01/2009 Modified: 10/12/2003 Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: Expired Site Name: F B Skips Ltd Correspondence Address: Former A R C Conblock Yard, Off Old Hafod Road, Hafod, Wrexham, Clwyd, LL14



4. Current Land Use Map



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4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site:

10

The following records are represented as points on the Current Land Uses map.

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	59	N	Johnstown Fire Station	329823 346396	Fire Station, Gutter Hill, Johnstown, Wrexham, LL14 1LT	Fire Brigade Stations	Central and Local Government
2	92	N	Wrights Garage	329847 346427	Gutter Hill, Johnstown, Wrexham, LL14 1LT	Vehicle Repair, Testing and Servicing	Repair and Servicing
3	98	NW	Electricity Sub Station	329740 346390	LL14	Electrical Features	Infrastructure and Facilities
4	126	E	Electricity Sub Station	329977 346331	LL14	Electrical Features	Infrastructure and Facilities
5	132	SE	Bromfield Garage	329958 346177	Moreton Street, Johnstown, Wrexham, LL14 2AA	Vehicle Repair, Testing and Servicing	Repair and Servicing
6A	186	SE	Cassini Blinds Wrexham Chester & Northwich	329967 346109	3 Park Mews, Park Street, Johnstown, Wrexham, LL14 2AF	Curtains and Blinds	Consumer Products
7A	186	SE	Bellini Blinds Wrexham	329967 346109	3 Park Mews, Park Street, Johnstown, Wrexham, LL14 2AF	Curtains and Blinds	Consumer Products
8A	186	SE	The Blind Repair Company	329967 346109	3 Park Mews, Park Street, Johnstown, Wrexham, LL14 2AF	Curtains and Blinds	Consumer Products
9	189	SW	Pro Control Pest Services	329635 346191	20, Gardden Road, Rhosllanerchrugog, Wrexham, LL14 2EN	Pest and Vermin Control	Contract Services
10	214	N	Factory	329869 346548	LL14	Unspecified Works Or Factories	Industrial Features



4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site:

2

The following petrol or fuel site records provided by Catalist are represented as points on the Current Land Use map:

ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
11	23	W	329785 346289	Obsolete	The Garage, Hill Street, Hill Street, Rhosllanerchrugog, Wrexham, Wrexham, LL14 1LN	Not Applicable	Obsolete
12	400	NE	330139 346606	BP	Rss Wrexham Road, Wrexham Road, Wrexham Road, Johnstown, Wrexham, Wrexham, LL14 1PA	No	Open

4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site:

0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site:

0

Database searched and no data found.



5. Geology

5.1 Artificial Ground and Made Ground

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

5.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON

5.3 Bedrock and Solid Geology

The database has been searched on site, including a 50m buffer.

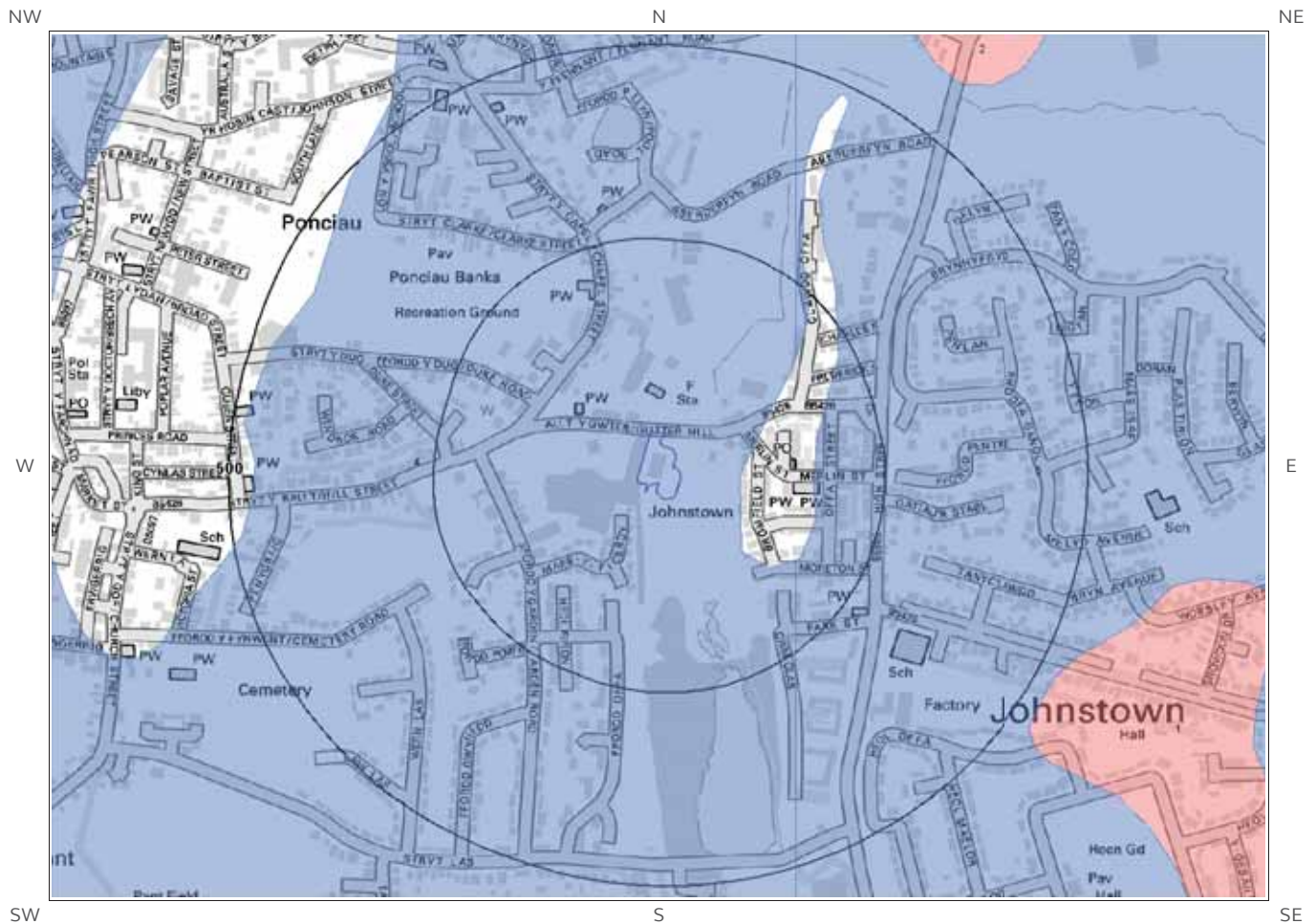
Lex Code	Description	Rock Type
PLMC-MDSS	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED)	MUDSTONE, SILTSTONE AND SANDSTONE

(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

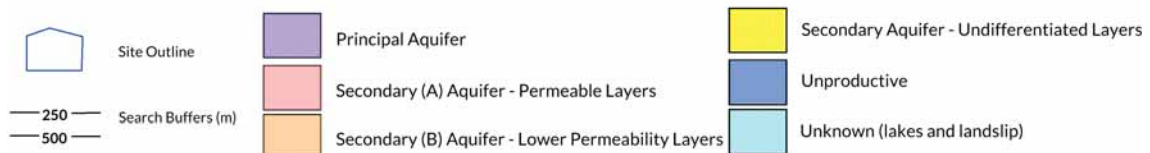


6 Hydrogeology and Hydrology

6a. Aquifer Within Superficial Geology

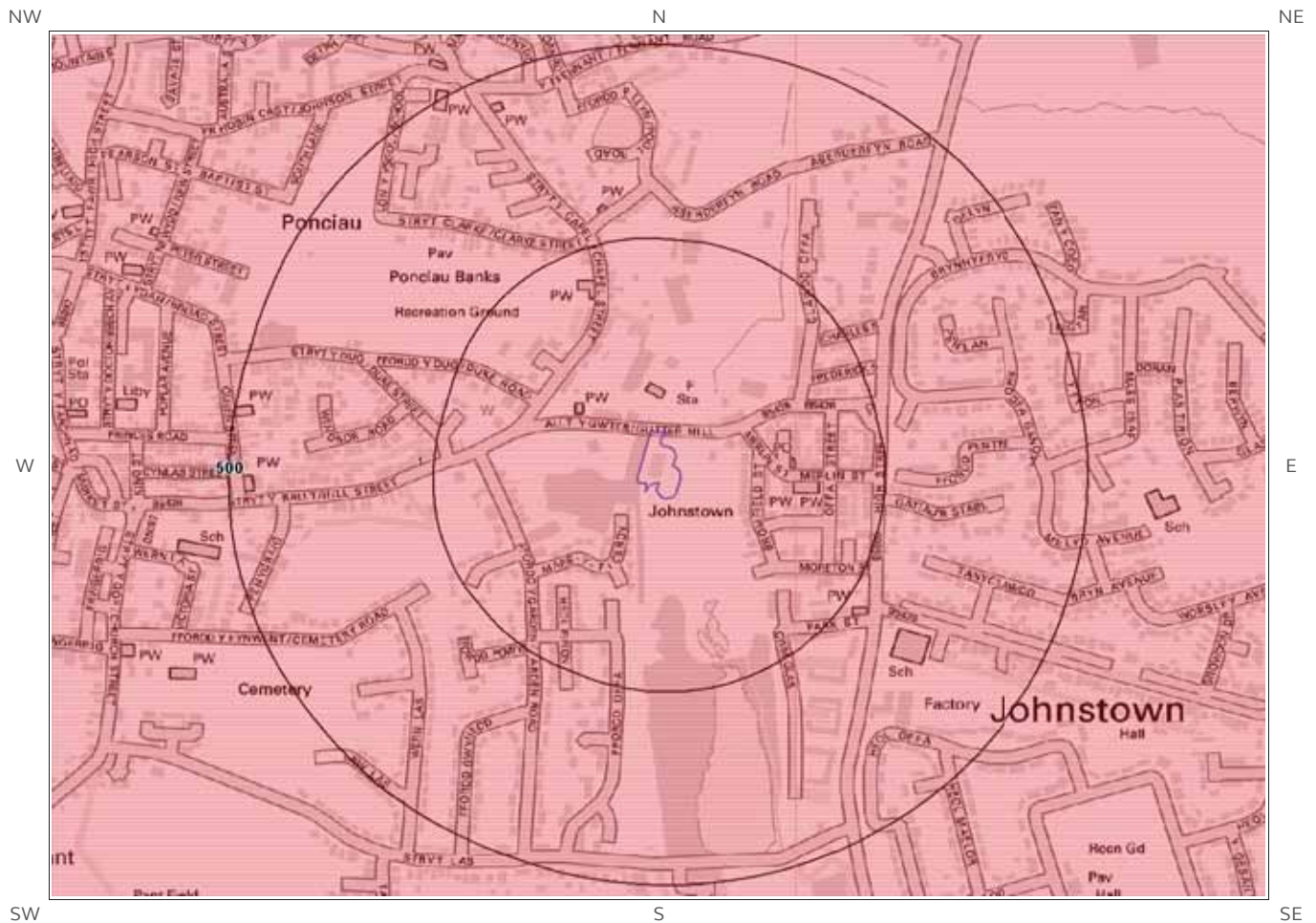


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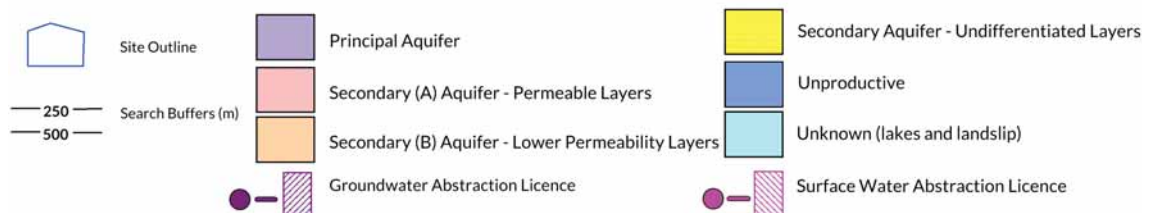




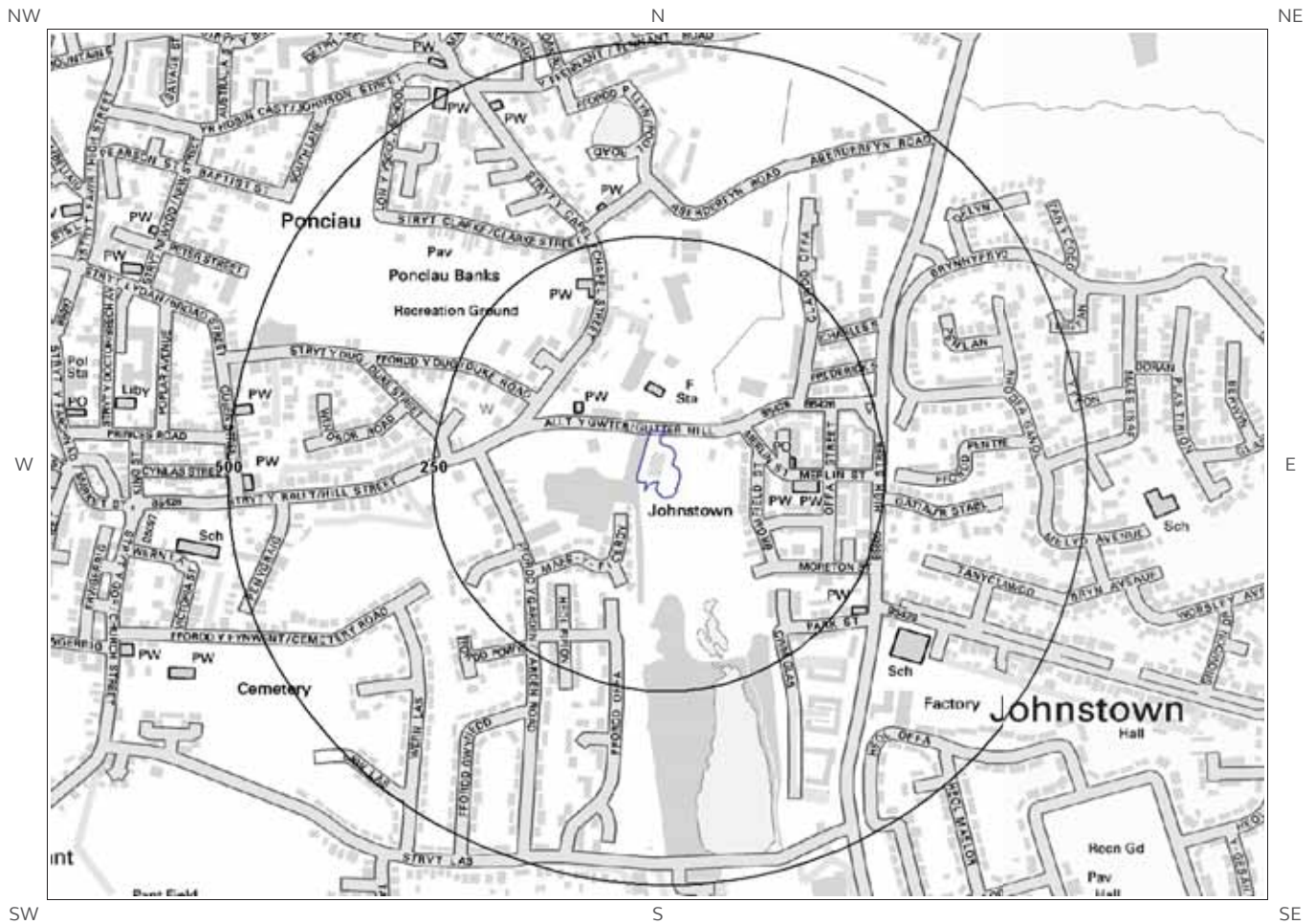
6b. Aquifer Within Bedrock Geology and Abstraction Licenses



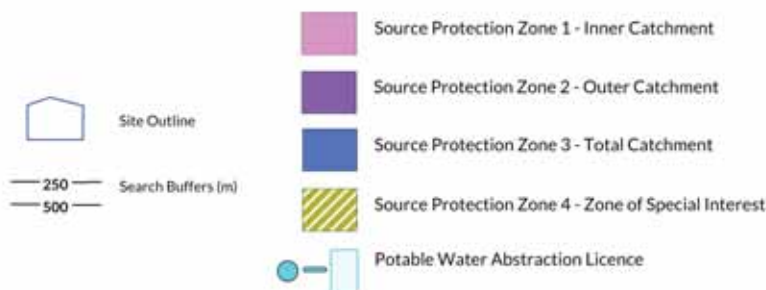
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6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses

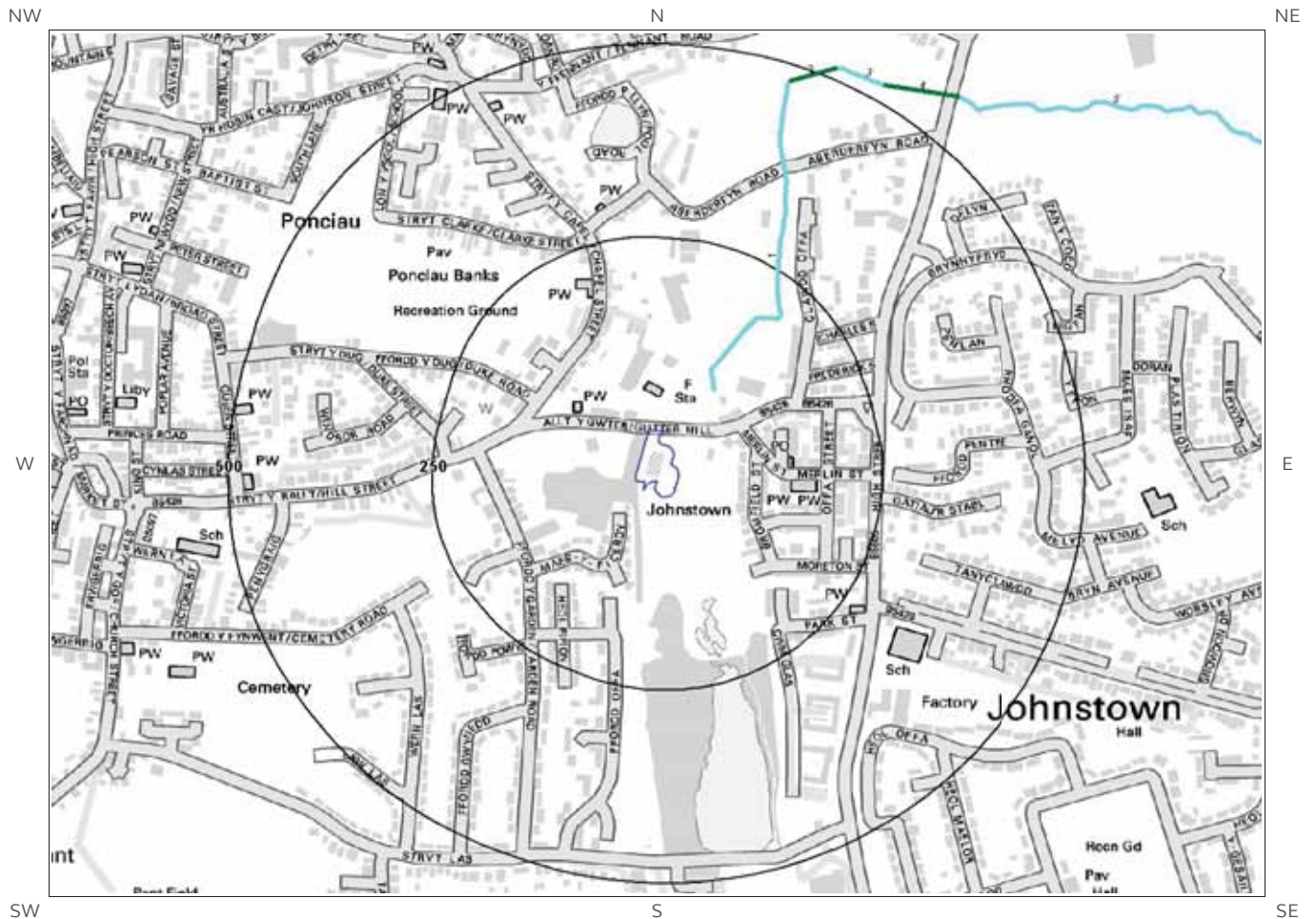


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6e. Hydrology – Detailed River Network and River Quality



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6. Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Records of strata classification within the superficial geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
4	0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
5	163	E	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

6.2 Aquifer within Bedrock Deposits

Records of strata classification within the bedrock geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	141	E	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



6.3 Groundwater Abstraction Licences

Groundwater Abstraction Licences within 2000m of the study site

Identified

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details
Not shown	1613	NW	328960 347700	Status: Active Licence No: 24/67/7/0037 Details: Potable Water Supply - Direct Direct Source: Eaw Groundwater Point: Talwrn Borehole Data Type: Point Name: Dee Valley Water Plc Annual Volume (m ³): 272760 Max Daily Volume (m ³): 1431.99 Original Application No: 295 Original Start Date: 5/7/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/4/2007 Version End Date:

6.4 Surface Water Abstraction Licences

Surface Water Abstraction Licences within 2000m of the study site

None identified

Database searched and no data found.

6.5 Potable Water Abstraction Licences

Potable Water Abstraction Licences within 2000m of the study site

Identified

The following Potable Water Abstraction Licences records are represented as points, lines and regions on the SPZ and Potable Water Abstraction Licences Map (6c):

ID	Distance (m)	Direction	NGR	Details
Not shown	1613	NW	328960 347700	Status: Active Licence No: 24/67/7/0037 Details: Potable Water Supply - Direct Direct Source: Eaw Groundwater Point: Talwrn Borehole Data Type: Point Name: Dee Valley Water Plc Annual Volume (m ³): 272760 Max Daily Volume (m ³): 1431.99 Original Application No: 295 Original Start Date: 5/7/1966 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:

6.6 Source Protection Zones

Source Protection Zones within 500m of the study site

None identified

Database searched and no data found.



6.7 Source Protection Zones within Confined Aquifer

Source Protection Zones within the Confined Aquifer within 500m of the study site None identified

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site Identified

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.
141	E	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.

6.9 River Quality

Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site None identified

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Database searched and no data found.



6.10 Detailed River Network

Detailed River Network entries within 500m of the study site

Identified

The following Detailed River Network records are represented on the Hydrology Map (6e):

ID	Distance (m)	Direction	Details
1	78	NE	River Name: Aberderfyn Welsh River Name: - Alternative Name: - River Type: Tertiary River Main River Status: Currently Undefined
2	477	N	River Name: Aberderfyn Welsh River Name: - Alternative Name: - River Type: Culvert Main River Status: Currently Undefined

6.11 Surface Water Features

Surface water features within 250m of the study site

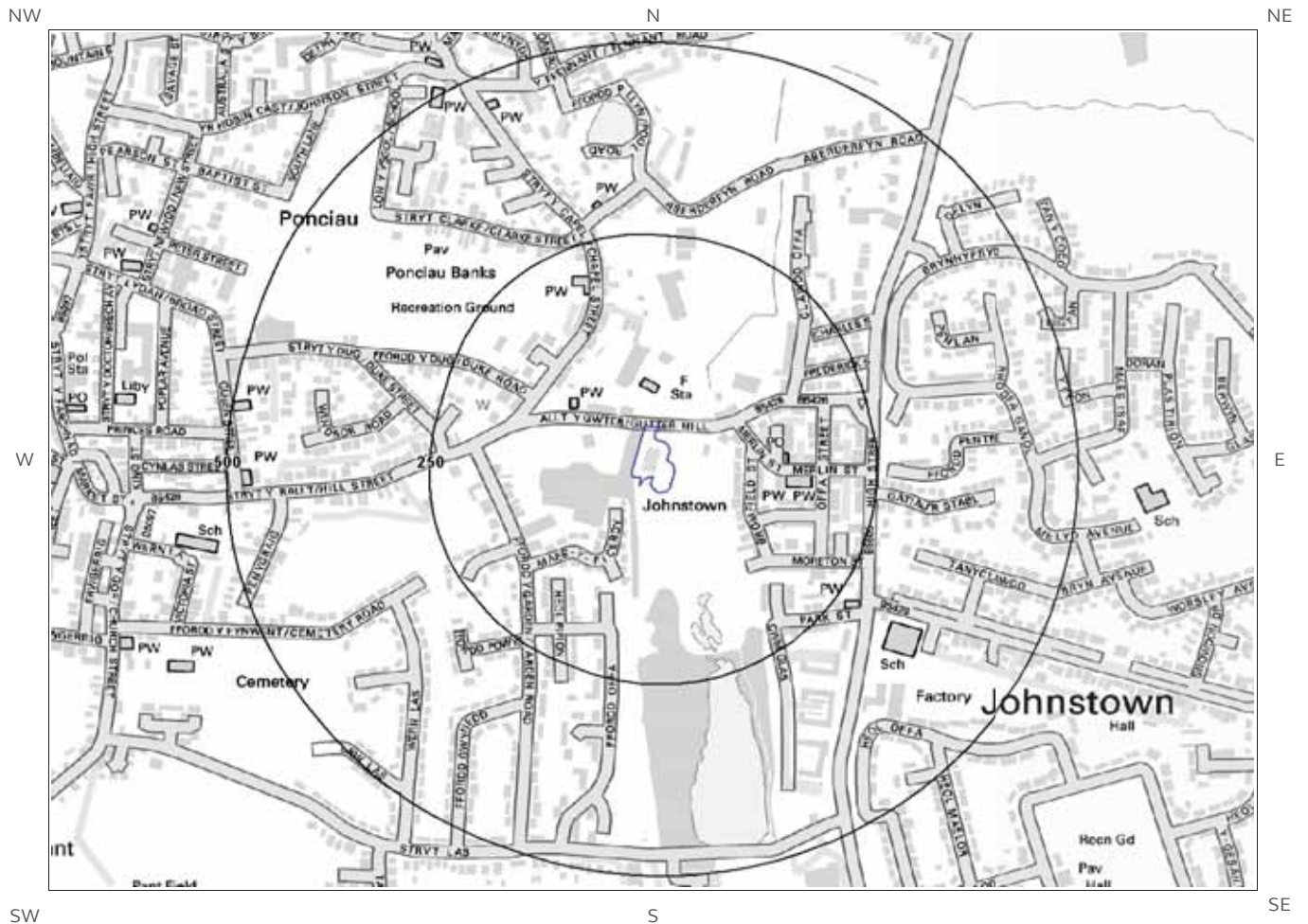
Identified

The following surface water records are not represented on mapping:

