

Stansty Road, Wrexham (Total Fitness)

Proposed Housing

Urban Developments Ltd

Geo-environmental Report



GroundSolve Ltd

Consulting Geotechnical, Engineering Geology and Environmental Engineers

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1.0 INTRODUCTION

Urban Developments Ltd (UDL) are proposing to build six new properties on the northern section of the Total Fitness car park, off Stansty Road, Wrexham.

The development will involve the loss of car parking spaces at Total Fitness; therefore, it will be necessary to replace these spaces, with the proposed location being the eastern section of the site.

Planning permission has now been granted, with the following conditions needing to be addressed prior to commencement of the development:

Condition 3:

“No development shall take place until a phased site investigation of the nature and extent of contamination has been carried out and submitted to and approved in writing by the Local Planning Authority (LPA). If any contamination is found during the site investigation, no part of the development shall commence until a scheme specifying the measures that will be taken to remediate the site to render it suitable for the development hereby permitted to and approved in writing by the LPA.

The site shall thereafter be remediated in accordance with the approved scheme. If during the course of development any contamination is found that has not been identified in the site investigation, no further development shall take place on those parts of the site where that contamination has been found until an approved additional scheme of remediation has been submitted to and approved in writing by the LPA for those parts of the site. The relevant parts of the site shall thereafter be remediated in accordance with the additional scheme of remediation.”

Condition 4:

“Each part of the site subject to the remediation under the scheme approved as part of Condition 3 shall not be occupied/used until a Validation Report has been completed in respect of that part of the site and submitted to and approved in writing by the LPA”

Condition 6:

“No part of the development shall commence until a scheme for the comprehensive and integrated drainage of the site indicating how foul water, surface water and land drainage will be dealt with has been submitted to and approved in writing by the LPA. The scheme as approved shall be implemented in accordance with a timescale to be agreed as part of the submitted details and maintained thereafter”.

Condition 7:

“Construction of any dwelling hereby permitted shall not begin until the parking and turning spaces numbered 1-20, and 81, 83 and 106 on drawing no PLN-07 Revision K have been laid out surfaced and drained. Thereafter they shall be permanently retained and kept free of any obstruction, and at all times made available solely for the parking and turning of motor vehicles in conjunction with the operation of the gym located to the south of the land subject to this planning permission”.

Consequently, UDL have appointed GroundSolve Ltd (GSL) to undertake a Phase I desk study and Phase II site investigation to address the above planning conditions.

A previous desk study and site investigation was undertaken for the entire Total Fitness site by Ian Farmer Associates (IFA) in 2013, Reference 1 and 2. The purpose of which was to determine the ground conditions and geotechnical parameters for the development of residential housing, along with environmental risk assessments.

In addition, a desk study and site investigation was undertaken by GSL for the Gower Homes site immediately north of the site, which has recently been completed, Reference 3.

This report presents the relevant findings from the previous reports, along with this desk study and site investigation. It gives firm geotechnical recommendations for the development, and presents conceptual ground models and environmental risk assessments.

2.0 THE SITE

2.1 Site Location and Description

The site is situated at the northern end of the Total Fitness car park; approximately 800m to the north west of Wrexham Town centre, at National Grid Reference SH 330 513, see Figure 1.

It is bounded to the east by housing and Mayville Avenue, and by a railway line that runs along the western site boundary. The Total Fitness car park, with the gym lies to the south of the site, whilst the recently completed Gower Homes development and access road lies to the north of the site, see Figure 2.

The site can be divided into two sections, the western section is predominantly level and covered with tarmac, as it is currently used as a car park for the Total Fitness gym.

The edge of the car park is defined by a covered walkway, to the east of the walkway the ground level rises slightly and this area is grassed and partly enclosed by Heras fencing.

A topographical survey of the site, dated 2014 has been provided by the client, which confirms the site elevation for both sections of the site to be between 86.50 and 87.0m AOD.

However, this does not represent the current condition in the north eastern section of the site, which appears to be up to 1m higher within the Heras fencing. It is known that Gower Homes used this area for stockpiling granular material during their development. In addition, the grassed area in the south eastern section of the site appears to be higher than suggested by the topographical survey.

The site is roughly "L" shaped, with approximate dimensions of 75m from north to south and up to 65m from east to west at its widest point, see Figure 2.

Photographs showing the site are presented in Appendix A.

2.2 Geology and Hydrogeology

The geology of the site has been studied using the following sources:

- Published 1:50,000 geology plan, Sheet 121, Wrexham,
- Associated geological memoirs, Reference 4,
- Wrexham applied mapping study at a scale of 1:25,000 has been researched, Reference 5.

These show the site to be underlain by glacial till over the northern most section of the site, with sand and gravel on the southern section of the site. A "Kettle Hole" is recorded immediately south of the site, which is a post glacial depression that has subsequently been infilled with soft clays and peat.

Reference 5 describes the sand and gravel as water bearing, medium dense to dense, well sorted, sand and gravel, with occasional cobbles, and interbedded medium dense, clean sands and silty clayey sands.

The glacial till is described as mainly, silty, sandy clays, with gravel, cobble and occasional boulder. It contains bands of sand and gravel, which may be water bearing. The clays are generally of intermediate compressibility, with small consolidation settlements.

The drift thickness is shown to be between 35 and 40m in this area.

Reference 5 also confirms that the site is not in a shallow mining area and no shafts are recorded nearby.

The superficial deposits overlie bedrock comprising mudstone of the Etruria Formation (formerly known as the Ruabon Marl Formation), formed during the Carboniferous. These are above the coal bearing strata; consequently, shallow mining will not be an issue at this site.

The bedrock and superficial aquifers are both designated as being a Secondary Aquifer – A, with the superficial deposits being classified as having a high vulnerability, as is the bedrock aquifer.

Experience from nearby sites has shown that the groundwater level will be at considerable depth.

2.3 Abandoned Mining

A Coal Mining Report has been obtained for the development, the main findings are summarised below, with the report presented in full in Appendix B.

- The site is within the zone of likely influence from workings in two seams of coal at 330m to 390m depth. The seams were last worked in 1921,
- Any ground movement from these workings should have ceased,
- The site is not within a zone of likely physical influence on the surface from any present underground coal workings,
- There are no records or any mine entries within, or within 20m of the site boundary,
- There is no record of mine gas emissions requiring action within the site boundary,
- The report shows that there has been no damage notice or claim for the site within 50m since 31st October 1994.

2.4 History

The history of the site has been studied on old Ordnance Survey (OS) plans at varying scales, dating from 1874, however, for ease of reference they have all be changed to a common scale

of 1:2,500. Aerial photographs dating from 1945 held by the Welsh Government have also been researched.

The 1874 OS plan shows the site to be within open fields, see Figure 3a. It is bounded to the west by the Wrexham, Mold, and Connah's Quay Railway line that trends north/ south past the site. A road is present to the north and east of the site, with a number of terraced properties shown on the eastern side of the road, see Figure 3a. Two possible ponds are shown to the south of the site.

The 1899 OS plan shows that the railway lines had been considerably widened. No other changes are shown on the site, see Figure 3b.

The road to the north of the site is shown to split, with the original road running beneath the railway line in cutting, and joining the lane to the west of the railway line, now called Crispin Lane. The new road is shown to branch off and run parallel with the eastern side of the railway line towards the north, see Figure 3b.

A pond and an area of marsh land is also shown in the open fields to the south of the site. It appears that the area to the west of the southernmost pond is being infilled, see Figure 3b. The source of infilling appears to be an industrial building to the south.

The 1912 OS plan shows no changes to the site, but a number of semi-detached properties had been built along the road that branched off towards the north, see Figure 3c. Further infilling had taken place to the south of the site.

By the 1937 OS plan the road to the east of the site is called Rhosddu Road, and the houses to the east of the site, along with the access road had been constructed, see Figure 3d.

The number of railway tracks to the west of the site had been reduced. The filling to the south had now completely backfilled both ponds and a building had been constructed on top of the backfilled ponds, see Figure 3d.

Aerial photographs dated 1945, 1946, 1951, 1956, and 1962 confirmed the site to be open fields.

The 1958 OS plan, shows the site as seen in the aerial photographs, although the road beneath the railway is now called Stansty Road, and the road branching off to the north is called New Road, see Figure 3e.

The 1960 OS plan shows no changes to the site or surrounding areas, although the building to the south is called "Works", see Figure 3f.

The 1973 OS plan shows that a GPO Depot had been constructed, with the southern section of the depot impinging on the north western section of the site. The rest of the site appears to be hardstanding/ associated with the depot. A "Tank" was shown immediately north of the site. The layout of Stansty Road is also shown to have changed, incorporating a loop within

the layout for access to the site, see Figure 3g. The building to the south had been extended and was now called a “Warehouse”. Yale High School had also been built along Crispin Lane to the west, see Figure 3g.

Aerial photographs dated 1973 and 1974 confirmed that the GPO building had been constructed. The southernmost building appears to be a high warehouse type building, with a large loading bay to the east for loading large lorries. Immediately north of this the building at right angles was a single storey structure and probably corresponds to the offices. The northernmost building also appears to be a high warehouse type building, with a pitched roof. The site appears to be covered with tarmac and car parking bays are set out for the post office vans, which are numerous across the site. To the south of the site infilling was ongoing to backfill the last of the hollow associated with the previous ponds.

No changes were observed on aerial photographs dated 1985, 1987, 1989 and 1993. However, the tank was only clearly visible on the 1985 photographs, where it appeared to be a refueling point for the GPO vehicles.

This is confirmed by the 1990 OS plan, see Figure 3h.

The 1992 OS plan shows no changes to the site, or surrounding areas, see Figure 3i.

An aerial photograph dated 1996 appears to show the GPO building to be dis used, and an aerial photograph dated 2003 confirmed that the GPO building had been demolished and Total Fitness was under construction. The site itself appears to be being used for the stockpile of spoil from the construction of Total Fitness, see Figure 3j.

This is confirmed by the 1:10,000 OS plan dated 2019, which show the current site layout, see Figure 3k.

3.0 ENVIRONMENTAL SEARCHES

An Envirocheck report had been obtained for the site, the main points are summarised below, with the report presented in full in Appendix C.

Agency and Hydrological

- According to the BGS there is a potential for groundwater flooding to occur at surface,
- The closest active discharge consent is 694m south west of the site, for a Dwr Cymru pumping station,
- The closest LAPCC was 399m north of the site at Remploy Ltd, which has since closed,
- The nearest surface water feature is 325m north east of the site,
- The closest pollution incident to controlled waters was 189m to the east in 1996, and was a Category 3-Minor incident
- The closest water abstraction is 648m to the south west for Carlsberg Tetley Brewing Ltd.

Waste

- There are no historic landfills within 500m of the site,
- The closest licensed waste management facility is 454m south of the site,
- There is potentially infilled land 516m north east of the site,
- There is potentially infilled land (water) some 60m south of the site.

Hazardous Substances

- There are no hazardous installations within 500m of the site.

Geological

The BGS have provided a summary of the estimated soil chemistry at the site, which is summarised below.

- Arsenic <15 mg/kg,
- Cadmium <1.8 mg/kg,
- Chromium 60 - 90 mg/kg,
- Lead 100 - 200mg/kg,
- Nickel 15 - 30 mg/kg.

In addition, the following issues were raised.

- The site is in an area that may be affected by coal mining activity,
- Very low potential for collapsible ground stability hazards,

- No hazard for dissolution,
- Very low potential for landslide ground stability hazards,
- Very low potential for running sand ground stability hazards,
- Very low to no potential for shrinking or swelling clay ground stability hazards,
- The site is in an intermediate radon affected area, as between 1 and 3% of homes are above the action level,
- Therefore, no radon protective measures are required in the construction of new dwellings or extensions.

Industrial Land Uses

- The closest active contemporary trade directory entry is Jewsons some 281m south of the site,
- The closest closed fuel station entry is 133m south east of the site on Rhosddu Road,
- The closest open fuel station entry is 422m to the south west and is Shell Wrexham on Mold Road.

Sensitive Land Use

- There are no sensitive land uses within 500m of the site.

4.0 PROPOSED DEVELOPMENT

UDL proposes to construct six conventional two storey properties on the northern half of the Total Fitness car park, off Stansty Road, Wrexham. This will comprise a short terrace of houses on the eastern section of the site (Plots 3 to 6) and a semidetached property on the western section of the site (Plots 1 and 2). The proposed site layout is presented in Figure 4.

Foundation loads are not known at this stage. However, based on experience of similar structures; foundation loads are unlikely to exceed 50 – 75 kN/m run, with floor slab loadings unlikely to exceed 5kN/m². At this stage, floor levels have not been provided, but are anticipated to be close to existing grade, which will mean lowering the ground levels for Plots 3 to 6, by around 1m.

The recommendations given in this report are based on these assumptions, and will need to be reviewed and if necessary revised during the detailed design process.

5.0 THE INVESTIGATIONS

5.1 Previous Investigation (Ian Farmer Associates-2013)

This investigation was carried out by IFA as part of the site investigation for the entire Total Fitness site, with site work undertaken between 15th and 17th July 2013.

It comprised cable percussive and window sample boreholes, with the following boreholes being relevant to this site.

- One cable percussive borehole (BH02a), drilled to a depth of 10.00m,
- Window sample boreholes (WS04-WS06) drilled to a maximum depth of 5.45m.
- Standard Penetration Testing (SPT's) was carried out in the boreholes, typically at 1m intervals.
- A combined gas/groundwater monitoring standpipe was installed in WS04 and three rounds of monitoring undertaken.

The borehole logs are presented in Appendix D and the locations of the boreholes presented on Figure 4.

Physical and chemical testing was also undertaken and comments are included in Sections 6.0 and 9.0.

5.2 Previous Investigation (GSL - 2015)

This investigation was undertaken on the 22nd December 2015 and comprised three machine excavated trial pits to a maximum depth of 3.90m using a JCB 3CX. However, only TP 03 was excavated close to this site.

Only TP 3 was excavated close to the site and was for a proposed geo cellular soakaway to determine whether soakaways would be a viable drainage option for the site.

The trial pits were supervised and logged by an engineer from GSL in accordance with BS 5930, Reference 6. The ground conditions are discussed in Section 6.0, with the trial pits log presented in Appendix E, and the locations shown on Figure 4.

The soakaway test in TP 03 was undertaken in accordance with BRE 365, Reference 7, the results of which are discussed in Section 8.0, and also presented in Appendix E.

Physical and chemical testing was also undertaken, which where relevant is discussed later in this report.

5.3 This Investigation (GroundSolve Ltd-2019)

This investigation was undertaken on the 22nd and 23rd August 2019, and comprised:

- Three machine excavated trial pits to a maximum depth of 4.0m,
- Soakaway testing in all three trial pits.

The trial pits were supervised and logged by an engineer from GSL in general accordance with BS 5930, Reference 6. The trial pits were filled with water using a 2,000-gallon water bowser to enable soakaway testing to be carried out in accordance with BRE Digest 365, Reference 7.

The trial pit logs are presented in Appendix F, with the soakaway test results in Appendix G. The locations of the trial pits are presented on Figure 4.

Soil samples were taken from the trial pits for the following physical and chemical testing:

Physical Testing

- Moisture Content,
- Atterberg limit,
- pH and Water-soluble Sulphate,
- Particle Size Distribution.

The testing was carried out in accordance with BS1377, Reference 8, with the results presented in full in Appendix H.

Chemical Testing

Samples for chemical testing were taken from the topsoil encountered in the trial pits, placed in the appropriate containers and a cool box, and taken immediately to the laboratories of ALS in Chester for the following testing:

Metals & Non-metals - Arsenic (As), Boron (B), Cadmium (Cd), Chromium (hexavalent), Chromium (Trivalent), Copper (Cu), Lead (Pb), Mercury (Hg), Nickel (Ni), Phenol, Selenium (Se), and Zinc (Zn).

Petroleum Hydrocarbons - Benzene, Toluene, Ethylbenzene, o-xylene, m-xylene, p-xylene, Aliphatics >C5 – C44, Aromatics >EC5 – EC44.

Polyaromatic Hydrocarbons (PAH) – Acenaphthene, Acenaphthylene, Anthracene, Benz (a) anthracene, Benzo (a) pyrene, Benzo (b) fluoranthene, Benzo (g, h, i) perylene, Benzo (k) fluoranthene, Chrysene, Dibenzo (a, h) anthracene, Fluorene, Fluoranthene, Indeno (1,2,3-cd) pyrene, Naphthalene, Phenanthrene, Pyrene.

Other Contaminants – Sulphide (easily liberated), Water soluble Sulphate (2:1 extract), Cyanide, pH, Soil Organic Matter (SOM).

In addition, asbestos screening was carried out on all samples.

The results are summarised in Section 7.0, and the results presented in full in Appendix I.

6.0 GROUND CONDITIONS

6.1 General Stratigraphy

The general stratigraphy encountered in the boreholes and trial pits from both investigations is summarised below.

BH/TP No	Topsoil (m)	Made Ground (m)	Clay (m)	Gravel (m)	Sand (m)
BH02a		0.0-2.60	2.60-8.50	8.50-10.0	
WS04		0.00-0.75	0.75-2.20	2.20-4.45	
WS 05		0.00-1.30	1.30-2.70 3.70-4.20	4.20-5.45	2.70-3.70
WS 06		0.0-0.50	0.50-3.90	3.90-5.45	
<i>TP03</i>		0.00-1.30	2.00-3.15		1.30-2.00 3.15-3.90
TP 1		0.0-1.0	1.0-3.50	3.50-4.0	
TP 2	0.30-0.90	0.00-0.30 0.90-1.20	1.20-2.40		
TP 3	0.0-0.40	0.40-1.20	1.20-3.50	3.50-4.0	

Note **Bold** = Ian Farmer Investigation,
Italics = GSL 2015 Investigation,
 TP 1 = This Investigation.

6.2 Topsoil

Topsoil/subsoil was only encountered in TP 2 and TP 3 in the eastern section of the site. In TP 2 it was encountered beneath a thin veneer of made ground, where it was described as, loose to medium dense, dark brown, slightly clayey, sandy, gravelly silt. Whilst in TP 3, it was described as, loose, black, sandy silt, with rootlets.

A pH test recorded a value of 8.45 in the topsoil/subsoil, with a sulphate value when measured as 2:1 water extract of 0.0243g/l.

6.3 Made Ground

In TP 02 a thin layer of demolition debris was encountered above the topsoil, which was described as loose, dark brown, slightly gravelly, sandy, silty, angular to subangular, fine to coarse gravel, of brick and concrete fragments. This corresponds to the hardcore left on site by Gower Homes.

Beneath the topsoil in TP 3, made ground described as, medium dense, black to dark brown, gravelly, silty, fine to coarse sand was encountered.

Both TP 2 and TP 3 encountered the previous tarmac surfacing for the GPO site, at 0.90m in TP 2 and 0.80m in TP 3, with the tarmac underlain by a thin layer of sub base/hardcore.

In TP 1 excavated in the existing Total Fitness car park encountered similar made ground as those in the GSL 2015 investigation for the Gower Homes investigation. That is two layers of car park construction, one at surface constructed at the same time as Total Fitness, and a lower layer, which was the former GPO surface car park, which was encountered at a depth of 0.60m. Beneath the lower car park construction a concrete slab was encountered, which had to be broken out using a pneumatic breaker.

Beneath the tarmac and topsoil the made ground was generally a loose to medium dense, grey and dark grey, limestone, brick and concrete cobble and gravel in a silty sand matrix.

pH testing recorded values between 8.28 and 9.25 in the made ground, with a sulphate value, when measured as 2:1 water extract between 0.07 and 0.119g/l.

In the previous investigation by GSL, TP 03 excavated immediately north of the site in the grassed area, encountered made ground to a depth of 1.30m, described as loose to medium dense, brown, clayey, gravelly silt/ fine sand, with some cobble of brick and concrete.

In the IFA investigation made ground was described to a depth of 2.60m in BH 2a, however, this is considered to have been mis logged.

6.4 Glacial Till (Clay)

The clay is considered to be a glacial till, which was encountered in all of the boreholes and trial pits.

It was encountered directly below the made ground, except in TP03 from the 2015 GSL investigation, which had a sand layer between the made ground and clay. It was described as soft to firm, and stiff, orangish brown/ brown, slightly sandy, slightly gravelly, clay. SPT "N" values in the clay from the previous investigation ranged between 6 and 11, confirming the soft to firm nature of the clay, although it was generally firm near surface.

Atterberg limit testing recorded liquid limits between 28 and 47%, plastic limits between 14 and 22%, with plasticity indices between 14 and 25%, indicating clay of low to intermediate plasticity. Natural moisture contents were between 17 and 23.2%.

A particle size distribution test on the material in TP 2, recorded it to have a clay/silt content of 52%, with the remainder being sand and gravel.

A pH test recorded a value of 8.21 in the glacial till, with a sulphate value when measured as 2:1 water extract of 0.0138g/l.

In the previous investigation Atterberg limit testing recorded liquid limits between 29 and 35%, with plastic limits between 17 and 18%, and plasticity indices of 11 and 18%, indicating clay of low to intermediate plasticity. Natural moisture contents between 12 and 17% were recorded.

Samples from the clay recorded pH values between 7.5 and 7.6, with a total sulphate content of 0.02%, and water-soluble sulphate contents, when measured as 2:1 water extract of 0.1 g/l.

6.5 Glacial Deposits

These typically comprised an upper layer of gravel, overlying sand.

Gravel

These were encountered predominantly below the clay and comprised loose to medium dense, brown, sandy, clayey, sub angular to sub rounded, fine to coarse gravel, with a little cobble and boulder. The gravel included sandstone, siltstone, mudstone and coal. SPT "N" values in the gravel ranged between 11 and 50, with the higher values probably encountering cobbles within the gravel.

Sand

The underlying sand was described as medium dense to dense, orangish brown and greyish brown, slightly clayey, slightly gravelly, medium to coarse sand. However, sand described as medium dense, light brown, clayey, gravelly, medium to coarse sand, was also encountered above the clay between 1.30-2.00m in TP03.