Distance (m)	Direction
78	NE
92	NE
141	S
219	S



7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)

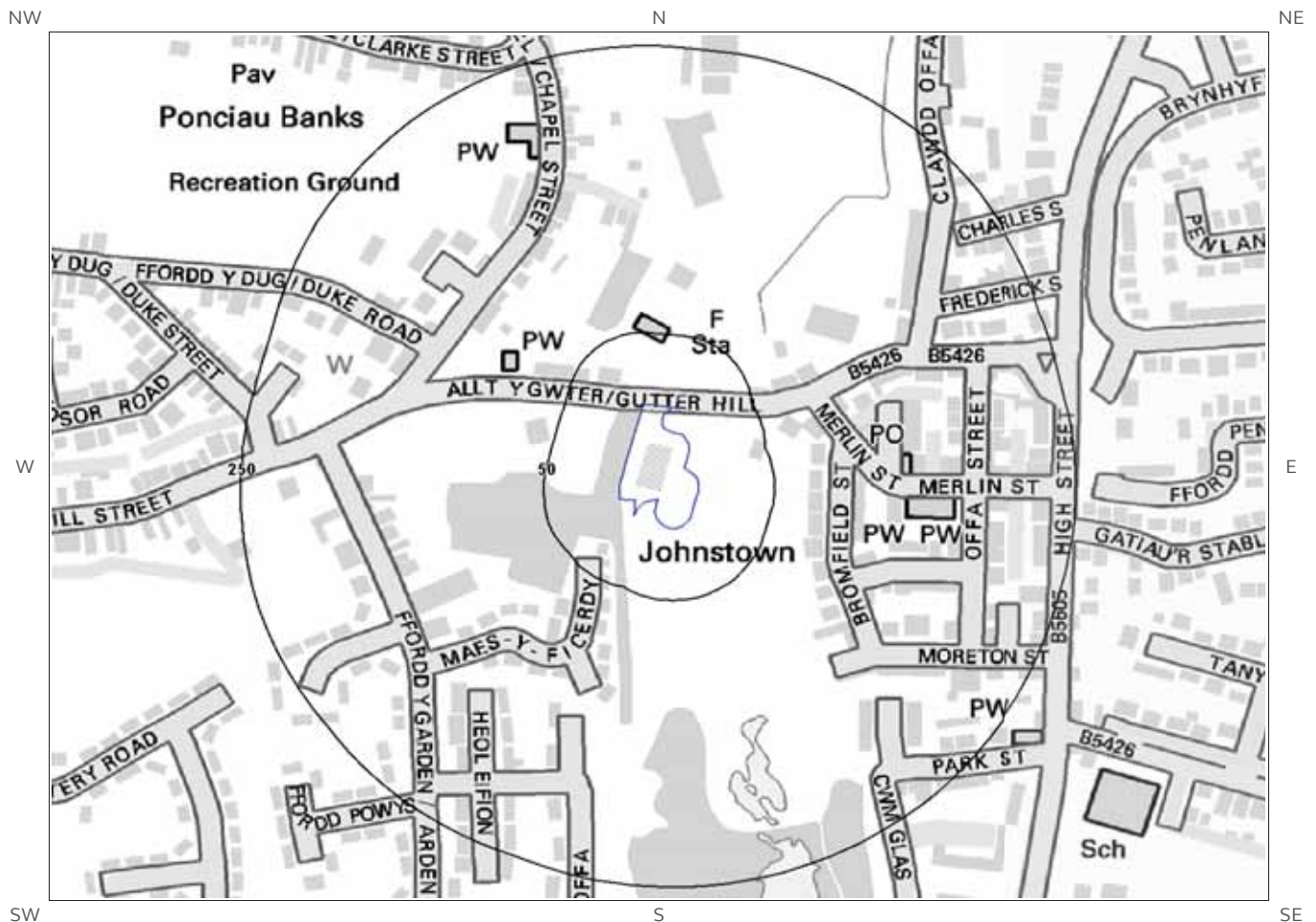


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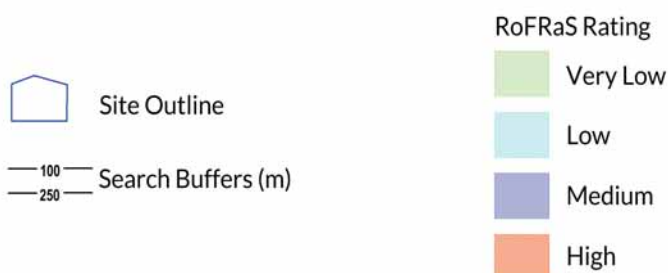




7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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7 Flooding

7.1 River and Coastal Zone 2 Flooding

Environment Agency/Natural Resources Wales Zone 2 floodplain within 250m

None identified

Environment Agency/Natural Resources Wales Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

Database searched and no data found.

7.2 River and Coastal Zone 3 Flooding

Environment Agency/Natural Resources Wales Zone 3 floodplain within 250m

None identified

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

Database searched and no data found.

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

Highest risk of flooding onsite

Very Low

The Environment Agency/Natural Resources Wales RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a Very Low (less than 1 in 1000) chance of flooding in any given year.

7.4 Flood Defences

Flood Defences within 250m of the study site

None identified

Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Areas benefiting from Flood Defences within 250m of the study site

None identified



7.6 Areas benefiting from Flood Storage

Areas used for Flood Storage within 250m of the study site

None identified

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site

Identified

Clearwater Flooding or Superficial Deposits Flooding

Superficial Deposits Flooding

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

7.7.2 Highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions

Potential at Surface

Where potential for groundwater flooding to occur at surface is indicated, this means that given the geological conditions in the area groundwater flooding hazard should be considered in all land-use planning decisions. It is recommended that other relevant information e.g. records of previous incidence of groundwater flooding, rainfall, property type, and land drainage information be investigated in order to establish relative, but not absolute, risk of groundwater flooding.

7.8 Groundwater Flooding Confidence Areas

British Geological Survey confidence rating in this result

High

Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.



8. Designated Environmentally Sensitive Sites Map



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8. Designated Environmentally Sensitive Sites

Presence of Designated Environmentally Sensitive Sites within 2000m of the study site

Identified

8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:

6

The following Site of Special Scientific Interest (SSSI) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	SSSI Name	Data Source
7A	0	On Site	STRYT LAS A'R HAFOD	Natural Resources Wales
8B	484	S	STRYT LAS A'R HAFOD	Natural Resources Wales
9C	520	S	STRYT LAS A'R HAFOD	Natural Resources Wales
10D	719	S	STRYT LAS A'R HAFOD	Natural Resources Wales
11E	837	E	STRYT LAS A'R HAFOD	Natural Resources Wales
12F	1033	SE	STRYT LAS A'R HAFOD	Natural Resources Wales

8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:

0

Database searched and no data found.

8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:

6

The following Special Area of Conservation (SAC) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	SAC Name	Data Source
1A	0	On Site	Johnstown Newt Sites	Natural Resources Wales
2B	484	S	Johnstown Newt Sites	Natural Resources Wales
3C	520	S	Johnstown Newt Sites	Natural Resources Wales
4D	719	S	Johnstown Newt Sites	Natural Resources Wales
5E	837	E	Johnstown Newt Sites	Natural Resources Wales
6F	1033	SE	Johnstown Newt Sites	Natural Resources Wales



8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:

0

Database searched and no data found.

8.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.



8.6 Records of Ancient Woodland within 2000m of the study site:

29

The following records of Designated Ancient Woodland provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:



ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
13	625	S	Unknown	Ancient and Semi-Natural Woodland
14	658	S	Unknown	Ancient and Semi-Natural Woodland
Not shown	1078	S	Unknown	Ancient and Semi-Natural Woodland
Not shown	1115	N	Unknown	Restored Ancient Woodland Site
Not shown	1150	S	Unknown	Restored Ancient Woodland Site
Not shown	1264	N	Unknown	Ancient and Semi-Natural Woodland
Not shown	1308	S	Unknown	Ancient and Semi-Natural Woodland
Not shown	1312	N	Unknown	Ancient and Semi-Natural Woodland
Not shown	1322	N	Unknown	Ancient and Semi-Natural Woodland
22	1333	NW	Unknown	Restored Ancient Woodland Site
23	1362	W	Unknown	Ancient and Semi-Natural Woodland
Not shown	1366	N	Unknown	Ancient and Semi-Natural Woodland
Not shown	1426	SE	Unknown	Restored Ancient Woodland Site
Not shown	1471	N	Unknown	Ancient and Semi-Natural Woodland
Not shown	1483	S	Unknown	Ancient and Semi-Natural Woodland
Not shown	1572	N	Unknown	Ancient and Semi-Natural Woodland
Not shown	1604	SW	Unknown	Ancient and Semi-Natural Woodland
Not shown	1623	NW	Unknown	Restored Ancient Woodland Site
31	1627	SW	Unknown	Ancient and Semi-Natural Woodland
Not shown	1887	W	Unknown	Ancient and Semi-Natural Woodland
Not shown	1907	W	Unknown	Ancient and Semi-Natural Woodland
Not shown	1910	W	YEW TREE DINGLE	Ancient and Semi-Natural Woodland
Not shown	1915	W	Unknown	Ancient and Semi-Natural Woodland
Not shown	1918	W	Unknown	Ancient and Semi-Natural Woodland
Not shown	1950	NW	Unknown	Ancient and Semi-Natural Woodland
Not shown	1954	W	YEW TREE DINGLE	Ancient and Semi-Natural Woodland
Not shown	1960	W	YEW TREE DINGLE	Ancient and Semi-Natural Woodland



ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
Not shown	1966	W	YEW TREE DINGLE	Ancient and Semi-Natural Woodland
Not shown	1980	W	YEW TREE DINGLE	Ancient and Semi-Natural Woodland

8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

0

Database searched and no data found.

8.8 Records of World Heritage Sites within 2000m of the study site:

0

Database searched and no data found.

8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

0

Database searched and no data found.

8.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.



8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

0

Database searched and no data found.

8.14 Records of Green Belt land within 2000m of the study site:

0

Database searched and no data found.



9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a Groundsure Geo Insight, available from our [website](#). The following information has been found:

9.1.1 Shrink Swell

Maximum Shrink-Swell** hazard rating identified on the study site Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

9.1.2 Landslides

Maximum Landslide* hazard rating identified on the study site Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

9.1.3 Soluble Rocks

Maximum Soluble Rocks* hazard rating identified on the study site Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This indicates an automatically generated 50m buffer and site.



9.1.4 Compressible Ground

Maximum Compressible Ground* hazard rating identified on the study site

Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard

Very low potential for compressible deposits to be present. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

9.1.5 Collapsible Rocks

Maximum Collapsible Rocks* hazard rating identified on the study site

Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard

Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

9.1.6 Running Sand

Maximum Running Sand** hazard rating identified on the study site

Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard

Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

* This indicates an automatically generated 50m buffer and site.



9.2 Radon

9.2.1 Radon Affected Areas

Radon Affected Area assessment: The site is in a Radon Affected Area, as between 3 and 5% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

9.2.2 Radon Protection

Radon protection measures requirements for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment: Basic radon protective measures are necessary.



10. Mining

10.1 Coal Mining

Coal mining areas within 75m of the study site

Identified

The following coal mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

10.2 Non-Coal Mining

Non-Coal Mining areas within 50m of the study site boundary

Identified

The following non-coal mining information is provided by the BGS:

Distance (m)	Direction	Name	Commodity	Assessment of likelihood
0.0	On Site	Not available	Iron Ore (Bedded)	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered

Past underground mine workings may occur. The rock types present in these areas are such that small mineral veins may be present on which it is possible that small scale mining has been undertaken and/or it is possible that limited underground extraction of other materials may have occurred. All such occurrences are likely to be of minor localised extent and infrequent. It should be noted, however, that there is always the possibility of the existence of other sub-surface excavations, such as wells, cess pits, follies, air raid shelters/bunkers and other military structures etc. that could affect surface ground stability but which are outside the scope of this dataset. However, if in a coalfield area you should still consider a Coal Authority mining search for the area of interest.

10.3 Brine Affected Areas

Brine affected areas within 75m of the study site
Guidance: No Guidance Required.

None identified



Contact Details

Groundsure Helpline
Telephone: 08444 159 000
info@groundsure.com

British Geological Survey Enquiries
Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:
Web: www.bgs.ac.uk

BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk

Natural Resources Wales
Ty Cambria
29 Newport Road
Cardiff
CF24 0TP
Tel: 0300 065 3000
Email: enquiries@naturalresourceswales.gov.uk

Public Health England
Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
www.gov.uk/phe
Email: enquiries@phe.gov.uk
Main switchboard: 020 7654 8000

The Coal Authority
200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk

Ordnance Survey
Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505

Local Authority
Authority: Wrexham - Wrexham County Borough Council
Phone: 01978 292 000
Web: <http://www.wrexham.gov.uk/>
Address: The Guildhall, Wrexham, Wrexham, LL11 1AY





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Acknowledgements: Site of Special Scientific Interest, National Nature Reserve, Ramsar Site, Special Protection Area, Special Area of Conservation data is provided by, and used with the permission of, Natural England who retain the Copyright and Intellectual Property Rights for the data.

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<https://www.groundsure.com/terms-and-conditions-march-2018>



TIER ENVIRONMENTAL

SUIT 513, CHADWICK HOUSE, WARRINGTON
ROAD,
WARRINGTON, WA3 6AE

Groundsure
Reference:

GS-4811801

Your Reference:

PE02038_TE1085

Report Date

15 Mar 2018

Report Delivery
Method:

Email - pdf

Geo Insight

Address: NEW FOUNDRY BUILDINGS, GUTTER HILL, JOHNSTOWN, WREXHAM, LL14 1LS

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Geo Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above Groundsure reference number.

Yours faithfully,

Managing Director
Groundsure Limited

Enc.
Groundsure Geo Insight

Address: NEW FOUNDRY BUILDINGS, GUTTER HILL, JOHNSTOWN,
WREXHAM, LL14 1LS

Date: 15 Mar 2018

Reference: GS-4811801

Client: TIER ENVIRONMENTAL

NW N NE



SW S SE

Aerial Photograph Capture date: 09-Jun-2013
Grid Reference: 329834,346290
Site Size: 0.28ha



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Overview of Findings

The Groundsure Geo Insight provides high quality geo-environmental information that allows geo-environmental professionals and their clients to make informed decisions and be forewarned of potential ground instability problems that may affect the ground investigation, foundation design and possibly remediation options that could lead to possible additional costs.

The report is based on the BGS 1:50,000 and 1:10,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Non-coal mining data and Borehole Records, Coal Authority data including brine extraction areas, PBA non-coal mining and natural cavities database, Johnson Poole and Bloomer mining data and Groundsure's unique database including historical surface ground and underground workings.

For further details on each dataset, please refer to each individual section in the report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Geology 1:10,000 Scale

1.1 Artificial Ground	1.1 Is there any Artificial Ground/ Made Ground present beneath the study site at 1:10,000 scale?	Yes
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site at 1:10,000 scale?*	Yes
	1.2.2 Are there any records of landslip within 500m of the study site boundary at 1:10,000 scale?	No
1.3 Bedrock, Solid Geology and linear features	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale?	Yes

Section 2: Geology 1:50,000 Scale

2.1 Artificial Ground	2.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	Yes
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	Yes
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	Yes
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	Yes
	2.2.3 Are there any records of landslip within 500m of the study site boundary?	No
	2.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No



Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and linear features

2.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.

2.3.2 Are there any records relating to permeability of bedrock ground within the study site boundary?

Yes

2.3.3 Are there any records of linear features within 500m of the study site boundary?

Yes

Section 3: Radon

3. Radon

3.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?

The property is in a Radon Affected Area, as between 3 and 5% of properties are above the Action Level.

3.2 Radon Protection

Basic radon protective measures are necessary.

Section 4: Ground Workings	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	1	0	16	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	0	7	42
4.3 Current Ground Workings	0	0	0	3	23

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	0	7	42
5.2 Coal Mining	1	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	1	0	0	1	2
5.5 Non-Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	0

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0
Section 6: Natural Ground Subsidence	On-site				
6.1 Shrink-Swell Clay	Very Low				
6.2 Landslides	Very Low				
6.3 Ground Dissolution of Soluble Rocks	Negligible				
6.4 Compressible Deposits	Very Low				
6.5 Collapsible Deposits	Very Low				
6.5 Running Sand	Very Low				
Section 7: Borehole Records	On-site	0-50m	51-250		
7 BGS Recorded Boreholes	0	2	44		
Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250		
8 Records of Background Soil Chemistry	1	0	0		
Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500	
9.1 Tunnels	0	0	0	Not Searched	
9.2 Historical Railway and Tunnel Features	8	1	5	Not Searched	
9.3 Historical Railways	1	0	1	Not Searched	
9.4 Active Railways	0	0	0	Not Searched	
9.5 Railway Projects	0	0	0	0	

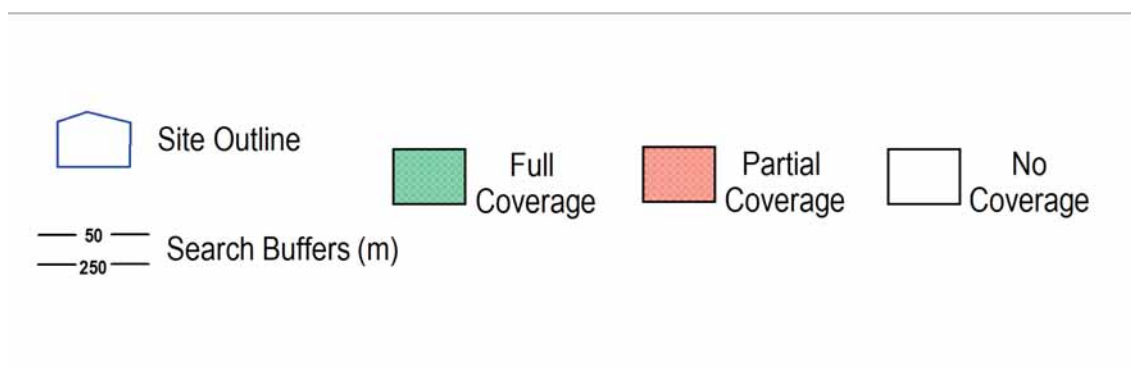


1:10,000 Scale Availability



1_10,000 Availability Legend

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Availability of 1:10,000 Scale Geology Mapping

The following information represents the availability of the key components of the 1:10,000 scale geological data.

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	Some deposits are mapped	Full	Full	Some deposits are mapped
2	141.0	Some deposits are mapped	Full	Full	Some deposits are mapped
N3	1251.0	No deposits are mapped	No coverage	No coverage	No coverage

Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not all themes are mapped or available on every map sheet. Therefore a coverage layer showing the availability of the four themes is presented above.

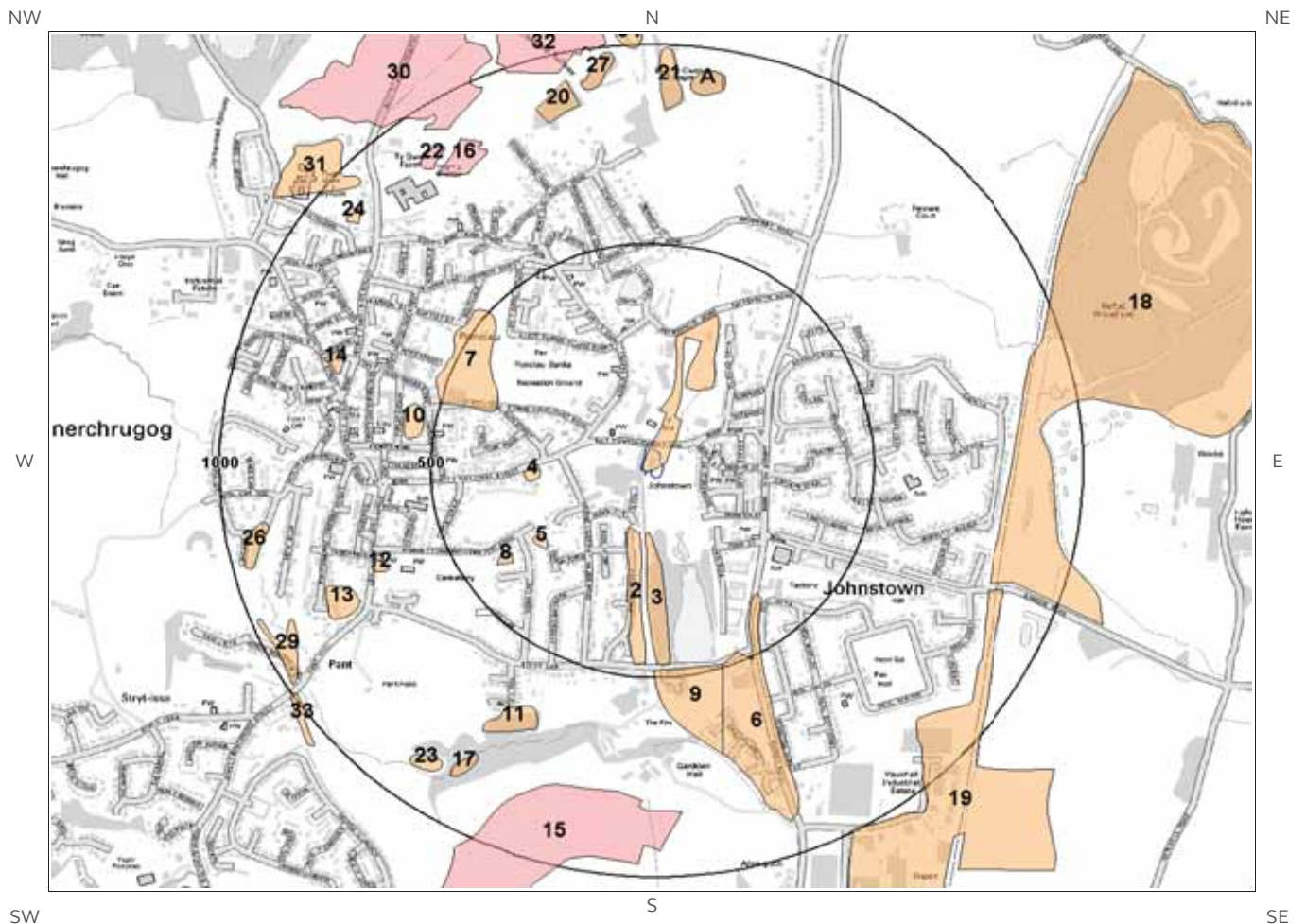
The definitions of coverage are as follows:

Geology	Full Coverage	Partial Coverage	No Coverage
Bedrock	The whole tile has been mapped	Some but not all the tile has been mapped	No coverage
Superficial	The whole tile has been mapped	Some but not all of the tile has been mapped	No coverage
Artificial	Some deposits are mapped on this tile	-	No deposits are mapped
Mass Movement	Some deposits are mapped on this tile	-	No coverage



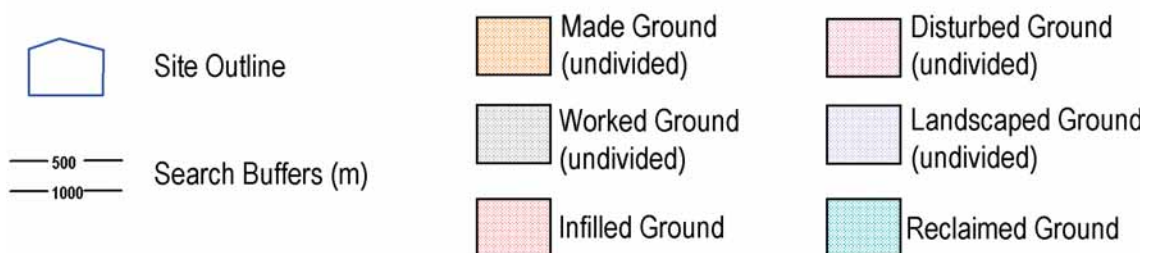
1 Geology (1:10,000 scale).