SPT "N" values in the sand ranged between 4 and 44, generally being loose near surface.

6.6 Groundwater

Groundwater was not encountered in any of the trial pit in this investigation. However, groundwater was encountered as a slight seepage in TP03, immediately north of the site at a depth of 1.00m.

In addition, groundwater was not encountered in any of the other exploratory positions including WS04, drilled immediately north of the site, which had a standpipe installed. The standpipe was monitored for groundwater as part of the IFA investigation and was dry throughout.

7.0 RESULTS OF CHEMICAL TESTING

Soil samples were taken from the topsoil and glacial till, with the sample depths presented in the table below.

TP No	Depth (m)	Strata
TP01	0.50	Made ground
TP02	0.50	Topsoil
TP2	1.50	Glacial till
TP3	0.50	Made ground

The results of the soil analyses are presented below, where they have been compared to suitable generic assessment criteria (GACs), in order to allow a generic quantitative risk assessment (GQRA) to be carried out for the site and the proposed development.

The Category 4 Screening Levels (C4SLs) published by DEFRA (2014) have been adopted in the first instance, which have been published for six substances to date. Where a C4SL is unavailable, the “Suitable 4 Use Levels” (S4ULs) published by LQM/CIEH (2015) have been adopted.

These criteria have been derived using the CLEA model for a range of standard end-use scenarios and a range of soil organic matter (SOM) contents. It should be noted that the C4SL values are derived on the basis of a “low level of toxicological concern”, while the S4UL values are based on a “tolerable” or “minimal” level of risk. As such, the S4ULs describe a lower level of risk than the C4SLs, and are equivalent to the former Soil Guideline Values (SGVs, published by the Environment Agency) and the previous editions of the LQM/CIEH GAC values.

A “residential with gardens” end-use has been adopted for this analysis, based on the SOM content of 2.5%, based on the measured SOM content in the sample tested.

Note: the S4UL values presented below are Copyright Land Quality Management Limited, reproduced with permission; Publication Number S4UL3668. All rights reserved.

Metals & Non-Metals	Min (mg/kg)	Max (mg/kg)	Average (mg/kg)	Adopted Guideline (mg/kg)	Source	Exceedances
Arsenic	5.32	11.5	8.29	37	C4SL	0
Boron	2.42	5.81	4.2	290	S4UL	0
Cadmium	<0.02	0.348	0.21	22	C4SL	0
Chromium, Trivalent	9.6	11.8	10.53	910	S4UL	0
Chromium, Hexavalent	<0.6	<0.6	<0.6	21	C4SL	0
Copper	5.63	4440	1125.58	2400	S4UL	1
Lead	13.7	293	118.8	200	C4SL	1
Mercury	<0.14	<0.14	<0.14	1.2	S4UL	0
Nickel	13.3	21.3	17.48	130	S4UL	0
Phenol	<0.01	<0.01	<0.01	200	S4UL	0
Selenium	<1	<1	<1	250	S4UL	0
Zinc	42.3	227	136.03	3700	S4UL	0

Two of the above values exceeded guidance values for residential land use with gardens, being Copper and Lead in TP2 at 0.50m depth.

Petroleum Hydrocarbons	Min (mg/kg)	Max (mg/kg)	Average (mg/kg)	Adopted Guideline (mg/kg)	Source	Exceedances
Benzene	<0.009	<0.18	0.05	0.87	C4SL	0
Toluene	<0.007	<0.14	0.04	290	S4UL	0
Ethylbenzene	<0.004	<0.08	0.02	110	S4UL	0
o-xylene	<0.01	<0.2	0.06	140	S4UL	0
Aliphatics >C5-C6	<0.01	<0.01	<0.01	78	S4UL	0
Aliphatics >C6-C8	<0.01	<0.01	<0.01	230	S4UL	0
Aliphatics >C8-C10	<0.01	<0.01	<0.01	65	S4UL	0
Aliphatics >C10-C12	<0.01	<0.01	<0.01	330	S4UL	0
Aliphatics >C12-C16	<0.1	4.33	1.49	2400	S4UL	0
Aliphatics >C16-C35	<0.1	211.5	72.17	92000	S4UL	0
Aliphatics >C35-C44	<0.1	90.4	28.33	92000	S4UL	0
Aromatics >EC5-EC7	<0.01	<0.01	<0.01	140	S4UL	0
Aromatics >EC7-EC8	<0.01	<0.01	<0.01	290	S4UL	0
Aromatics >EC8-EC10	<0.01	<0.01	<0.01	83	S4UL	0
Aromatics >EC10-EC12	<0.01	<0.01	<0.01	180	S4UL	0
Aromatics >EC12-EC16	<0.1	6.77	2.62	330	S4UL	0
Aromatics >EC16-EC21	<0.1	100	39.55	540	S4UL	0
Aromatics >EC21-EC35	1.92	500	194.28	1500	S4UL	0
Aromatics >EC35-EC44	<0.1	224	80.48	1500	S4UL	0

None of the above values exceeded SGV values for residential land use with gardens.

Polyaromatic Hydrocarbons (PAH)	Min (mg/kg)	Max (mg/kg)	Average (mg/kg)	Adopted Guideline (mg/kg)	Source	Exceedances
Acenaphthene	<0.008	3.46	1.11	510	S4UL	0
Acenaphthylene	<0.012	0.752	0.27	420	S4UL	0
Anthracene	<0.016	15.8	5.04	5400	S4UL	0
Benz(a)anthracene	<0.014	25.3	8.08	11	S4UL	1
Benzo(a)pyrene	<0.015	22.9	7.39	5	C4SL	2
Benzo(b)fluoranthene	<0.015	25.7	8.05	3.3	S4UL	2
Benzo(g,h,i)perylene	<0.024	15.2	4.93	340	S4UL	0
Benzo(k)fluoranthene	<0.014	9.27	3.01	93	S4UL	0
Chrysene	<0.01	20.8	6.82	22	S4UL	0
Dibenzo(a,h)anthracene	<0.023	2.56	0.84	0.28	S4UL	2
Fluoranthene	<0.017	72.3	23.08	560	S4UL	0
Fluorene	<0.01	2.76	0.89	400	S4UL	0
Indeno(1,2,3-cd)pyrene	<0.018	15.1	4.9	36	S4UL	0
Naphthalene	<0.009	0.267	0.16	5.6	S4UL	0
Phenanthrene	<0.015	50.7	16.04	220	S4UL	0
Pyrene	<0.015	63.2	20.13	1200	S4UL	0

Seven of the above values exceeded guidance values for residential land use with gardens, being Benz (a) anthracene in TP3, Benzo (a) pyrene, Benzo (b) fluoranthene and Dibenzo(a,h)anthracene in TP1 and TP3 both at depths of 0.50m.

Other Contaminants / Testing	Min (mg/kg)	Max (mg/kg)	Average (mg/kg)	Adopted Guideline (mg/kg)	Source	Exceedances
Soil Organic Matter (SOM)	<0.35	5.95	3.29	-	-	-
pH	8.21	9.25	8.55	-	-	-
Sulphide, Easily liberated	<15	<15	<15	-	-	-
Cyanide, Total	<1	<1	<1	-	-	-
Water Soluble Sulphate as SO ₄ 2:1 Extract	0.0138	0.119	0.06	-	-	-
p/m-Xylene	<0.01	<0.2	0.06	130	S4UL	0

None of the above values exceeded SGV values for residential land use without gardens

In addition, the asbestos screening revealed the presence of Crysotile (white) asbestos in TP1 and TP2 at 0.50m depth. The samples were scheduled for a full asbestos quantification, and the results are reported below.

	TP1	TP2
Asbestos Quantification – Total %	<0.001	0.002

8.0 GEOTECHNICAL RECOMMENDATIONS

8.1 Excavations and Site Preparation

The site preparation for Plots 1 and 2 will depend on the final floor slab levels.

There would not be a need to excavate the car park surfacing beneath the plots or hardstandings, with the existing surface being suitable. However, it will need to be excavated and taken off site to a suitably licensed landfill facility site in the garden areas, with the tarmac and hardstandings replaced by suitable inert material, see Section 8.4.

Beneath Plots 3 to 6 the ground levels are already above anticipated finished ground levels and the surface materials will need to be taken off site to a suitably licensed landfill facility. The previous car park surfacing is at the anticipated floor slab/garden level and this material should also be excavated until the top of the glacial till is encountered.

The topsoil in the eastern section of the site is not considered suitable for re-use and should also be taken off site.

Excavations will be in made ground and glacial deposits and will be possible using conventional earthmoving equipment. It is possible that old foundations associated with the GPO building may be encountered beneath Plots 1 and 2 where a concrete slab was encountered in TP 1, which had to be broken out using a pneumatic breaker. The location of the previous building on site is presented on Figure 5.

Excavations deeper than 1.20m that are to be entered should be battered back or shored for safety reasons.

Groundwater seepages are not anticipated, if encountered they should be slight and easily catered for by pumping from sumps cut within the excavation.

8.2 Foundations and Floor Slabs

Conventional spread foundations are considered suitable for the development founded in the underlying firm clay, where an allowable bearing pressure of 100kN/m² can be used to proportion the foundations. However, the previous site investigations found the ground conditions to be variable across the site, ranging from clay to sands and gravels over short distances, consequently, it may be necessary to lightly reinforce the foundations, if such ground conditions are encountered. Alternatively, foundations can be deepened to ensure a uniform bearing strata.

Minimum foundations depths below final external ground levels should be 0.90m in the clay. Floor slabs can be designed to be ground bearing for Plots 3 to 6, designed assuming a "Poor" formation as described in Reference 9.

For Plots 1 and 2, whilst the ground is considered suitable for ground bearing slabs, the checking authority, i.e. NHBC or similar, are unlikely to accept this, and floor slabs will have to be designed to be suspended, as the made ground is greater than 0.60m in thickness, to comply with NHBC regulations, Reference 10.

8.3 Drainage

Soakaway testing was carried out in Trial Pits 1 to TP 3, with three tests undertaken in each pit, except for TP 1, where only two tests were undertaken due to time constraints.

The testing was carried out in accordance with BRE Digest 365, Reference 7, with the pit filled quickly using a 2,000-gallon water bowser. The fall in water level was then monitored and the permeability of the soil calculated. The results of the testing are summarised below and presented in full in Appendix G.

TP 1 and TP 2 were extended into the underlying sand and gravel horizon by around 0.50m, where the results were as anticipated. However, the soakaway test in TP 3 was undertaken in material that contained a high silt/clay content, consequently the permeabilities were higher than anticipated. It must therefore be concluded that the sand and gravel may have been encountered at the base of the pit.

Summary of Soakaway testing - This investigation

TP No	Depth (m)	Test No	Permeability m/sec
TP 1	4.0	1	3.53×10^{-5}
		2	2.58×10^{-5}
TP 2	2.40	1	8.35×10^{-5}
		2	4.83×10^{-5}
		3	2.23×10^{-5}
TP 3	4.0	1	3.21×10^{-5}
		2	2.40×10^{-5}
		3	2.55×10^{-5}

The soakaway testing from the site investigation to the north is summarised below with TP 03 being immediately north of this site.

Summary of Soakaway testing – Previous investigation

TP No	Depth (m)	Test No	Permeability m/sec
TP01	3.50	1	1.60×10^{-4}
		2	1.176×10^{-4}
		3	9.788×10^{-5}
TP02	3.70	1	2.016×10^{-4}
		2	1.574×10^{-4}
		3	5.108×10^{-5}
TP03	3.90	1	6.279×10^{-6}

However, in TP03 the soil was much less permeable and the calculated permeability is marginal for the use of soakaways.

It is therefore concluded that soakaway drainage is suitable for the development, with soakaways taken down into the underlying sand and gravel, where a permeability of 1×10^{-5} m/sec can be used in the design.

It should also be noted that it was a Local Authority condition that all of the soakaways constructed on the Gower Homes development to the north be tested after construction. This was undertaken by GSL and all test were successful with the results submitted to the Local Authority for approval.

8.4 Reuse of Materials

As the site is small and generally at grade, little re use of material is envisaged.

However, there will be significant quantities of clean clay and sand and gravel from the foundation and soakaway excavations. This can be used as an inert cover in the garden areas of the plots, which should then be capped with a nominal thickness, say 200mm, with a further cover of 200mm of clean imported topsoil, giving a total in the gardens of 400mm.

However, if planting is planned for the development this should be increased to 600mm.

8.5 Access Road and Hard Standings

The access road has already been constructed.

It is considered likely that the existing car park construction at Total Fitness will provide the surfacing for the car parking and hardstanding for the plots, although resurfacing may be required.

8.6 Protection of Buried Concrete and Services

On the basis of the laboratory test results, chemical attack of buried concrete is not an issue. Therefore, buried concrete should comply with Design Sulphate Class DS-1. The site conditions would suggest that an ACEC class for the site of AC-1 would be appropriate, in accordance with Reference 11.

8.7 Landfill and Radon Gas

The desk study has failed to reveal any landfills within 250m of the site. However, several ponds to the south of the site were backfilled to facilitate development of a warehouse. Consequently, gas monitoring visits were undertaken on three occasions as part of the IFA investigation, the results of which are presented within Appendix J.

Using the NHBC guidance on methane and carbon dioxide, Reference 12 would give a Traffic Light Classification of Green, which means that no gas protection measures are required.

However, the desk study identified that basic radon protection measures would be required for the development. Radon protection measures should therefore be incorporated into the development in line with the recommendations in BRE, Report BR211, Reference 13.

9.0 CONCEPTUAL GROUND MODEL AND RISK ASSESSMENT

9.1 General

According to the Contaminated Land Regulations, to determine whether there is a significant possibility of significant harm, the following should be taken into account:

“The nature and degree of harm, the susceptibility of the receptors and the timescale within which the harm might occur”.

Current good practice therefore requires that the findings from the desk study or site investigation be evaluated for contamination on a site-specific basis using a risk-based approach. Risk assessment involves identification of the hazards and evaluation of the risks associated with these hazards. Risk assessment requires an evaluation of a conceptual “source – pathway – receptor” linkage model and can be qualitative or quantitative.

The basis of an environmental risk assessment involves identifying a ‘source’ of contamination, a ‘pathway’ along which the contamination may migrate and a ‘receptor’ at risk from the contamination.

Current legislation defines the various elements of the pollution linkage as:

- A contaminant ‘source’ is a substance, which is in or under the ground and which has the potential to cause harm or to cause pollution of controlled waters.
- A ‘pathway’ is one or more routes through which a receptor is being exposed to, or affected by, a contaminant, or could be so affected.
- A ‘receptor’ is either a living organism, an ecological system, a piece of land or property, or controlled water.

A pollutant linkage indicates that all three elements have been identified. The site can only be defined as ‘Contaminated Land’ if a pollutant linkage exists and the contamination meets the criteria above.

9.2 Hazard Identification

The previous report by IFA identified several elevated levels of soil contamination as follows:

- Arsenic,
- Lead,
- Benzo (a) pyrene,
- Benz(a)anthracene,
- Chrysene,

- Dibenzo (ah) anthracene.

However, the report confirmed that these elevated values were only encountered in the southern part of the site, i.e. south of this site.

The reason for the elevated values is due to the source of the fill being from the metal works site to the south of the development, with the material being used to backfill the pond areas. It can therefore be proved from the desk study that this material was never tipped as far northwards as this site.

The GSL investigation to the north of the site in 2015 failed to encounter any contamination of concern.

On Site

The desk study has failed to reveal any past site use apart from as a GPO depot. The only other site use has been as a car park for Total Fitness. Both uses are not considered to be contaminative.

The investigations have failed to reveal any visual or olfactory evidence of contamination, with the exception of tarmac.

However, the investigation has proved apart from car park construction, the presence of made ground on the eastern section of the site, which is likely to have been placed during the construction/demolition of the GPO building.

Fuel/hydrocarbon spills associated with the sites use as a car park are possible, but likely to be limited and confined to the upper layers of tarmac.

Chemical testing revealed slight elevated values of Copper and Lead in TP 2 and PAH in TP 1 and TP 3. A PAH source analysis, revealed the PAH to be derived from Coal, Tar or creosote, probably associated with the underlying tarmac.

In addition, traces of asbestos were encountered in the made ground, however, the low concentrations are not considered to present a risk to public health, and in any case, would be removed from beneath garden areas.

Off Site

The site is adjacent to the railway; although no other nearby contaminative land uses have been identified. While the envirocheck report did identify nearby industrial uses these were close to the southern boundary of the Total Fitness site.

While the tank to the north was probably used for refueling GPO vehicles. It was encountered during the works for the Gower Homes development whereby the remains of the structure

were removed. No contamination was observed and the soils below the tank base tested and a validation report submitted to the Local Authority for approval.

However, a backfilled pond is to the south of the site and this is discussed in more detail below.

9.3 Summary of Conceptual Ground Model

Potential Contamination Sources	Potential Contaminants of Concern	Potential Pathways	Receptor Group
Fuel tank Made Ground Ground gas	TPH & PAH Heavy Metals Asbestos Radon	Dermal contact Inhalation of contaminated dust Ingestion of soil or home-grown vegetables	Construction Workers End users
		Lateral Migration and Limited Infiltration	End Users Groundwater

9.4 Pathways

In relation to any on site contamination reaching potential site users, the following pathways are generally considered:

- Ingestion and skin contact with soils on site,
- Ingestion of home-grown vegetables,
- Inhalation from wind-blown dust,
- Leaching of contaminated materials that may affect controlled waters,
- Direct contact with contaminated material during construction,
- Infiltration and accumulation of ground gas.

9.5 Receptors

The potential impact of a hazard must be assessed with regard to the following target groups:

- Future site users,
- Construction workers,
- Surface and groundwater, both on and off the site,
- Nearby vegetation,
- Building materials and buried services.

9.6 Future Site Users

The site is to be re-developed with housing, which is the most sensitive land use.

The only possible contaminant source identified by the desk study and site investigation is minor heavy metals and PAH contamination, with very low traces of asbestos.

However, it will be necessary to remove the made ground on the eastern section of the site to get to grade, which will remove the made ground and any residual contamination.

In Plots 1 and 2 on the western side of the site, it will be necessary to remove the car park construction and provide a cover in the garden areas. As discussed above in Section 8.4, the underlying glacial till can be used as part of the cover, capped with inert imported topsoil.

Following the above course of action, the risk to future site users is considered to be negligible.

9.7 Controlled Waters

The superficial deposit and bedrock do not form a recognised aquifer and there are no nearby water courses. In addition, any contamination or source of contamination will be removed during the development. Consequently, direct water infiltration into the ground at surface will be limited with the storm water being discharged through soakaways.

Consequently, the risk to controlled waters is considered to be negligible.

9.8 Construction Workers

The risks to construction workers is considered to be very low and can be catered for by appropriate PPE and washing facilities in accordance with current good practice.

In addition, a watching brief should be kept on all excavations, should contamination be encountered it should be excavated, stored safely on site, tested and disposed of at a suitably licensed landfill facility.

9.9 Ground Gases

The backfilled ponds to the south of the site were previously identified as a possible source of landfill gas. Consequently, a program of gas monitoring was undertaken, which failed to reveal any elevated gas levels.

However, the development is to be fitted with radon protection measures, which will provide adequate protection against the low risk of landfill gas.

9.10 Building Materials

The investigation has not revealed any contamination that could adversely affect building materials or services, although this should be checked with the statutory suppliers.

9.11 Vegetation

The existing topsoil on site is not considered to be suitable for re-use and should be removed from site to a suitably licensed landfill facility.

Any topsoil in gardens and landscaping areas will therefore have to be inert imported material.

9.12 Validation Strategy

The recommendations in this report should be reviewed once the development levels have been set.

However, it is envisaged that garden areas will be at the same elevation as the new car parking places, which will require excavation of the raised ground in the eastern section of the site.

The report has recommended that for Plots 1 and 2 the tarmac construction be removed and replaced to provide a suitable garden for the purchasers.

For Plots 3 to 6 the made ground will be removed down to the underlying natural ground and capped with a 200mm layer of imported topsoil.

It is possible that the Local Authority will request a detailed remediation strategy. This would include details on the following:

- Provision of transportation dockets to confirm the made ground has been taken off site to a suitably licensed landfill site,
- Photographs of the works,
- Confirmation that clean material has been placed in garden areas,
- Hand dug trial pits to confirm the work has been carried out,
- Validation of topsoil prior to import.

REFERENCES

1. Stansty Road, Wrexham, Report on Preliminary Investigation, Ian Farmer Associates, June 2013,
2. Stansty Road, Wrexham, Report on Phase II Investigation, Ian Farmer Associates, September 2013,
3. Stansty Road, Wrexham (Total Fitness) Geo-environmental Report, GroundSolve Ltd, April 2016,
4. Geology of the Country around Wrexham, Memoirs of the Geological Society, 1928,
5. Applied Geological Mapping in the Wrexham Area: Geology and Land use Planning: Technical Report WA/91/4
6. BS 5930, 1999, Code of Practice for Site Investigation,
7. BRE Digest 365, Soakaway Design, 2003,
8. BS 1377, 1991, British Standard Methods of Tests for Soils for Civil engineering Purposes,
9. Cement & Concrete Association, Concrete Ground floors: their design, construction and finish, Deacon, R, Publication 48.034, 1986.
10. NHBC Standards, 2019,
11. BRE Special Digest 1, 2005, Concrete in Aggressive Ground.
12. Guidance on Evaluation of Development Proposal on Sites where Methane and Carbon Dioxide are present, NHBC, 2007,
13. Radon: Guidance on protective measures for new buildings, BRE 211, 2007.