1.1 Artificial Ground map (1:10,000 scale)



Artificial Ground Legend

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1. Geology 1:10,000 scale

1.1 Artificial Ground

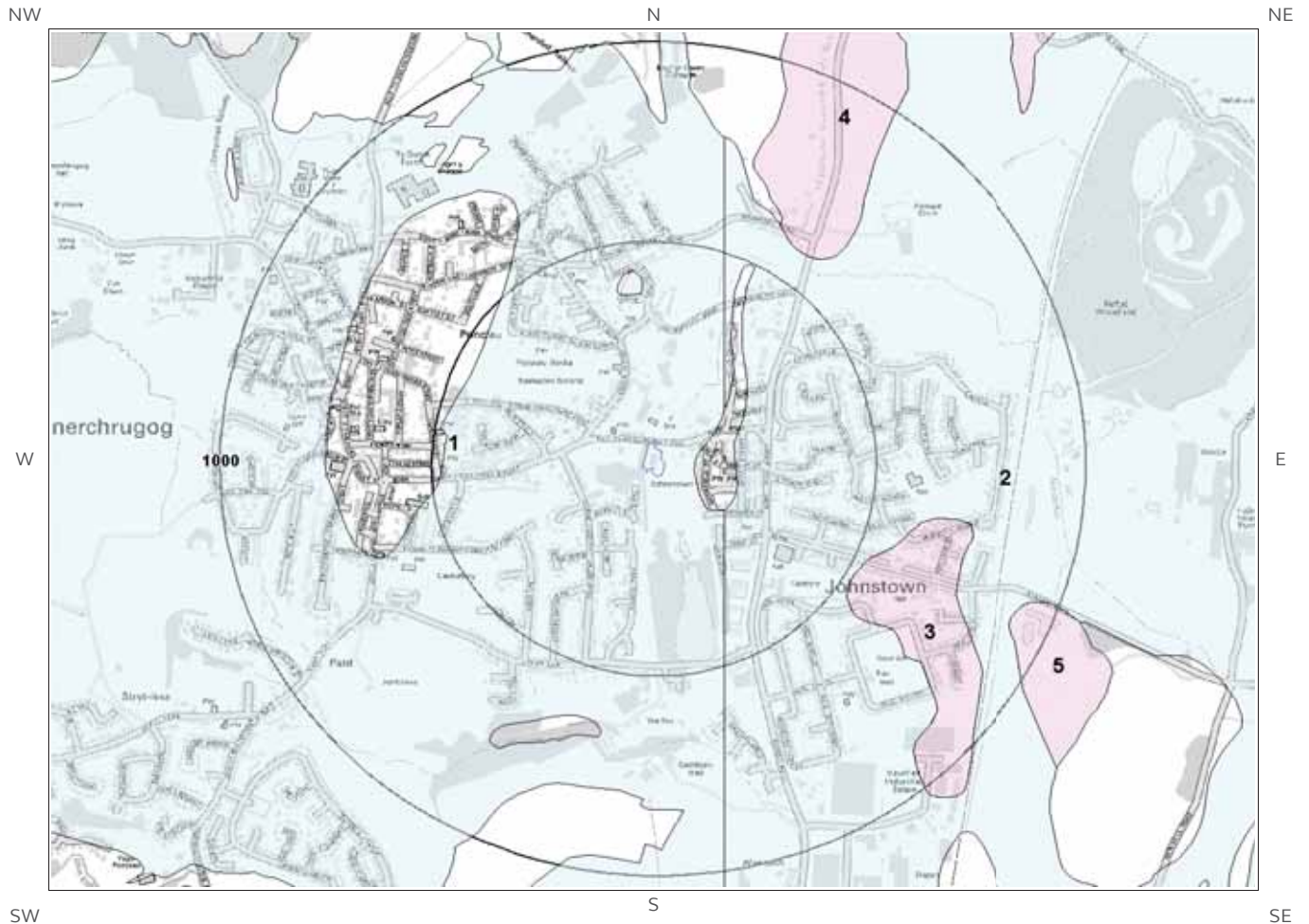
The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

Are there any records of Artificial/ Made Ground within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	135.0	S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
3	137.0	S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
4	240.0	W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
5	284.0	SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
6	370.0	SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
7	370.0	W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
8	371.0	SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
9	479.0	S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

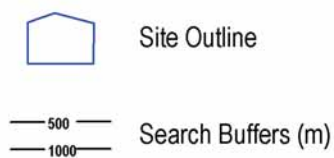


1.2 Superficial Deposits and Landslips map (1:10,000 scale)



Artificial Ground Legend

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1.2 Superficial Deposits and Landslips

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	TILL-DMTN	Till - Diamicton	Diamicton
2	166.0	E	TILL-DMTN	Till - Diamicton	Diamicton

1.2.2 Landslip

Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale? No

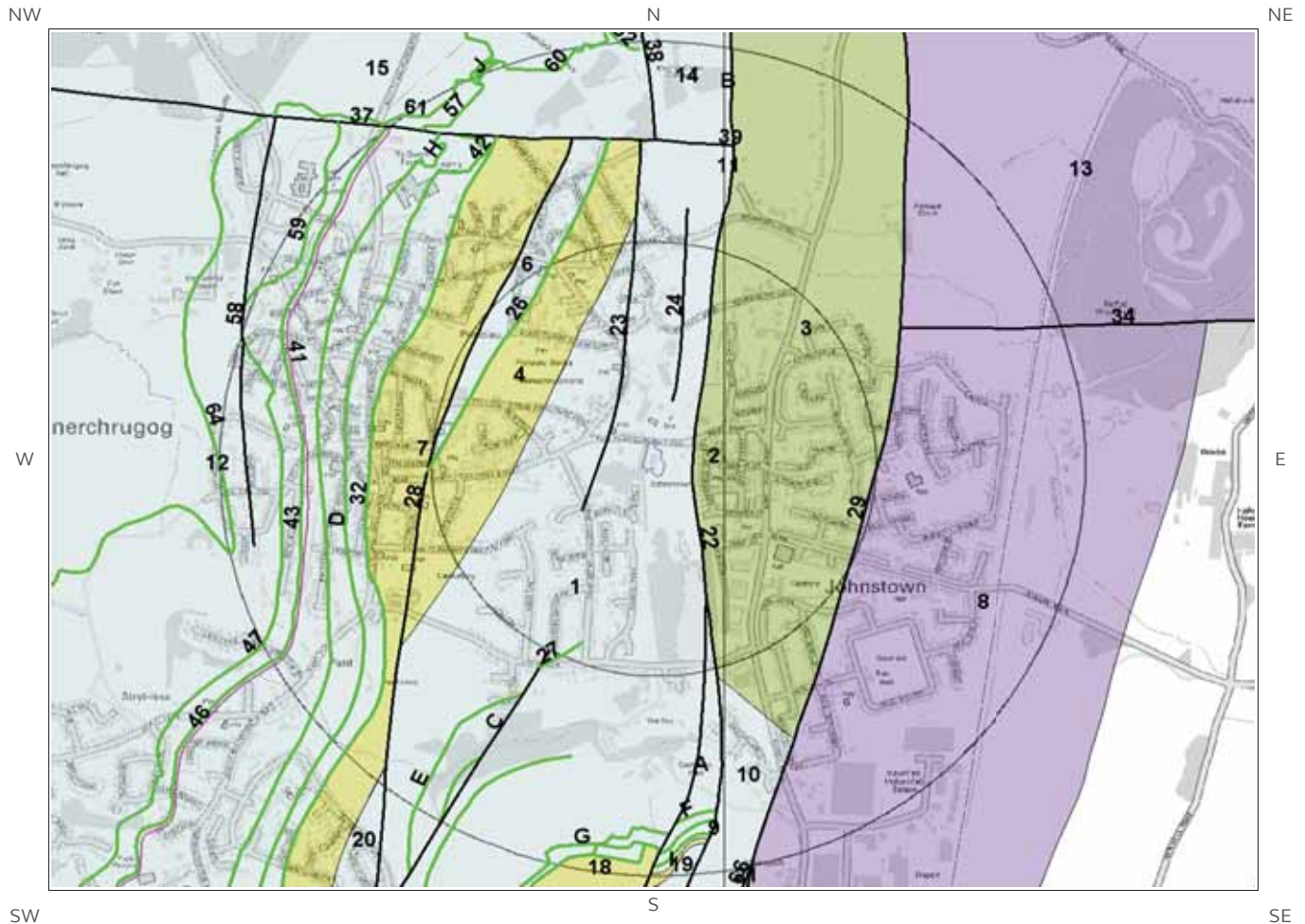
Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:10,000 scale

This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

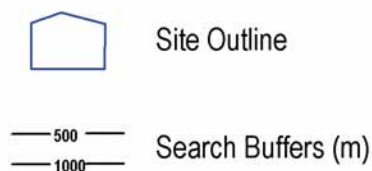


1.3 Bedrock and linear features map (1:10,000 scale)



Bedrock and linear features Legend

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1.3 Bedrock and linear features

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

1.3.1 Bedrock/ Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary at 1:10,000 scale.

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
2	66.0	E	CF-SDST	Cefn Rock - Sandstone	Bolsovian Sub-age
3	141.0	E	CF-SDST	Cefn Rock - Sandstone	Bolsovian Sub-age
4	262.0	W	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
5A	321.0	S	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
6	427.0	NW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
7	478.0	W	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
8	487.0	E	ETM-MDST	Etruria Formation - Mudstone	Westphalian Age

1.3.2 Linear features

Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance (m)	Direction	Category Description	Feature Description
22	66.0	E	FAULT	Normal fault, inferred; crossmarks on downthrow side
23	97.0	W	FAULT	Normal fault, inferred; downthrow not specified
24	107.0	N	FAULT	Normal fault, inferred; downthrow not specified
25A	321.0	S	FAULT	Normal fault, inferred; crossmarks on downthrow side
26	427.0	NW	ROCK	Coal seam, inferred
27	451.0	S	ROCK	Coal seam, inferred
28	478.0	W	FAULT	Normal fault, inferred; crossmarks on downthrow side
29	487.0	E	FAULT	Normal fault, inferred
30C	500.0	SW	FAULT	Normal fault, inferred; crossmarks on downthrow side



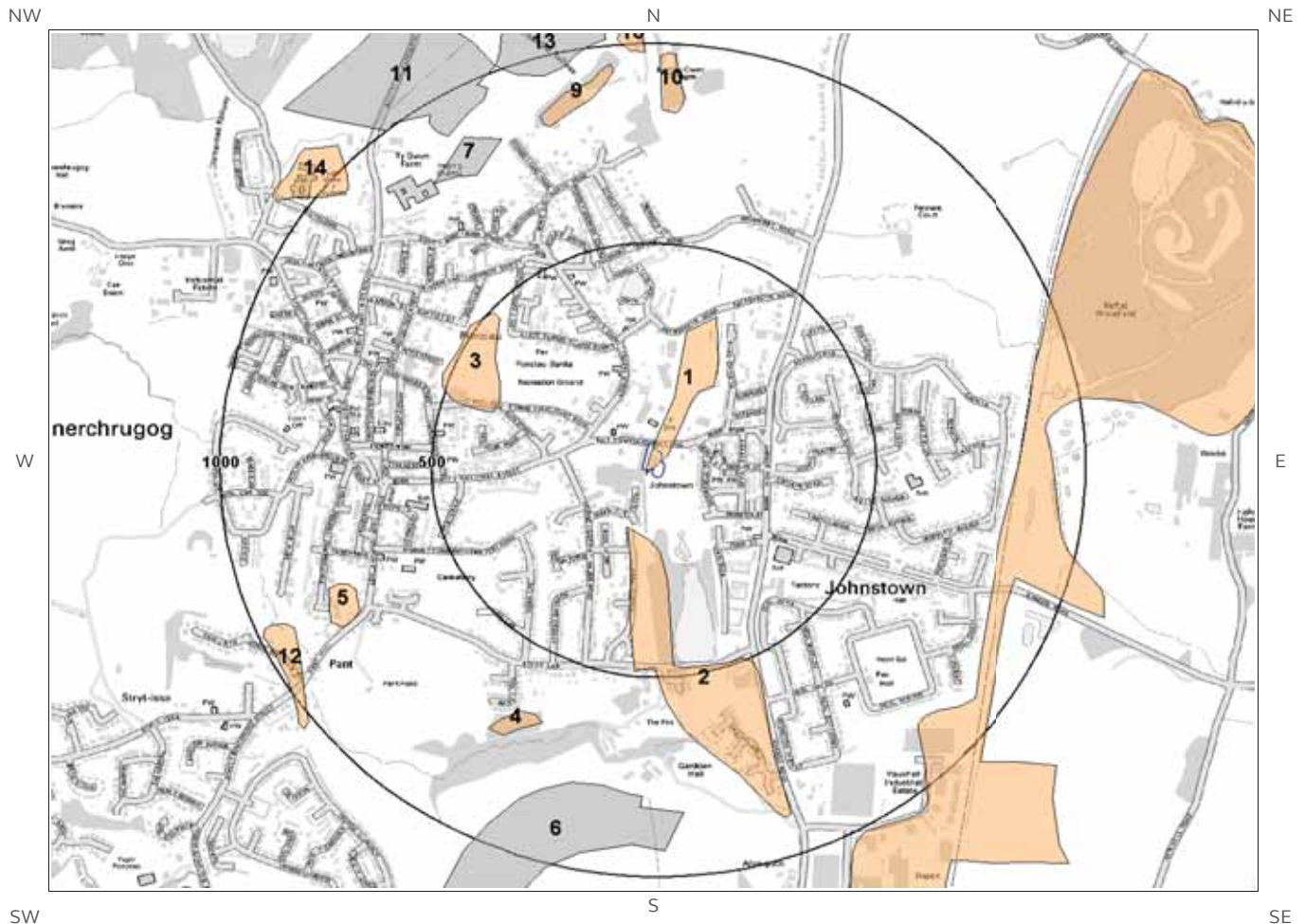
The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of great Britain at 1:10,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

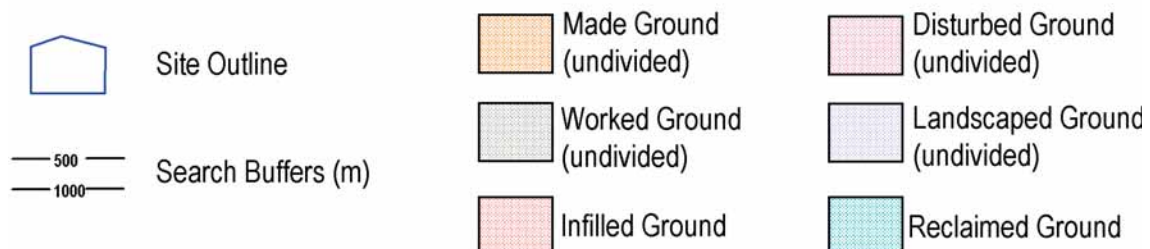


2 Geology 1:50,000 Scale

2.1 Artificial Ground map



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2. Geology 1:50,000 scale

2.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 121

2.1.1 Artificial/ Made Ground

Are there any records of Artificial/ Made Ground within 500m of the study site boundary? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	141.0	S	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
3	370.0	W	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

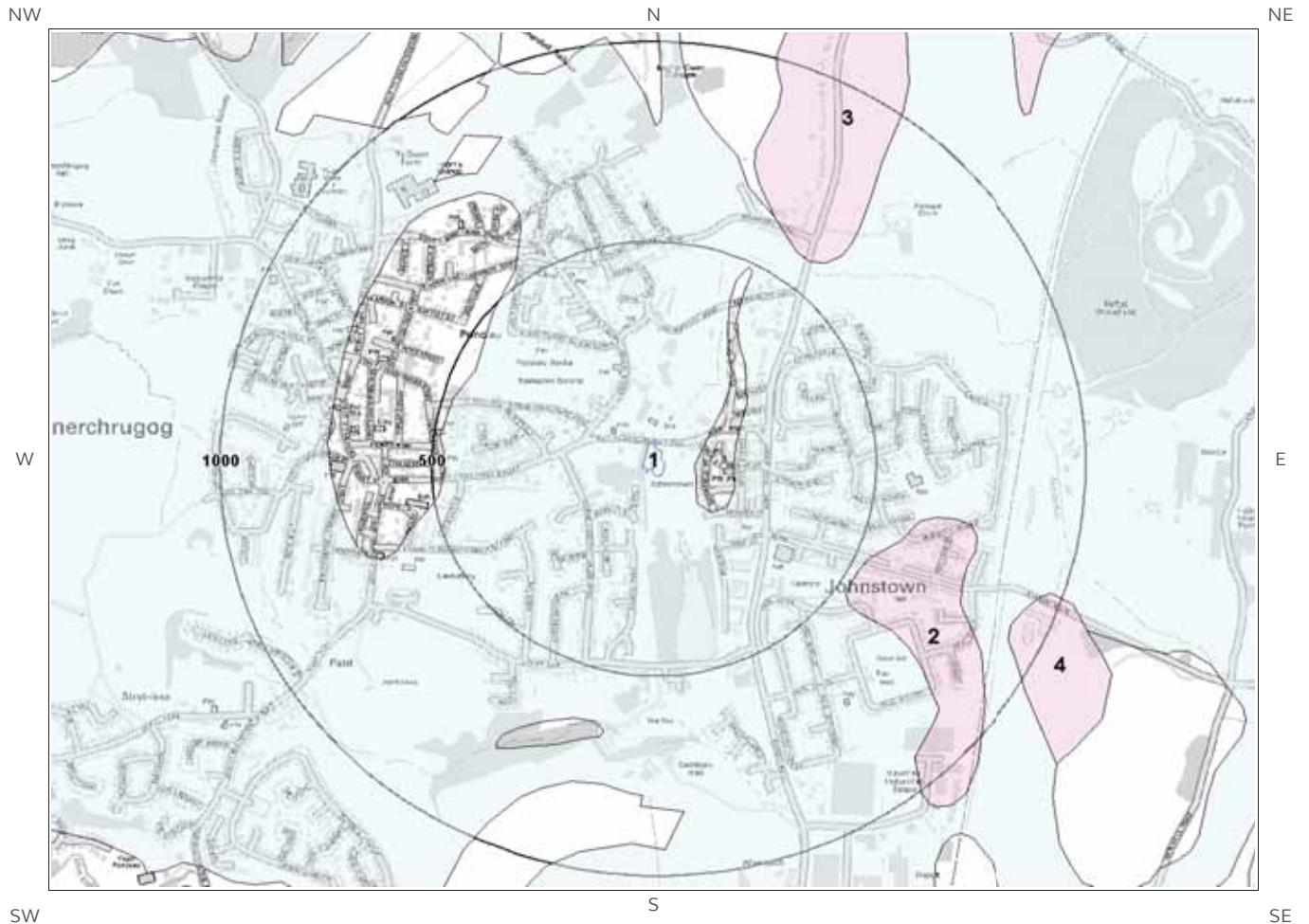
2.1.2 Permeability of Artificial Ground

Are there any records relating to permeability of artificial ground within the study site boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	Very High	Low



2.2 Superficial Deposits and Landslips map (1:50,000 scale)



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2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary? Yes

ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON

2.2.2 Permeability of Superficial Ground

Are there any records relating to permeability of superficial ground within the study site boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	High	Low

2.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

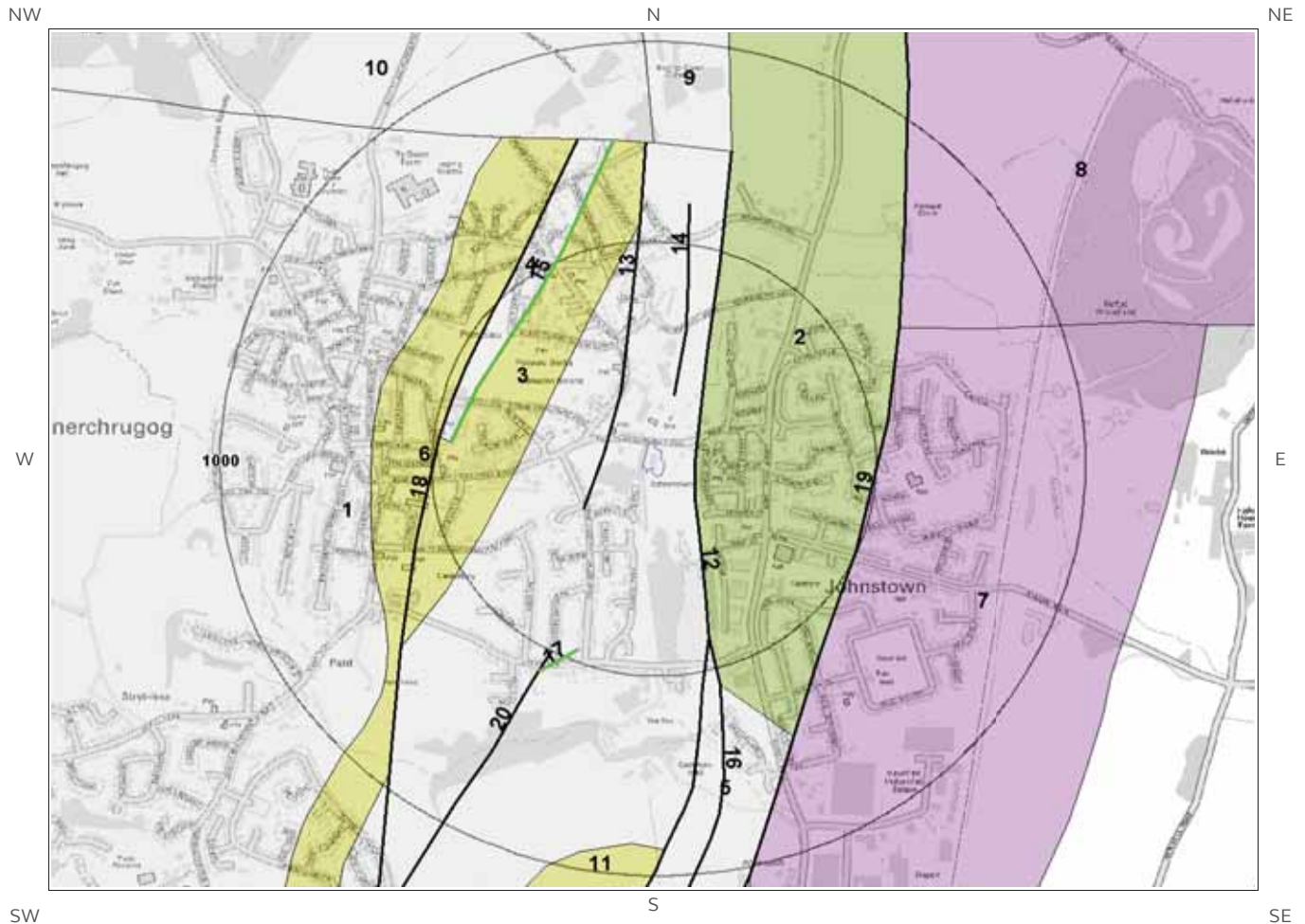
2.2.4 Landslip Permeability

Are there any records relating to permeability of landslips within the study site boundary? No

Database searched and no data found.



2.3 Bedrock and linear features map (1:50,000 scale)



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2.3 Bedrock, Solid Geology & linear features

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 121

2.3.1 Bedrock/Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary:

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
1	0.0	On Site	PLMC-MDSS	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
2	72.0	E	CF-SDST	CEFN ROCK - SANDSTONE	WESTPHALIAN
3	259.0	NW	PLMC-SDST	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - SANDSTONE	WESTPHALIAN
4	417.0	NW	PLMC-MDSS	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
5	421.0	S	PLMC-MDSS	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
6	473.0	W	PLMC-SDST	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - SANDSTONE	WESTPHALIAN
7	489.0	E	ETM-MDST	ETRURIA FORMATION - MUDSTONE	WESTPHALIAN

2.3.2 Permeability of Bedrock Ground

Are there any records relating to permeability of bedrock ground within the study site boundary? Yes

Distance	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Fracture	Moderate	Low



2.3.3 Linear features

Are there any records of linear features within 500m of the study site boundary?

Yes

ID	Distance	Direction	Category Description	Feature Description
12	72.0	E	FAULT	Fault, inferred, displacement unknown
13	95.0	W	FAULT	Fault, inferred, displacement unknown
14	121.0	N	FAULT	Fault, inferred, displacement unknown
15	417.0	NW	ROCK	Coal seam, inferred
16	421.0	S	FAULT	Fault, inferred, displacement unknown
17	469.0	S	ROCK	Coal seam, inferred
18	473.0	W	FAULT	Fault, inferred, displacement unknown
19	489.0	E	FAULT	Fault, inferred, displacement unknown
20	500.0	SW	FAULT	Fault, inferred, displacement unknown

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nation wide coverage.



3 Radon Data

3.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is in a Radon Affected Area, as between 3 and 5% of properties are above the Action Level.

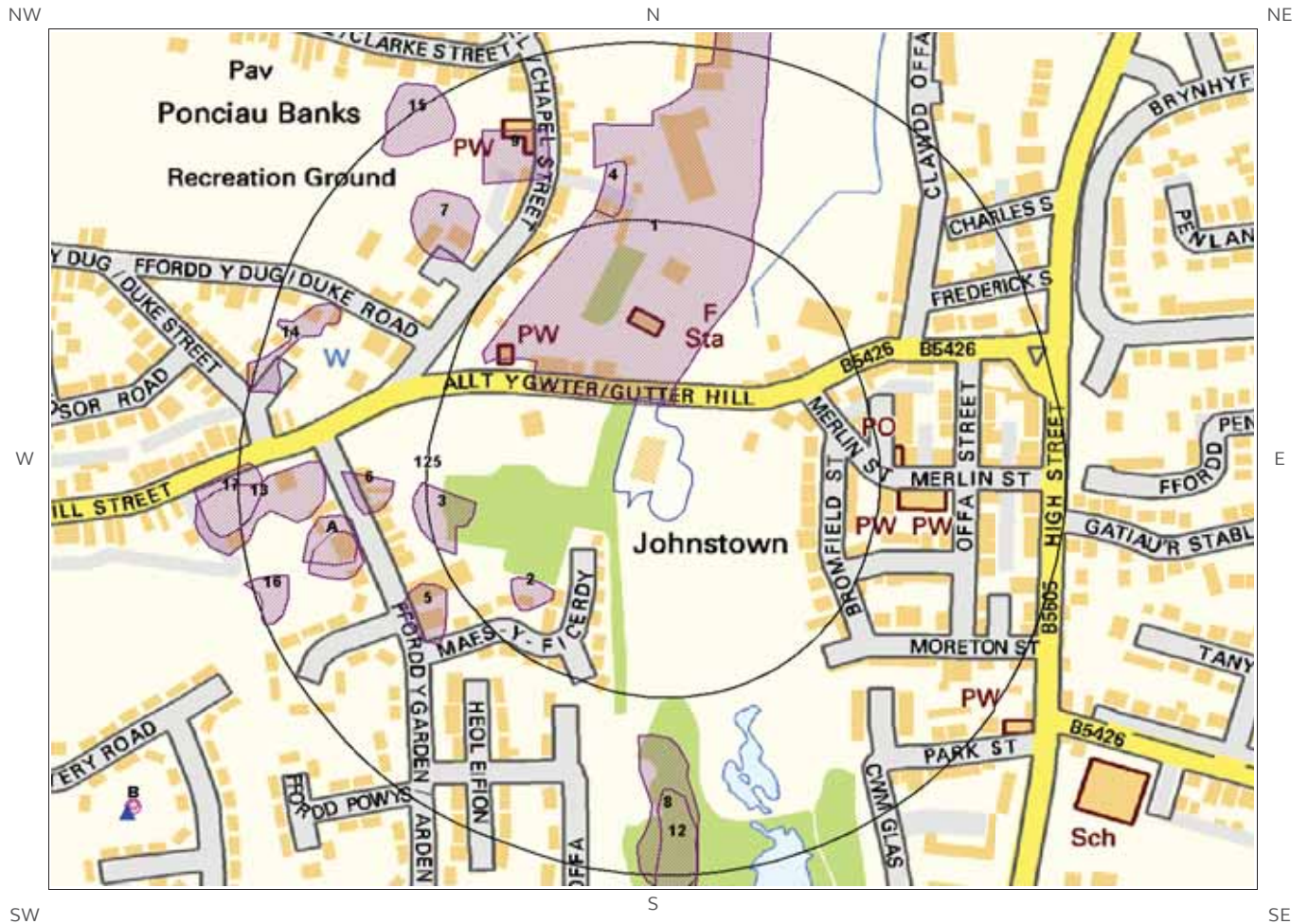
The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

3.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? Basic radon protective measures are necessary.