FIGURES

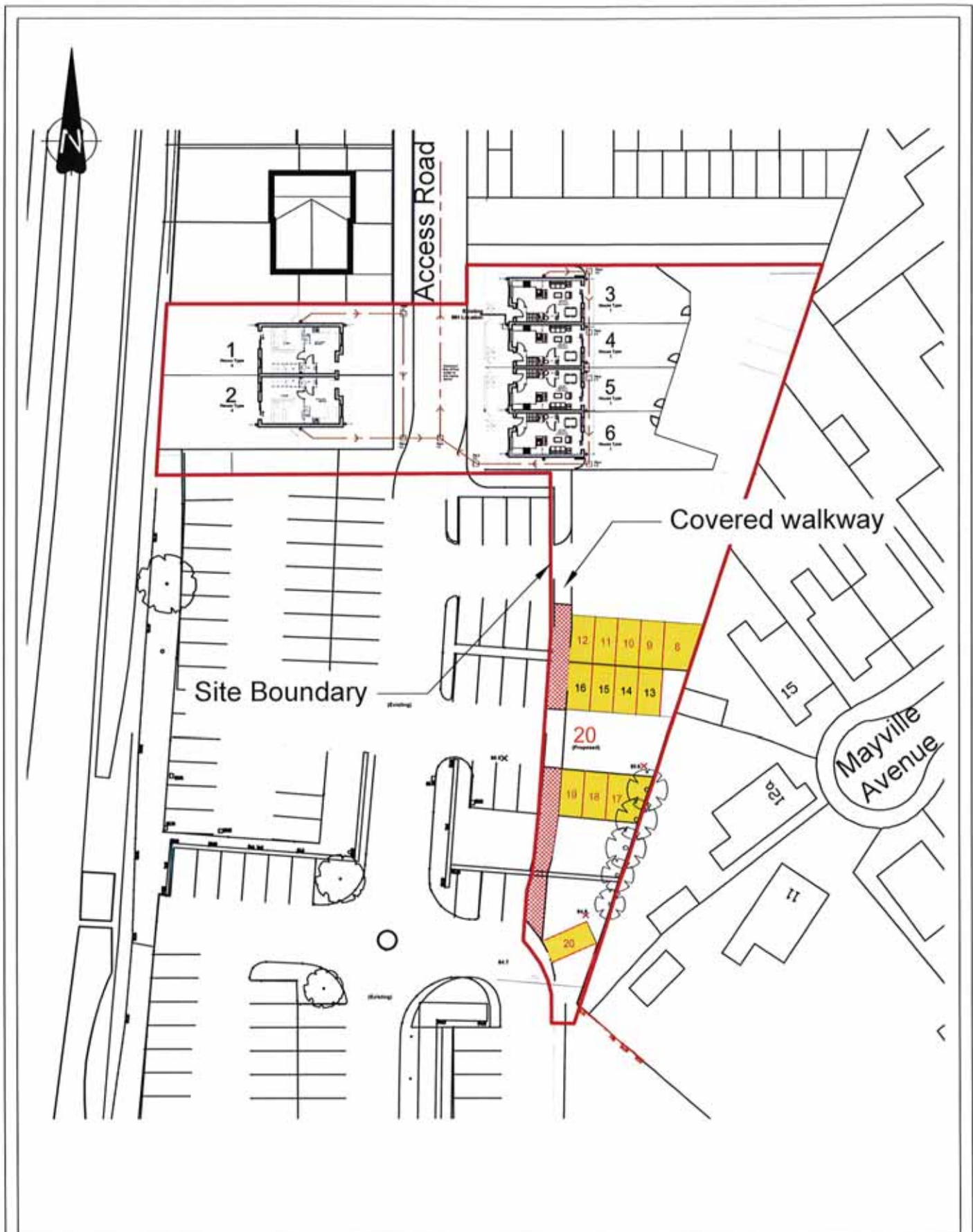


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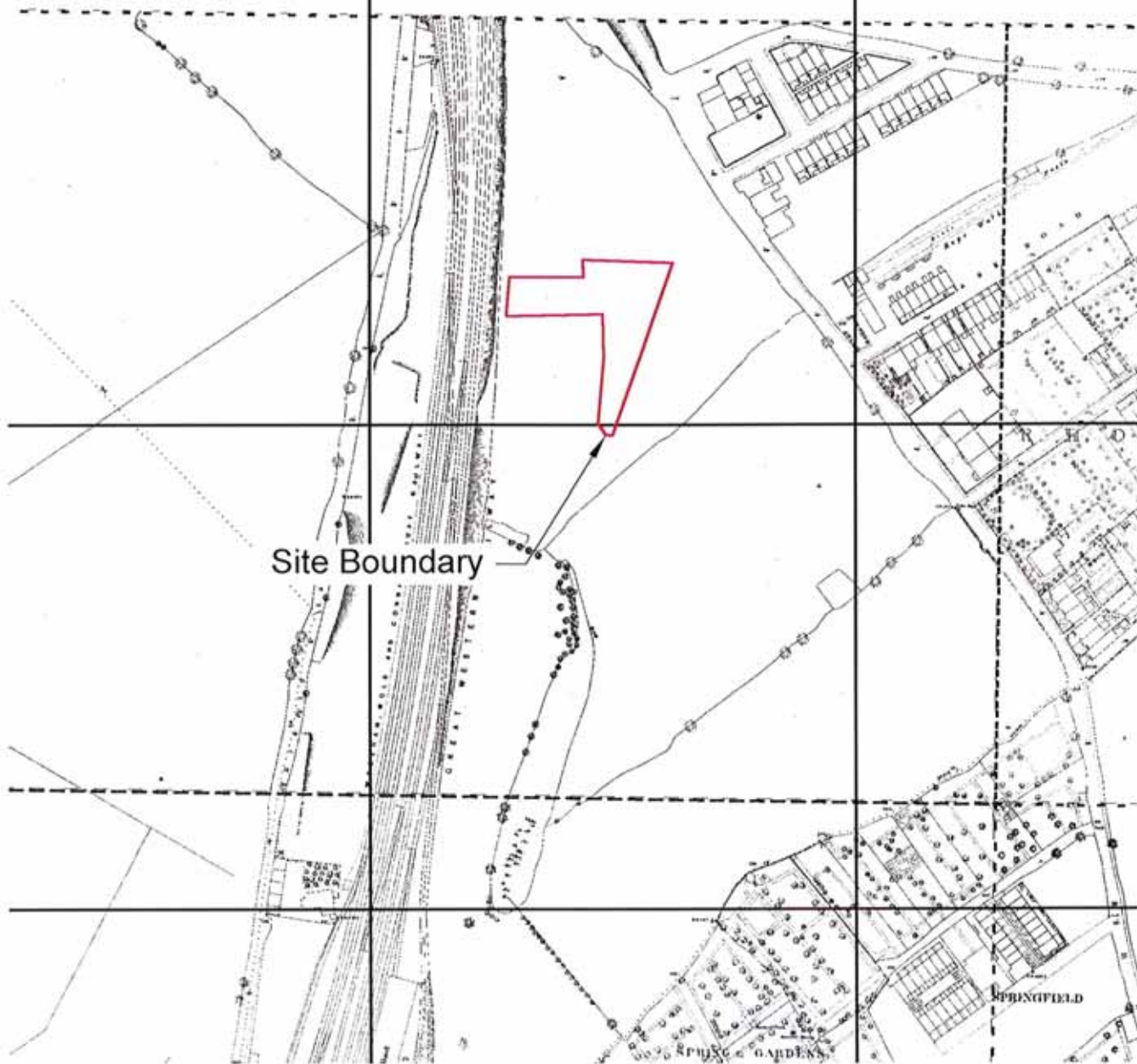
FIGURE 1



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Figure Title
EXISTING AND PROPOSED
SITE LAYOUT

FIGURE 2



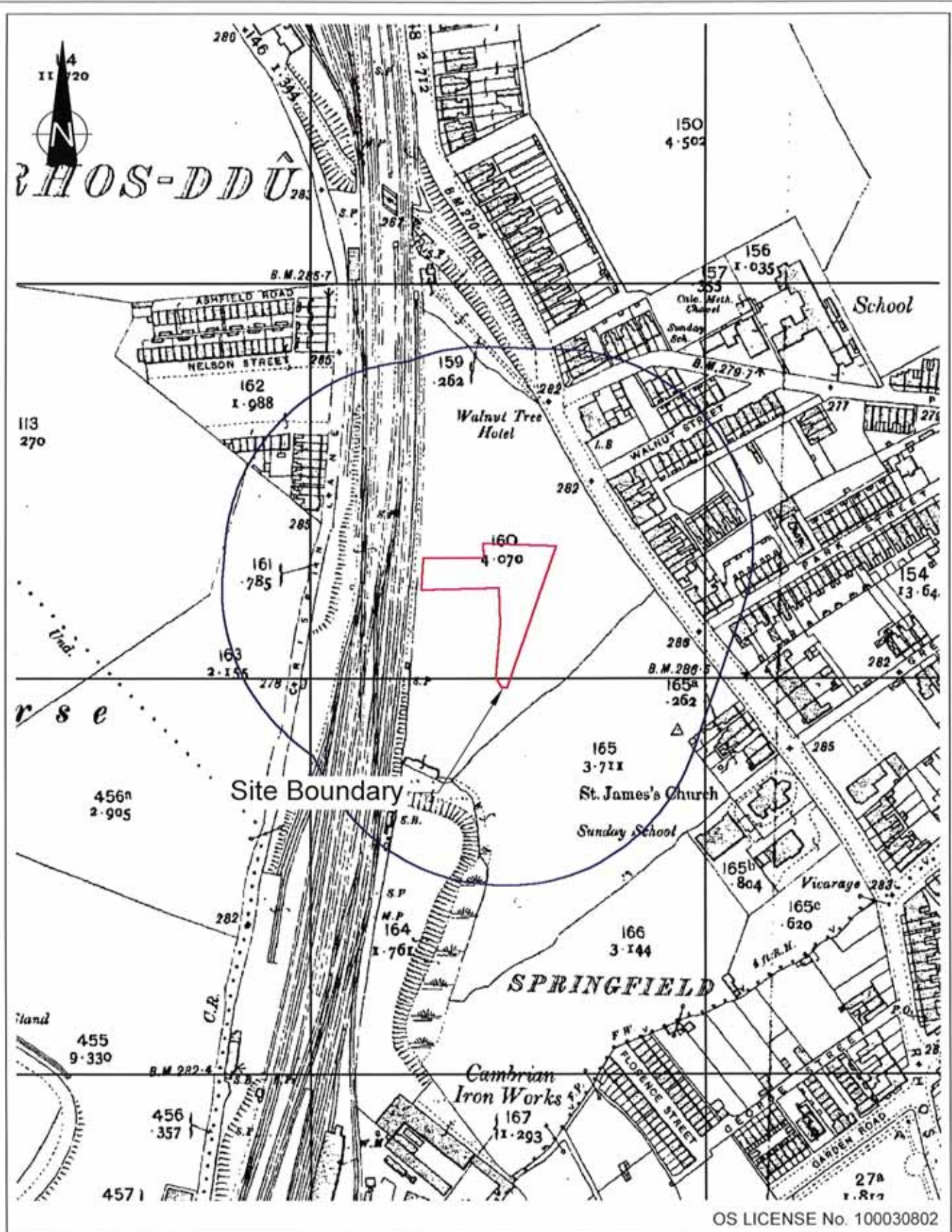
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Figure Title

SITE HISTORY - 1874

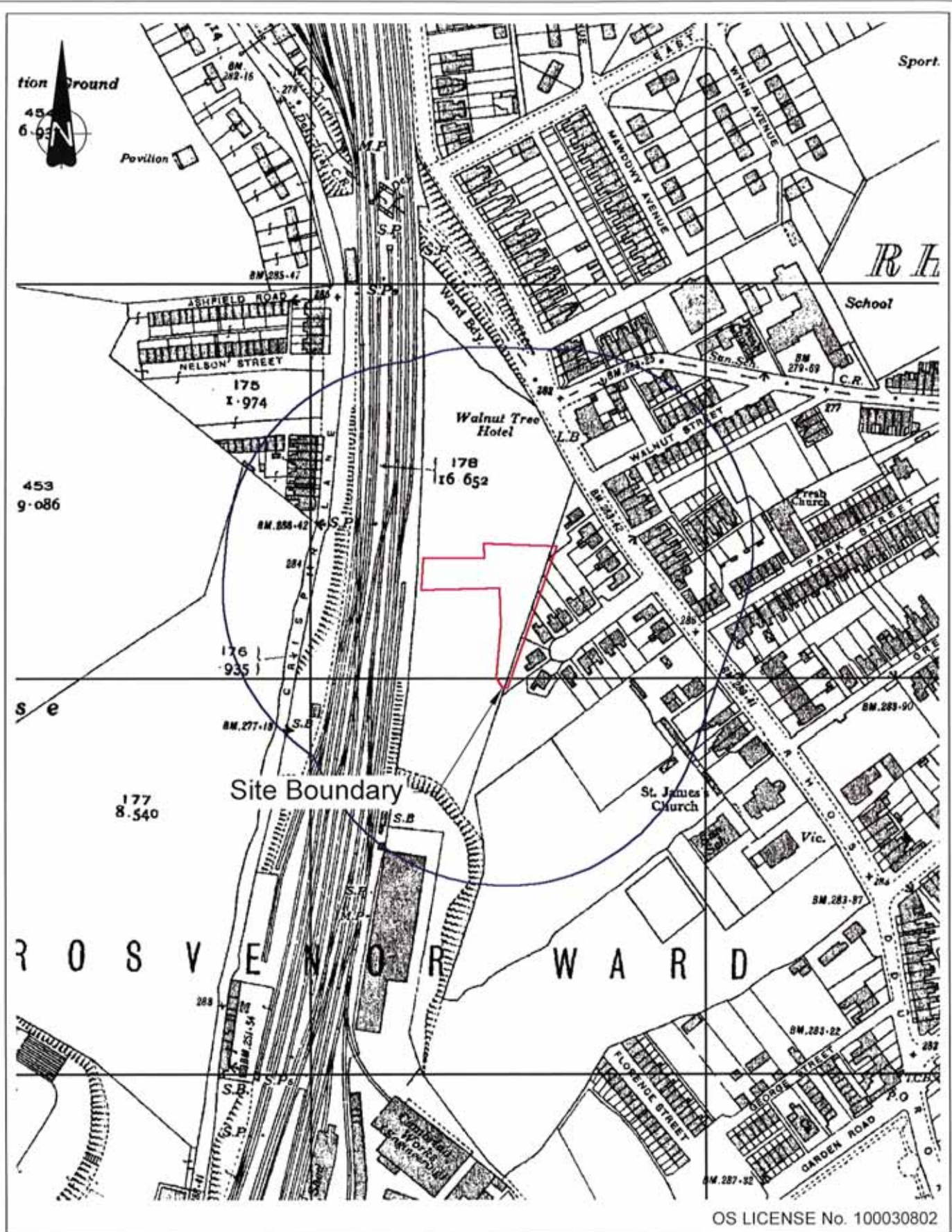
FIGURE 3a



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Figure Title
 SITE HISTORY - 1912
 FIGURE 3c



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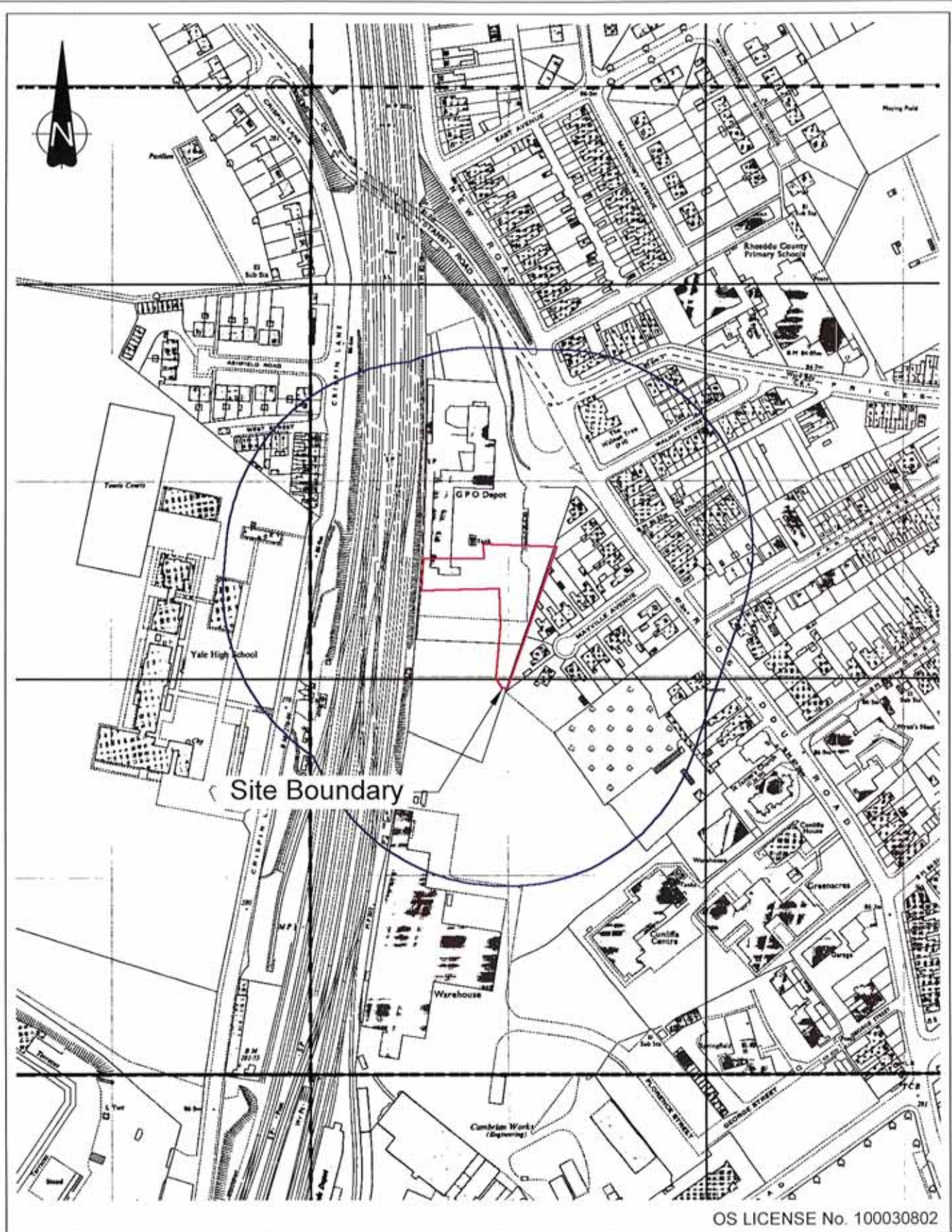
Figure Title
SITE HISTORY - 1937
 FIGURE 3d



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Figure Title
SITE HISTORY - 1960

FIGURE 3f

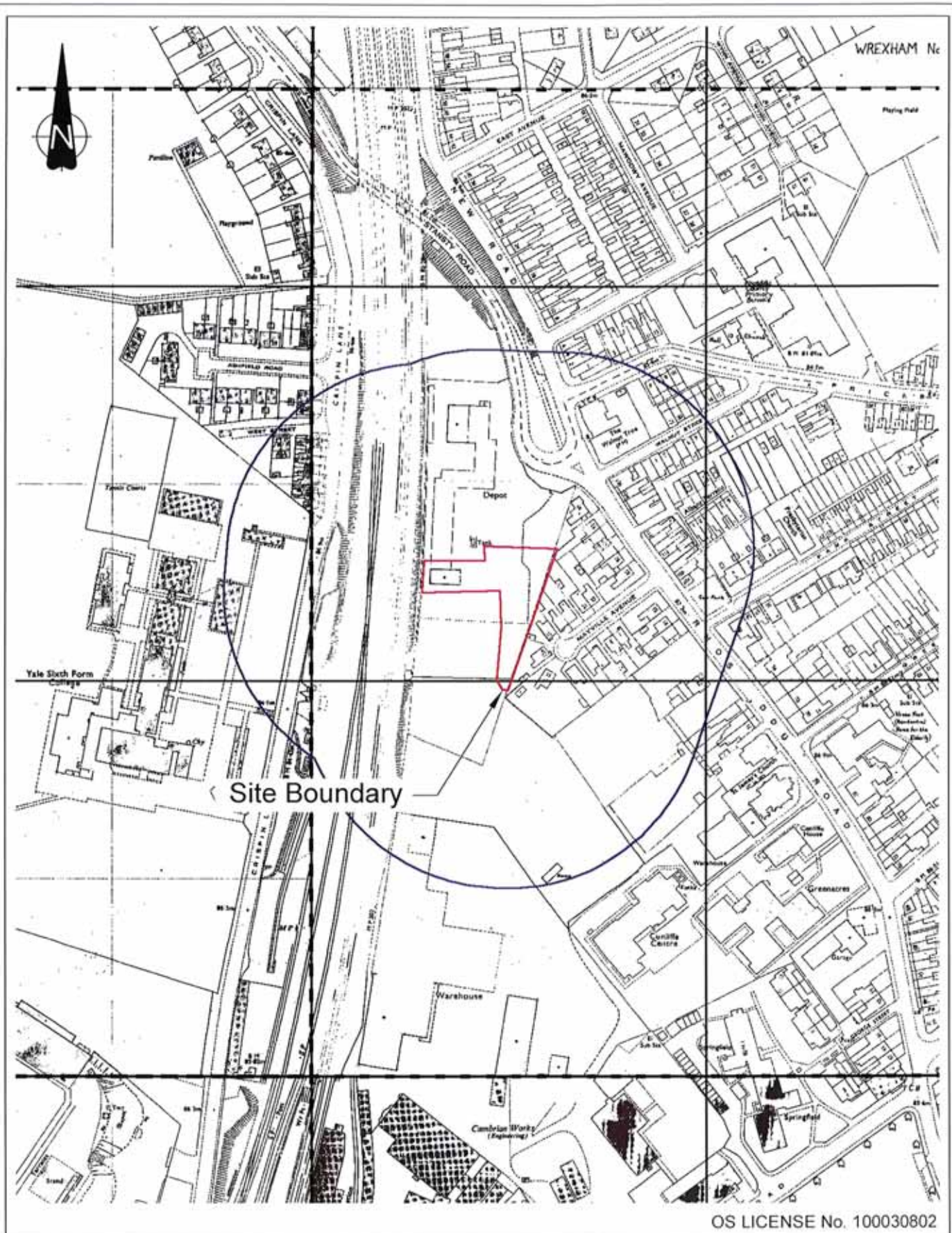


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Figure Title
SITE HISTORY - 1973

FIGURE 3g

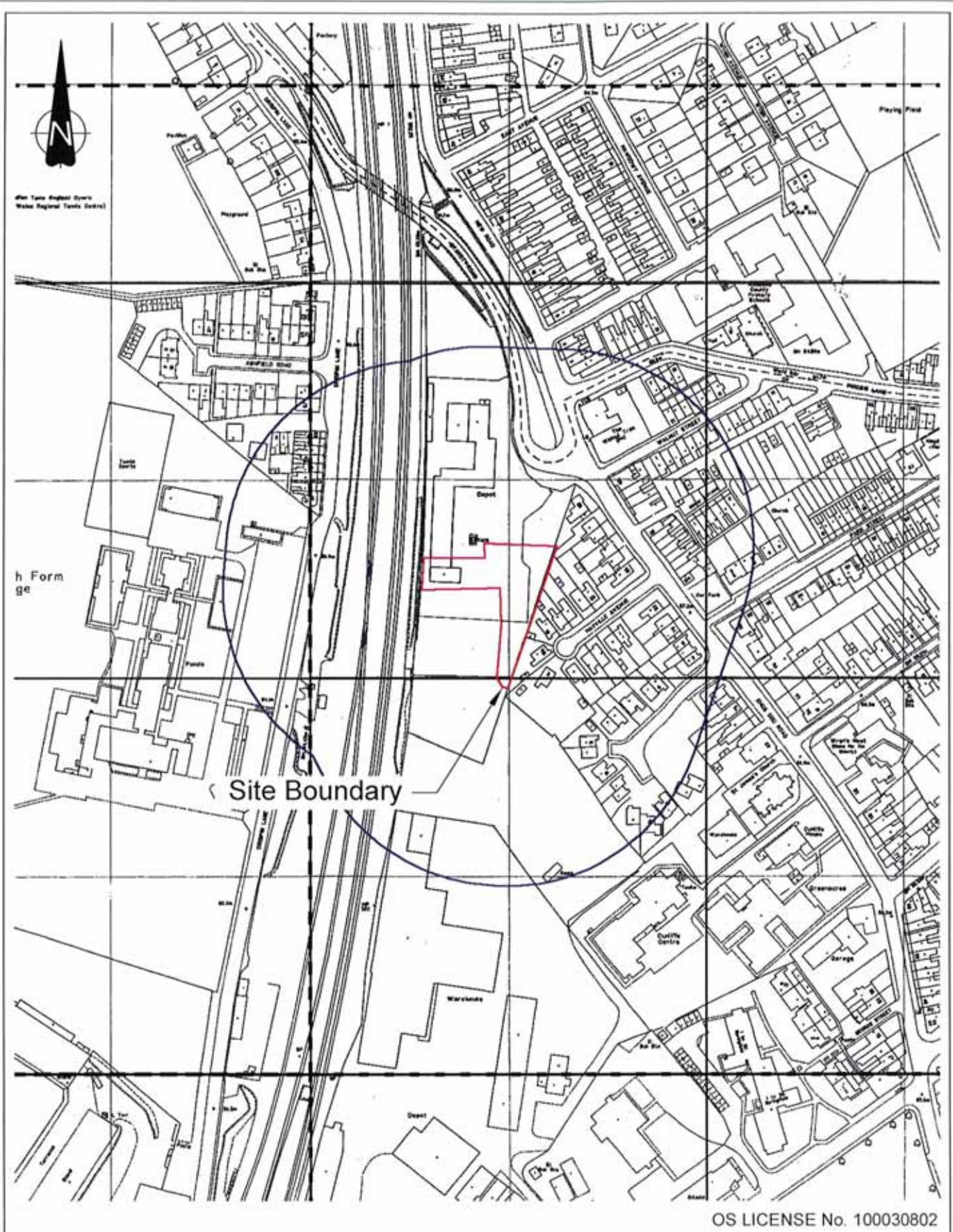


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Figure Title

SITE HISTORY - 1990

FIGURE 3h



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Figure Title
SITE HISTORY - 1992

FIGURE 3i



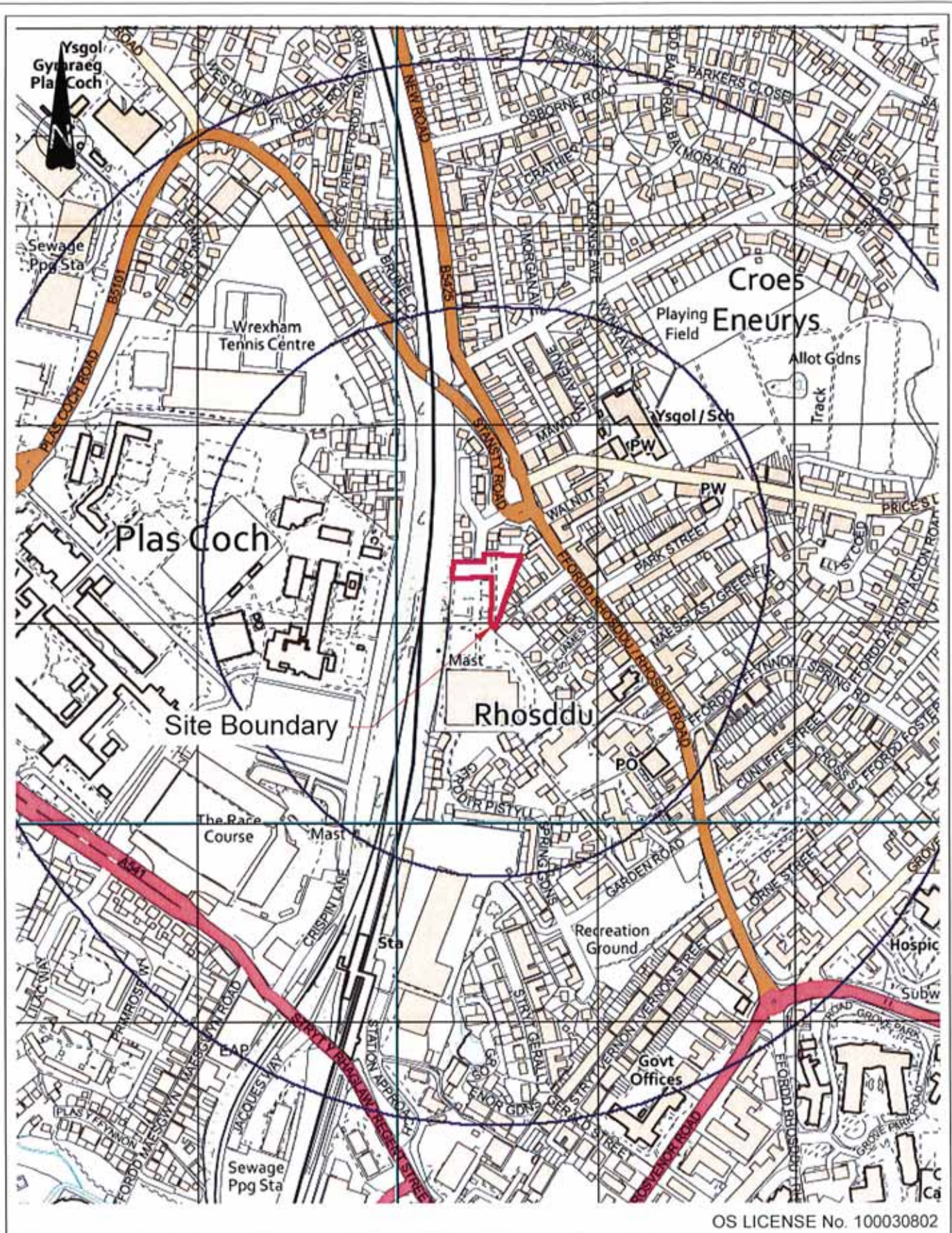
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Figure Title

SITE HISTORY - 2003

FIGURE 3j

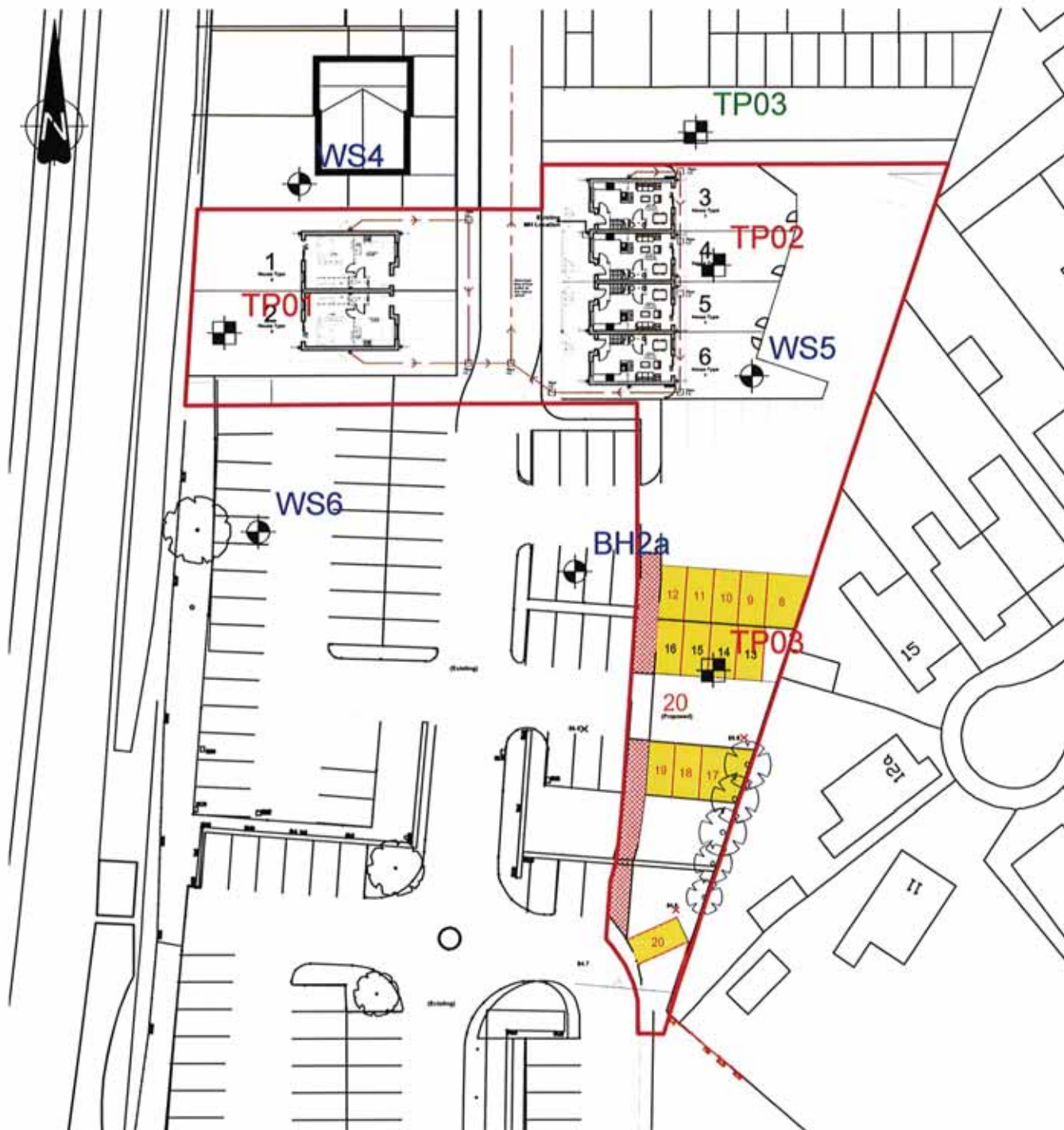


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Figure Title

SITE HISTORY - 2019

FIGURE 3k



Legend	
	This Investigation
	Previous Investigation carried out by GSL
	Previous Investigation carried out by Ian Farmer Associates

SCALE 1: 500 @ A4

Figure Title
LOCATION OF BOREHOLES &
TRIAL PITS



Site Boundary

Legend



Previous Structures

SCALE 1: 500 @ A4

Figure Title

GEOTECHNICAL
CONSTRAINTS

FIGURE 5

APPENDIX A

Site Photographs



Photograph 1 Access to the site off Stansty Road, Total Fitness in background



Photograph 2 Eastern section of site showing walkway and car parking from the north



Photograph 3 Western section of the site from the south



Photograph 4 Eastern section of the site from the south



Photograph 5 Boundary road between Gower Homes development and eastern section of site



Photograph 6 Western section of the site from the north

APPENDIX B

Coal Mining Report



The Coal
Authority

CON29M

coal mining report

SITE AT 333000, 351300, WREXHAM



Known or potential coal mining risks

Past underground coal mining
Future underground coal mining

Page 3

Page 3



Further action

No further reports from the Coal Authority are required. Further information on any next steps can be found in our Professional opinion.

For more information on our reports please visit
www.groundstability.com



Professional opinion

According to the official mining information records held by the Coal Authority at the time of this search, evidence of, or the potential for, coal mining related features have been identified. It is unlikely that these features will impact on the stability of the enquiry boundary.

Your reference: 219413571_2
Our reference: 51002172286001
Date: 27 September 2019

Client name:
LANDMARK INFORMATION
GROUP LIMITED

If you require any further assistance please
contact our experts on:
0345 762 6848
groundstability@coal.gov.uk



The Law
Society

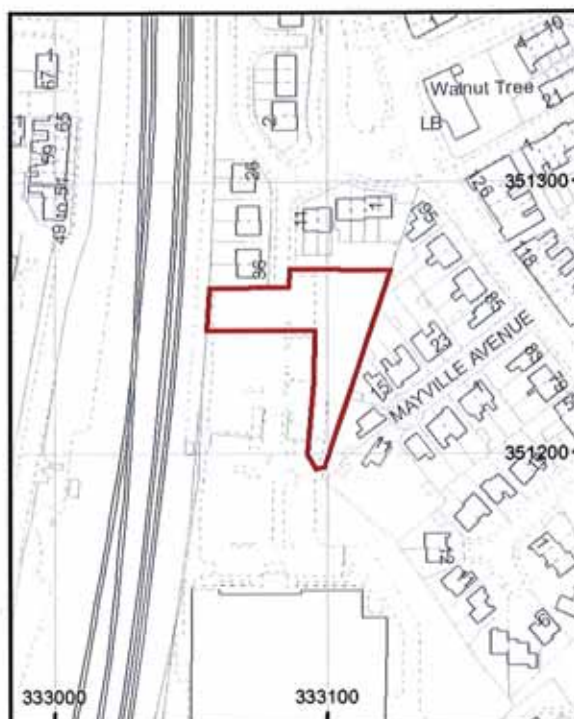
Enquiry boundary

Key

Approximate position of enquiry boundary shown



We can confirm that the location is
on the coalfield



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This report is prepared in accordance with the latest Law Society's Guidance Notes 2018, the User Guide 2018 and the Coal Authority's Terms and Conditions applicable at the time the report was produced.



Accessibility

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Your reference: 219413571_2
Our reference: 51002172286001
Date: 27 September 2019

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If you require any further assistance please
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Detailed findings

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1 Past underground coal mining

The property is in a surface area that could be affected by underground mining in 2 seams of coal at 330m to 390m depth, and last worked in 1921.

Any movement in the ground due to coal mining activity associated with these workings should have stopped by now.

2 Present underground coal mining

The property is not within a surface area that could be affected by present underground mining.

3 Future underground coal mining

The property is not in an area where the Coal Authority has received an application for, and is currently considering whether to grant a licence to remove or work coal by underground methods.

The property is not in an area where a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area likely to be affected from any planned future underground coal mining.

However, reserves of coal exist in the local area which could be worked at some time in the future.

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

4 Mine entries

There are no recorded coal mine entries known to the Coal Authority within, or within 20 metres, of the boundary of the property.

5 Coal mining geology

The Coal Authority is not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining.

6 Past opencast coal mining

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

7 Present opencast coal mining

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

8 Future opencast coal mining

There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

9 Coal mining subsidence

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

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

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

10 Mine gas

The Coal Authority has no record of a mine gas emission requiring action.

11 Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Coal Authority, under its Emergency Surface Hazard Call Out procedures.

12 Withdrawal of support

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

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

13 Working facilities order

The property is not in an area where an order has been made, under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

14 Payments to owners of former copyhold land

The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Statutory cover



Coal mining subsidence

In the unlikely event of any coal mining related subsidence damage, the Coal Authority or the mine operator has a duty to take remedial action in respect of subsidence caused by the withdrawal of support from land or property in connection with lawful coal mining operations.

When the works are the responsibility of the Coal Authority, our dedicated public safety and subsidence team will manage the claim. The house or land owner ("the owner") is covered for these works under the terms of the Coal Mining Subsidence Act 1991 (as amended by the Coal Industry Act 1994). Please note, this Act does not apply where coal was worked or gotten by virtue of the grant of a gale in the Forest of Dean, or any other part of the Hundred of St. Briavels in the county of Gloucester.

If you believe your land or property is suffering from coal mining subsidence damage and you need more information on what to do next, please use the following link to our website which sets out what your rights are and what you need to consider before making a claim.

www.gov.uk/government/publications/coal-mining-subsidence-damage-notice-form



Coal mining hazards

Our public safety and subsidence team provide a 24 hour a day, 7 days a week hazard reporting service, to help protect the public from hazards caused by past coal workings, such as a mine shaft or shallow working collapse. To report any hazards please call **01623 646 333**. Further information can be found on our website: www.gov.uk/coalauthority

Your reference: **219413571_2**
 Our reference: **51002172286001**
 Date: **27 September 2019**

Client name
LANDMARK INFORMATION
GROUP LIMITED

If you require any further assistance please
 contact our experts on:
0345 762 6848
groundstability@coal.gov.uk

Glossary



Key terms

adit - horizontal or sloped entrance to a mine

coal mining subsidence - ground movement caused by the removal of coal by underground mining

Coal Mining Subsidence Act 1991 - the Act setting out the duties of the Coal Authority to repair damage caused by coal mining subsidence

coal mining subsidence damage - damage to land, buildings or structures caused by the removal of coal by underground mining

coal seams - bed of coal of varying thickness

future opencast coal mining - a licence granted, or licence application received, by the Coal Authority to excavate coal from the surface

future underground coal mining - a licence granted, or licence application received, by the Coal Authority to excavate coal underground. Although it is unlikely, remaining coal reserves could create a possibility for future mining, which would be licensed by the Coal Authority

mine entries - collective name for shafts and adits

payments to owners of former copyhold land - historically, copyhold land gave rights to coal to the copyholder. Legislation was set up to allow others to work this coal, but they had to issue a notice and pay compensation if a copyholder came forward

shaft - vertical entry into a mine

site investigation - investigations of coal mining risks carried out with the Coal Authority's permission

stop notice - a delay to repairs because further coal mining subsidence damage may occur and it would be unwise to carry out permanent repairs

subsidence claim - a formal notice of subsidence damage to the Coal Authority since it was established on 31 October 1994

withdrawal of support - a historic notice informing landowners that the coal beneath their property was going to be worked

working facilities orders - a court order which gave permission, restricted or prevented coal mine workings

APPENDIX C

Envirocheck Report

Envirocheck[®] Report: Datasheet

Order Details:

Order Number:

219413571_1_1

Customer Reference:

2269mjs

National Grid Reference:

333090, 351240

Slice:

A

Site Area (Ha):

0.19

Search Buffer (m):

1000

Site Details:

Site at 333000, 351300

Client Details:

Mr M Scott
GroundSolve Ltd
Unit 1
Well House Barns
Chester Road
Bretton
Flintshire
CH4 0DH

Report Section	Page Number
Summary	-
Agency & Hydrological	1
Waste	18
Hazardous Substances	-
Geological	21
Industrial Land Use	25
Sensitive Land Use	39
Data Currency	40
Data Suppliers	45
Useful Contacts	46

Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination. For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency/Natural Resources Wales and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities, and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client. In this datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

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Report Version v53.0

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
BGS Groundwater Flooding Susceptibility	pg 1	Yes	Yes	Yes	n/a
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 1			1	11
Prosecutions Relating to Controlled Waters			n/a	n/a	n/a
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control					
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 4			2	6
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 5			Yes	
Pollution Incidents to Controlled Waters	pg 5		5	2	16
Prosecutions Relating to Authorised Processes					
Registered Radioactive Substances	pg 9			3	6
River Quality	pg 11				1
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points	pg 11				1
Substantiated Pollution Incident Register	pg 11				1
Water Abstractions	pg 12				8 (*4)
Water Industry Act Referrals					
Groundwater Vulnerability Map	pg 15	Yes	n/a	n/a	n/a
Bedrock Aquifer Designations	pg 15	Yes	n/a	n/a	n/a
Superficial Aquifer Designations	pg 15	Yes	n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences				n/a	n/a
Flooding from Rivers or Sea without Defences				n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
OS Water Network Lines	pg 15				16

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Waste					
BGS Recorded Landfill Sites					
Historical Landfill Sites					
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)	pg 18			2	
Local Authority Landfill Coverage	pg 18	1	n/a	n/a	n/a
Local Authority Recorded Landfill Sites					
Potentially Infilled Land (Non-Water)	pg 18				5
Potentially Infilled Land (Water)	pg 18		1	4	17
Registered Landfill Sites					
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites	pg 20				2
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)					
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Geological					
BGS 1:625,000 Solid Geology	pg 21	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 21	Yes	Yes	Yes	Yes
BGS Recorded Mineral Sites	pg 23				1
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
CBSCB Compensation District			n/a	n/a	n/a
Coal Mining Affected Areas	pg 23	Yes	n/a	n/a	n/a
Mining Instability	pg 23	Yes	n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain	pg 23	Yes		n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 23	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards				n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 23	Yes		n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 23	Yes		n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 23	Yes		n/a	n/a
Radon Potential - Radon Affected Areas	pg 24	Yes	n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries	pg 25		5	19	61
Fuel Station Entries	pg 32		1		5
Points of Interest - Commercial Services	pg 33			5	15
Points of Interest - Education and Health	pg 34			1	2
Points of Interest - Manufacturing and Production	pg 35		3	5	9
Points of Interest - Public Infrastructure	pg 36			2	21
Points of Interest - Recreational and Environmental	pg 38		2		4
Gas Pipelines					
Underground Electrical Cables					