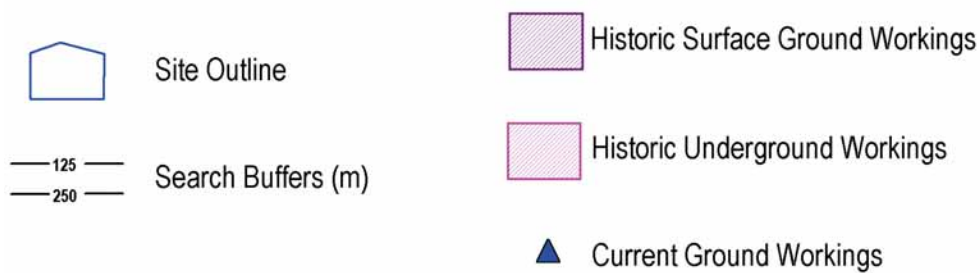


4 Ground Workings map



Ground Workings Legend

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4 Ground Workings

4.1 Historical Surface Ground Working Features derived from Historical Mapping

This dataset is based on Groundsure's unique Historical Land Use Database derived from 1:10,560 and 1:10,000 scale historical mapping

Are there any Historical Surface Ground Working Features within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Use	Date
1	0.0	On Site	329815 346466	Brick and Tile Works	1873
2	77.0	SW	329753 346199	Unspecified Heap	1873
3	93.0	W	329694 346252	Unspecified Heap	1873
4	128.0	N	329805 346484	Pond	1873
5	132.0	SW	329681 346185	Unspecified Heap	1873
6	146.0	W	329643 346270	Unspecified Heap	1873
7	150.0	NW	329695 346458	Unspecified Heap	1873
8	152.0	S	329843 346045	Unspecified Heap	1898
9	165.0	N	329742 346507	Grave Yard	1873
10A	174.0	W	329618 346237	Unspecified Heap	1898
11A	174.0	W	329622 346226	Unspecified Heap	1873
12	189.0	S	329849 346020	Unspecified Heap	1873
13	193.0	W	329571 346259	Unspecified Heap	1873
14	206.0	W	329587 346372	Ponds	1898
15	220.0	NW	329677 346533	Unspecified Heap	1873
16	225.0	W	329576 346195	Unspecified Heap	1873
17	234.0	W	329550 346265	Unspecified Heap	1898



4.2 Historical Underground Working Features derived from Historical Mapping

This data is derived from the Groundsure unique Historical Land Use Database. It contains data derived from 1:10,000 and 1:10,560 historical Ordnance Survey Mapping and includes some natural topographical features (Shake Holes for example) as well as manmade features that may have implications for ground stability. Underground and mining features have been identified from surface features such as shafts. The distance that these extend underground is not shown.

Are there any Historical Underground Working Features within 1000m of the study site boundary? Yes

The following Historical Underground Working Features are provided by Groundsure:

ID	Distance (m)	Direction	NGR	Use	Date
18B	385.0	SW	329487 346049	Unspecified Disused Shaft	1974
19B	386.0	SW	329487 346050	Unspecified Old Shaft	1898
Not shown	400.0	N	329949 346725	Unspecified Disused Shaft	1974
Not shown	404.0	N	329948 346729	Old Coal Shaft	1949
Not shown	404.0	N	329954 346728	Unspecified Old Shaft	1960
Not shown	405.0	N	329951 346728	Unspecified Old Shafts	1898
Not shown	426.0	N	329951 346750	Unspecified Old Shafts	1898
Not shown	558.0	SW	329354 345941	Unspecified Old Shaft	1898
Not shown	567.0	SW	329567 345745	Old Coal Shaft	1949
Not shown	567.0	SW	329567 345745	Unspecified Old Shaft	1898
Not shown	574.0	SW	329568 345738	Unspecified Old Shaft	1960
Not shown	603.0	S	329844 345645	Coal Shaft	1873
Not shown	643.0	S	329767 345609	Coal Shaft	1873
Not shown	645.0	SW	329346 345814	Unspecified Old Shafts	1898
Not shown	649.0	SW	329346 345809	Unspecified Old Shafts	1960
Not shown	651.0	SW	329341 345810	Old Coal Shafts	1949
Not shown	700.0	SW	329290 345794	Unspecified Old Shafts	1898
Not shown	707.0	SW	329288 345786	Unspecified Old Shafts	1960
Not shown	707.0	SW	329286 345787	Old Coal Shafts	1949
Not shown	761.0	SW	329253 345744	Unspecified Old Shaft	1898
Not shown	767.0	SW	329169 345840	Unspecified Old Shaft	1898
Not shown	767.0	SW	329113 345937	Unspecified Old Shaft	1898



ID	Distance (m)	Direction	NGR	Use	Date
Not shown	770.0	SW	329168 345835	Unspecified Old Shaft	1960
Not shown	770.0	SW	329111 345933	Unspecified Old Shaft	1960
Not shown	771.0	SW	329166 345838	Old Coal Shaft	1949
Not shown	772.0	SW	329109 345933	Old Coal Shaft	1949
Not shown	773.0	S	330076 345511	Old Coal Shaft	1949
Not shown	774.0	SW	329394 345606	Unspecified Old Shafts	1898
Not shown	785.0	SW	329212 345753	Unspecified Old Shaft	1960
Not shown	786.0	SW	329398 345591	Coal Shaft	1873
Not shown	787.0	SW	329209 345754	Old Coal Shaft	1949
Not shown	798.0	N	329831 347332	Colliery	1873
Not shown	810.0	S	330107 345482	Unspecified Shaft	1873
Not shown	832.0	SW	329468 345500	Unspecified Old Shaft	1949
Not shown	832.0	SW	329472 345498	Unspecified Old Shaft	1960
Not shown	835.0	N	329875 347323	Unspecified Disused Mine	1974
Not shown	835.0	N	329875 347323	Unspecified Disused Mine	1960
Not shown	848.0	SW	329308 345577	Old Coal Shaft	1949
Not shown	848.0	SW	329308 345577	Unspecified Old Shafts	1898
Not shown	849.0	SW	329307 345575	Unspecified Disused Shaft	1974
Not shown	854.0	SW	329307 345571	Unspecified Old Shaft	1960
Not shown	862.0	SW	329442 345480	Unspecified Old Shaft	1960
Not shown	924.0	E	331085 346650	Disused Colliery	1977
Not shown	942.0	SE	330560 345383	Colliery	1898
Not shown	945.0	E	331082 346801	Colliery	1949
Not shown	949.0	N	329865 347290	Unspecified Disused Shafts	1974
Not shown	955.0	N	330036 347274	Coal Shaft	1873
Not shown	984.0	N	329871 347325	Unspecified Disused Shafts	1974
Not shown	990.0	W	328882 345912	Coal Shaft	1873



4.3 Current Ground Workings

This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

Are there any BGS Current Ground Workings within 1000m of the study site boundary? Yes

The following Current Ground Workings information is provided by British Geological Survey:

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
67B	395.0	SW	329483 346045	Coal, Deep	Pant	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)	Ceased
Not shown	405.0	N	329950 346726	Coal, Deep	Aber-derfyn	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)	Ceased
Not shown	427.0	N	329947 346750	Coal, Deep	Aber-derfyn	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)	Ceased
Not shown	564.0	SW	329349 345942	Coal, Deep	Pant	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)	Ceased
Not shown	574.0	SW	329565 345744	Coal, Deep	Brandie Pits, No. 6 Pit	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)	Ceased
Not shown	620.0	S	329814 345631	Coal, Deep	Brandie Pits	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)	Ceased
Not shown	627.0	SW	329390 345800	Coal, Deep	Brandie Pits Shaft	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)	Ceased
Not shown	632.0	SW	329341 345843	Coal, Deep	Brandie Pits Shaft	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)	Ceased
Not shown	634.0	S	329762 345622	Coal, Deep	Brandie Pits, Engine Pit	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)	Ceased
Not shown	649.0	SW	329346 345813	Coal, Deep	Brandie Pits Shaft	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)	Ceased



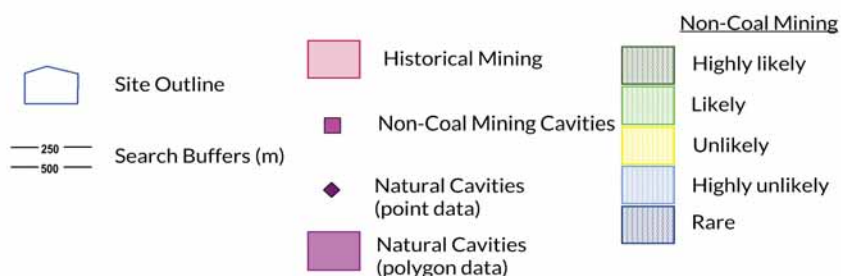
ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	660.0	SE	330430 345937	Sand	Wharf Cottage Sand Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	674.0	SW	329287 345843	Coal, Deep	Brandie Pits Shaft	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)	Ceased
Not shown	704.0	SW	329290 345792	Coal, Deep	Brandie Pits Shaft	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)	Ceased
Not shown	732.0	SW	329236 345813	Coal, Deep	Pant Colliery Pit	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)	Ceased
Not shown	736.0	N	330045 347043	Sandstone	Bryn-yr-Owen	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	774.0	SW	329170 345832	Coal, Deep	Pant Colliery Pit	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)	Ceased
Not shown	775.0	SW	329111 345930	Coal, Deep	Pant	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)	Ceased
Not shown	780.0	SW	329400 345600	Coal, Deep	Brandie Pits, Park No. 1 Pit	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)	Ceased
Not shown	784.0	SW	329185 345794	Coal, Deep	Pant Colliery Pit	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)	Ceased
Not shown	785.0	SW	329212 345759	Coal, Deep	Brandie Pits Shaft	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)	Ceased
Not shown	809.0	SW	329228 345705	Coal, Deep	Brandie Pits Shaft	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)	Ceased
Not shown	835.0	SW	329468 345501	Coal, Deep	Gardden Hall	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)	Ceased
Not shown	852.0	SW	329308 345576	Coal, Deep	Brandie Pits, No. 2 Pit	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)	Ceased



ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	953.0	N	330026 347271	Coal, Deep	Bryn-yr-Owen Colliery	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)	Ceased
Not shown	964.0	N	329870 347300	Coal, Deep	Bryn-yr-Owen Colliery	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)	Ceased
Not shown	994.0	W	328881 345912	Coal, Deep	Pant Brick Works	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)	Ceased



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5 Mining, Extraction & Natural Cavities

5.1 Historical Mining

This dataset is derived from Groundsure unique Historical Land-use Database that are indicative of mining or extraction activities.

Are there any Historical Mining areas within 1000m of the study site boundary? Yes

The following Historical Mining information is provided by Groundsure:

ID	Distance (m)	Direction	NGR	Details	Date
5A	385.0	SW	329487 346049	Unspecified Disused Shaft	1974
6A	386.0	SW	329487 346050	Unspecified Old Shaft	1898
7B	400.0	N	329949 346725	Unspecified Disused Shaft	1974
8B	404.0	N	329948 346729	Old Coal Shaft	1949
9B	404.0	N	329954 346728	Unspecified Old Shaft	1960
10B	405.0	N	329951 346728	Unspecified Old Shafts	1898
11B	426.0	N	329951 346750	Unspecified Old Shafts	1898
12	558.0	SW	329354 345941	Unspecified Old Shaft	1898
13C	567.0	SW	329567 345745	Old Coal Shaft	1949
14C	567.0	SW	329567 345745	Unspecified Old Shaft	1898
15C	574.0	SW	329568 345738	Unspecified Old Shaft	1960
Not shown	603.0	S	329844 345645	Coal Shaft	1873
Not shown	643.0	S	329767 345609	Coal Shaft	1873
18D	645.0	SW	329346 345814	Unspecified Old Shafts	1898
19D	649.0	SW	329346 345809	Unspecified Old Shafts	1960
20D	651.0	SW	329341 345810	Old Coal Shafts	1949
21E	700.0	SW	329290 345794	Unspecified Old Shafts	1898
22E	707.0	SW	329288 345786	Unspecified Old Shafts	1960
23E	707.0	SW	329286 345787	Old Coal Shafts	1949
24	761.0	SW	329253 345744	Unspecified Old Shaft	1898



ID	Distance (m)	Direction	NGR	Details	Date
25F	767.0	SW	329169 345840	Unspecified Old Shaft	1898
26G	767.0	SW	329113 345937	Unspecified Old Shaft	1898
27F	770.0	SW	329168 345835	Unspecified Old Shaft	1960
28G	770.0	SW	329111 345933	Unspecified Old Shaft	1960
29F	771.0	SW	329166 345838	Old Coal Shaft	1949
30G	772.0	SW	329109 345933	Old Coal Shaft	1949
Not shown	773.0	S	330076 345511	Old Coal Shaft	1949
Not shown	774.0	SW	329394 345606	Unspecified Old Shafts	1898
33H	785.0	SW	329212 345753	Unspecified Old Shaft	1960
Not shown	786.0	SW	329398 345591	Coal Shaft	1873
35H	787.0	SW	329209 345754	Old Coal Shaft	1949
Not shown	798.0	N	329831 347332	Colliery	1873
Not shown	810.0	S	330107 345482	Unspecified Shaft	1873
Not shown	832.0	SW	329468 345500	Unspecified Old Shaft	1949
Not shown	832.0	SW	329472 345498	Unspecified Old Shaft	1960
Not shown	835.0	N	329875 347323	Unspecified Disused Mine	1974
Not shown	835.0	N	329875 347323	Unspecified Disused Mine	1960
Not shown	848.0	SW	329308 345577	Unspecified Old Shafts	1898
Not shown	848.0	SW	329308 345577	Old Coal Shaft	1949
Not shown	849.0	SW	329307 345575	Unspecified Disused Shaft	1974
Not shown	854.0	SW	329307 345571	Unspecified Old Shaft	1960
Not shown	862.0	SW	329442 345480	Unspecified Old Shaft	1960
Not shown	924.0	E	331085 346650	Disused Colliery	1977
Not shown	942.0	SE	330560 345383	Colliery	1898
Not shown	945.0	E	331082 346801	Colliery	1949
Not shown	949.0	N	329865 347290	Unspecified Disused Shafts	1974
Not shown	955.0	N	330036 347274	Coal Shaft	1873
Not shown	984.0	N	329871 347325	Unspecified Disused Shafts	1974
Not shown	990.0	W	328882 345912	Coal Shaft	1873



5.2 Coal Mining

This dataset provides information as to whether the study site lies within a known coal mining affected area as defined by the coal authority.

Are there any Coal Mining areas within 1000m of the study site boundary? Yes

The following Coal Mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0.0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

5.3 Johnson Poole and Bloomer

This dataset provides information as to whether the study site lies within an area where JPB hold information relating to mining.

Are there any JPB Mining areas within 1000m of the study site boundary? No

The following information provided by JPB is not represented on mapping: Database searched and no data found.

5.4 Non-Coal Mining

This dataset provides information as to whether the study site lies within an area which may have been subject to non-coal historic mining.

Are there any Non-Coal Mining areas within 1000m of the study site boundary? Yes

The following non-coal mining information is provided by the BGS:

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
1	0.0	On Site	Not available	Iron Ore (Bedded)	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
2	489.0	E	Not available	Vein Mineral	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
Not shown	551.0	S	Not available	Iron Ore (Bedded)	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
Not shown	579.0	N	Not available	Iron Ore (Bedded)	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered



5.5 Non-Coal Mining Cavities

This dataset provides information from the Peter Brett Associates (PBA) mining cavities database (compiled for the national study entitled “Review of mining instability in Great Britain, 1990” PBA has also continued adding to this database) on mineral extraction by mining.

Are there any Non-Coal Mining cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.6 Natural Cavities

This dataset provides information based on the Peter Brett Associates natural cavities database. The dataset is made up of points and polygons. Where polygons are used these represent an area in which it is expected the cavities could be found. It does not indicate that cavities are present everywhere within the polygon, and caution should be used in the interpretation of this data.

Are there any Natural Cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.7 Brine Extraction

This data provides information from the Coal Authority issued on behalf of the Cheshire Brine Subsidence Compensation Board.

Are there any Brine Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.8 Gypsum Extraction

This dataset provides information on Gypsum extraction from British Gypsum records.

Are there any Gypsum Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.9 Tin Mining

This dataset provides information on tin mining areas and is derived from tin mining records. This search is based upon postcode information to a sector level..

Are there any Tin Mining areas within 1000m of the study site boundary? No

Database searched and no data found.



5.10 Clay Mining

This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

Are there any Clay Mining areas within 1000m of the study site boundary?

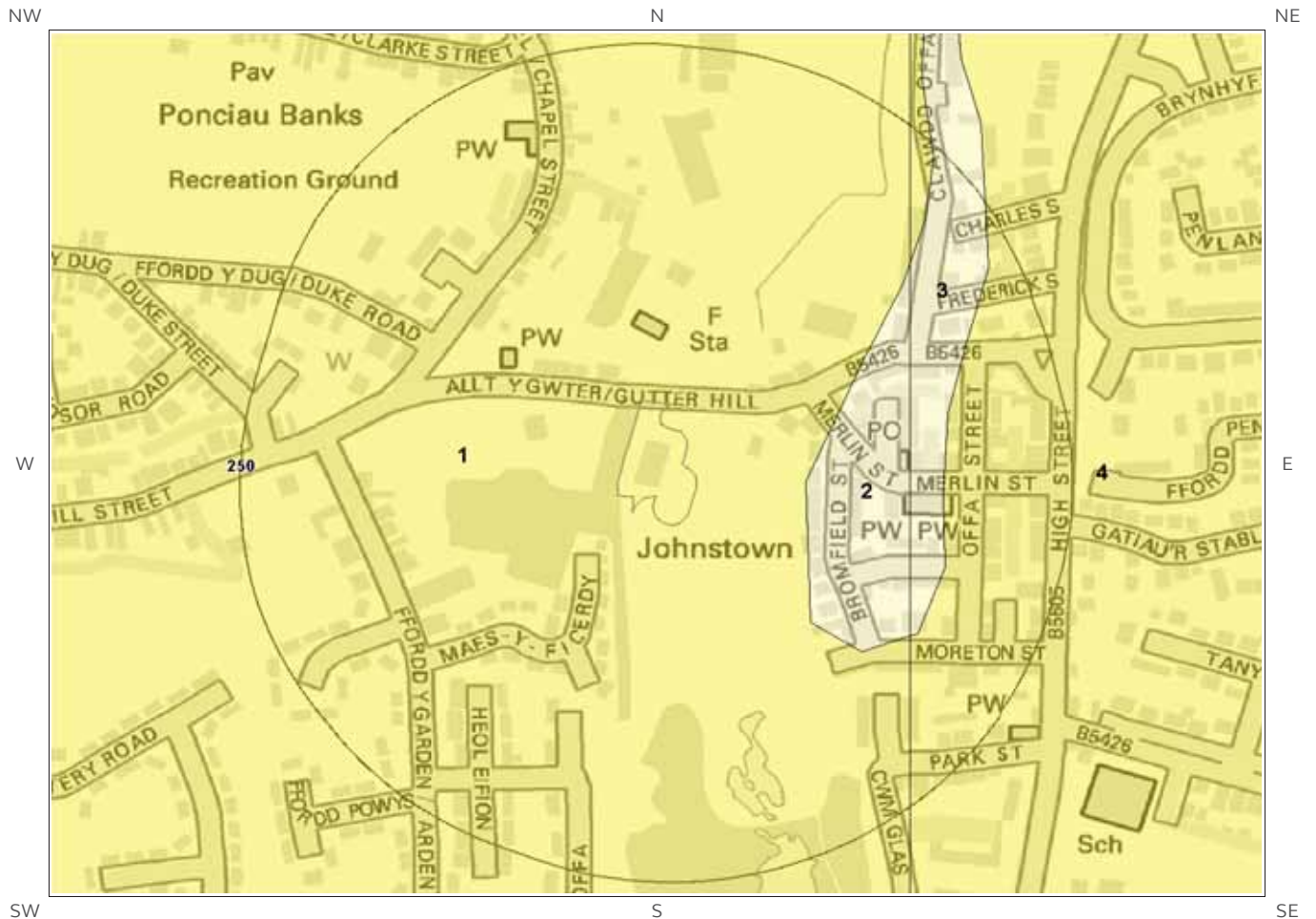
No

Database searched and no data found.



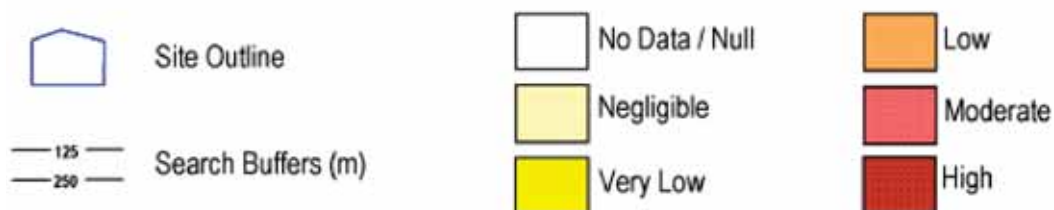
6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map



Shrink Swell Clay Legend

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[illegible]

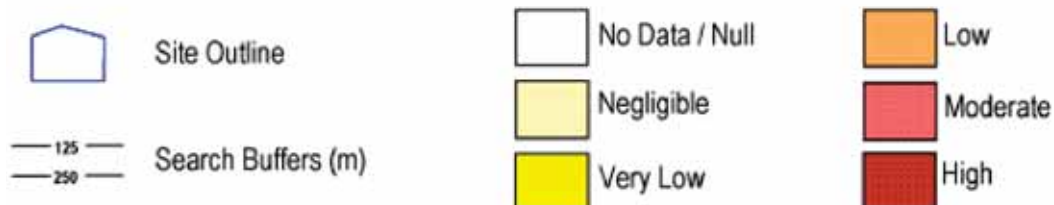
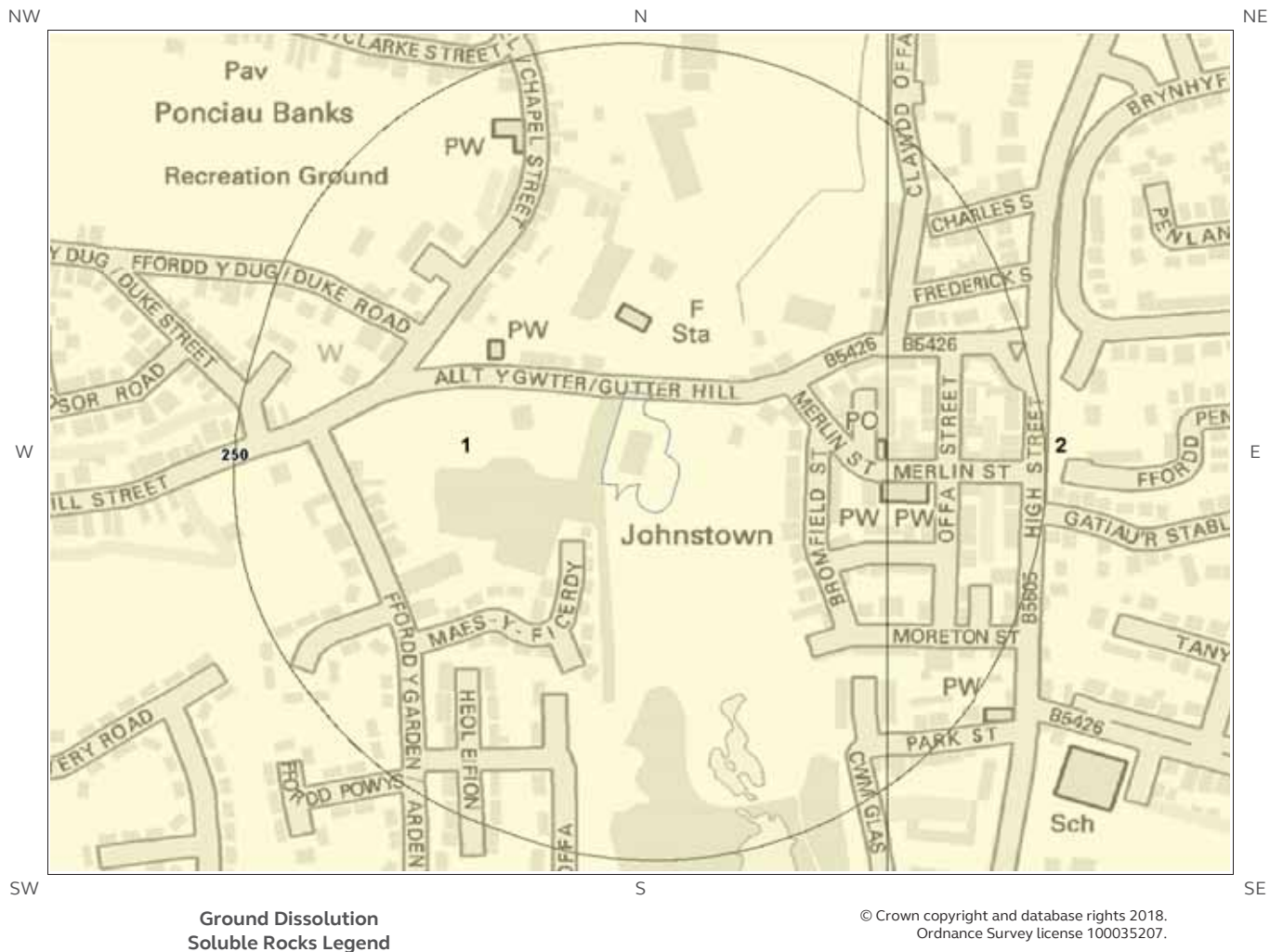
 Site Outline
  No Data / Null
  Low

 Search Buffers (m)
  Negligible
  Moderate

 Very Low
  High

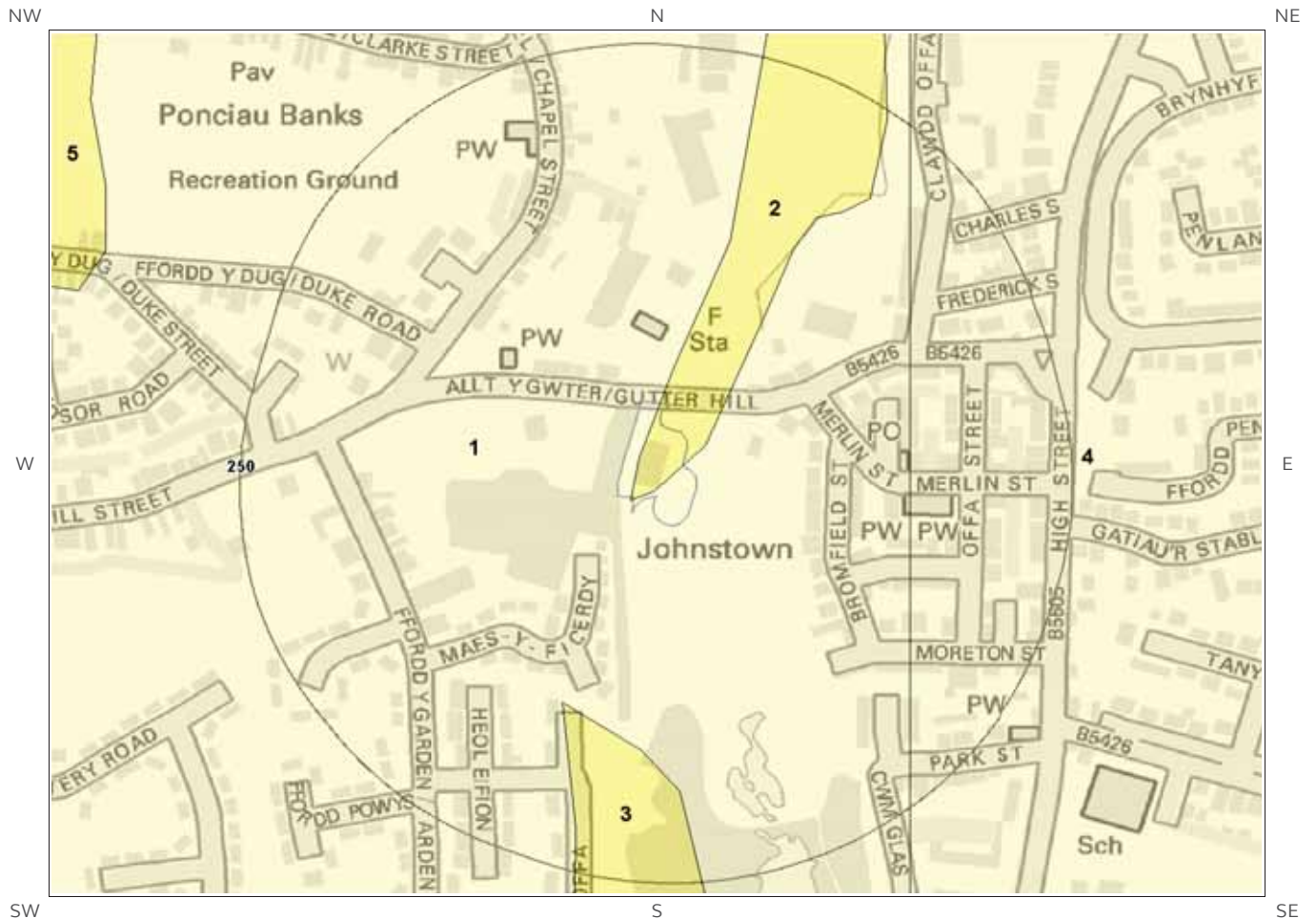


6.3 Ground Dissolution of Soluble Rocks map



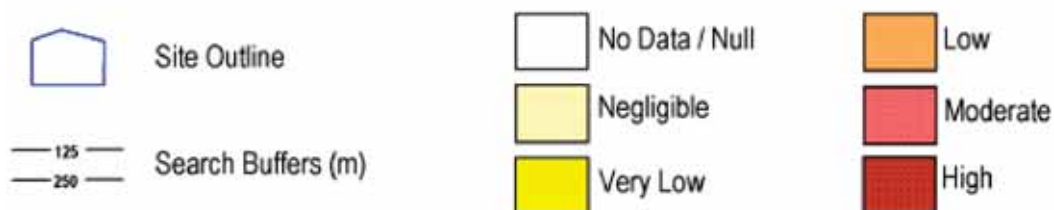


6.4 Compressible Deposits map



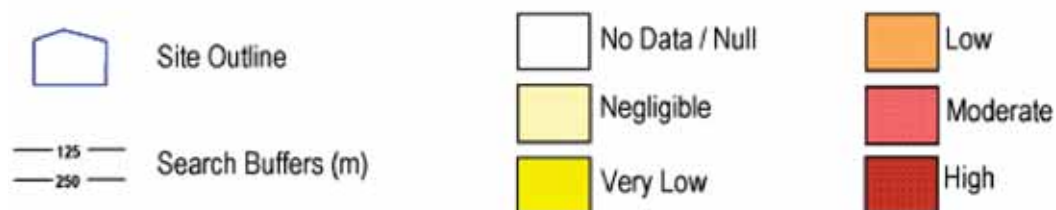
Compressible Deposits Legend

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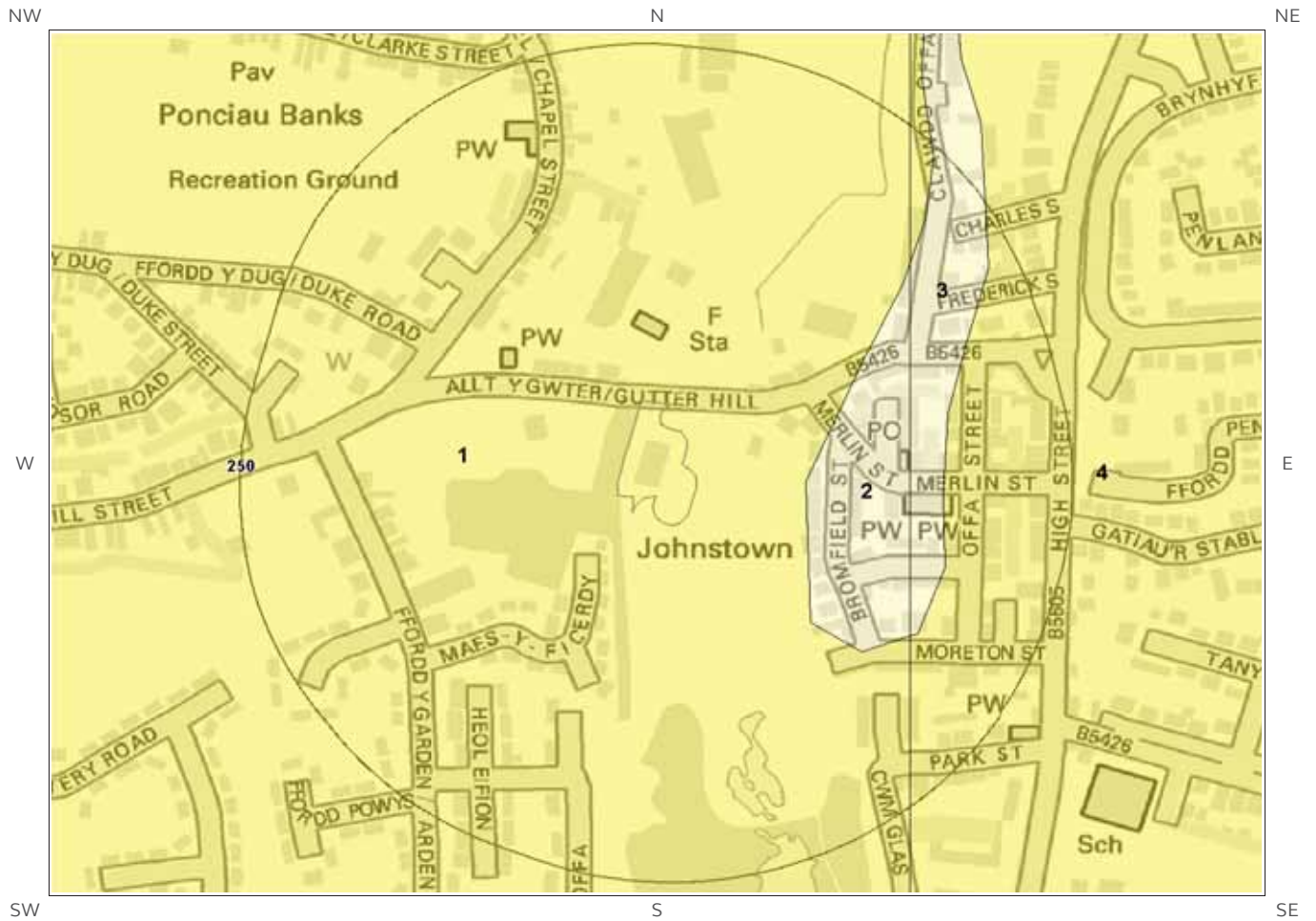


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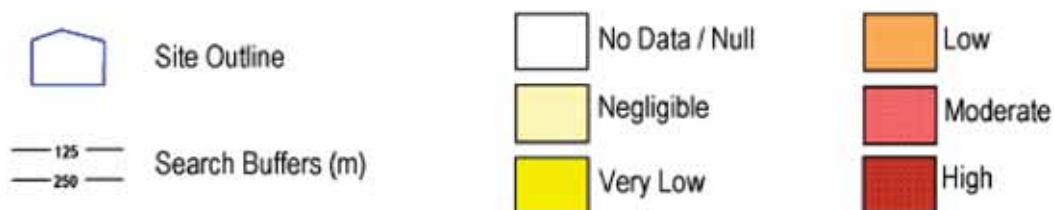


6.6 Running Sand map



Running Sand Legend

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6 Natural Ground Subsidence

The National Ground Subsidence rating is obtained through the 6 natural ground stability hazard datasets, which are supplied by the British Geological Survey (BGS).

The following GeoSure data represented on the mapping is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale.

What is the maximum hazard rating of natural subsidence within the study site** boundary? Very Low

6.1 Shrink-Swell Clays

The following Shrink Swell information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

6.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

6.3 Ground Dissolution of Soluble Rocks

The following Ground Dissolution information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This includes an automatically generated 50m buffer zone around the site



6.4 Compressible Deposits

The following Compressible Deposits information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.
2	0.0	On Site	Very Low	Very low potential for compressible deposits to be present. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

6.5 Collapsible Deposits

The following Collapsible Rocks information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

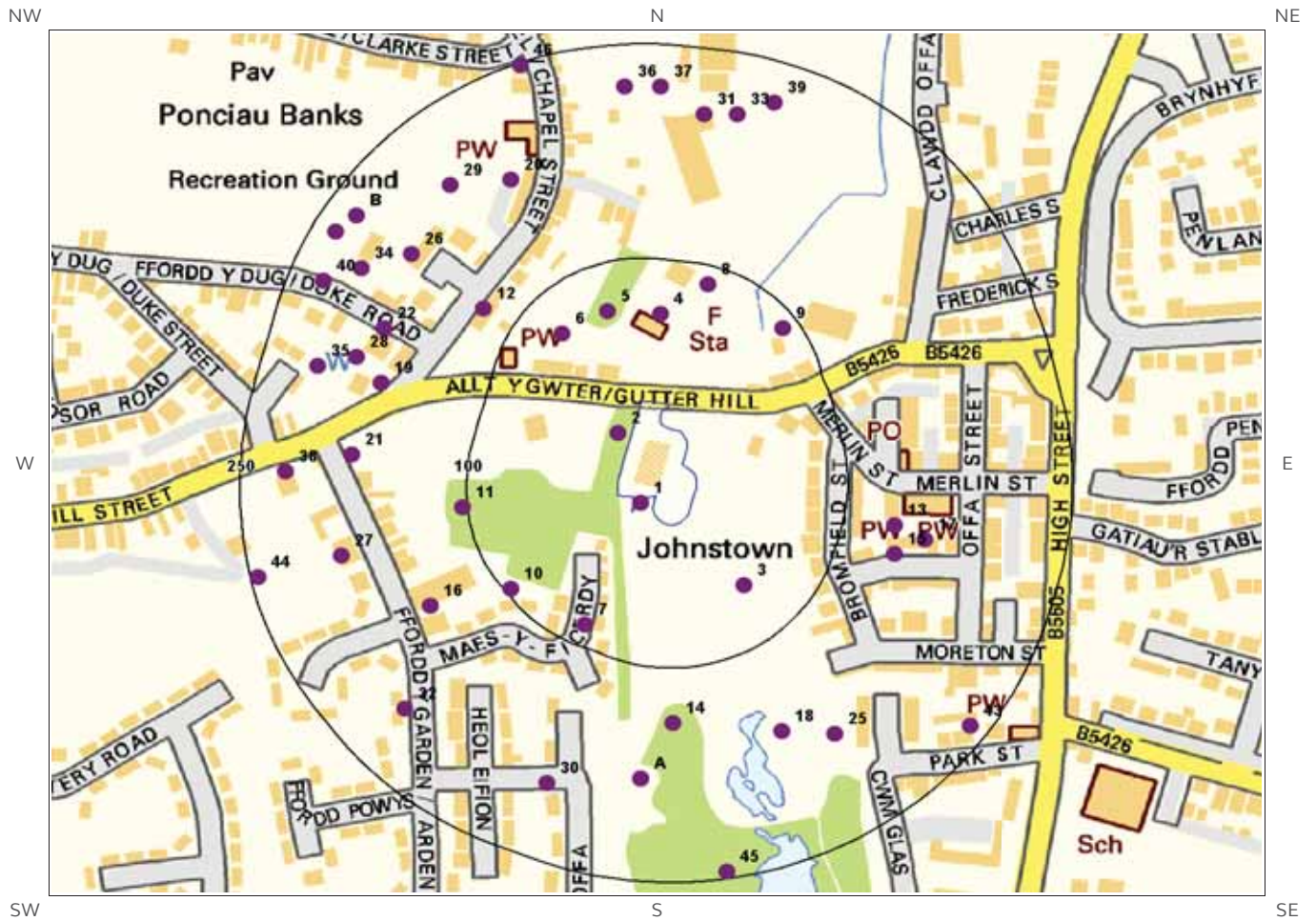
6.6 Running Sands

The following Running Sands information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.



7 Borehole Records map



Borehole Records Legend

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7 Borehole Records

The systematic analysis of data extracted from the BGS Borehole Records database provides the following information.

Records of boreholes within 250m of the study site boundary:

46

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	1.0	SE	329822 346266	SJ24NE800	-1.0	UNNAMED SHAFT
2	9.0	W	329807 346315	SJ24NE923	-1.0	PONKEY COLL., SHAFT
3	61.0	SE	329890 346208	SJ24NE802	-1.0	UNNAMED SHAFT
4	61.0	N	329835 346398	SJ24NE970	-1.0	UNNAMED SHAFT
5	66.0	N	329800 346400	SJ24NE1130	201.3	AFONEITHA WORKS
6	70.0	NW	329770 346384	SJ24NE727	-1.0	PONKEY COLL. SHAFT
7	85.0	S	329785 346181	SJ24NE801	-1.0	UNNAMED SHAFT
8	87.0	N	329866 346419	SJ24NE971	-1.0	UNNAMED SHAFT
9	89.0	NE	329916 346388	SJ24NE972	-1.0	UNNAMED SHAFT
10	97.0	SW	329736 346206	SJ24NE832	-1.0	BRANDIE COLL., SHAFT
11	104.0	W	329704 346263	SJ24NE915	-1.0	PONKEY COLL., SHAFT
12	123.0	NW	329718 346402	SJ24NE726	-1.0	PONKEY COLL. SHAFT
13	134.0	E	329990 346250	SJ24NE493	3.65	JOHNSTOWN, YALE ST. BH2
14	139.0	S	329843 346112	SJ24NE803	-1.0	UNNAMED SHAFT
15	139.0	E	329990 346230	SJ24NE492	4.57	JOHNSTOWN, YALE ST. BH1
16	146.0	SW	329683 346194	SJ24NE916	-1.0	PONKEY COLL., SHAFT
17	156.0	E	330010 346240	SJ34NW233	3.65	JOHNSTOWN, YALE STREET 3
18	161.0	SE	329915 346106	SJ24NE804	-1.0	UNNAMED SHAFT
19	170.0	W	329650 346350	SJ24NE7	201.35	PONKEY IRONWORKS ENGINE PIT
20	177.0	NW	329736 346492	SJ24NE895	-1.0	PONKEY COLL., SHAFT
21	177.0	W	329631 346300	SJ24NE799	-1.0	PONKEY COLL. NO.4 SHAFT
22	178.0	W	329652 346388	SJ24NE724	-1.0	PONKEY COLL. SHAFT



ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
23A	179.0	S	329822 346073	SJ24NE681	-1.0	BRANDIE COLL. CHAIN PIT
24A	179.0	S	329822 346073	SJ24NE574	-1.0	BRANDY COLL. SHAFT
25	180.0	SE	329950 346104	SJ24NE805	-1.0	UNNAMED SHAFT
26	184.0	NW	329670 346440	SJ24NE27	18.29	MR EDWARDS IGS4
27	188.0	W	329624 346229	SJ24NE572	-1.0	GARDEN COLL. SHAFT
28	190.0	W	329634 346368	SJ24NE570	-1.0	BRANDY COLL. SHAFT
29	197.0	NW	329696 346488	SJ24NE565	-1.0	PONKEY COLL. SAW PIT
30	197.0	SW	329760 346070	SJ24NE1076	-1.0	BRANDY COLLIERY CHAIN PIT
31	204.0	N	329864 346538	SJ24NE969	-1.0	UNNAMED SHAFT
32	204.0	SW	329666 346122	SJ24NE917	-1.0	PONKEY COLL., SHAFT
33	207.0	N	329886 346538	SJ24NE922	-1.0	PONKEY COLL., SHAFT
34	207.0	NW	329637 346430	SJ24NE973	-1.0	UNNAMED SHAFT
35	213.0	W	329608 346362	SJ24NE725	-1.0	PONKEY COLL. SHAFT
36	220.0	N	329811 346557	SJ24NE896	-1.0	PONKEY COLL., SHAFT
37	220.0	N	329835 346557	SJ24NE968	-1.0	UNNAMED SHAFT
38	220.0	W	329587 346288	SJ24NE914	-1.0	PONKEY COLL., SHAFT
39	221.0	N	329910 346546	SJ24NE960	-1.0	RUABON COLL. SHAFT
40	227.0	W	329612 346421	SJ24NE894	-1.0	PONKEY COLL., SHAFT
41B	229.0	NW	329634 346467	SJ24NE695	-1.0	PONKEY COLL., SHAFT
42B	235.0	NW	329620 346456	SJ24NE678	-1.0	UNNAMED SHAFT
43	238.0	SE	330040 346110	SJ34NW223	32.92	SHAFT UNAMED
44	245.0	W	329569 346214	SJ24NE865	-1.0	BRANDIE COLL., SHAFT
45	246.0	S	329879 346008	SJ24NE806	-1.0	UNNAMED SHAFT
46	248.0	N	329742 346572	SJ24NE757	-1.0	UNNAMED SHAFT



The borehole records are available using the hyperlinks below: Please note that if the donor of the borehole record has requested the information be held as commercial-in-confidence, the additional data will be held separately by the BGS and a formal request must be made for its release.

#1: scans.bgs.ac.uk/sobi_scans/boreholes/143337
#2: scans.bgs.ac.uk/sobi_scans/boreholes/143460
#3: scans.bgs.ac.uk/sobi_scans/boreholes/143339
#4: scans.bgs.ac.uk/sobi_scans/boreholes/143507
#5: scans.bgs.ac.uk/sobi_scans/boreholes/143667
#6: scans.bgs.ac.uk/sobi_scans/boreholes/143264
#7: scans.bgs.ac.uk/sobi_scans/boreholes/143338
#8: scans.bgs.ac.uk/sobi_scans/boreholes/143508
#9: scans.bgs.ac.uk/sobi_scans/boreholes/143509
#10: scans.bgs.ac.uk/sobi_scans/boreholes/143369
#11: scans.bgs.ac.uk/sobi_scans/boreholes/143452
#12: scans.bgs.ac.uk/sobi_scans/boreholes/143263
#13: scans.bgs.ac.uk/sobi_scans/boreholes/143030
#14: scans.bgs.ac.uk/sobi_scans/boreholes/143340
#15: scans.bgs.ac.uk/sobi_scans/boreholes/143029
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#18: scans.bgs.ac.uk/sobi_scans/boreholes/143341
#19: scans.bgs.ac.uk/sobi_scans/boreholes/142390
#20: scans.bgs.ac.uk/sobi_scans/boreholes/143432
#21: scans.bgs.ac.uk/sobi_scans/boreholes/143336
#22: scans.bgs.ac.uk/sobi_scans/boreholes/143261
#23A: scans.bgs.ac.uk/sobi_scans/boreholes/143218
#24A: scans.bgs.ac.uk/sobi_scans/boreholes/143111
#25: scans.bgs.ac.uk/sobi_scans/boreholes/143342
#26: scans.bgs.ac.uk/sobi_scans/boreholes/142410
#27: scans.bgs.ac.uk/sobi_scans/boreholes/143109
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#29: scans.bgs.ac.uk/sobi_scans/boreholes/143102
#30: scans.bgs.ac.uk/sobi_scans/boreholes/143613
#31: scans.bgs.ac.uk/sobi_scans/boreholes/143506
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#33: scans.bgs.ac.uk/sobi_scans/boreholes/143459
#34: scans.bgs.ac.uk/sobi_scans/boreholes/143510
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#38: scans.bgs.ac.uk/sobi_scans/boreholes/143451
#39: scans.bgs.ac.uk/sobi_scans/boreholes/143497
#40: scans.bgs.ac.uk/sobi_scans/boreholes/143431
#41B: scans.bgs.ac.uk/sobi_scans/boreholes/143232
#42B: scans.bgs.ac.uk/sobi_scans/boreholes/143215
#43: scans.bgs.ac.uk/sobi_scans/boreholes/153615
#44: scans.bgs.ac.uk/sobi_scans/boreholes/143402
#45: scans.bgs.ac.uk/sobi_scans/boreholes/143343
#46: scans.bgs.ac.uk/sobi_scans/boreholes/143294



8 Estimated Background Soil Chemistry

Records of background estimated soil chemistry within 250m of the study site boundary:

1

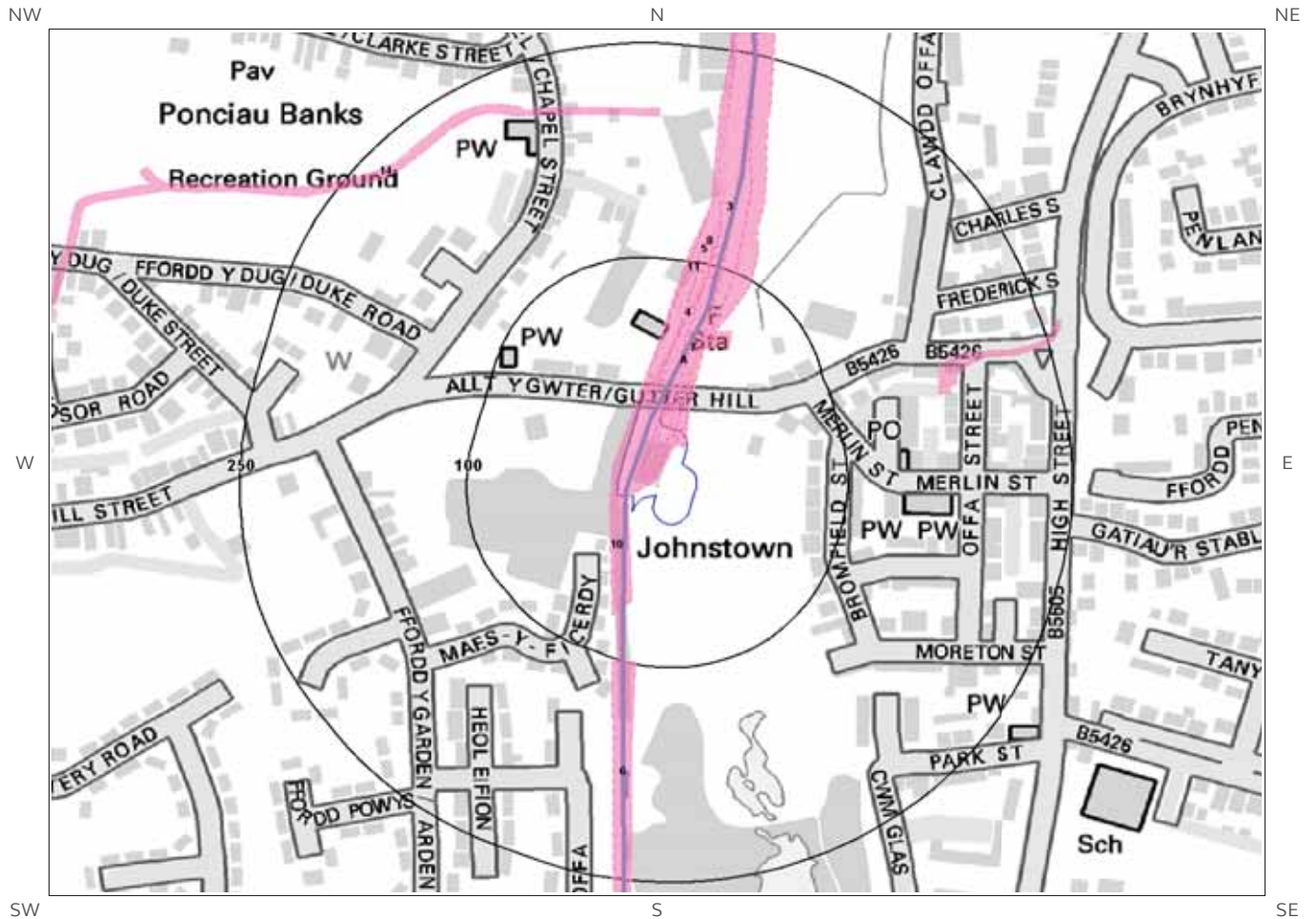
For further information on how this data is calculated and limitations upon its use, please see the Groundsure Geo Insight User Guide, available on request.