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
Ancient Woodland					
Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones					
Ramsar Sites					
Sites of Special Scientific Interest	pg 39				1
Special Areas of Conservation					
Special Protection Areas					
World Heritage Sites					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A13NE (SW)	0	1	333092 351239
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NE (E)	31	1	333150 351239
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NW (W)	156	1	332900 351250
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NE (NE)	362	1	333400 351500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A14NW (NE)	432	1	333450 351550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A18SE (NE)	433	1	333400 351600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A18SE (N)	434	1	333150 351700
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A18SE (NE)	445	1	333350 351650
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A18SE (N)	451	1	333250 351700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12NE (W)	456	1	332600 351250
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A19SW (NE)	466	1	333450 351600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A18SE (N)	489	1	333200 351750
1	Discharge Consents Operator: Crosville Wales Ltd Property Type: Undefined Or Other Location: Wrexham Mold Road Depot Authority: Natural Resources Wales Catchment Area: River Dee Reference: Cm0062401 Permit Version: 1 Effective Date: 16th June 1970 Issued Date: 16th June 1970 Revocation Date: 6th January 1993 Discharge Type: Unspecified Discharge: Not Supplied Environment: Un-Named Trib. Of Gwenfro Receiving Water: Un-Named Trib. Of Gwenfro Status: Consent expired Positional Accuracy: Located by supplier to within 10m	A7NE (SW)	498	2	332720 350870
2	Discharge Consents Operator: Crosville Wales Ltd Property Type: Undefined Or Other Location: Wrexham Mold Road Depot Authority: Natural Resources Wales Catchment Area: River Dee Reference: Cm0026101 Permit Version: 1 Effective Date: 21st December 1964 Issued Date: 21st December 1964 Revocation Date: 6th January 1993 Discharge Type: Unspecified Discharge: Not Supplied Environment: Un-Named Trib. Of Gwenfro Receiving Water: Un-Named Trib. Of Gwenfro Status: Consent expired Positional Accuracy: Located by supplier to within 10m	A7NE (SW)	624	2	332550 350880

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
3	Discharge Consents Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Pumping Stations Location: Measgwyn Sewage Pumping Station, Maesgwyn Pumping Station, Measgwyn Road, Wrexham Authority: Natural Resources Wales Catchment Area: GWENFRO Reference: Cm0194101 Permit Version: 2 Effective Date: 29th March 2002 Issued Date: 28th March 2002 Revocation Date: Not Supplied Discharge Type: Miscellaneous Discharges - Emergency Discharges Discharge: Freshwater Stream/River Environment: Receiving Water: Afon Gwenfro Status: Effective Positional Accuracy: Located by supplier to within 10m	A7NE (SW)	694	2	332710 350620
3	Discharge Consents Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Pumping Stations Location: Measgwyn Sewage Pumping Station, Maesgwyn Pumping Station, Measgwyn Road, Wrexham Authority: Natural Resources Wales Catchment Area: GWENFRO Reference: Cm0194101 Permit Version: 2 Effective Date: 29th March 2002 Issued Date: 28th March 2002 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: Afon Gwenfro Status: Effective Positional Accuracy: Located by supplier to within 10m	A7NE (SW)	694	2	332710 350620
3	Discharge Consents Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Pumping Stations Location: Measgwyn Sewage Pumping Station, Maesgwyn Pumping Station, Measgwyn Road, Wrexham Authority: Natural Resources Wales Catchment Area: GWENFRO Reference: Cm0194101 Permit Version: 2 Effective Date: 29th March 2002 Issued Date: 28th March 2002 Revocation Date: Not Supplied Discharge Type: Miscellaneous Discharges - Emergency Discharges Discharge: Freshwater Stream/River Environment: Receiving Water: Afon Gwenfro Status: Effective Positional Accuracy: Located by supplier to within 10m	A7NE (SW)	694	2	332710 350620
3	Discharge Consents Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Pumping Stations Location: Measgwyn Sewage Pumping Station, Maesgwyn Pumping Station, Measgwyn Road, Wrexham Authority: Natural Resources Wales Catchment Area: GWENFRO Reference: Cm0194101 Permit Version: 2 Effective Date: 29th March 2002 Issued Date: 28th March 2002 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: Afon Gwenfro Status: Effective Positional Accuracy: Located by supplier to within 10m	A7NE (SW)	694	2	332710 350620

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
3	Discharge Consents Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Pumping Station - Water Company Location: Maesgwyn Ps Authority: Natural Resources Wales Catchment Area: River Dee Reference: CM0194101 Permit Version: 1 Effective Date: 19th October 1989 Issued Date: 19th October 1989 Revocation Date: 28th March 2002 Discharge Type: Unspecified Discharge: Not Supplied Environment: Receiving Water: Gwenfro Status: New Consent, by Application (Water Resources Act 1991, Section 88) Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	716	2	332700 350600
4	Discharge Consents Operator: Carlsberg-Tetley Brewing Ltd Property Type: Brewing & Malting Location: Wrexham Lager Brewery Central Road, Central Road Wrexham Authority: Natural Resources Wales Catchment Area: River Dee Reference: CM0088101 Permit Version: 2 Effective Date: 15th November 1995 Issued Date: 14th November 1995 Revocation Date: 6th March 2001 Discharge Type: Trade Effluent Discharge: Not Supplied Environment: Receiving Water: River Gwenfro Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995) Positional Accuracy: Located by supplier to within 100m	A8SW (S)	740	2	332910 350480
4	Discharge Consents Operator: Carlsberg-Tetley Brewing Ltd Property Type: Brewing & Malting Location: Wrexham Lager Brewery Central Road, Central Road Wrexham Authority: Natural Resources Wales Catchment Area: River Dee Reference: Cm0088101 Permit Version: 1 Effective Date: 6th February 1980 Issued Date: 6th February 1980 Revocation Date: 14th November 1995 Discharge Type: Trade Effluent Discharge: Not Supplied Environment: Receiving Water: River Gwenfro Status: Authorisation revoked Positional Accuracy: Located by supplier to within 10m	A8SW (S)	740	2	332910 350480
4	Discharge Consents Operator: Ind Coope Ltd Property Type: Brewing & Malting Location: Wrexham Lager Brewery Central Road, Central Road Wrexham Authority: Natural Resources Wales Catchment Area: River Dee Reference: Cm0024701 Permit Version: 1 Effective Date: 22nd September 1964 Issued Date: 22nd September 1964 Revocation Date: 17th February 1986 Discharge Type: Unspecified Discharge: Not Supplied Environment: Receiving Water: Gwenfro Status: Consent expired Positional Accuracy: Located by supplier to within 10m	A8SW (S)	740	2	332910 350480

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
4	Discharge Consents Operator: Ind Coope Ltd Property Type: Brewing & Malting Location: Wrexham Lager Brewery Central Road, Central Road Wrexham Authority: Natural Resources Wales Catchment Area: River Dee Reference: Cm0024702 Permit Version: 1 Effective Date: 22nd September 1984 Issued Date: 22nd September 1984 Revocation Date: 17th February 1986 Discharge Type: Unspecified Discharge: Not Supplied Environment: Gwenfro Receiving Water: Gwenfro Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995) Positional Accuracy: Located by supplier to within 10m	A8SW (S)	740	2	332910 350480
5	Discharge Consents Operator: Clwyd Health Authority Property Type: Undefined Or Other Location: Wrexham District General Hospital W, District General Hospital Watery, Watery Road Authority: Natural Resources Wales Catchment Area: River Dee Reference: Cm0146501 Permit Version: 1 Effective Date: 23rd December 1985 Issued Date: 23rd December 1985 Revocation Date: 18th February 1993 Discharge Type: Unspecified Discharge: Not Supplied Environment: Gwenfro Receiving Water: Gwenfro Status: Consent expired Positional Accuracy: Located by supplier to within 10m	A7SE (SW)	967	2	332520 350420
6	Local Authority Pollution Prevention and Controls Name: Remploy Limited Location: Station Road, Railway Road, WREXHAM, Clwyd, LL11 2DN Authority: Wrexham County Borough Council, Environmental Health Department Permit Reference: WCBC/PG6/2/REM/V2 Dated: 6th November 1992 Process Type: Local Authority Air Pollution Control Description: PG6/2 Manufacture of timber and wood-based products Status: Authorised Positional Accuracy: Manually positioned to the address or location	A18SW (N)	399	3	332980 351652
6	Local Authority Pollution Prevention and Controls Name: Remploy Limited Location: Station Road, Railway Road, WREXHAM, Clwyd, LL11 2DN Authority: Wrexham County Borough Council, Environmental Health Department Permit Reference: NOT GIVEN Dated: Not Supplied Process Type: Local Authority Air Pollution Control Description: PG6/33 Wood coating Status: Not Supplied Positional Accuracy: Automatically positioned to the address	A18SW (N)	399	3	332981 351652
7	Local Authority Pollution Prevention and Controls Name: Shell Uk Ltd Location: Mold Road, WREXHAM, Clwyd, LL11 2AF Authority: Wrexham County Borough Council, Environmental Health Department Permit Reference: WCBC/PG1/14(2)/V3 Dated: 23rd December 1998 Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station Status: Authorised Positional Accuracy: Automatically positioned to the address	A12SE (SW)	502	3	332623 350992
8	Local Authority Pollution Prevention and Controls Name: Regent Service Station Location: 63-67 Regent Street, WREXHAM, Clwyd, LL11 1PH Authority: Wrexham County Borough Council, Environmental Health Department Permit Reference: NOT GIVEN Dated: Not Supplied Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station Status: Not Supplied Positional Accuracy: Automatically positioned to the address	A8NW (S)	523	3	332961 350691

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
9	Local Authority Pollution Prevention and Controls Name: Sainsbury'S Supermarket Petrol Filling Station Location: Plas Coch Road, WREXHAM, Clwyd, LL11 2BW Authority: Wrexham County Borough Council, Environmental Health Department Permit Reference: WCBC/PG1/14(11)V3 Dated: 23rd December 1998 Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station Status: Authorised Positional Accuracy: Manually positioned to the address or location	A12NE (W)	597	3	332481 351414
10	Local Authority Pollution Prevention and Controls Name: Johnson Cleaners Uk Ltd Location: Plas Coch Road, Stansty, Wrexham, LI11 2bw Authority: Wrexham County Borough Council, Environmental Health Department Permit Reference: WCBC-PG6-46(6) Dated: Not Supplied Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning Status: Permitted Positional Accuracy: Located by supplier to within 10m	A17SE (NW)	618	3	332522 351570
11	Local Authority Pollution Prevention and Controls Name: The Professionals Location: 43 King Street, Wrexham, LI11 1hr Authority: Wrexham County Borough Council, Environmental Health Department Permit Reference: WCBC/PG6/46(3) Dated: Not Supplied Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning Status: Permitted Positional Accuracy: Manually positioned to the address or location	A8NE (S)	628	3	333338 350615
12	Local Authority Pollution Prevention and Controls Name: Johnsons Cleaners Uk Ltd Location: 11 Lord Street, Wrexham, LI11 1lh Authority: Wrexham County Borough Council, Environmental Health Department Permit Reference: WCBC-PG6-46(2)V1 Dated: Not Supplied Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning Status: Permitted Positional Accuracy: Manually positioned to the address or location	A8SE (S)	753	3	333347 350485
	Nearest Surface Water Feature	A13NE (NE)	325	-	333400 351438
13	Pollution Incidents to Controlled Waters Property Type: Waste Handling Facilities Location: Rhosddu Trading Estate Authority: Environment Agency, Welsh Region Pollutant: Sewage - Treated Effluent Note: Not Supplied Incident Date: 19th February 1996 Incident Reference: 27645 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Runoff Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13SE (E)	189	4	333300 351200
13	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Rhosddu Trading Estate Authority: Environment Agency, Welsh Region Pollutant: Unknown Note: Not Supplied Incident Date: 19th February 1996 Incident Reference: 27645 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Runoff Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13SE (E)	190	4	333300 351195

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
14	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Clwyd Reinforcement, Rhewl, WREXHAM Authority: Environment Agency, Welsh Region Pollutant: Rubble/Litter Or Solids Note: Accidental Spillage/Leakage Incident Date: 19th September 1996 Incident Reference: 29995 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Runoff Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13SW (S)	219	4	333000 351000
15	Pollution Incidents to Controlled Waters Property Type: Water Company Sewage: Surface Water Outfall Location: Bradley Road, Fire Station Authority: Environment Agency, Welsh Region Pollutant: Miscellaneous - Fire water / Foam Note: Natural Causes Incident Date: 21st July 1995 Incident Reference: 25061 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Runoff Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13NE (NE)	221	4	333300 351400
16	Pollution Incidents to Controlled Waters Property Type: Road (Lost Load) Location: Railway Road, Rhosddu, WREXHAM Authority: Environment Agency, Welsh Region Pollutant: Farm Effluent/Slurry Note: Not Supplied Incident Date: 25th September 1991 Incident Reference: 2064 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Leakage Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A13NW (N)	246	4	333000 351500
17	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Rear Of Yale College, WREXHAM Authority: Environment Agency, Welsh Region Pollutant: Light Oil Note: Vandalism Incident Date: 7th November 1996 Incident Reference: 30495 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Runoff Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13NW (NW)	293	4	332800 351400
18	Pollution Incidents to Controlled Waters Property Type: Road (Lost Load) Location: Mold-Gwersyllt, Road On, Roundabout Authority: Environment Agency, Welsh Region Pollutant: Unknown Note: Accidental Spillage/Leakage Incident Date: 28th December 1991 Incident Reference: 1879 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Runoff Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A8NW (SW)	409	4	332850 350870
19	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Jaques Scrap Yard Authority: Environment Agency, Welsh Region Pollutant: Miscellaneous - Fire water / Foam Note: Emergency Overflow; River Gwentfro Incident Date: 18th November 1998 Incident Reference: 37299 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Runoff Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A8NW (SW)	510	4	332850 350750

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
20	Pollution Incidents to Controlled Waters Property Type: Water Company Sewage: Surface Water Outfall Location: Rogers And, Jackson, WREXHAM Authority: Environment Agency, Welsh Region Pollutant: Farm Effluent/Slurry Note: Vandalism Incident Date: 26th September 1994 Incident Reference: 21080 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Runoff Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A8NE (S)	546	4	333100 350650
21	Pollution Incidents to Controlled Waters Property Type: Water Company Sewage: Other Location: Maes Gwyn, Road Maelor Hospital Wrexha Authority: Environment Agency, Welsh Region Pollutant: Miscellaneous - Fire water / Foam Note: Mechanical Failure Incident Date: 23rd August 1995 Incident Reference: 25511 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Overflow Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	635	4	332700 350700
22	Pollution Incidents to Controlled Waters Property Type: Road (Lost Load) Location: B And Q, WREXHAM Authority: Environment Agency, Welsh Region Pollutant: Chemicals - Other Organic Note: Accidental Spillage/Leakage Incident Date: 23rd October 1994 Incident Reference: 21478 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Runoff Incident Severity: Category 1 - Major Incident Positional Accuracy: Located by supplier to within 100m	A12SW (W)	658	4	332400 351200
23	Pollution Incidents to Controlled Waters Property Type: Not Given Location: By B & Q, WREXHAM Authority: Environment Agency, Welsh Region Pollutant: Sewage - Treated Effluent Note: Neglect Incident Date: 2nd May 1997 Incident Reference: 32229 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Leakage Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12NW (W)	672	4	332400 351400
24	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Between Brook Street, And Ambie Inn Authority: Environment Agency, Welsh Region Pollutant: Oils - Fats And Grease Note: Not Supplied Incident Date: 2nd August 1996 Incident Reference: 29675 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A8SW (S)	703	4	333000 350500
25	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Old Tannery Site, WREXHAM Authority: Environment Agency, Welsh Region Pollutant: Sewage - Treated Effluent Note: Not Supplied Incident Date: 2nd October 1996 Incident Reference: 30125 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	709	4	332705 350605

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
25	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Brook Street Authority: Environment Agency, Welsh Region Pollutant: Sewage - Treated Effluent Note: River Gwenfro Incident Date: 4th August 1997 Incident Reference: 33139 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	712	4	332700 350605
25	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Downstream Wrexham Lager Culvert, WREXHAM Authority: Environment Agency, Welsh Region Pollutant: Milk/Creamery Wastes Note: Not Supplied Incident Date: 7th October 1996 Incident Reference: 30124 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	713	4	332705 350600
25	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Cambrian Yard Authority: Environment Agency, Welsh Region Pollutant: Chlorinated Water Note: Not Supplied Incident Date: 8th October 1996 Incident Reference: 30131 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	717	4	332705 350595
26	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Wrexham Fire Station, WREXHAM Authority: Environment Agency, Welsh Region Pollutant: Foam/Soap Suds Note: Poor Management Incident Date: 9th June 1997 Incident Reference: 32560 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Runoff Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A8SE (S)	796	4	333100 350400
26	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Wrexham Fire Station, WREXHAM Authority: Environment Agency, Welsh Region Pollutant: Foam/Soap Suds Note: River Gwenfro, Run-Off Incident Date: 9th June 1997 Incident Reference: 32560 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Poor Management Control Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A8SE (S)	801	4	333100 350395
27	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Wrexham Lager Site Authority: Environment Agency, Welsh Region Pollutant: Crude Sewage Note: Accidental Spillage/Leakage Incident Date: 12th November 1996 Incident Reference: 30439 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Leakage Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A7SE (SW)	801	4	332700 350500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
28	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Old Tannery, WREXHAM Authority: Environment Agency, Welsh Region Pollutant: Algae Note: Not Supplied Incident Date: 5th September 1996 Incident Reference: 29872 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A8SE (S)	802	4	333200 350400
29	Pollution Incidents to Controlled Waters Property Type: Warehouses Location: Acton Service Station Authority: Environment Agency, Welsh Region Pollutant: Road Run-Off Note: Poor Operational Practise Incident Date: 22nd May 1995 Incident Reference: 24085 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Overflow Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A19SE (NE)	861	4	333800 351800
30	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Brewery, WREXHAM Authority: Environment Agency, Welsh Region Pollutant: Algae Note: Not Supplied Incident Date: 14th May 1991 Incident Reference: 2705 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A3NE (S)	996	4	333100 350200
31	Registered Radioactive Substances Name: Glyndwr University Location: Research & Innovation Centre, North East Wales Institute, Plas Coch, WREXHAM, Clwyd, LL11 2AW Authority: Natural Resources Wales Permit Reference: AW1209 Dated: 21st January 1997 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Discretionary registration under the Act of an open source which is also the subject of an authorisation Status: Authorisation either revoked or cancelled Positional Accuracy: Unknown	A12SE (W)	389	2	332695 351102
31	Registered Radioactive Substances Name: Glyndwr University Location: Multidisciplinary Research And Innovation Centre, North East Wales Institute, Plas Coch, Wrexham, Clwyd, LL11 2AW Authority: Natural Resources Wales Permit Reference: Bw8569 Dated: 1st December 2003 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA Status: Authorisation either revoked or cancelled Positional Accuracy: Manually positioned to the address or location	A12SE (W)	390	2	332691 351108
31	Registered Radioactive Substances Name: Glyndwr University Location: Multidisciplinary Research & Innovation, North East Wales Institute, Plas Coch, WREXHAM, Clwyd, LL11 2AW Authority: Natural Resources Wales Permit Reference: AW1233 Dated: 15th January 1997 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Authorisation under RSA Status: Authorisation superseded by a substantial or non substantial variation Positional Accuracy: Unknown	A12SE (W)	393	2	332690 351102

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
32	Registered Radioactive Substances Name: North Wales Nhs Trust Location: Wrexham Maelor Hospital, Croesnewydd Road, WREXHAM, Clwyd, LL13 7NT Authority: Natural Resources Wales Permit Reference: Bw8607 Dated: 1st December 2003 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA Status: Authorisation superseded by a substantial or non substantial variation Positional Accuracy: Automatically positioned to the address	A7NW (SW)	942	2	332394 350569
32	Registered Radioactive Substances Name: North Wales Nhs Trust Location: Wrexham Maelor Hospital, Croesnewydd Road, WREXHAM, Clwyd, LL13 7NT Authority: Natural Resources Wales Permit Reference: BF4768 Dated: 31st March 1999 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Discretionary authorisation under RSA Status: Authorisation superseded by a substantial or non substantial variation Positional Accuracy: Automatically positioned to the address	A7NW (SW)	942	2	332394 350569
32	Registered Radioactive Substances Name: Wrexham Maelor Hospital Nhs Trust Location: Wrexham Maelor Hospital, Croesnewydd Road, WREXHAM, Clwyd, LL13 7NT Authority: Natural Resources Wales Permit Reference: AX6141 Dated: 6th October 1997 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA Status: Authorisation either revoked or cancelled Positional Accuracy: Automatically positioned to the address	A7NW (SW)	942	2	332394 350569
32	Registered Radioactive Substances Name: Wrexham Maelor Hospital Nhs Trust Location: Wrexham Maelor Hospital, Croesnewydd Road, WREXHAM, Clwyd, LL13 7NT Authority: Natural Resources Wales Permit Reference: AT7626 Dated: 5th December 1995 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA Status: Authorisation superseded by a substantial or non substantial variation Positional Accuracy: Automatically positioned to the address	A7NW (SW)	942	2	332394 350569
32	Registered Radioactive Substances Name: Wrexham Maelor Hospital Nhs Trust Location: Wrexham Maelor Hospital, Croesnewydd Road, WREXHAM, Clwyd, LL13 7NT Authority: Natural Resources Wales Permit Reference: AR1108 Dated: 24th July 1995 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA Status: Authorisation superseded by a substantial or non substantial variation Positional Accuracy: Automatically positioned to the address	A7NW (SW)	942	2	332394 350569
32	Registered Radioactive Substances Name: Wrexham Maelor Hospital Nhs Trust Location: Wrexham Maelor Hospital, Croesnewydd Road, WREXHAM, Clwyd, LL13 7NT Authority: Natural Resources Wales Permit Reference: AO4518 Dated: 4th November 1994 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA Status: Authorisation superseded by a substantial or non substantial variation Positional Accuracy: Automatically positioned to the address	A7NW (SW)	942	2	332394 350569