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	<15 mg/kg	<100 mg/kg

*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

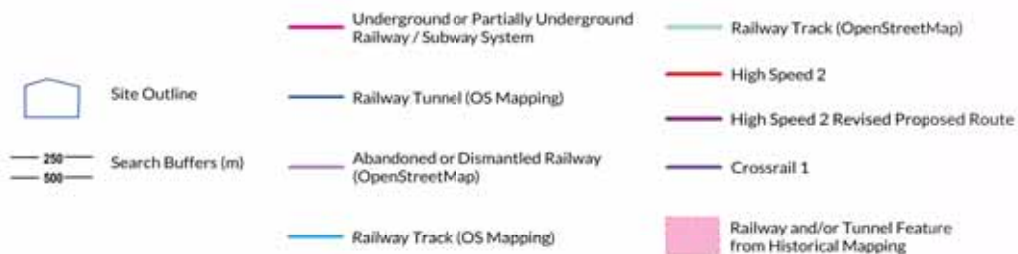


9 Railways and Tunnels map



Railways and Tunnels Legend

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9 Railways and Tunnels

9.1 Tunnels

This data is derived from OpenStreetMap and provides information on the possible locations of underground railway systems in the UK - the London Underground, the Tyne & Wear Metro and the Glasgow Subway.

Have any underground railway lines been identified within the study site boundary? No

Have any underground railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

This data is derived from Ordnance Survey mapping and provides information on the possible locations of railway tunnels forming part of the UK overground railway network.

Have any other railway tunnels been identified within the site boundary? No

Have any other railway tunnels been identified within 250m of the site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

9.2 Historical Railway and Tunnel Features

This data is derived from Groundsure's unique Historical Land-use Database and contains features relating to tunnels, railway tracks or associated works that have been identified from historical Ordnance Survey mapping.

Have any historical railway or tunnel features been identified within the study site boundary? Yes

Have any historical railway or tunnel features been identified within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Details	Date
1A	0	On Site	329848 346366	Railway Sidings	1909
2A	0	On Site	329853 346367	Railway Sidings	1898
3	0	On Site	329889 346466	Railway Sidings	1873
4	0	On Site	329882 346478	Railway Sidings	1949
5	0	On Site	329882 346530	Railway Sidings	1938
7	0	On Site	329853 346366	Railway Sidings	1912



ID	Distance (m)	Direction	NGR	Details	Date
8	0	On Site	329898 346887	Railway Sidings	1900
9	0	On Site	329890 346742	Railway Sidings	1875
10	16	SW	329806 346236	Railway Sidings	1912
11	77	N	329856 346429	Railway Sidings	1912
6	99	S	329851 345706	Railway Sidings	1949
12	169	E	330027 346354	Tramway Sidings	1900
13	172	E	330027 346356	Tramway Sidings	1912
14	199	N	329449 346468	Railway Sidings	1875

Any records that have been identified are represented on the Railways and Tunnels map.

9.3 Historical Railways

This data is derived from OpenStreetMap and provides information on the possible alignments of abandoned or dismantled railway lines in proximity to the study site.

Have any historical railway lines been identified within the study site boundary? Yes

Have any historical railway lines been identified within 250m of the study site boundary? Yes

Distance (m)	Direction	Status
0	On Site	Abandoned
174	S	Abandoned

Multiple sections of the same track may be listed in the detail above

Any records that have been identified are represented on the Railways and Tunnels map.

9.4 Active Railways

These datasets are derived from Ordnance Survey mapping and OpenStreetMap and provide information on the possible locations of active railway lines in proximity to the study site.

Have any active railway lines been identified within the study site boundary? No

Have any active railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above

Any records that have been identified are represented on the Railways and Tunnels map.



9.5 Railway Projects

These datasets provide information on the location of large scale railway projects High Speed 2 and Crossrail 1 .

Is the study site within 5km of the route of the High Speed 2 rail project? No

Is the study site within 500m of the route of the Crossrail 1 rail project? No

Further information on proximity to these routes, the project construction status and associated works can be obtained through the purchase of a Groundsure HS2 and Crossrail 1 Report.

The route data has been digitised from publicly available maps by Groundsure. The route as provided relates to the Crossrail 1 project only, and does not include any details of the Crossrail 2 project, as final details of the route for Crossrail 2 are still under consultation.

Please note that this assessment takes account of both the original Phase 2b proposed route and the amended route proposed in 2016. As the Phase 2b route is still under consultation, Groundsure are providing information on both options until the final route is formally confirmed. Practitioners should take account of this uncertainty when advising clients.



Contact Details

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Telephone: 08444 159 000
info@groundsure.com



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Fax: 0115 936 3276.
Email: enquiries@bgs.ac.uk
Web: www.bgs.ac.uk

BGS Geological Hazards Reports and general geological enquiries



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<https://www.gov.uk/government/organisations/public-health-england>
Email: enquiries@phe.gov.uk
Main switchboard: 020 7654 8000



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Tel: +44 (0) 1384 262 000
Email: enquiries.gs@jpb.co.uk
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Website: <http://www.ordnancesurvey.co.uk/>



Getmapping PLC

Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444
Website: <http://www1.getmapping.com/>





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Site Details:

NEW FOUNDRY BUILDINGS,
GUTTER HILL, JOHNSTOWN,
WREXHAM, LL14 1LS

Client Ref: PE02038_TE1085
Report Ref: GS-4811802
Grid Ref: 329833, 346294

Map Name: County Series

Map date: 1872-1873

Scale: 1:10,560

Printed at: 1:10,560



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

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

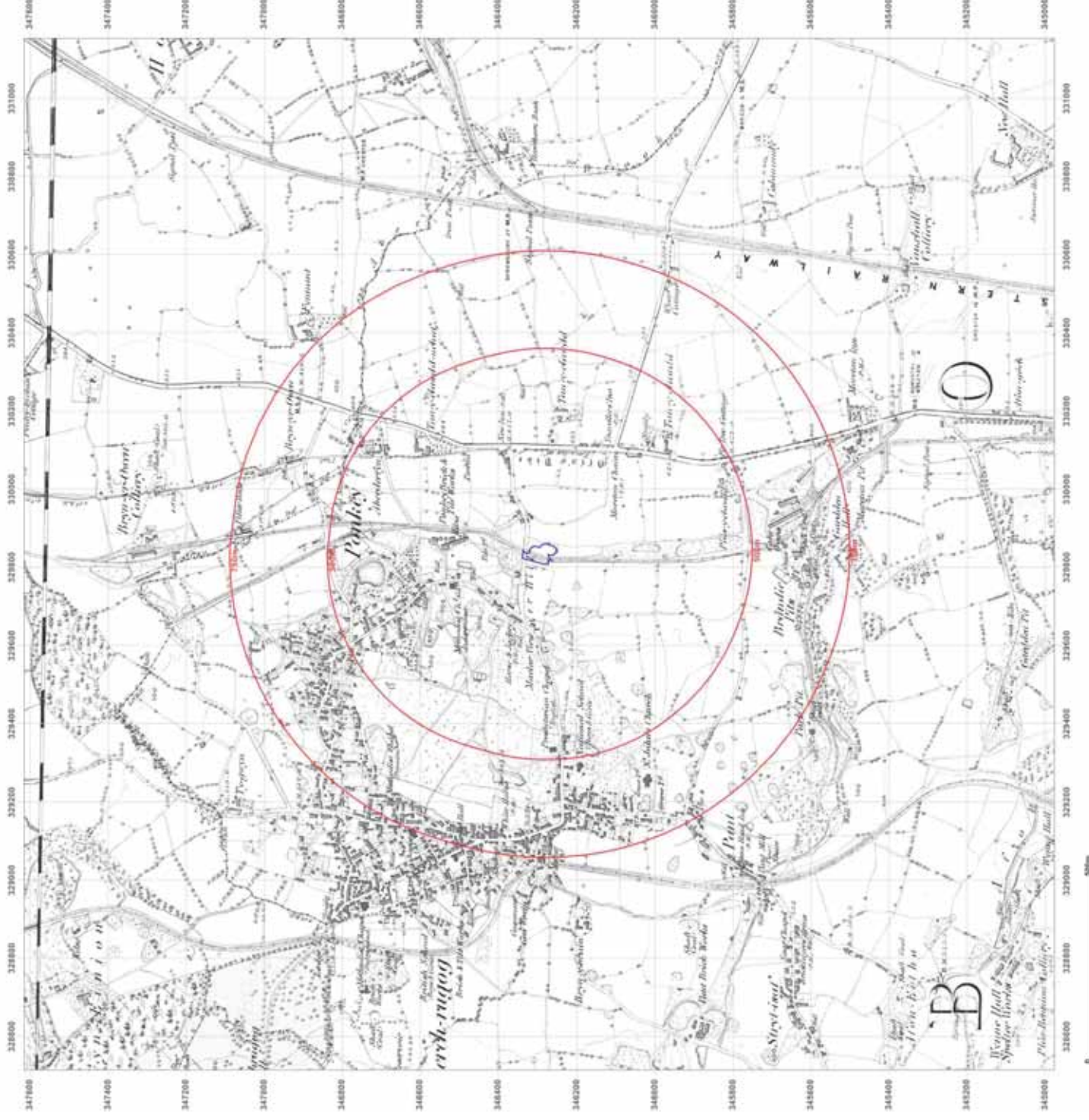


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Client Ref: PE02038_TE1085
Report Ref: GS-4811802
Grid Ref: 329833, 346294

Map Name: County Series

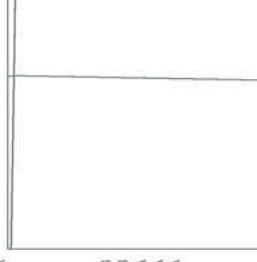
Map date: 1898

Scale: 1:10,560

Printed at: 1:10,560



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



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

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

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

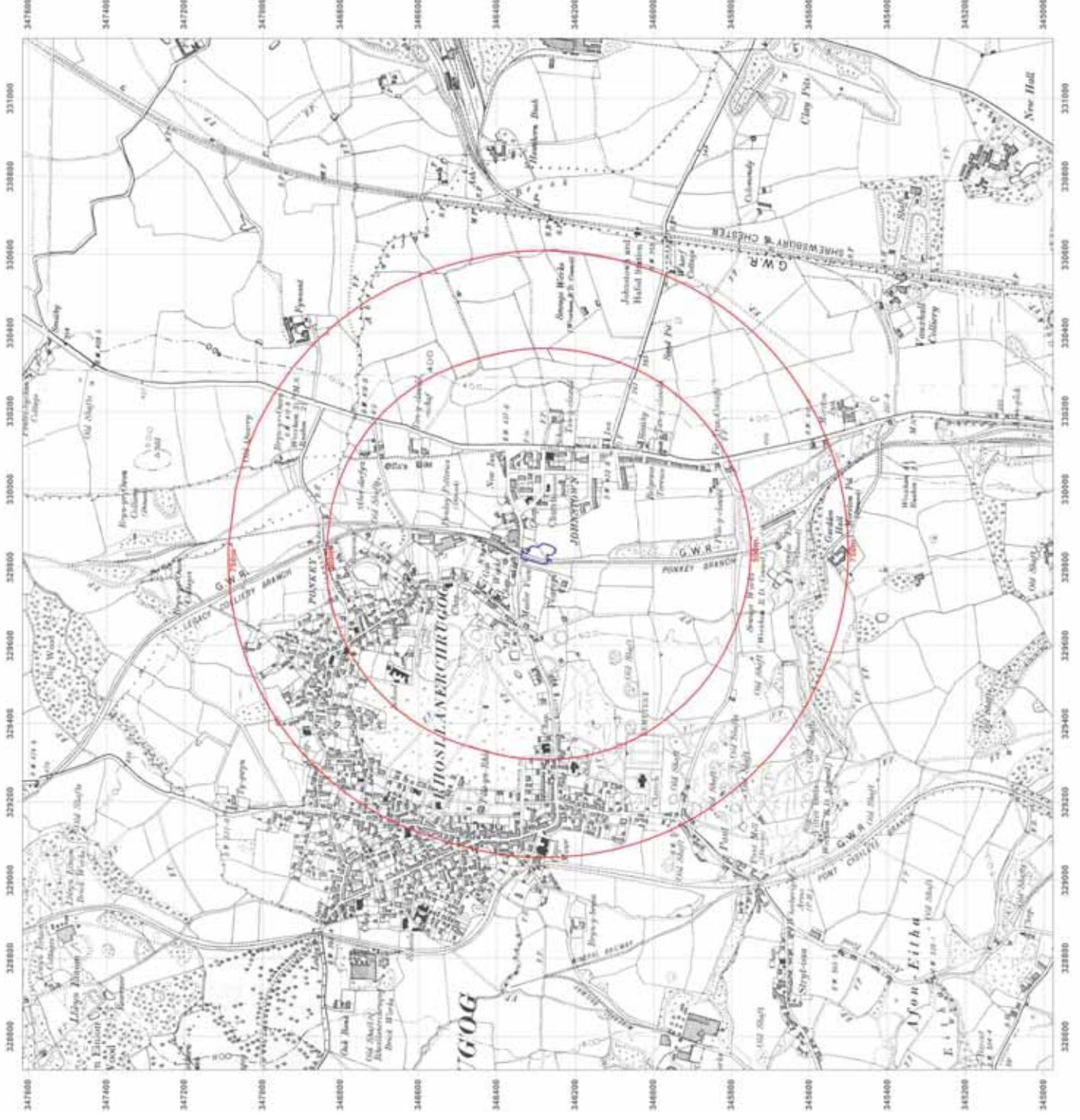


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Client Ref: PE02038_TE1085
Report Ref: GS-4811802
Grid Ref: 329833, 346294

Map Name: County Series

Map date: 1909-1910

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1872
Revised 1910
Edition N/A
Copyright N/A
Levelled N/A

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

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

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

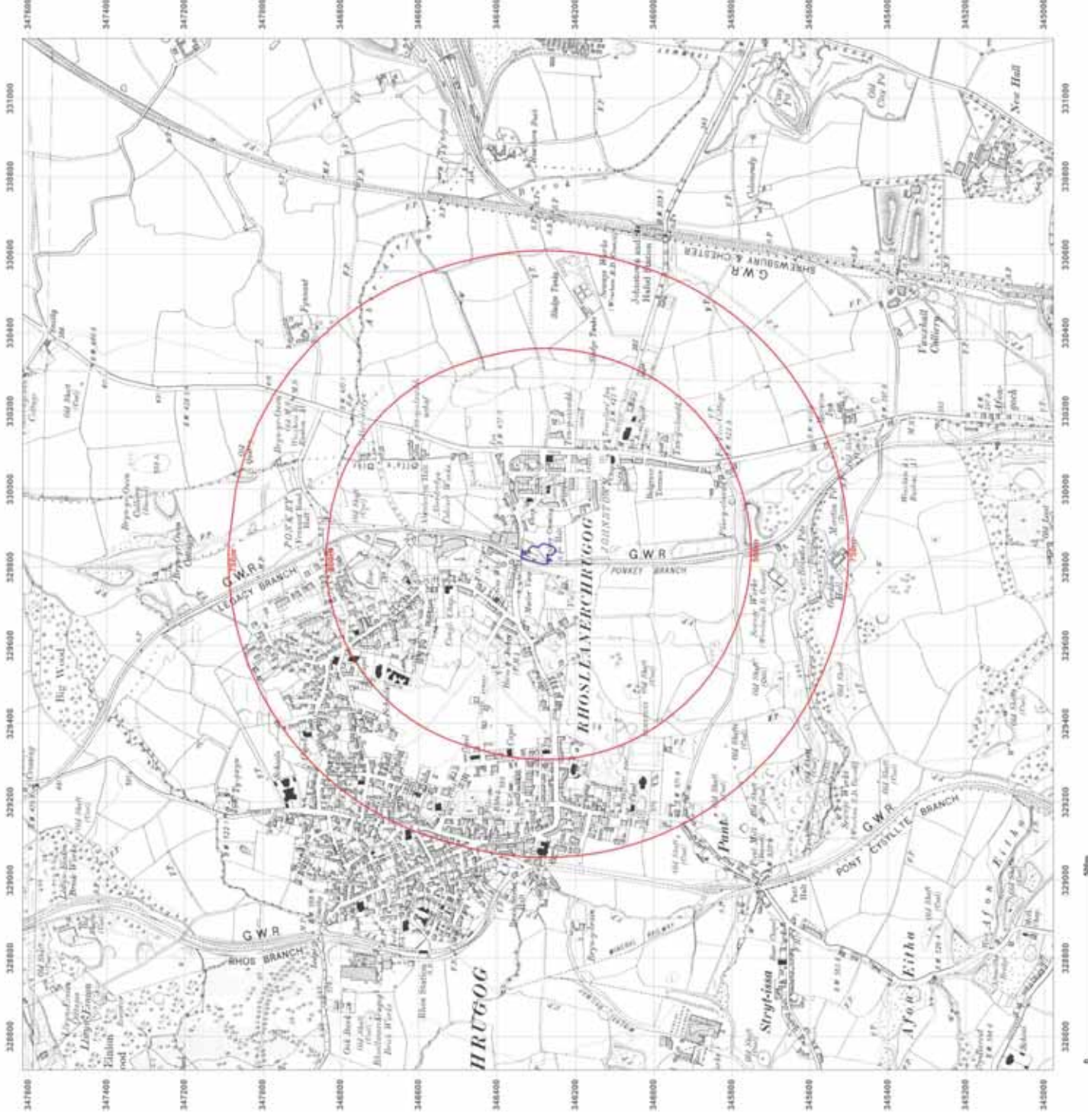


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Client Ref: PE02038_TE1085
Report Ref: GS-4811802
Grid Ref: 329833, 346294

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



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

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

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

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



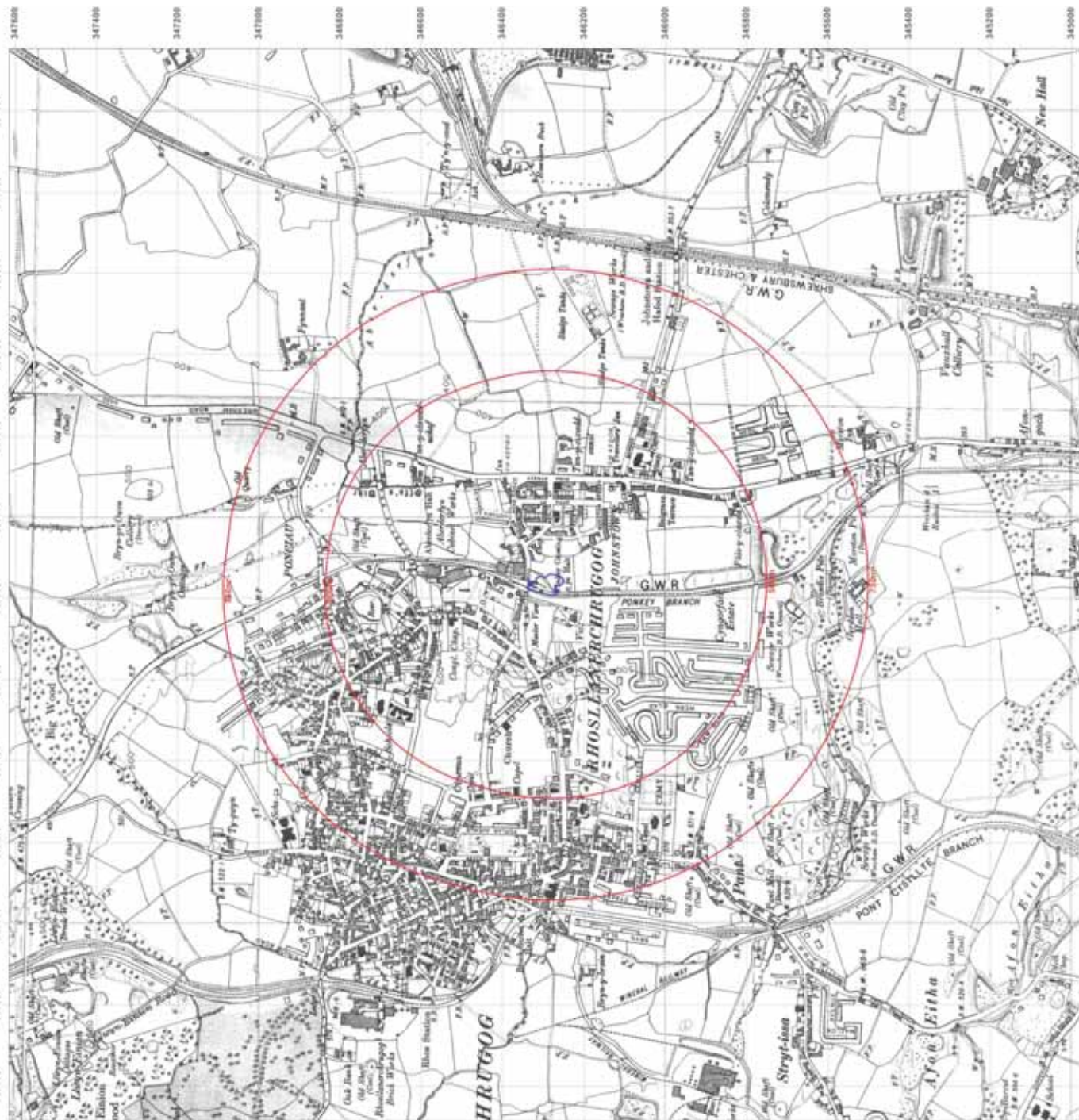
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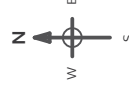
Client Ref: PEO2038_TE1085
Report Ref: GS-4811802
Grid Ref: 329833, 346294

Map Name: County Series

Map date: 1949

Scale: 1:10,560

Printed at: 1:10,560



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

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

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

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



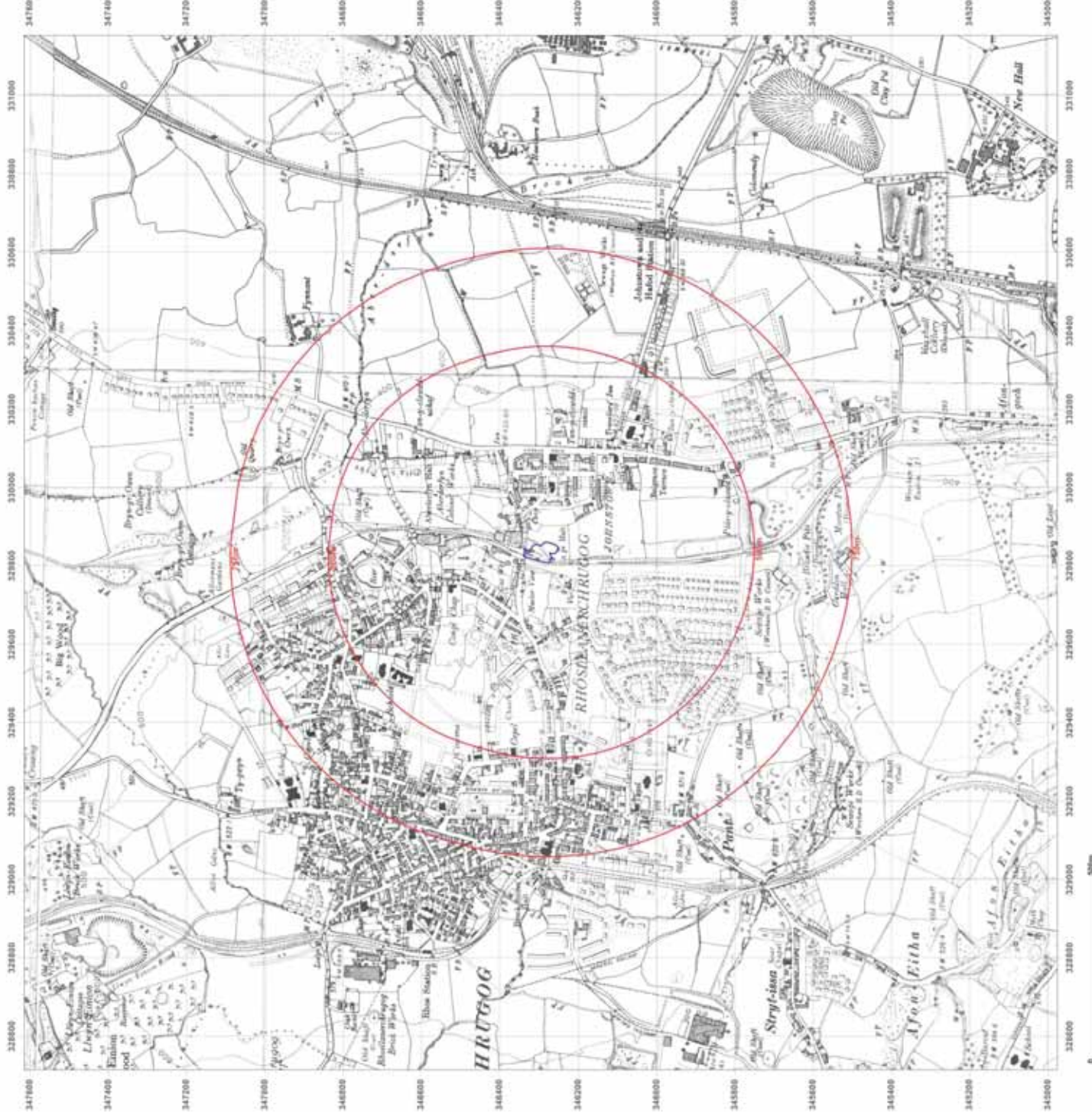
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Client Ref: PE02038_TE1085
Report Ref: GS-4811802
Grid Ref: 329833, 346294