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	River Quality Name: Gwenfro GQA Grade: River Quality E Reach: Willow Rd.Wrexham - Hospital Estimated Distance 2 (km): Flow Rate: Flow less than 0.31 cumecs Flow Type: River Year: 2000	A7SE (SW)	808	4	332689 350499
33	River Quality Chemistry Sampling Points Name: Gwenfro Reach: Hospital To Confluence Tributary Near South Sea Estimated Distance: 3.20 Objective: Not Supplied Positional Accuracy: Located by supplier to within 10m Year: 1990 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 1993 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 1994 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 1995 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 1996 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 1997 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 1998 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 1999 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 2000 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2001 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2002 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2003 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2004 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2005 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 2006 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2007 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2008 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 2009 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied	A7SE (SW)	937	4	332530 350450
34	Substantiated Pollution Incident Register Authority: Natural Resources Wales Incident Date: 26th July 2018 Incident Reference: 1804662 Water Impact: Category 2 - Significant Incident Air Impact: Category 4 - No Impact Land Impact: Category 4 - No Impact Positional Accuracy: Located by supplier to within 10m Pollutant: General Biodegradable Materials And Wastes: Food And Drink	A7SE (SW)	951	2	332537 350427

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
35	Water Abstractions Operator: Carlsberg Tetley Brewing Ltd. Licence Number: 24/67/7/0012 Permit Version: 100 Location: Well No.1 Authority: Environment Agency, Welsh Region Abstraction: Breweries/Wine: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Well No.2 Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 11th February 2001 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	648	4	332600 350780
36	Water Abstractions Operator: Carlsberg Tetley Brewing Ltd. Licence Number: 24/67/7/0012 Permit Version: 100 Location: Well No.3 Authority: Environment Agency, Welsh Region Abstraction: Breweries/Wine: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Well No.1 Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 11th February 2001 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	677	4	332630 350705
36	Water Abstractions Operator: Carlsberg Tetley Brewing Ltd. Licence Number: 24/67/7/0012 Permit Version: 100 Location: Well No.2 Authority: Environment Agency, Welsh Region Abstraction: Breweries/Wine: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Well No.3 Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 11th February 2001 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	709	4	332610 350681
37	Water Abstractions Operator: Carlsberg Tetley Brewing Ltd. Licence Number: 24/67/7/0194 Permit Version: 100 Location: Borehole Authority: Environment Agency, Welsh Region Abstraction: Breweries/Wine: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 11th February 1999 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	773	4	332600 350604

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
37	Water Abstractions Operator: Carlsberg Tetley Brewing Ltd. Licence Number: 24/67/7/0194 Permit Version: 100 Location: Borehole Authority: Environment Agency, Welsh Region Abstraction: Breweries/Wine: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 11th February 1999 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	774	4	332600 350602
37	Water Abstractions Operator: Carlsberg Tetley Brewing Ltd. Licence Number: 24/67/7/0194 Permit Version: 100 Location: Borehole Authority: Environment Agency, Welsh Region Abstraction: Breweries/Wine: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 11th February 1999 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	774	4	332600 350603
37	Water Abstractions Operator: Carlsberg Tetley Brewing Ltd. Licence Number: 24/67/7/0194 Permit Version: 100 Location: Borehole Authority: Environment Agency, Welsh Region Abstraction: Breweries/Wine: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 11th February 1999 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	775	4	332600 350601
38	Water Abstractions Operator: Wrexham County Borough Licence Number: 24/67/7/0147 Permit Version: 100 Location: River Gwenfro Authority: Environment Agency, Welsh Region Abstraction: Other Industrial/Commercial/Public Services: Effluent/Slurry Dilution Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: River Gwenfro Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 24th February 1967 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A8SE (S)	985	4	333230 350220

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Mr J Rees Licence Number: 24/67/7/0135 Permit Version: 100 Location: River Gwenfro Authority: Environment Agency, Welsh Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: River Gwenfro Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 28th January 1983 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A7SW (SW)	1221	4	332350 350230
	Water Abstractions Operator: Mr N Morris Licence Number: 24/67/7/0135 Permit Version: 101 Location: Tributary Of River Gwenfro Authority: Natural Resources Wales Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: At Lower Berse Farm Authorised Start: 01 April Authorised End: 30 September Permit Start Date: 13th June 2003 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A1NE (SW)	1698	2	331800 350100
	Water Abstractions Operator: Mr N Morris Licence Number: 24/67/7/0135 Permit Version: 101 Location: River Gwenfro Authority: Natural Resources Wales Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: At Lower Berse Farm Authorised Start: 01 April Authorised End: 30 September Permit Start Date: 13th June 2003 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(W)	1988	2	331190 350560
	Water Abstractions Operator: Morris Licence Number: 24/67/7/0135 Permit Version: Not Supplied Location: Abstraction: Afon Gwenfro + Tributaries Between Points A+B, E+F, G+C Authority: Natural Resources Wales Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from any point within an area Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(W)	1988	2	331190 350560

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Groundwater Vulnerability Map Combined Classification: Secondary Superficial Aquifer - High Vulnerability Combined Vulnerability: High Combined Aquifer: Productive Bedrock Aquifer, Productive Superficial Aquifer Pollutant Speed: High Bedrock Flow: Well Connected Fractures Dilution: 300-550 mm/year Baseflow Index: >70% Superficial Patchiness: >90% Superficial Thickness: >10m Superficial Recharge: High	A13NE (SW)	0	2	333092 351239
	Bedrock Aquifer Designations Aquifer Designation: Secondary Aquifer - A	A13NE (SW)	0	2	333092 351239
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - Undifferentiated	A13NE (SW)	0	2	333092 351239
	Extreme Flooding from Rivers or Sea without Defences None				
	Flooding from Rivers or Sea without Defences None				
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				
39	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 88.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A7NE (SW)	686	5	332665 350662
40	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 21.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Gwenfro Catchment Name: Dee Primacy: 1	A8SW (S)	695	5	332837 350551
41	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 155.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Gwenfro Catchment Name: Dee Primacy: 1	A7NE (SW)	696	5	332731 350604
42	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 1.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8SW (S)	696	5	332825 350555
43	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 435.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Gwenfro Catchment Name: Dee Primacy: 1	A8SW (S)	696	5	332845 350547

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
44	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 2.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Gwenfro Catchment Name: Dee Primacy: 1	A8SW (S)	697	5	332825 350554
45	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 929.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Gwenfro Catchment Name: Dee Primacy: 1	A7NE (SW)	701	5	332687 350628
46	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 185.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A7NE (SW)	705	5	332621 350676
47	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 295.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A17SE (NW)	759	5	332500 351776
48	OS Water Network Lines Watercourse Form: Lake Watercourse Length: 27.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A7NE (SW)	823	5	332437 350703
49	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 424.3 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A7NW (SW)	825	5	332397 350749
50	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 22.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A12SW (W)	902	5	332172 351068
51	OS Water Network Lines Watercourse Form: Lake Watercourse Length: 14.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A12SW (W)	911	5	332159 351086
52	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 358.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A12SW (W)	919	5	332150 351096

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
53	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 71.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Gwenfro Catchment Name: Dee Primacy: 1	A8SE (S)	953	5	333159 350245
54	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 218.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Gwenfro Catchment Name: Dee Primacy: 1	A8SE (S)	975	5	333228 350229

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
55	Licensed Waste Management Facilities (Locations) Licence Number: LP3194FV Location: Jacques Garage, Wrexham, Clwyd, Wrexham, LL11 2AD Operator Name: Jacques Garage Operator Location: Not Supplied Authority: Natural Resources Wales Site Category: Not Supplied Licence Status: Expired Issued: 29th September 1992 Last Modified: Not Supplied Expires: 24th April 2007 Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A8NW (S)	454	2	332905 350785
55	Licensed Waste Management Facilities (Locations) Licence Number: 37037 Location: Mold Road, Wrexham, Clwyd, LL11 2AD Operator Name: Jacques Garage Operator Location: Not Supplied Authority: Natural Resources Wales Site Category: Metal Recycling Sites (Vehicle Dismantlers) Licence Status: Expired Issued: 29th September 1992 Last Modified: 30th November 2001 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A8NW (S)	454	2	332905 350785
	Local Authority Landfill Coverage Name: Wrexham County Borough Council - Has supplied landfill data		0	6	333092 351239
56	Potentially Infilled Land (Non-Water) Bearing Ref: NE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A18SE (NE)	516	-	333406 351699
57	Potentially Infilled Land (Non-Water) Bearing Ref: N Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A18NW (N)	691	-	332926 351939
58	Potentially Infilled Land (Non-Water) Bearing Ref: NE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A19SE (NE)	746	-	333785 351612
59	Potentially Infilled Land (Non-Water) Bearing Ref: N Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A18NW (N)	849	-	332999 352112
60	Potentially Infilled Land (Non-Water) Bearing Ref: N Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A18NW (N)	861	-	333044 352127
61	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1879	A13SW (S)	60	-	333079 351138
62	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A13NE (NE)	311	-	333384 351437
63	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1879	A18SE (N)	349	-	333232 351598
64	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1900	A18SE (NE)	372	-	333267 351610
65	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1879	A14NW (E)	490	-	333613 351255

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
66	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A18SW (N)	518	-	332952 351768
67	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A14NW (E)	588	-	333711 351279
68	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1900	A14SW (E)	596	-	333675 351038
69	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A7NE (SW)	620	-	332605 350818
70	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1879	A8SW (S)	695	-	332855 350545
71	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1915	A14NE (E)	708	-	333800 351476
72	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A7NE (SW)	713	-	332698 350605
73	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A8SW (SW)	749	-	332762 350526
74	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1879	A7NE (SW)	777	-	332615 350586
75	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1900	A17NE (NW)	785	-	332649 351931
76	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A19SW (NE)	809	-	333745 351785
77	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A17SW (NW)	821	-	332396 351748
78	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A17SE (NW)	821	-	332427 351786
79	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1915	A14NE (E)	835	-	333924 351504
80	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1879	A7SE (SW)	841	-	332589 350526
81	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A19SE (NE)	866	-	333904 351643
82	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1879	A7SE (SW)	905	-	332551 350474

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
83	Registered Waste Treatment or Disposal Sites Licence Holder: Jacques Garage Licence Reference: NOW-521-L (L65) Site Location: Jacques Garage (Vehicle Dismantlers), Mold Road, WREXHAM, Clwyd, LL11 2AD Operator Location: As Site Address Authority: Environment Agency Wales, North Area Site Category: Scrapyard Max Input Rate: Very Small (Less than 10,000 tonnes per year) Waste Source: No known restriction on source of waste Restrictions: Licence Status: Operational as far as is known Dated: 1st September 1992 Preceded By: Not Given Licence: Superseded By: Not Given Licence: Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste: Batteries/Acid Therein Max.Stor Brake/Clutch Fluid Max.Stor Coolant (Water/Ethylene Glycol) M.Stor Fuel Oils/Diesel Max.Stor Gearboxes/Transmission Units Max.Stor Int'L Combust Engines Max.Stor Mineral Oils/Lubric'Oils Max.Stor Petrol Max.Stor Scrap Vehicles Tyres Max.Stor Prohibited Waste: Cadmium Compounds Elemental Sodium/Potassium Liable To Cause Environmental Hazards Mercury Compounds Percussive/Explosive/Similar Waste Pressurised/Liquified Gas Spec.Waste (Epa'90-S62/1996 Regs)N.O.S Sub'S Control Radioactive Subs Act'60 Waste In Containers Waste N.O.S. Water Soluble Waste (Except Coolant)	A8NW (SW)	550	4	332860 350700
84	Registered Waste Treatment or Disposal Sites Licence Holder: Clwyd Health Authority Licence Reference: L66 Site Location: Ysbyty Maelor Wrexham Hospital, Watery Road, Wrexham, Clwyd, LI13 7td Operator Location: Preswylfa, Hendy Road, MOLD, Flintshire, CH7 1PZ Authority: Environment Agency Wales, North Area Site Category: Storage - with transfer Max Input Rate: Undefined Waste Source: Waste produced/controlled by licence holder Restrictions: Licence Status: Site exempt from licence Dated: 1st October 1992 Preceded By: Not Given Licence: Superseded By: Not Given Licence: Positional Accuracy: Approximate location provided by supplier Boundary Quality: Not Supplied Authorised Waste: Clinical Wastes Confidential Documents/Computer Disks Radioactive Wastes	A7SE (SW)	801	4	332700 350500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Warwickshire Group	A13NE (SW)	0	1	333092 351239
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NE (SW)	0	1	333092 351239
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NW (N)	246	1	333000 351500
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SW (SW)	380	1	332773 350992
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: <15 mg/kg	A7NE (SW)	595	1	332631 350825
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SE (W)	608	1	332500 351000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: <15 mg/kg	A12SE (SW)	657	1	332500 350895

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic: 15 - 25 mg/kg Concentration: Cadmium: <1.8 mg/kg Concentration: Chromium: 60 - 90 mg/kg Concentration: Lead Concentration: 100 - 200 mg/kg Nickel: 15 - 30 mg/kg Concentration:	A7NE (SW)	685	1	332589 350736
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic: <15 mg/kg Concentration: Cadmium: <1.8 mg/kg Concentration: Chromium: 60 - 90 mg/kg Concentration: Lead Concentration: 100 - 200 mg/kg Nickel: 15 - 30 mg/kg Concentration:	A8SW (S)	689	1	333000 350514
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic: 15 - 25 mg/kg Concentration: Cadmium: <1.8 mg/kg Concentration: Chromium: 60 - 90 mg/kg Concentration: Lead Concentration: 200 - 300 mg/kg Nickel: 15 - 30 mg/kg Concentration:	A7NE (SW)	709	1	332500 350806
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic: <15 mg/kg Concentration: Cadmium: <1.8 mg/kg Concentration: Chromium: 60 - 90 mg/kg Concentration: Lead Concentration: 200 - 300 mg/kg Nickel: 15 - 30 mg/kg Concentration:	A12SW (W)	898	1	332192 351000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic: <15 mg/kg Concentration: Cadmium: <1.8 mg/kg Concentration: Chromium: 60 - 90 mg/kg Concentration: Lead Concentration: 100 - 200 mg/kg Nickel: 15 - 30 mg/kg Concentration:	A14SE (E)	916	1	334000 351000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic: <15 mg/kg Concentration: Cadmium: <1.8 mg/kg Concentration: Chromium: 60 - 90 mg/kg Concentration: Lead Concentration: 200 - 300 mg/kg Nickel: <15 mg/kg Concentration:	A7SE (SW)	957	1	332500 350448

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil and Sediment Arsenic: <15 mg/kg Concentration: Cadmium: <1.8 mg/kg Concentration: Chromium: 60 - 90 mg/kg Concentration: Lead Concentration: 200 - 300 mg/kg Nickel: 15 - 30 mg/kg Concentration:	A7SE (SW)	1000	1	332500 350394
85	BGS Recorded Mineral Sites Site Name: Wrexham Colliery Sand Pit Location: Wrexham, Denbighshire Source: British Geological Survey, National Geoscience Information Service Reference: 184974 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Quaternary Geology: Glaciofluvial Sheet Deposits, Devensian Commodity: Sand Positional Accuracy: Located by supplier to within 10m	A18NW (N)	931	1	333031 352197
	BGS Measured Urban Soil Chemistry No data available				
	BGS Urban Soil Chemistry Averages No data available				
	Coal Mining Affected Areas Description: In an area which may be affected by coal mining activity. It is recommended that a coal mining report is obtained from the Coal Authority. Contact details are included in the Useful Contacts section of this report.	A13NE (SW)	0	7	333092 351239
	Mining Instability Mining Evidence: Inconclusive Coal Mining Source: Ove Arup & Partners Boundary Quality: As Supplied	A13NE (SW)	0	-	333092 351239
	Non Coal Mining Areas of Great Britain Risk: Rare Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	1	333092 351239
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	1	333092 351239
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	1	333092 351239
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	1	333092 351239
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	1	333092 351239
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	1	333092 351239
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	1	333092 351239
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	26	1	333115 351176
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	89	1	333139 351355
	Radon Potential - Radon Affected Areas Affected Area: The property is in an intermediate probability radon area (1 to 3% of homes are estimated to be at or above the Action Level) Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	1	333092 351239

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	1	333092 351239

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
86	Contemporary Trade Directory Entries Name: Diamond Domestics Location: 53, Crispin Lane, Wrexham, Clwyd, LL11 2HS Classification: Cleaning Services - Domestic Status: Inactive Positional Accuracy: Automatically positioned to the address	A13NW (NW)	68	-	333000 351297
86	Contemporary Trade Directory Entries Name: Carter Engineering Services Location: 7, West Street, Wrexham, Clwyd, LL11 2HY Classification: Wrought Ironwork Status: Inactive Positional Accuracy: Automatically positioned to the address	A13NW (NW)	101	-	332971 351313
87	Contemporary Trade Directory Entries Name: Fireworld Location: 106, Rhosddu Road, Wrexham, Clwyd, LL11 2NG Classification: Fireplaces & Mantelpieces Status: Inactive Positional Accuracy: Automatically positioned to the address	A13NE (E)	71	-	333194 351259
88	Contemporary Trade Directory Entries Name: Benzo-Fury Me.Uk Location: 56, Spring Gardens, Wrexham, Clwyd, LL11 2NX Classification: Chemicals - Distributors & Wholesalers Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SE (S)	120	-	333112 351076
89	Contemporary Trade Directory Entries Name: Wrexham Transport Ltd Location: 5, Mawddwy Avenue, Wrexham, Clwyd, LL11 2ER Classification: Road Haulage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A13NE (N)	162	-	333161 351424
90	Contemporary Trade Directory Entries Name: Dsb Cleaning Services Location: Park Court Offices, 45, Rhosddu Road, Wrexham, Clwyd, LL11 2NS Classification: Commercial Cleaning Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SE (SE)	273	-	333292 351003
91	Contemporary Trade Directory Entries Name: Wolseley Uk Location: Cambrian Works, Station Approach, Wrexham, Clwyd, LL11 2NY Classification: Builders' Merchants Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SW (S)	276	-	333045 350925
91	Contemporary Trade Directory Entries Name: Jewson Location: Cambrian Works, Station Approach, Wrexham, LL11 2NY Classification: Builders' Merchants Status: Active Positional Accuracy: Automatically positioned to the address	A13SW (S)	281	-	333046 350920
92	Contemporary Trade Directory Entries Name: Nwchems Location: 1, Spring Gardens, Wrexham, Clwyd, LL11 2NX Classification: Chemical Manufacturers Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SE (S)	298	-	333149 350903
93	Contemporary Trade Directory Entries Name: Rhosddu Dry Cleaners Location: 24, Rhosddu Road, Wrexham, Clwyd, LL11 2LP Classification: Dry Cleaners Status: Active Positional Accuracy: Automatically positioned to the address	A13SE (SE)	360	-	333347 350936
94	Contemporary Trade Directory Entries Name: Dickens Group Of Companies Location: 2, Mold Road, Wrexham, Clwyd, LL11 2AL Classification: Car Dealers Status: Inactive Positional Accuracy: Automatically positioned to the address	A8NW (SW)	378	-	332889 350881
95	Contemporary Trade Directory Entries Name: Jaques Garage Location: Unit 1, Railway Road, Wrexham, Clwyd, LL11 2DL Classification: Car Breakdown & Recovery Services Status: Active Positional Accuracy: Automatically positioned to the address	A18SW (N)	388	-	332934 351628

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
96	Contemporary Trade Directory Entries Name: Stayclean Services Location: 37, Holyrood Crescent, Wrexham, Clwyd, LL11 2EN Classification: Commercial Cleaning Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A18SE (NE)	394	-	333353 351587
96	Contemporary Trade Directory Entries Name: T Ivor Davies Location: 35, Holyrood Crescent, Wrexham, Clwyd, LL11 2EN Classification: Printers Status: Active Positional Accuracy: Automatically positioned to the address	A18SE (NE)	397	-	333360 351585
97	Contemporary Trade Directory Entries Name: Remploy Ltd Location: Railway Road, Wrexham, Clwyd, LL11 2DN Classification: Furniture Manufacturers - Home & Office Status: Inactive Positional Accuracy: Automatically positioned to the address	A18SW (N)	399	-	332981 351653
97	Contemporary Trade Directory Entries Name: Tyre Trend Location: Railway Road, WREXHAM, Clwyd, LL11 2DL Classification: Tyre Dealers Status: Inactive Positional Accuracy: Automatically positioned to the address	A18SW (N)	400	-	332938 351642
98	Contemporary Trade Directory Entries Name: Countrywide Farmers Location: Station Approach, WREXHAM, Clwyd, LL11 2AA Classification: Agricultural Merchants Status: Active Positional Accuracy: Automatically positioned to the address	A8NW (S)	401	-	333019 350803
99	Contemporary Trade Directory Entries Name: Johnsons Cleaners Location: Sainsbury'S Plas Coch Road, Wrexham, Clwyd, LL11 2BW Classification: Dry Cleaners Status: Active Positional Accuracy: Manually positioned within the geographical locality	A12NE (NW)	430	-	332747 351558
100	Contemporary Trade Directory Entries Name: A T S Euromaster Location: Dave Bennet Car Repairs, Maesgwyn Garage, Mold Road, Wrexham, LL11 2AD Classification: Tyre Dealers Status: Active Positional Accuracy: Automatically positioned to the address	A8NW (SW)	454	-	332868 350804
101	Contemporary Trade Directory Entries Name: Chips Away Location: 1, Railway Road, Wrexham, Clwyd, LL11 2DH Classification: Car Body Repairs Status: Inactive Positional Accuracy: Automatically positioned to the address	A18SW (N)	468	-	332953 351717
101	Contemporary Trade Directory Entries Name: Commercial & Domestic Refrigeration & Air Conditioning Location: 1, Stansty Drive, Wrexham, Clwyd, LL11 2DG Classification: Air Conditioning Equipment & Systems Status: Inactive Positional Accuracy: Automatically positioned to the address	A18SW (N)	497	-	332922 351738
102	Contemporary Trade Directory Entries Name: Jaques Garage Location: Mold Road, Wrexham, Clwyd, LL11 2AD Classification: Car Breakers & Dismantlers Status: Inactive Positional Accuracy: Automatically positioned to the address	A8NW (S)	470	-	332908 350766
103	Contemporary Trade Directory Entries Name: Zerodrytime Wrexham Carpet Cleaning Ltd Location: 25, Grosvenor Road, Wrexham, LL11 1BT Classification: Carpet, Curtain & Upholstery Cleaners Status: Inactive Positional Accuracy: Automatically positioned to the address	A8NE (SE)	478	-	333310 350767

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
104	Contemporary Trade Directory Entries Name: Shell Service Station Location: Mold Road, Wrexham, LL11 2AF Classification: Petrol Filling Stations Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SE (SW)	488	-	332639 350992
104	Contemporary Trade Directory Entries Name: Shell Select Location: Mold Road, Wrexham, Clwyd, LL11 2AF Classification: Petrol Filling Stations - 24 Hour Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SE (SW)	502	-	332623 350992
104	Contemporary Trade Directory Entries Name: Shell Select Location: Mold Road, Wrexham, LL11 2AF Classification: Petrol Filling Stations - 24 Hour Status: Active Positional Accuracy: Automatically positioned to the address	A12SE (SW)	502	-	332623 350991
104	Contemporary Trade Directory Entries Name: Shell Service Station Location: Mold Road, Wrexham, Clwyd, LL11 2AF Classification: Petrol Filling Stations Status: Active Positional Accuracy: Automatically positioned to the address	A12SE (SW)	502	-	332623 350991
104	Contemporary Trade Directory Entries Name: Dave Bennett Location: Mold Road, Wrexham, Clwyd, LL11 2AF Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SE (SW)	544	-	332580 350983
105	Contemporary Trade Directory Entries Name: Coed Celyn Hospital Location: Coed Celyn, Grove Road, Wrexham, Clwyd, LL11 1DY Classification: Hospitals Status: Inactive Positional Accuracy: Automatically positioned to the address	A9NW (SE)	506	-	333505 350894
106	Contemporary Trade Directory Entries Name: Regent Service Station Location: Regent Street, Wrexham, Clwyd, LL11 1PF Classification: Petrol Filling Stations Status: Inactive Positional Accuracy: Automatically positioned to the address	A8NW (S)	517	-	332962 350697
107	Contemporary Trade Directory Entries Name: Hi Speed Tyres Location: Caxton Place, Wrexham, Clwyd, LL11 1PP Classification: Tyre Dealers Status: Active Positional Accuracy: Automatically positioned to the address	A8NE (S)	552	-	333145 350645
108	Contemporary Trade Directory Entries Name: G F S Blinds Location: 1 Maesgwyn Road, Wrexham, Clwyd, LL11 2AP Classification: Blinds, Awnings & Canopies Status: Active Positional Accuracy: Manually positioned within the geographical locality	A8NW (SW)	554	-	332798 350730
109	Contemporary Trade Directory Entries Name: Ecozorb Location: Nightingale House, Chester Road, Wrexham, LL11 2SJ Classification: Pet Foods & Animal Feeds Status: Inactive Positional Accuracy: Automatically positioned to the address	A14SW (SE)	554	-	333576 350915
110	Contemporary Trade Directory Entries Name: Currys Pc World Location: Retail Park, Plas Coch Road, Wrexham, LL11 2BA Classification: Electrical Goods Sales, Manufacturers & Wholesalers Status: Active Positional Accuracy: Automatically positioned to the address	A17SE (NW)	568	-	332653 351659
110	Contemporary Trade Directory Entries Name: Currys Location: Retail Park, Plas Coch Road, Wrexham, Clwyd, LL11 2BA Classification: Electrical Goods Sales, Manufacturers & Wholesalers Status: Inactive Positional Accuracy: Automatically positioned to the address	A17SE (NW)	570	-	332652 351660

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
111	Contemporary Trade Directory Entries Name: Elysium Healthcare Location: Wrexham, Clwyd, LL11 1bu Classification: Hospitals Status: Active Positional Accuracy: Manually positioned within the geographical locality	A8NE (S)	603	-	333266 350616
112	Contemporary Trade Directory Entries Name: Homebase Ltd Location: Retail Park, Plas Coch Road, Wrexham, Clwyd, LL11 2BA Classification: Hardware Status: Inactive Positional Accuracy: Automatically positioned to the address	A12NE (W)	607	-	332453 351317
113	Contemporary Trade Directory Entries Name: N C P Location: Regent House, Regent Street, Wrexham, Clwyd, LL11 1PR Classification: Car Painters & Sprayers Status: Inactive Positional Accuracy: Automatically positioned to the address	A8NE (S)	633	-	333132 350564
114	Contemporary Trade Directory Entries Name: Bus Information Line Location: Lord Street, Wrexham, Clwyd, LL11 1LF Classification: Bus & Coach Operators & Stations Status: Active Positional Accuracy: Automatically positioned to the address	A8SE (S)	685	-	333327 350550
114	Contemporary Trade Directory Entries Name: Busline Location: 1293, Wrexham, Clwyd, LL11 1WQ Classification: Bus & Coach Operators & Stations Status: Inactive Positional Accuracy: Manually positioned within the geographical locality	A8SE (S)	701	-	333334 350535
115	Contemporary Trade Directory Entries Name: Emergency Services Promotion Dept Location: Centenary Buildings, 17-21 King St, Wrexham, Clwyd, LL11 1HH Classification: Printers Status: Inactive Positional Accuracy: Manually positioned to the address or location	A8SE (S)	686	-	333262 350530
115	Contemporary Trade Directory Entries Name: Abbeycolor Location: 2, Lord Street, Wrexham, Clwyd, LL11 1LG Classification: Photographic Processors Status: Inactive Positional Accuracy: Automatically positioned to the address	A8SE (S)	716	-	333274 350502
115	Contemporary Trade Directory Entries Name: Prontaprint Location: 4, King Street, Wrexham, Clwyd, LL11 1LE Classification: Printers Status: Inactive Positional Accuracy: Automatically positioned to the address	A8SE (S)	739	-	333244 350472
116	Contemporary Trade Directory Entries Name: Micro Materials Location: Unit D, Yale Business Village, Elice Way, Wrexham, Clwyd, LL13 7YL Classification: Laboratory Equipment, Instruments & Supplies Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NE (SW)	722	-	332504 350781
116	Contemporary Trade Directory Entries Name: Micro Materials Ltd Location: Unit D, Yale Business Village, Elice Way, Wrexham, Clwyd, LL13 7YL Classification: Scientific Apparatus & Instruments - Manufacturers Status: Active Positional Accuracy: Automatically positioned to the address	A7NE (SW)	722	-	332504 350781
117	Contemporary Trade Directory Entries Name: Graphic Office Systems Location: Ground Floor Unit C St Andrews House, Yale Business Village, Elice Way, Wrexham, LL13 7YL Classification: Photocopiers Status: Active Positional Accuracy: Automatically positioned to the address	A7NE (SW)	734	-	332528 350732

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
118	Contemporary Trade Directory Entries Name: Hafan Wen Detox Unit Location: Gate 4 Watery Road, Wrexham Technology Park, Wrexham, Clwyd, LL13 7NQ Classification: Hospitals Status: Active Positional Accuracy: Manually positioned within the geographical locality	A8SW (S)	739	-	332803 350518
119	Contemporary Trade Directory Entries Name: S C S Location: Unit 4, Central Retail Park, Bradley Road, Wrexham, Clwyd, LL13 7SU Classification: Furniture Manufacturers - Home & Office Status: Inactive Positional Accuracy: Automatically positioned to the address	A8SW (S)	744	-	332950 350466
120	Contemporary Trade Directory Entries Name: Johnson Cleaners (Uk) Ltd Location: 11, Lord Street, Wrexham, Clwyd, LL11 1LH Classification: Dry Cleaners Status: Inactive Positional Accuracy: Automatically positioned to the address	A8SE (S)	754	-	333347 350484
120	Contemporary Trade Directory Entries Name: Printworks Wrexham Location: 10, Egerton Street, Wrexham, LL11 1LW Classification: Printers Status: Active Positional Accuracy: Automatically positioned to the address	A8SE (S)	802	-	333355 350436
121	Contemporary Trade Directory Entries Name: Screwfix Location: Unit 2a, Berse Road, Wrexham, LL11 2BL Classification: Builders' Merchants Status: Active Positional Accuracy: Automatically positioned to the address	A12SW (W)	763	-	332303 351124
122	Contemporary Trade Directory Entries Name: Appe Location: Unit G, Yale Business Village, Ellice Way, Wrexham, LL13 7YL Classification: Packaging & Wrapping Equipment & Supplies Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NE (SW)	763	-	332437 350799
123	Contemporary Trade Directory Entries Name: M H Fire Protection Location: 17, Ffordd Meirionydd, Wrexham, Clwyd, LL11 2LA Classification: Firefighting Equipment Status: Active Positional Accuracy: Automatically positioned to the address	A18NW (N)	773	-	332993 352035
124	Contemporary Trade Directory Entries Name: Brighthouse Location: 40-42 Regent Street, Wrexham, Clwyd, LL11 1SA Classification: Electrical Goods Sales, Manufacturers & Wholesalers Status: Inactive Positional Accuracy: Automatically positioned to the address	A8SE (S)	779	-	333274 350437
125	Contemporary Trade Directory Entries Name: The Sleep Depot Location: Bradley Rd, Wrexham, Clwyd, LL13 7SU Classification: Bed & Mattress Manufacturers Status: Inactive Positional Accuracy: Manually positioned to the road within the address or location	A8SW (S)	784	-	333038 350414
125	Contemporary Trade Directory Entries Name: Howatson & Partington Motor Services Location: The Garage, Island Green, Bradley Road, Wrexham, Clwyd, LL13 7TG Classification: Garage Services Status: Active Positional Accuracy: Automatically positioned to the address	A8SW (S)	801	-	333053 350396
126	Contemporary Trade Directory Entries Name: Aspect Temperature Control Ltd Location: 7, Oak Drive, Wrexham, Clwyd, LL12 7HH Classification: Air Conditioning & Refrigeration Contractors Status: Inactive Positional Accuracy: Automatically positioned to the address	A14NE (E)	785	-	333877 351487

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
127	Contemporary Trade Directory Entries Name: David Ashworth Location: 10, Rhosnesni Lane, Wrexham, Clwyd, LL12 7LY Classification: Car Body Repairs Status: Inactive Positional Accuracy: Automatically positioned to the address	A14NE (E)	785	-	333904 351354
128	Contemporary Trade Directory Entries Name: P R G Powerhouse Location: Unit 2C, Berse Road, Wrexham, Clwyd, LL11 2BL Classification: Electrical Goods Sales, Manufacturers & Wholesalers Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SW (W)	802	-	332272 351081
129	Contemporary Trade Directory Entries Name: Kwik Fit Location: Watery Road, Wrexham, LL13 7SY Classification: Tyre Dealers Status: Active Positional Accuracy: Automatically positioned to the address	A8SW (S)	824	-	332962 350383
130	Contemporary Trade Directory Entries Name: Ian Ellis Electrical Services Location: 10, Penymaes Avenue, Wrexham, Clwyd, LL12 7AP Classification: Domestic Appliances - Servicing, Repairs & Parts Status: Active Positional Accuracy: Automatically positioned to the address	A14SE (E)	829	-	333919 351032
131	Contemporary Trade Directory Entries Name: Competent Cleaners Wrexham Location: Regent Street, Wrexham, Clwyd, LL11 1SA Classification: Carpet, Curtain & Upholstery Cleaners Status: Active Positional Accuracy: Manually positioned within the geographical locality	A8SE (S)	833	-	333343 350399
131	Contemporary Trade Directory Entries Name: Competent Cleaners Wrexham Location: Regent Street, Wrexham, Clwyd, LL11 1SA Classification: Carpet, Curtain & Upholstery Cleaners Status: Inactive Positional Accuracy: Manually positioned within the geographical locality	A8SE (S)	833	-	333343 350399
131	Contemporary Trade Directory Entries Name: Music Magpie Location: 9-11 Regent Street, Wrexham, Clwyd, LL11 1SG Classification: Electrical Goods Sales, Manufacturers & Wholesalers Status: Active Positional Accuracy: Automatically positioned to the address	A8SE (S)	877	-	333368 350361
132	Contemporary Trade Directory Entries Name: Higgi Ltd Location: Suite 2b, Edison Court, Ellice Way, Wrexham Technology Park, Wrexham, Clwyd, LL13 7YT Classification: Chemicals - Distributors & Wholesalers Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NE (SW)	844	-	332470 350630
133	Contemporary Trade Directory Entries Name: Wrexham Busline Location: Chester St, Wrexham, Clwyd, LL13 8BG Classification: Bus & Coach Operators & Stations Status: Inactive Positional Accuracy: Manually positioned within the geographical locality	A9SW (SE)	875	-	333594 350474
133	Contemporary Trade Directory Entries Name: Busline Location: Crown Buildings, Chester Street, Wrexham, Clwyd, LL13 8BJ Classification: Bus & Coach Operators & Stations Status: Inactive Positional Accuracy: Manually positioned to the address or location	A9SW (SE)	882	-	333636 350496
134	Contemporary Trade Directory Entries Name: Graphtec Location: Nyquist House, Ellice Way, Wrexham Technology Park, Wrexham, LL13 7YT Classification: Industrial Instrument & Apparatus Manufacturers Status: Active Positional Accuracy: Automatically positioned to the address	A7NW (SW)	876	-	332409 350654

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
135	Contemporary Trade Directory Entries Name: Wilkinson Hardware Stores Location: Island Green Shopping Centre, Wrexham, Clwyd, LL13 7LW Classification: Hardware Status: Inactive Positional Accuracy: Automatically positioned to the address	A8SW (S)	885	-	333068 350311
136	Contemporary Trade Directory Entries Name: A S A P Sign Services Location: 9, Bradley Road, Wrexham, Clwyd, LL13 7TG Classification: Screen Process Printers Status: Inactive Positional Accuracy: Automatically positioned to the address	A8SW (S)	895	-	332990 350307
137	Contemporary Trade Directory Entries Name: Acton Auto Sales Location: 106, Chester Road, WREXHAM, Clwyd, LL11 2SN Classification: Car Dealers - Used Status: Active Positional Accuracy: Automatically positioned to the address	A19NW (NE)	909	-	333764 351912
137	Contemporary Trade Directory Entries Name: M & N Davies Location: 1 Box Lane, Wrexham, Clwyd, LL12 8BY Classification: Mot Testing Centres Status: Inactive Positional Accuracy: Manually positioned to the address or location	A19NE (NE)	912	-	333766 351914
137	Contemporary Trade Directory Entries Name: Acton M O T Centre Location: Acton M O T Testing Station, 1, Box Lane, Wrexham, Clwyd, LL12 8BY Classification: Mot Testing Centres Status: Active Positional Accuracy: Automatically positioned to the address	A19NE (NE)	937	-	333775 351940
138	Contemporary Trade Directory Entries Name: Ad Cleaning Services Location: 42, Acton Park Way, Wrexham, Clwyd, LL12 7LE Classification: Cleaning Services - Domestic Status: Inactive Positional Accuracy: Automatically positioned to the address	A19SE (NE)	913	-	333929 351697
139	Contemporary Trade Directory Entries Name: Tracie Griffiths Location: 29, Oak Drive, Wrexham, Clwyd, LL12 7HH Classification: Cleaning Services - Domestic Status: Inactive Positional Accuracy: Automatically positioned to the address	A14NE (E)	924	-	334018 351502
139	Contemporary Trade Directory Entries Name: Tracie Griffiths Location: 29, Oak Drive, Wrexham, Clwyd, LL12 7HH Classification: Cleaning Services - Domestic Status: Inactive Positional Accuracy: Automatically positioned to the address	A14NE (E)	924	-	334018 351502
140	Contemporary Trade Directory Entries Name: Artificial Limb & Appliance Centre Location: Wrexham Artificial Limb and Appliance Centre, Croesnewydd Road, Wrexham, LL13 7NT Classification: Disability Equipment - Manufacturers & Suppliers Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NW (SW)	939	-	332404 350563
141	Contemporary Trade Directory Entries Name: Mill Lane Service Wash Location: 3 Henblas Street, Wrexham, Clwyd, LL13 8AD Classification: Dry Cleaners Status: Inactive Positional Accuracy: Manually positioned to the address or location	A9SW (SE)	950	-	333539 350354
142	Contemporary Trade Directory Entries Name: Clean Carpets Location: 2, Ffordd Caerfyrddin, Wrexham, LL11 2LD Classification: Carpet, Curtain & Upholstery Cleaners Status: Inactive Positional Accuracy: Automatically positioned to the address	A18NW (N)	954	-	332998 352218

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
143	Contemporary Trade Directory Entries Name: Phoenix Location: Dolydd Road, Wrexham, Clwyd, LL13 7TF Classification: Distribution Services Status: Active Positional Accuracy: Automatically positioned to the address	A7SE (S)	958	-	332740 350307
144	Contemporary Trade Directory Entries Name: Fads Location: 5, Priory Street, Wrexham, Clwyd, LL11 1SU Classification: Wallpapers & Wall Coverings Status: Inactive Positional Accuracy: Automatically positioned to the address	A8SE (S)	958	-	333393 350284
145	Contemporary Trade Directory Entries Name: Max Spielmann Location: 19, Hope Street, Wrexham, Clwyd, LL11 1BG Classification: Photographic Processors Status: Inactive Positional Accuracy: Automatically positioned to the address	A9SW (S)	969	-	333462 350297
146	Contemporary Trade Directory Entries Name: Asda Petrol Location: Holt Road, Wrexham, Clwyd, LL13 8HL Classification: Petrol Filling Stations Status: Active Positional Accuracy: Automatically positioned to the address	A9NE (SE)	976	-	333971 350756
147	Contemporary Trade Directory Entries Name: Iddy'S Gas Services Location: 1, Overton Way, Wrexham, Clwyd, LL12 7LB Classification: Boilers - Servicing, Replacements & Repairs Status: Inactive Positional Accuracy: Automatically positioned to the address	A19SE (E)	988	-	334048 351616
148	Contemporary Trade Directory Entries Name: K & S Logistics Location: 31, Chestnut Avenue, Wrexham, Clwyd, LL12 7HT Classification: Road Haulage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A19SE (NE)	993	-	334022 351691
149	Fuel Station Entries Name: Rhosddu Road Service Station Location: Rhosddu Road, Wrexham, Wrexham, LL11 2NW Brand: Obsolete Premises Type: Not Applicable Status: Obsolete Positional Accuracy: Automatically positioned to the address	A13SE (SE)	133	-	333175 351087
150	Fuel Station Entries Name: Shell Wrexham Location: Mold Road, Wrexham, Wrexham, LL11 2AF Brand: SHELL Premises Type: Petrol Station Status: Open Positional Accuracy: Manually positioned to the address or location	A12SE (SW)	502	-	332623 350992
151	Fuel Station Entries Name: Regent Service Station Location: Regent Street, Wrexham, Wrexham, LL11 1PF Brand: Obsolete Premises Type: Not Applicable Status: Obsolete Positional Accuracy: Automatically positioned to the address	A8NW (S)	517	-	332962 350697
152	Fuel Station Entries Name: Sainsburys Wrexham Location: Plas Coch Road, Wrexham, Wrexham, LL11 2BA Brand: Sainsburys Premises Type: Hypermarket Status: Open Positional Accuracy: Manually positioned to the address or location	A12NE (W)	598	-	332480 351416
153	Fuel Station Entries Name: Acton Filling Station Location: 106, Chester Road Box Lane, Wrexham, Wrexham, LL11 2SN Brand: Obsolete Premises Type: Not Applicable Status: Obsolete Positional Accuracy: Manually positioned to the address or location	A19NW (NE)	900	-	333752 351911

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
154	Fuel Station Entries Name: Asda Wrexham Location: Holt Road , , Wrexham, Wrexham, LL13 8HL Brand: Asda Premises Type: Hypermarket Status: Open Positional Accuracy: Manually positioned to the address or location	A9NE (SE)	942	-	333863 350645
155	Points of Interest - Commercial Services Name: Jaques Garage Location: Unit 1, Railway Road, Wrexham, LL11 2DL Category: Recycling Services Class Code: Scrap Metal Merchants Positional Accuracy: Positioned to address or location	A18SW (N)	387	8	332933 351627
156	Points of Interest - Commercial Services Name: Kwik-Fit (GB) Limited Location: Mold Road, Wrexham, LL11 2AD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A8NW (SW)	459	8	332851 350808
156	Points of Interest - Commercial Services Name: Kwik-Fit (GB) Limited Location: Mold Road, Wrexham, LL11 2AD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A8NW (SW)	459	8	332851 350808
156	Points of Interest - Commercial Services Name: Dave Bennett Accident Repair Specialists Location: Mold Road, Wrexham, LL11 2AD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A8NW (SW)	475	8	332848 350791
156	Points of Interest - Commercial Services Name: B D Performance Location: Unit B, Maesgwyn Road, Wrexham, LL11 2AP Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A8NW (SW)	490	8	332834 350783
157	Points of Interest - Commercial Services Name: Dave Bennett Location: Mold Road, Wrexham, LL11 2AF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A12SE (SW)	544	8	332580 350983
158	Points of Interest - Commercial Services Name: M K Lpg Service Location: 11 Cae Glo, Colliery Road, Wrexham, LL11 2BF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A7NE (SW)	568	8	332699 350791
159	Points of Interest - Commercial Services Name: Scrap Yard Location: Not Supplied Category: Recycling Services Class Code: Scrap Metal Merchants Positional Accuracy: Positioned to an adjacent address or location	A8NW (SW)	569	8	332856 350680
160	Points of Interest - Commercial Services Name: Sainsburys Wrexham Location: Plas Coch Road, Wrexham, LL11 2BA Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A12NE (W)	580	8	332498 351413
160	Points of Interest - Commercial Services Name: Car Wash Location: Plas Coch Road, Wrexham, Clwyd, LL11 2BA Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A12NE (W)	598	8	332480 351416
161	Points of Interest - Commercial Services Name: Clwyd Transport Services Ltd Location: 57 Regent Street, Wrexham, LL11 1PF Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A8NW (S)	614	8	333030 350586