Map Name: Provisional

Map date: 1960-1964

Scale: 1:10,560

Printed at: 1:10,560



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



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



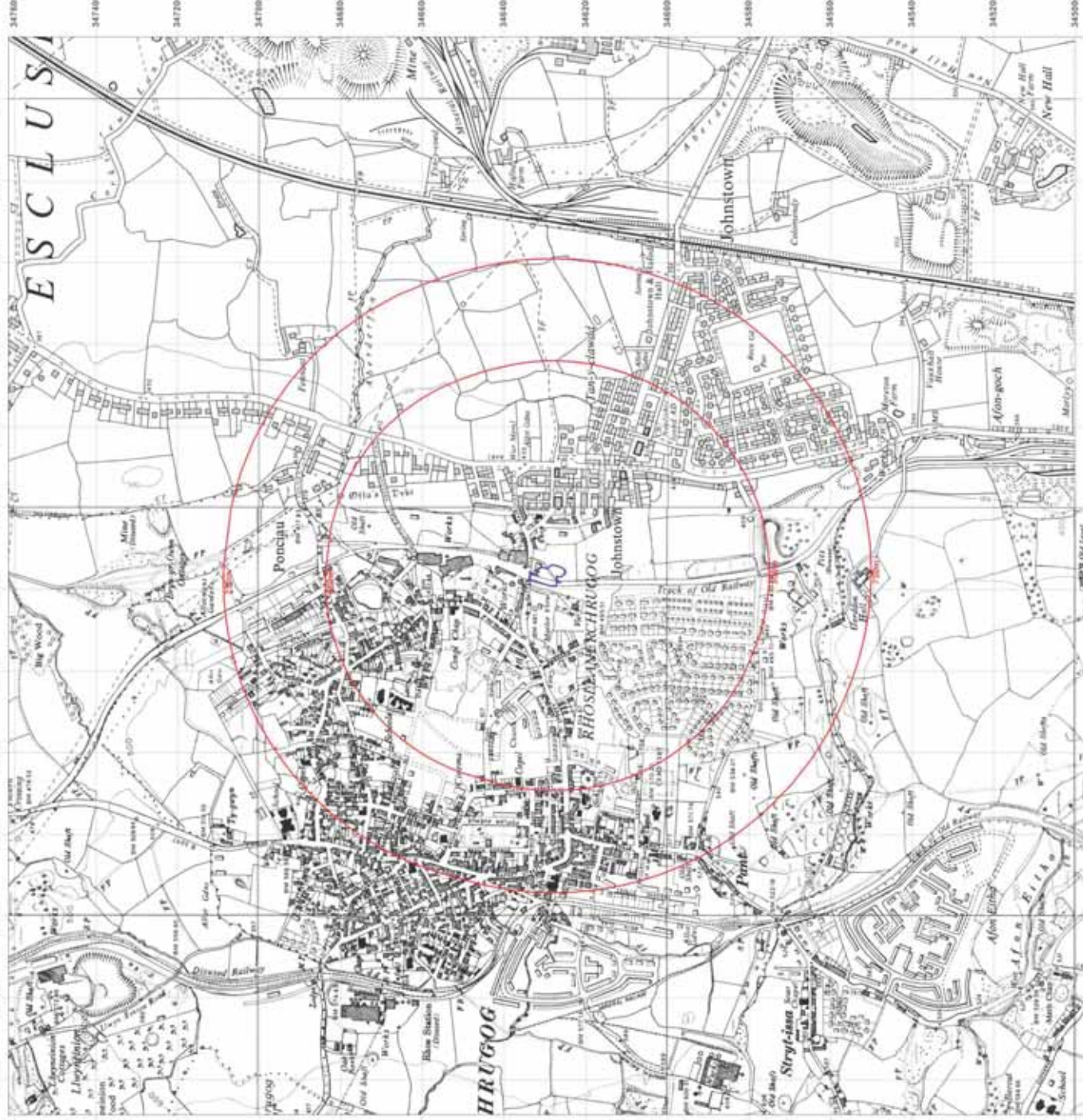
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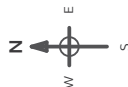
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Report Ref: GS-4811802
Grid Ref: 329833, 346294

Map Name: National Grid

Map date: 1976-1979

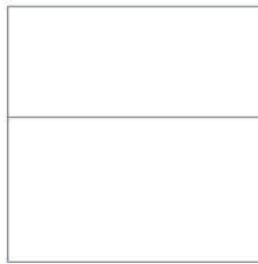
Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1973
Revised 1975
Edition N/A
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Levelled 1973

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



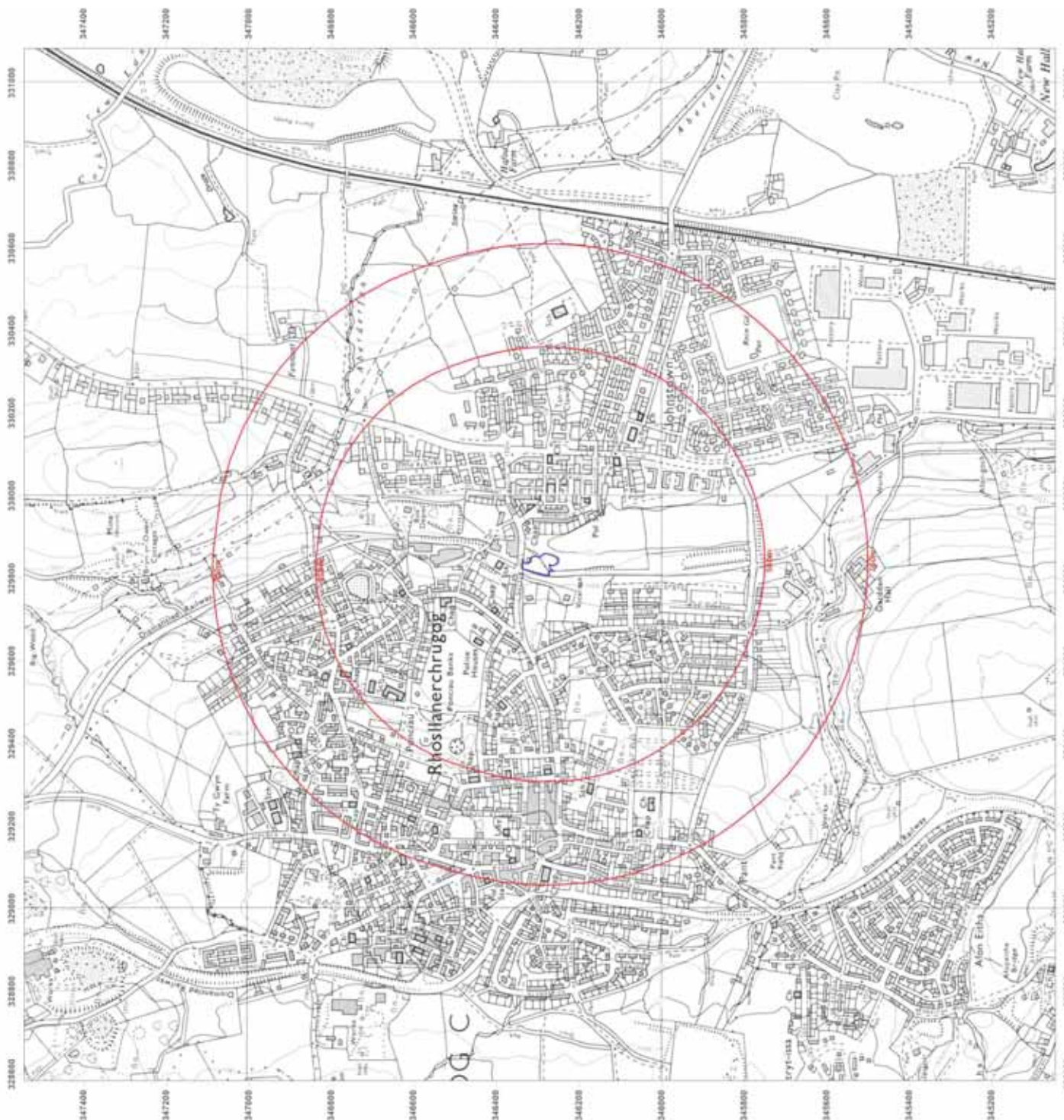
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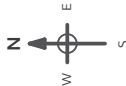
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Report Ref: GS-4811802
Grid Ref: 329833, 346294

Map Name: National Grid

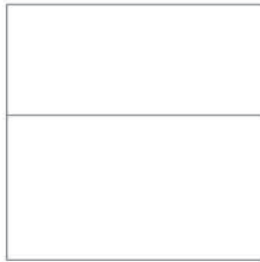
Map date: 1992

Scale: 1:10,000

Printed at: 1:10,000



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



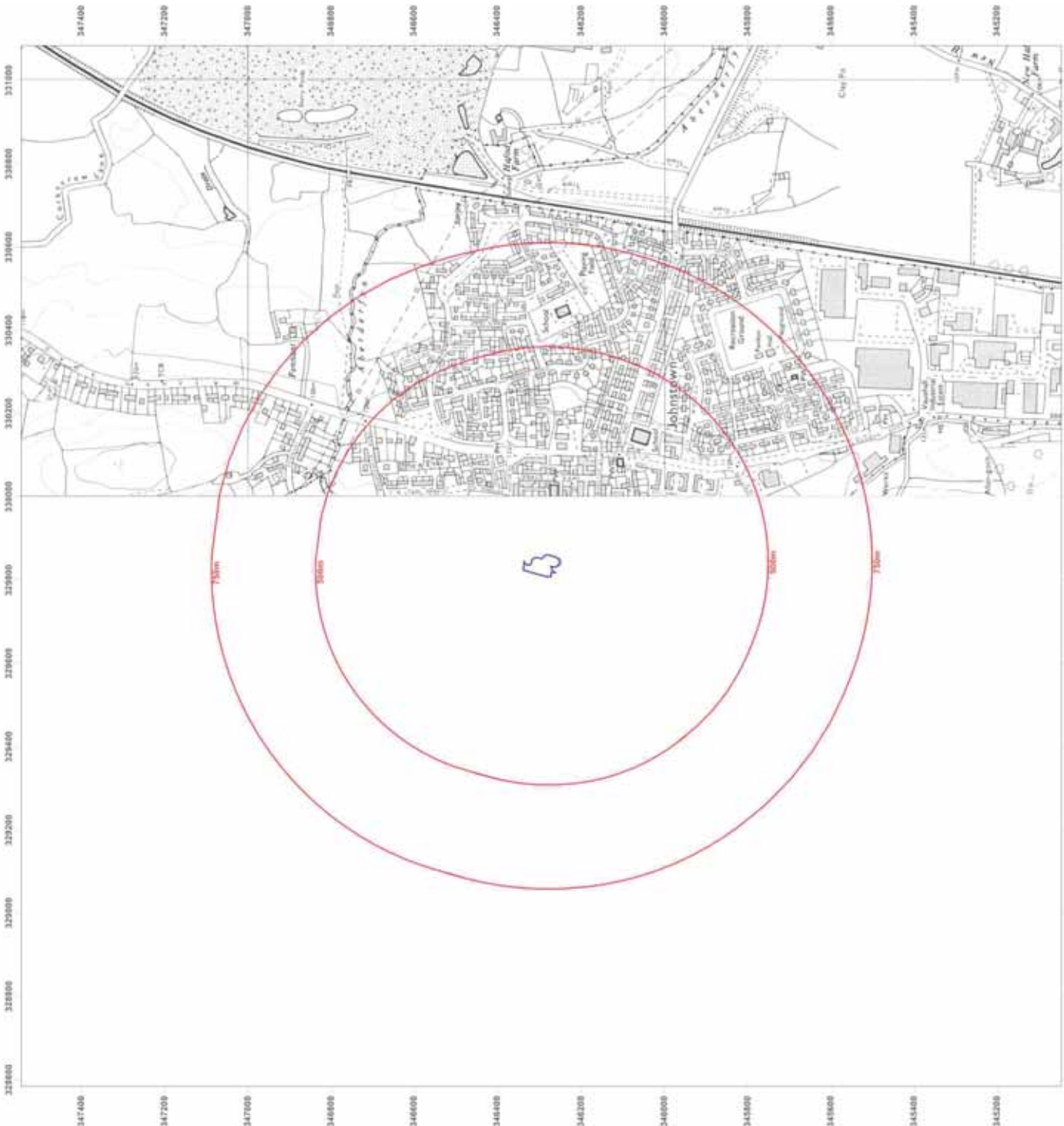
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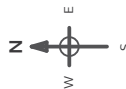
Client Ref: PE02038_TE1085
Report Ref: GS-4811802
Grid Ref: 329833, 346294

Map Name: 1:10,000 Raster

Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000

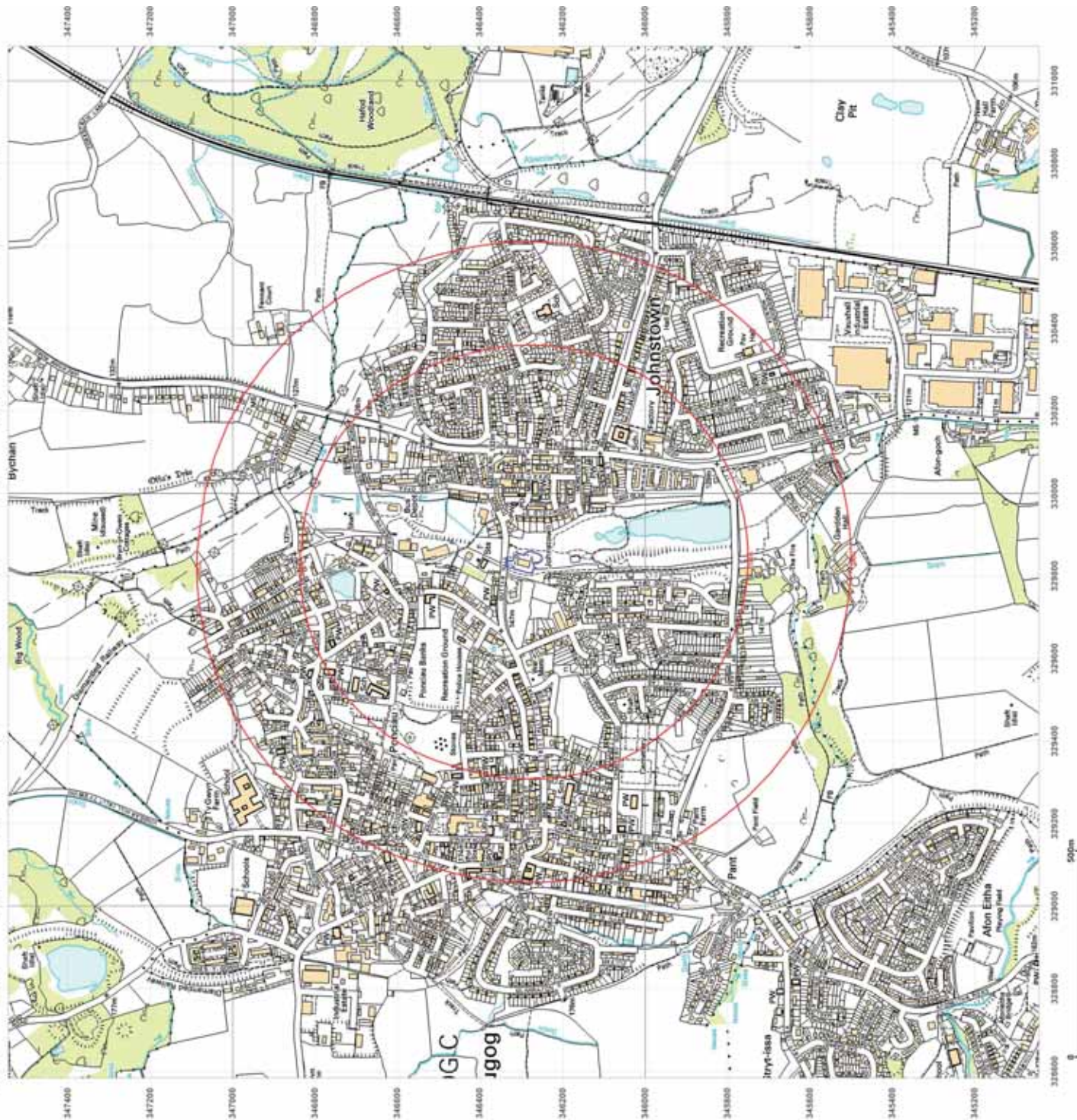


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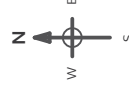


Site Details:

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WREXHAM, LL14 1LS

Client Ref: PE02038_TE1085
Report Ref: GS-4811802
Grid Ref: 329833, 346294

Map Name:	National Grid
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Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000

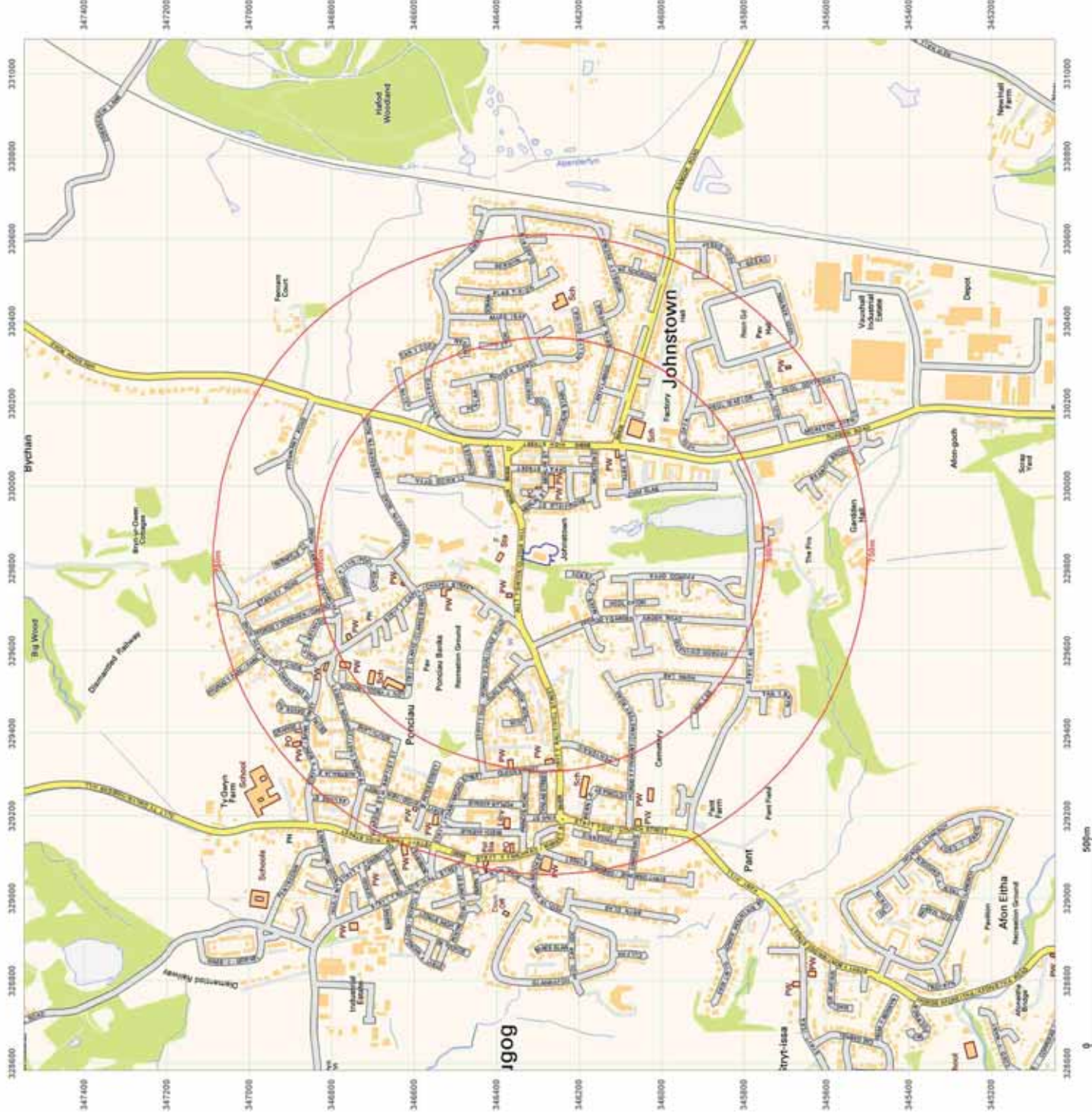


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Client Ref: PE02038_TE1085
Report Ref: GS-4811802
Grid Ref: 329833, 346294

Map Name: National Grid

Map date: 2014

Scale: 1:10,000

Printed at: 1:10,000

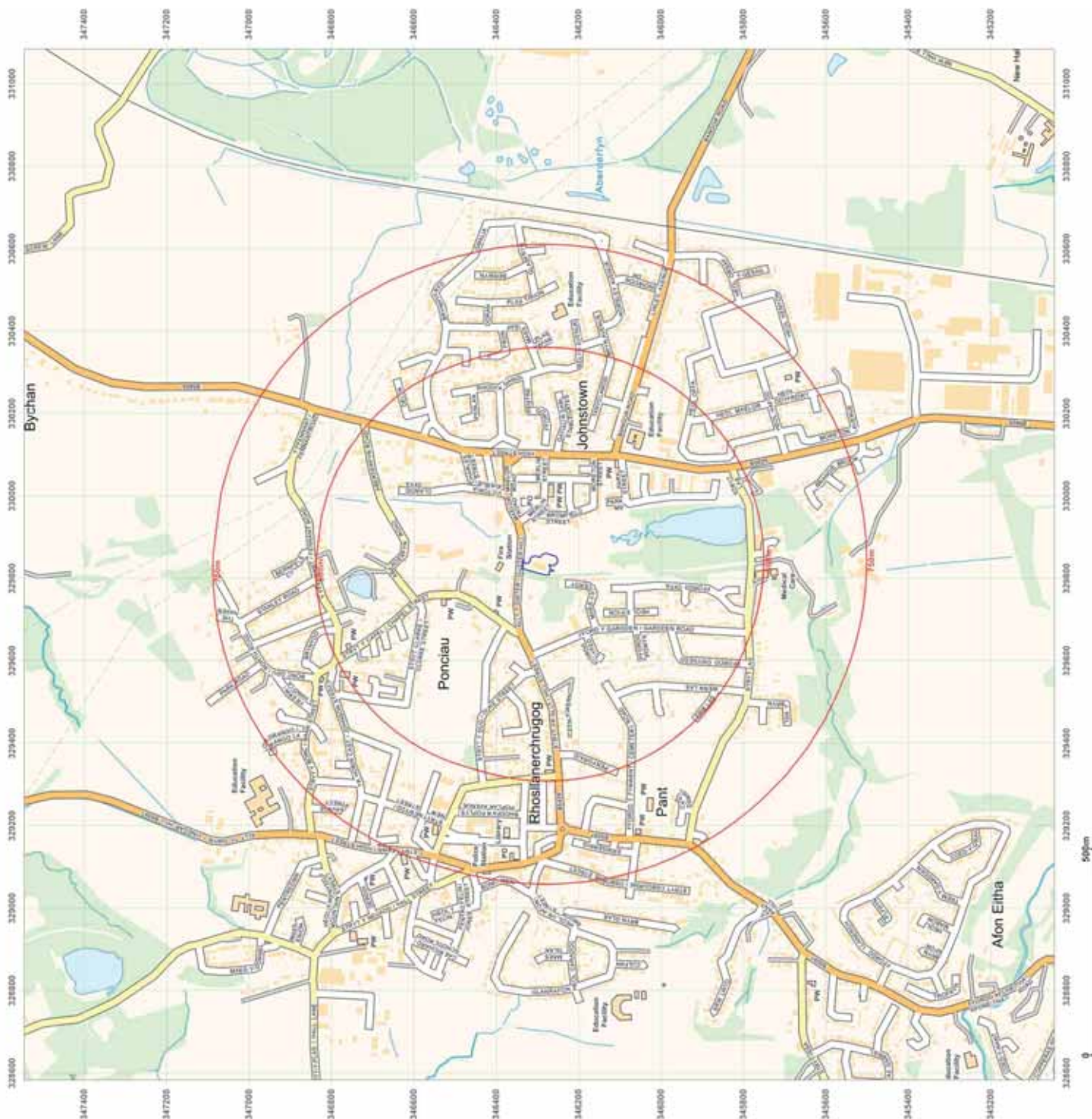


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Client Ref: PE02038_TE1085
Report Ref: GS-4811802
Grid Ref: 329833, 346294

Map Name: County Series

Map date: 1875

Scale: 1:2500

Printed at: 1:2,500



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

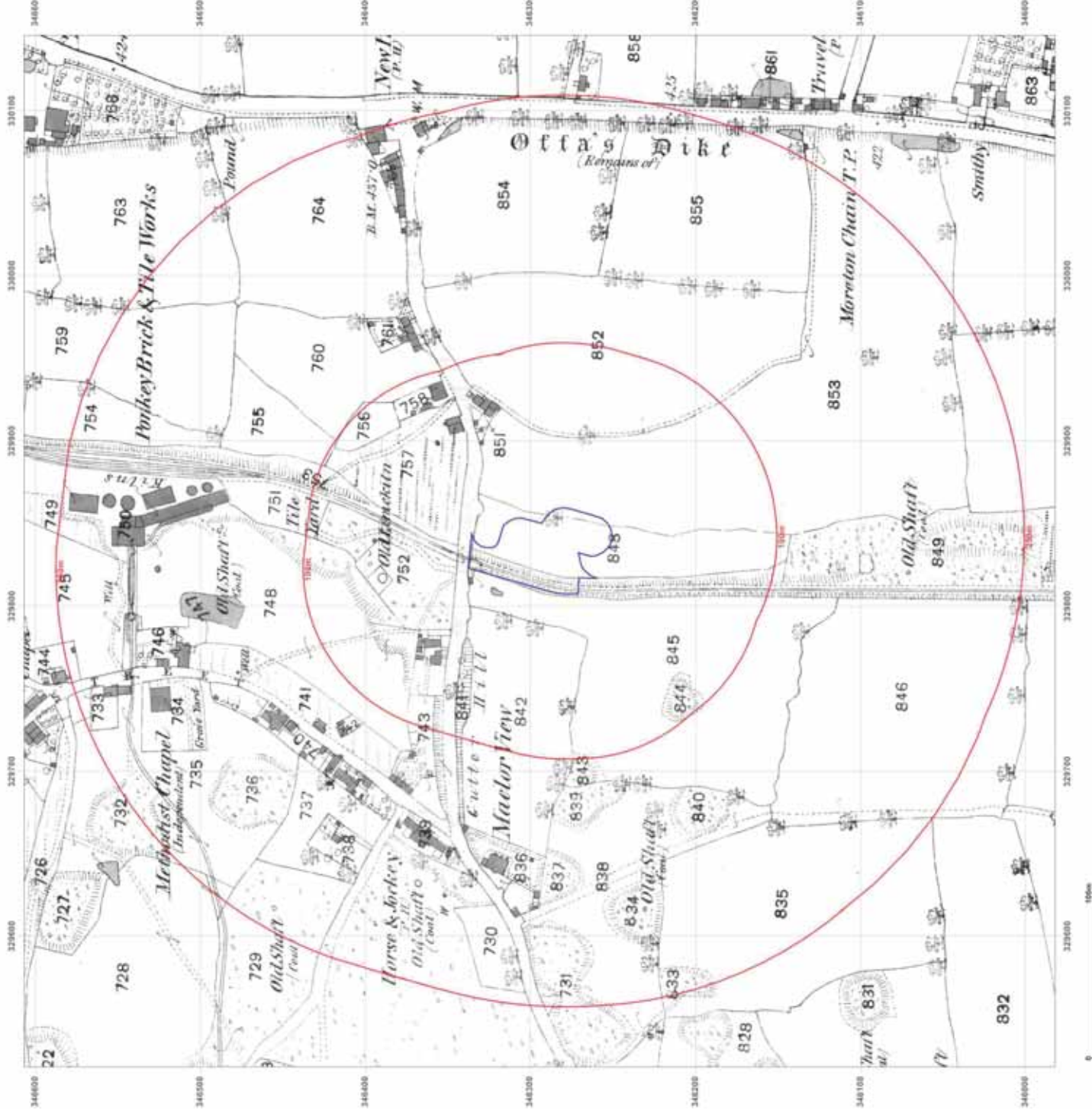


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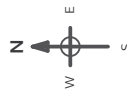
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Map Name: County Series

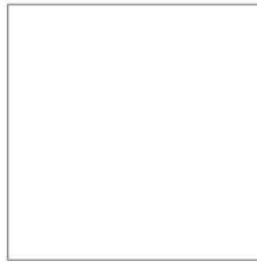
Map date: 1900

Scale: 1:2,500

Printed at: 1:2,500



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

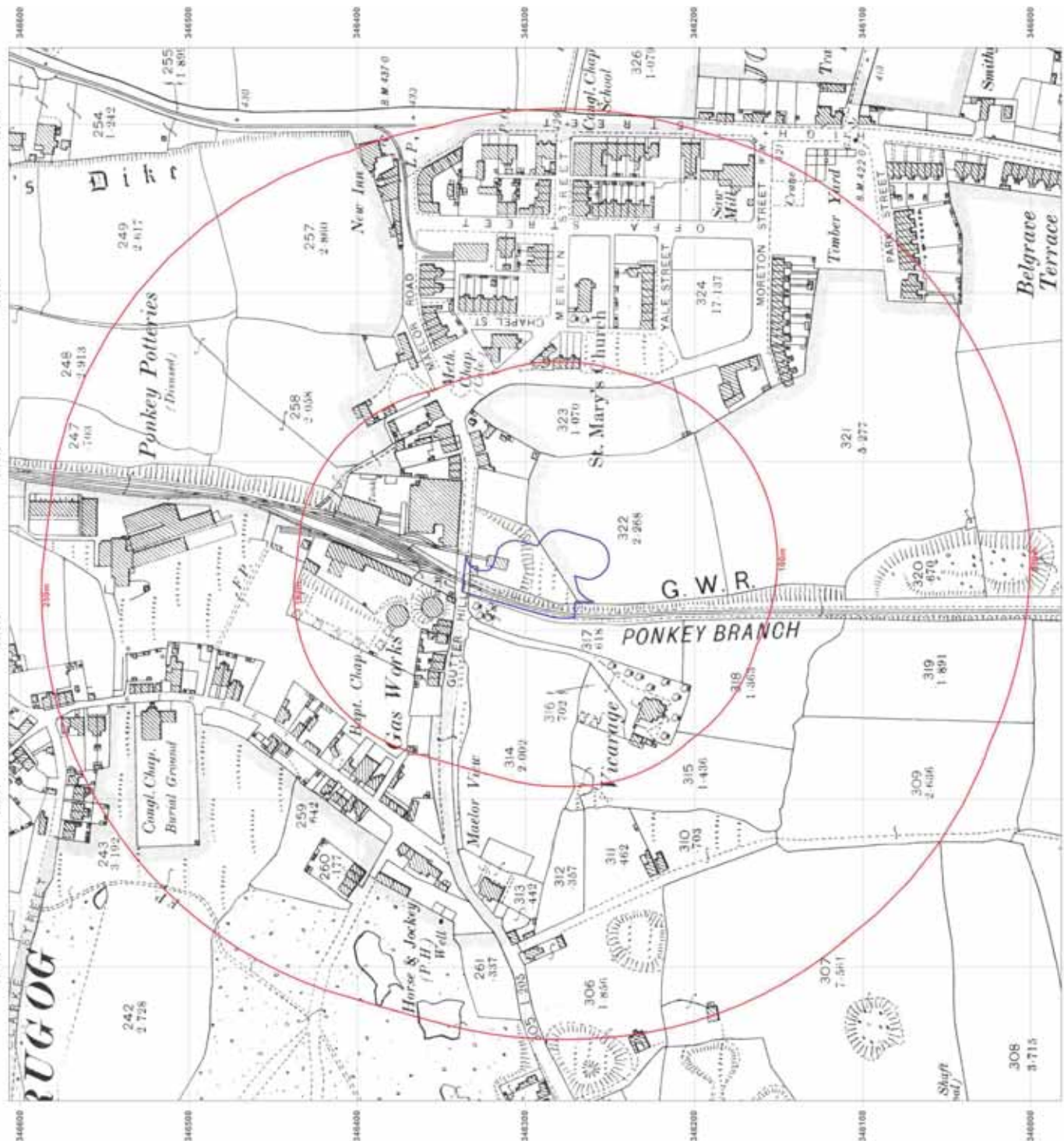


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Client Ref: PE02038_TE1085
Report Ref: GS-4811802
Grid Ref: 329833, 346294

Map Name: County Series

Map date: 1912

Scale: 1:2,500

Printed at: 1:2,500



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

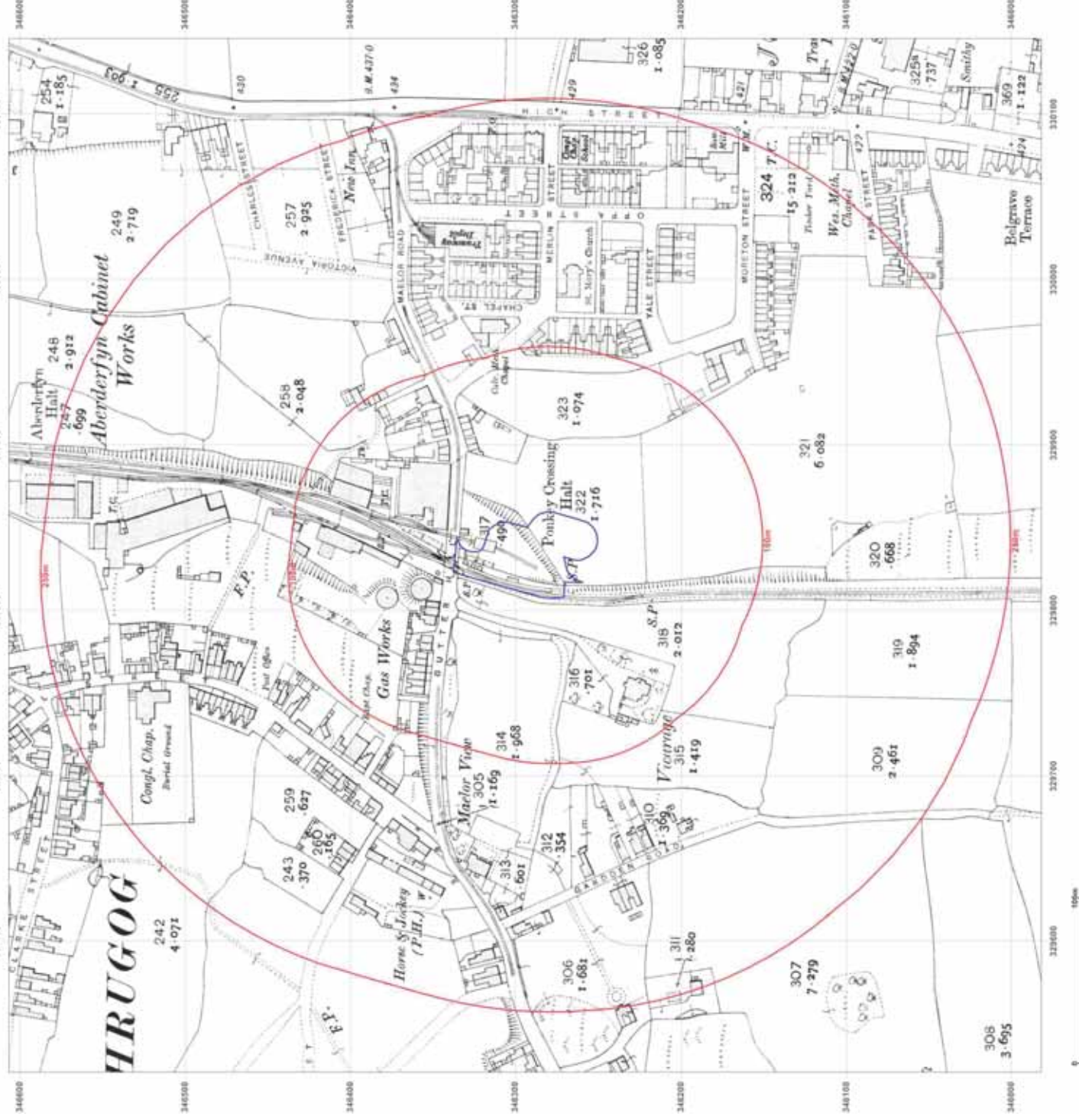


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Client Ref: PE02038_TE1085
Report Ref: GS-4811802
Grid Ref: 329833, 346294

Map Name:	National Grid
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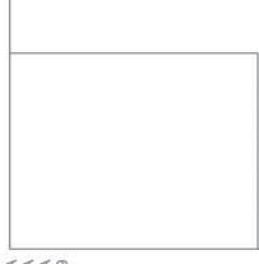
Map date: 1959

Scale: 1:2,500

Printed at: 1:2,500



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

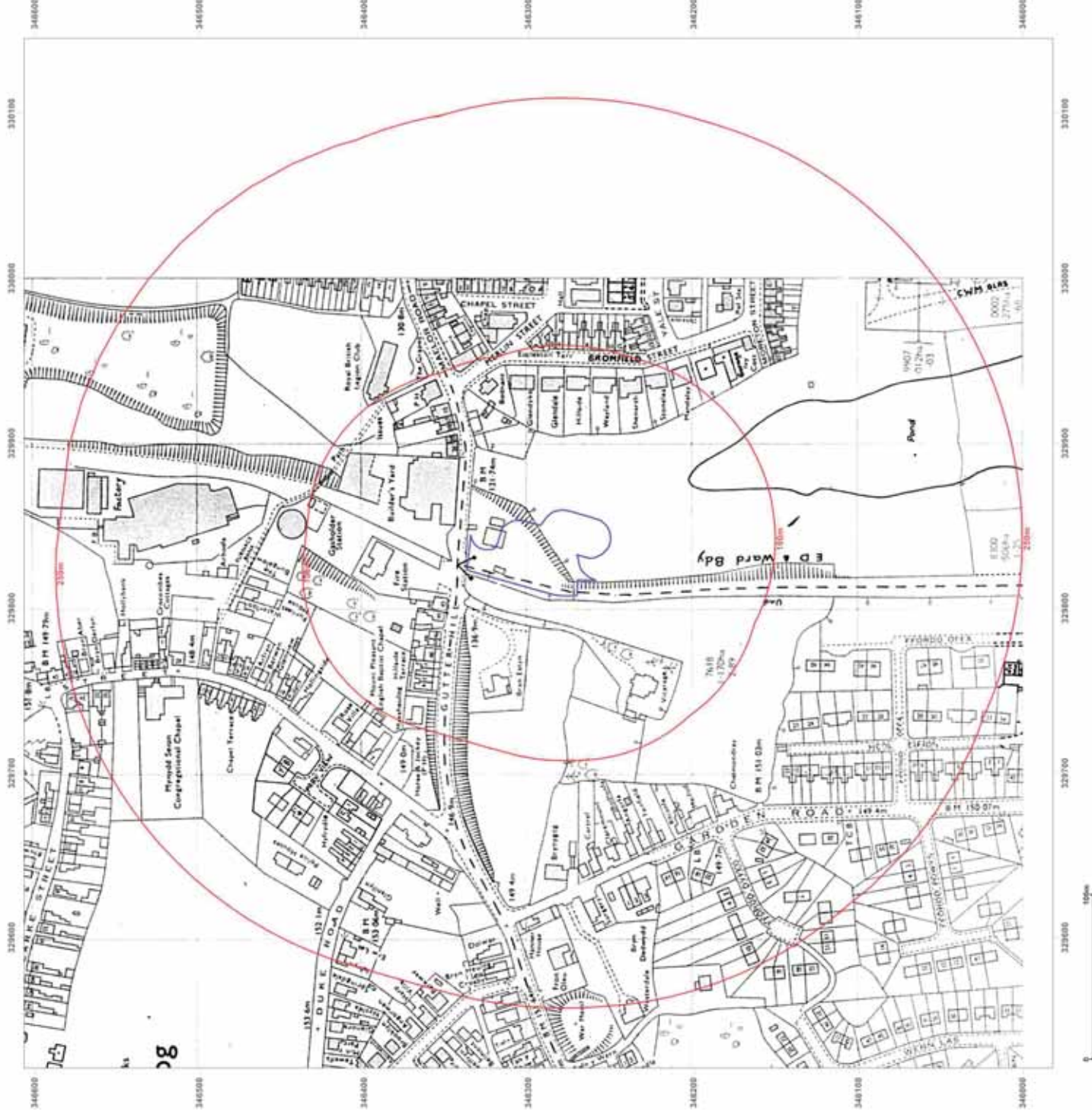


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Client Ref: PE02038_TE1085
Report Ref: GS-4811802
Grid Ref: 329833, 346294

Map Name: National Grid

Map date: 1959-1962

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1960
Revised 1960
Edition N/A
Copyright 1962
Levelled 1960



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

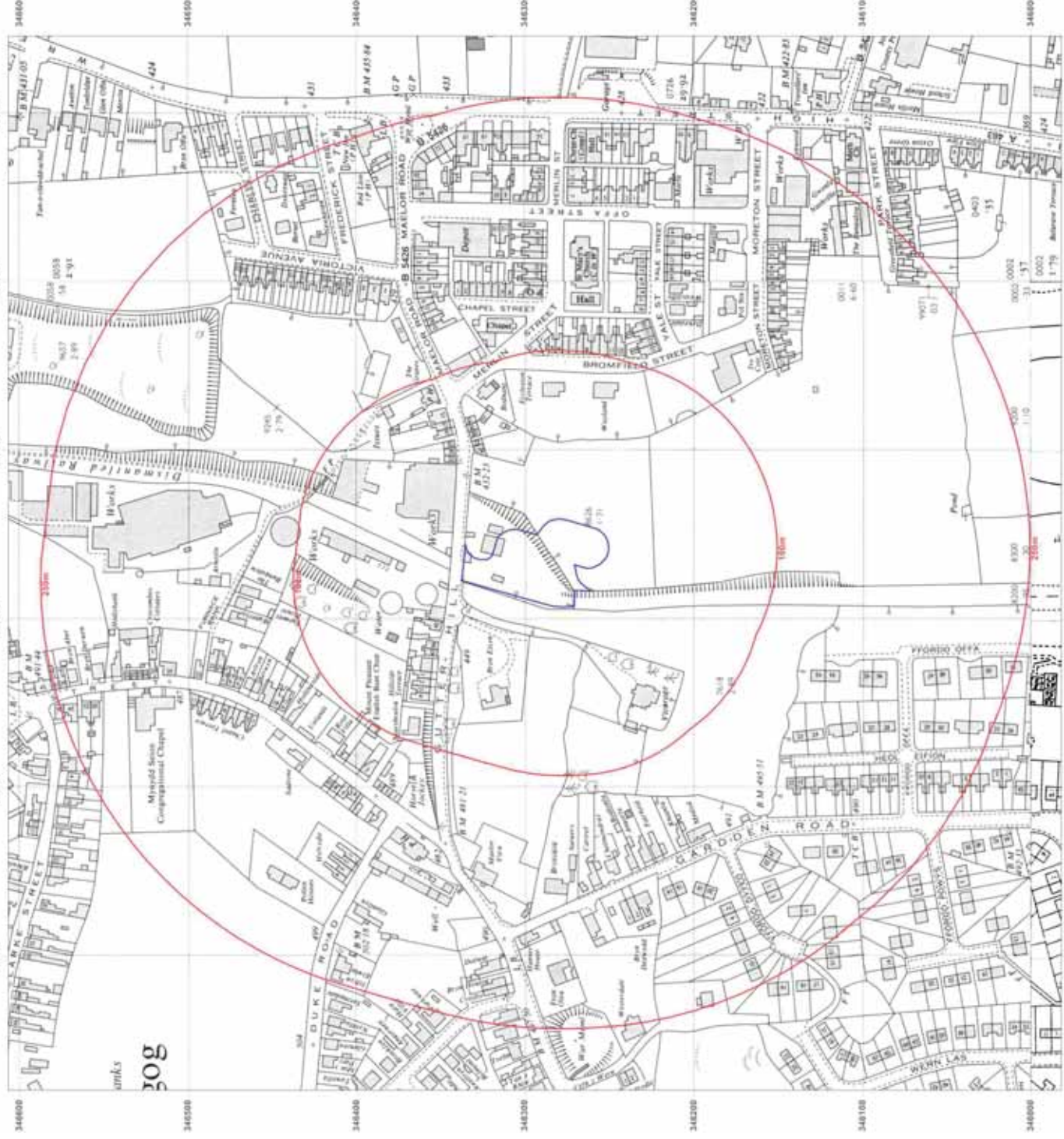


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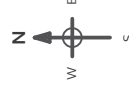
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Report Ref: GS-4811802
Grid Ref: 329833, 346294

Map Name: National Grid

Map date: 1961-1963

Scale: 1:2,500

Printed at: 1:2,500



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



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

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



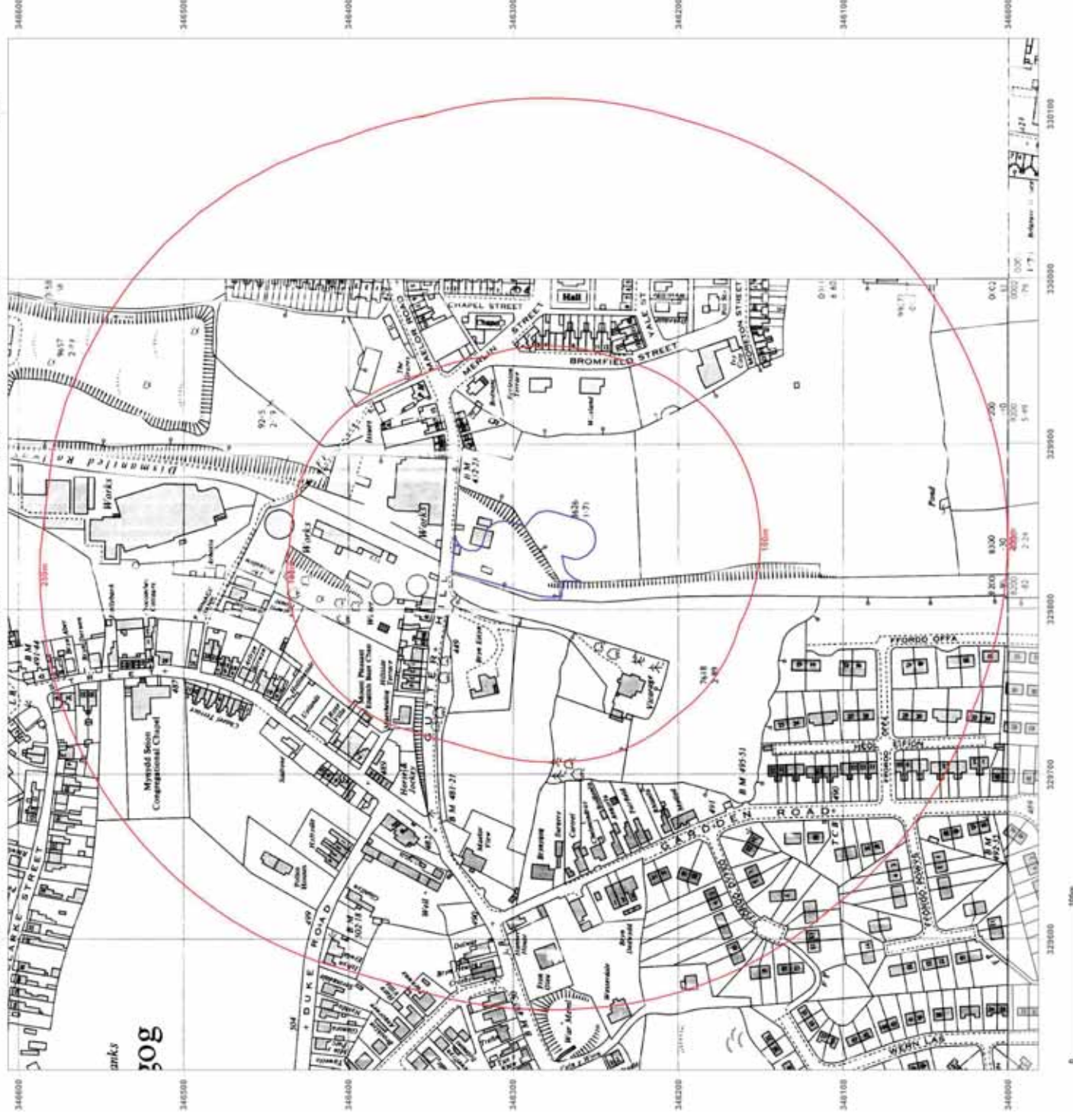
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Client Ref: PE02038_TE1085
Report Ref: GS-4811802
Grid Ref: 329833, 346294

Map Name: National Grid

Map date: 1968-1973

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1973
Revised 1973
Edition N/A
Copyright 1974
Levelled 1959

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

Surveyed 1973
Revised 1973
Edition N/A
Copyright 1974
Levelled 1960



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Client Ref: PE02038_TE1085
Report Ref: GS-4811802
Grid Ref: 329833, 346294

Map Name: National Grid
Map date: 1974-1975
Scale: 1:2,500
Printed at: 1:2,500



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



Surveyed 1975
Revised 1975
Edition N/A
Copyright 1976
Levelled 1959

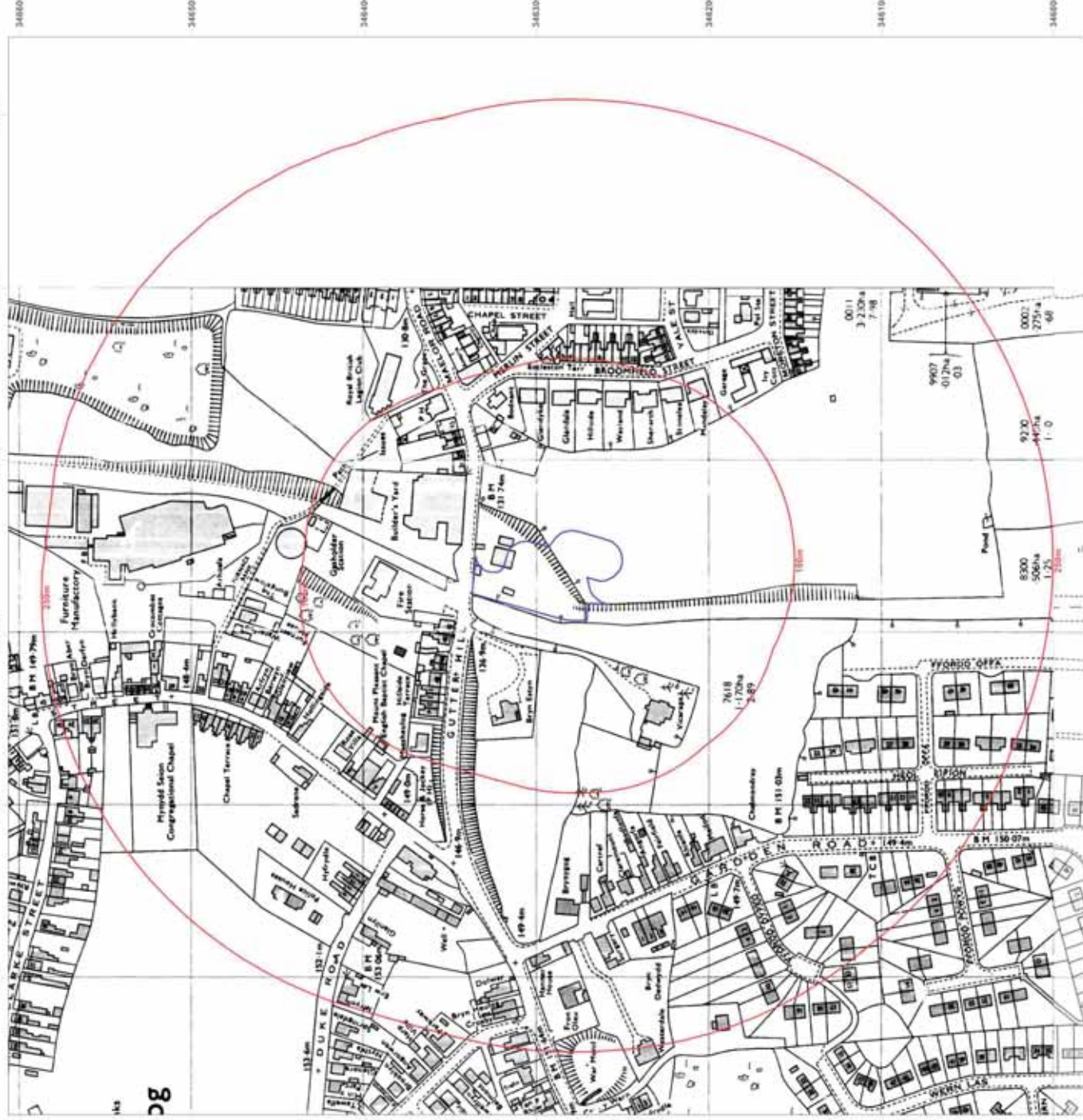


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WREXHAM, LL14 1LS

Client Ref: PE02038_TE1085
Report Ref: GS-4811802
Grid Ref: 329833, 346294

Map Name: National Grid

Map date: 1974-1978

Scale: 1:2,500

Printed at: 1:2,500



Surveyed N/A
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Edition N/A
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