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
161	Points of Interest - Commercial Services Name: Clwyd Transport Services Ltd Location: 57 Regent Street, Wrexham, LL11 1PF Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A8NW (S)	614	8	333030 350586
162	Points of Interest - Commercial Services Name: Autoteknix Location: 36 Colliery Road, Wrexham, LL11 2BQ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SW (NW)	658	8	332779 351857
163	Points of Interest - Commercial Services Name: Marcher Distributions Location: 10 Cae Glo, Colliery Road, Wrexham, LL11 2BF Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A17NE (NW)	771	8	332719 351953
164	Points of Interest - Commercial Services Name: Howatson & Partington Motor Services Location: The Garage Island Green, Bradley Road, Wrexham, LL13 7TG Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A8SW (S)	801	8	333052 350396
164	Points of Interest - Commercial Services Name: Kwik-Fit (GB) Limited Location: Watery Road, Wrexham, LL13 7SY Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A8SW (S)	825	8	332980 350379
165	Points of Interest - Commercial Services Name: Acton M O T Centre Location: 1 Box Lane, Wrexham, LL12 8BY Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A19NW (NE)	911	8	333765 351914
165	Points of Interest - Commercial Services Name: M & N Davies Location: Acton M O T Testing Station 1, Box Lane, Wrexham, LL12 8BY Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A19NE (NE)	937	8	333775 351940
166	Points of Interest - Commercial Services Name: D'n'L Car Washing Location: 5 Llys David Lord, Wrexham, LL13 7NX Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A8SW (S)	912	8	332858 350316
167	Points of Interest - Commercial Services Name: Phoenix Healthcare Distribution Ltd Location: Dolydd Road, Wrexham, LL13 7TF Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A7SE (S)	958	8	332740 350307
168	Points of Interest - Education and Health Name: Clwyd Drug & Alcohol Service Location: Swn y Coed, Grove Road, Wrexham, LL11 1DY Category: Health Practitioners and Establishments Class Code: Hospitals Positional Accuracy: Positioned to address or location	A14SW (SE)	497	8	333509 350915
168	Points of Interest - Education and Health Name: Coed Celyn Hospital Location: Coed Celyn, Grove Road, Wrexham, LL11 1DY Category: Health Practitioners and Establishments Class Code: Hospitals Positional Accuracy: Positioned to address or location	A9NW (SE)	506	8	333505 350894
168	Points of Interest - Education and Health Name: Coed Celyn Hospital Location: Coed Celyn, Grove Road, Wrexham, LL11 1DY Category: Health Practitioners and Establishments Class Code: Hospitals Positional Accuracy: Positioned to address or location	A9NW (SE)	506	8	333505 350894

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
169	Points of Interest - Manufacturing and Production Name: Tank Location: LL11 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A13SE (SE)	129	8	333186 351101
169	Points of Interest - Manufacturing and Production Name: Tank Location: LL11 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A13SE (SE)	132	8	333188 351099
169	Points of Interest - Manufacturing and Production Name: Tanks Location: LL11 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A13SE (SE)	138	8	333192 351094
170	Points of Interest - Manufacturing and Production Name: Factory Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A13NW (N)	269	8	333009 351525
170	Points of Interest - Manufacturing and Production Name: Factory Location: LL11 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A13NW (N)	270	8	333009 351526
170	Points of Interest - Manufacturing and Production Name: Factory Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A18SW (N)	352	8	332980 351604
170	Points of Interest - Manufacturing and Production Name: Factory Location: LL11 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to address or location	A18SW (N)	352	8	332986 351605
171	Points of Interest - Manufacturing and Production Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A8NW (SW)	486	8	332806 350807
172	Points of Interest - Manufacturing and Production Name: Tanks Location: LL13 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A8NW (S)	645	8	332950 350568
173	Points of Interest - Manufacturing and Production Name: Tank Location: LL11 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A8SW (S)	685	8	333044 350513
174	Points of Interest - Manufacturing and Production Name: Tanks Location: LL13 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A8SW (S)	751	8	333027 350448
174	Points of Interest - Manufacturing and Production Name: Tank Location: LL13 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A8SW (S)	776	8	332985 350428

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
174	Points of Interest - Manufacturing and Production Name: Tanks Location: LL13 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A8SW (S)	783	8	333012 350418
175	Points of Interest - Manufacturing and Production Name: Tanks Location: LL13 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A8SW (S)	780	8	332882 350446
175	Points of Interest - Manufacturing and Production Name: Works (Disused) Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A8SW (S)	829	8	332893 350393
175	Points of Interest - Manufacturing and Production Name: Tanks Location: LL13 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A8SW (S)	837	8	332852 350396
176	Points of Interest - Manufacturing and Production Name: Tanks Location: LL13 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A8SW (S)	788	8	332788 350471
177	Points of Interest - Public Infrastructure Name: Wrexham General Rail Station Location: Station Approach, LL11 Category: Public Transport, Stations and Infrastructure Class Code: Railway Stations, Junctions and Halts Positional Accuracy: Positioned to address or location	A8NW (S)	423	8	332963 350795
177	Points of Interest - Public Infrastructure Name: Wrexham General Station Location: Station Approach, LL11 Category: Public Transport, Stations and Infrastructure Class Code: Railway Stations, Junctions and Halts Positional Accuracy: Positioned to address or location	A8NW (S)	423	8	332963 350795
178	Points of Interest - Public Infrastructure Name: Shell Wrexham Location: Mold Road, Wrexham, LL11 2AF Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A12SE (SW)	502	8	332623 350992
178	Points of Interest - Public Infrastructure Name: Shell Service Station Location: Mold Road, Wrexham, LL11 2AF Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A12SE (SW)	502	8	332623 350992
178	Points of Interest - Public Infrastructure Name: Shell Service Station Location: Mold Road, Wrexham, LL11 2AF Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A12SE (SW)	502	8	332623 350991
178	Points of Interest - Public Infrastructure Name: Shell Wrexham Location: Mold Road, Wrexham, LL11 2AF Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A12SE (SW)	502	8	332623 350992
178	Points of Interest - Public Infrastructure Name: Shell Wrexham Location: Mold Road, Wrexham, Clwyd, LL11 2AF Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A12SE (SW)	502	8	332623 350992

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
179	Points of Interest - Public Infrastructure Name: Sainsbury's Wrexham Location: Plas Coch Road, Wrexham, LL11 2BA Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A12NE (W)	598	8	332480 351416
180	Points of Interest - Public Infrastructure Name: Wrexham C B C Location: Bus Station, Lord Street, Wrexham, LL11 1LF Category: Public Transport, Stations and Infrastructure Class Code: Bus and Coach Stations, Depots and Companies Positional Accuracy: Positioned to address or location	A8SE (S)	685	8	333327 350550
180	Points of Interest - Public Infrastructure Name: Bus Station Location: LL11 Category: Public Transport, Stations and Infrastructure Class Code: Bus and Coach Stations, Depots and Companies Positional Accuracy: Positioned to address or location	A8SE (S)	685	8	333344 350556
180	Points of Interest - Public Infrastructure Name: Bus Information Line Location: Bus Station, Lord Street, Wrexham, LL11 1LF Category: Public Transport, Stations and Infrastructure Class Code: Bus and Coach Stations, Depots and Companies Positional Accuracy: Positioned to address or location	A8SE (S)	686	8	333327 350549
181	Points of Interest - Public Infrastructure Name: North Wales Fire Service Location: Wrexham Fire Station, Bradley Road, Wrexham, LL13 7SU Category: Central and Local Government Class Code: Fire Brigade Stations Positional Accuracy: Positioned to address or location	A8SE (S)	738	8	333107 350458
181	Points of Interest - Public Infrastructure Name: North Wales Fire & Rescue Service Location: Fire Station, Bradley Road, Wrexham, LL13 7SU Category: Central and Local Government Class Code: Fire Brigade Stations Positional Accuracy: Positioned to address or location	A8SE (S)	738	8	333107 350458
181	Points of Interest - Public Infrastructure Name: Wrexham Fire Station Location: Fire Station, Bradley Road, Wrexham, LL13 7SU Category: Central and Local Government Class Code: Fire Brigade Stations Positional Accuracy: Positioned to address or location	A8SE (S)	739	8	333106 350457
182	Points of Interest - Public Infrastructure Name: Croesnewydd North Junction Location: LL13 Category: Public Transport, Stations and Infrastructure Class Code: Railway Stations, Junctions and Halts Positional Accuracy: Positioned to an adjacent address or location	A8SW (S)	858	8	332847 350375
183	Points of Interest - Public Infrastructure Name: Wrexham Central Rail Station Location: LL13 Category: Public Transport, Stations and Infrastructure Class Code: Railway Stations, Junctions and Halts Positional Accuracy: Positioned to address or location	A8SE (S)	859	8	333105 350337
183	Points of Interest - Public Infrastructure Name: Wrexham Central Station Location: Nr Watery Road, LL13 Category: Public Transport, Stations and Infrastructure Class Code: Railway Stations, Junctions and Halts Positional Accuracy: Positioned to address or location	A8SE (S)	859	8	333105 350337
184	Points of Interest - Public Infrastructure Name: Wrexham Police Station - Public Counter Services Location: Eastern Divisional Headquarters, Bodhyfryd, Wrexham, LL12 Category: Central and Local Government Class Code: Police Stations Positional Accuracy: Positioned to address or location	A9NE (SE)	867	8	333777 350656
184	Points of Interest - Public Infrastructure Name: North Wales Police Location: Eastern Divisional Headquarters, Bodhyfryd, Wrexham, LL12 7BW Category: Central and Local Government Class Code: Police Stations Positional Accuracy: Positioned to address or location	A9NE (SE)	867	8	333778 350656

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
184	Points of Interest - Public Infrastructure Name: Wrexham Location: Holt Road, Wrexham, LL13 8HL Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A9NE (SE)	938	8	333860 350647
184	Points of Interest - Public Infrastructure Name: Asda Petrol Location: Holt Road, Wrexham, LL13 8HL Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A9NE (SE)	942	8	333864 350646
184	Points of Interest - Public Infrastructure Name: Asda Wrexham Location: Holt Road, Wrexham, LL13 8HL Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A9NE (SE)	942	8	333863 350645
185	Points of Interest - Public Infrastructure Name: Busline Location: Crown Buildings, Chester Street, Wrexham, Clwyd, LL13 8BJ Category: Public Transport, Stations and Infrastructure Class Code: Bus and Coach Stations, Depots and Companies Positional Accuracy: Positioned to address or location	A9SW (SE)	882	8	333636 350496
186	Points of Interest - Recreational and Environmental Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A13NW (NW)	198	8	332963 351434
186	Points of Interest - Recreational and Environmental Name: Playground Location: Crispin Lane, LL11 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location	A13NW (NW)	201	8	332960 351436
187	Points of Interest - Recreational and Environmental Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A7NE (SW)	660	8	332621 350738
187	Points of Interest - Recreational and Environmental Name: Playground Location: Lilac Way, LL11 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A7NE (SW)	676	8	332604 350733
188	Points of Interest - Recreational and Environmental Name: Playground Location: Nr (Parc By Chan), LL11 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A18NE (N)	962	8	333367 352197
188	Points of Interest - Recreational and Environmental Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A18NE (N)	965	8	333374 352198

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
189	Sites of Special Scientific Interest Name: Gatewen Marsh Multiple Areas: N Total Area (m2): 45501.95 Source: Natural Resources Wales Reference: 106531wdi Designation Details: Biological Designation Date: 28th January 1986 Date Type: Notified	A12SW (W)	920	2	332148 351098

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices Flintshire Council - Environmental Health Department Wrexham County Borough Council - Public Protection Department	April 2014 April 2016	Annual Rolling Update Annually
Discharge Consents Environment Agency - Welsh Region Natural Resources Wales	August 2014 July 2019	Quarterly Quarterly
Enforcement and Prohibition Notices Environment Agency - Welsh Region	March 2013	Annual Rolling Update
Integrated Pollution Controls Environment Agency - Welsh Region	October 2008	Variable
Integrated Pollution Prevention And Control Natural Resources Wales Environment Agency - Welsh Region	April 2019 July 2019	Quarterly Quarterly
Local Authority Integrated Pollution Prevention And Control Wrexham County Borough Council - Environmental Health Department Flintshire Council - Environmental Health Department	April 2014 April 2016	Variable Variable
Local Authority Pollution Prevention and Controls Wrexham County Borough Council - Environmental Health Department Flintshire Council - Environmental Health Department	April 2014 April 2016	Annual Rolling Update Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements Wrexham County Borough Council - Environmental Health Department Flintshire Council - Environmental Health Department	April 2014 April 2016	Variable Variable
Nearest Surface Water Feature Ordnance Survey	January 2019	
Pollution Incidents to Controlled Waters Environment Agency - Welsh Region	December 1998	Not Applicable
Prosecutions Relating to Authorised Processes Environment Agency - Welsh Region Natural Resources Wales	March 2013 March 2013	Annual Rolling Update Annual Rolling Update
Prosecutions Relating to Controlled Waters Environment Agency - Welsh Region Natural Resources Wales	March 2013 March 2013	Annual Rolling Update Annual Rolling Update
Registered Radioactive Substances Natural Resources Wales Environment Agency - Welsh Region	January 2015 June 2016	Annually
River Quality Environment Agency - Head Office	November 2001	Not Applicable
River Quality Chemistry Sampling Points Environment Agency - Head Office	July 2012	Annually
Substantiated Pollution Incident Register Environment Agency Wales - North Area Natural Resources Wales	July 2019 July 2019	Quarterly Quarterly
Water Abstractions Environment Agency - Welsh Region Natural Resources Wales	July 2019 July 2019	Quarterly Quarterly
Water Industry Act Referrals Natural Resources Wales Environment Agency - Welsh Region	July 2019 October 2017	Quarterly Quarterly
Groundwater Vulnerability Map Natural Resources Wales	June 2018	Annually
Bedrock Aquifer Designations Natural Resources Wales	January 2018	Annually

Agency & Hydrological	Version	Update Cycle
Superficial Aquifer Designations Natural Resources Wales	January 2018	Annually
Source Protection Zones Natural Resources Wales	November 2016	Annual Rolling Update
Extreme Flooding from Rivers or Sea without Defences Natural Resources Wales	August 2019	Quarterly
Flooding from Rivers or Sea without Defences Natural Resources Wales	August 2019	Quarterly
Areas Benefiting from Flood Defences Natural Resources Wales	August 2019	Quarterly
Flood Water Storage Areas Natural Resources Wales	August 2019	Quarterly
Flood Defences Natural Resources Wales	August 2019	Quarterly
OS Water Network Lines Ordnance Survey	April 2019	Quarterly
Surface Water 1 in 30 year Flood Extent Natural Resources Wales	October 2013	Annually
Surface Water 1 in 100 year Flood Extent Natural Resources Wales	October 2013	Annually
Surface Water 1 in 1000 year Flood Extent Natural Resources Wales	October 2013	Annually
Surface Water Suitability Natural Resources Wales	October 2013	Annually
BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service	May 2013	Annually

Waste	Version	Update Cycle
BGS Recorded Landfill Sites British Geological Survey - National Geoscience Information Service	June 1996	Not Applicable
Historical Landfill Sites Natural Resources Wales	July 2017	Quarterly
Integrated Pollution Control Registered Waste Sites Environment Agency - Welsh Region	October 2008	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries) Environment Agency Wales - North Area Natural Resources Wales	July 2018 July 2018	Quarterly Quarterly
Licensed Waste Management Facilities (Locations) Environment Agency Wales - North Area Natural Resources Wales	July 2019 July 2019	Quarterly Quarterly
Local Authority Landfill Coverage Flintshire Council - Environmental Health Department Wrexham County Borough Council	May 2000 May 2000	Not Applicable Not Applicable
Local Authority Recorded Landfill Sites Wrexham County Borough Council Flintshire Council - Environmental Health Department	June 2003 May 2000	Not Applicable Not Applicable
Potentially Infilled Land (Non-Water) Landmark Information Group Limited	December 1999	Not Applicable
Potentially Infilled Land (Water) Landmark Information Group Limited	December 1999	Not Applicable
Registered Landfill Sites Environment Agency Wales - North Area	March 2003	Not Applicable
Registered Waste Transfer Sites Environment Agency Wales - North Area	March 2003	Not Applicable
Registered Waste Treatment or Disposal Sites Environment Agency Wales - North Area	March 2003	Not Applicable
Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH) Health and Safety Executive	April 2018	Bi-Annually
Explosive Sites Health and Safety Executive	March 2017	Annually
Notification of Installations Handling Hazardous Substances (NIHHS) Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements Wrexham County Borough Council - Planning Department Flintshire Council	February 2016 January 2016	Variable Variable
Planning Hazardous Substance Consents Wrexham County Borough Council - Planning Department Flintshire Council	February 2016 January 2016	Variable Variable

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	January 2009	Not Applicable
BGS Estimated Soil Chemistry British Geological Survey - National Geoscience Information Service	October 2015	Annually
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	April 2019	Bi-Annually
CBSCB Compensation District Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011	Not Applicable
Coal Mining Affected Areas The Coal Authority - Property Searches	March 2014	Annual Rolling Update
Mining Instability Ove Arup & Partners	October 2000	Not Applicable
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	July 2011	Annually
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	July 2011	Annually
Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries Thomson Directories	July 2019	Quarterly
Fuel Station Entries Catalist Ltd - Experian	September 2019	Quarterly
Gas Pipelines National Grid	July 2014	
Points of Interest - Commercial Services PointX	September 2019	Quarterly
Points of Interest - Education and Health PointX	September 2019	Quarterly
Points of Interest - Manufacturing and Production PointX	September 2019	Quarterly
Points of Interest - Public Infrastructure PointX	September 2019	Quarterly
Points of Interest - Recreational and Environmental PointX	September 2019	Quarterly
Underground Electrical Cables National Grid	December 2015	

Sensitive Land Use	Version	Update Cycle
Ancient Woodland Natural Resources Wales	August 2018	Bi-Annually
Areas of Outstanding Natural Beauty Natural Resources Wales	June 2019	Bi-Annually
Environmentally Sensitive Areas The National Assembly for Wales - GI Services (Department of Planning & Countryside)	January 2017	
Forest Parks Forestry Commission	April 1997	Not Applicable
Local Nature Reserves Flintshire Council Wrexham County Borough Council	August 2018 August 2018	Bi-Annually Bi-Annually
Marine Nature Reserves Natural Resources Wales	August 2018	Bi-Annually
National Nature Reserves Natural Resources Wales	June 2019	Bi-Annually
National Parks Natural Resources Wales	August 2018	Annually
Nitrate Vulnerable Zones Natural Resources Wales The National Assembly for Wales - GI Services (Department of Planning & Countryside)	July 2019 October 2005	Bi-Annually
Ramsar Sites Natural Resources Wales	July 2019	Bi-Annually
Sites of Special Scientific Interest Natural Resources Wales	March 2019	Bi-Annually
Special Areas of Conservation Natural Resources Wales	August 2018	Bi-Annually
Special Protection Areas Natural Resources Wales	August 2018	Bi-Annually

A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Scottish Environment Protection Agency	
The Coal Authority	
British Geological Survey	 British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL
Centre for Ecology and Hydrology	 Centre for Ecology & Hydrology NATURAL ENVIRONMENT RESEARCH COUNCIL
Natural Resources Wales	
Scottish Natural Heritage	
Natural England	
Public Health England	
Ove Arup	
Peter Brett Associates	

Contact	Name and Address	Contact Details
1	British Geological Survey - Enquiry Service British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
2	Natural Resources Wales Ty Cambria, 29 Newport Road, Cardiff, CF24 0TP	Telephone: 0300 065 3000 Email: enquiries@naturalresourceswales.gov.uk
3	Wrexham County Borough Council - Environmental Health Department Crown Buildings, P O Box 1297, Wrexham, Clwyd, LL13 8ZE	Telephone: 01978 297038 Fax: 01978 292502 Website: www.wrexham.gov.uk
4	Environment Agency - National Customer Contact Centre (NCCC) PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk
5	Ordnance Survey Adanac Drive, Southampton, Hampshire, SO16 0AS	Telephone: 03456 05 05 05 Email: customerservices@ordnancesurvey.co.uk Website: www.ordnancesurvey.gov.uk
6	Wrexham County Borough Council Lampet Street, Guildhall, Wrexham, Clwyd, LL11 1WL	Telephone: 01978 292000 Fax: 01978 292502 Website: www.wrexham.gov.uk
7	The Coal Authority - Property Searches 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG	Telephone: 0345 762 6848 Fax: 01623 637 338 Email: groundstability@coal.gov.uk Website: www2.groundstability.com
8	PointX 7 Abbey Court, Eagle Way, Sowton, Exeter, Devon, EX2 7HY	Website: www.pointx.co.uk
-	Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org
-	Landmark Information Group Limited Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

Please note that the Environment Agency / Natural Resources Wales / SEPA have a charging policy in place for enquiries.

Groundwater Vulnerability



Site Sensitivity Context Map - Slice A

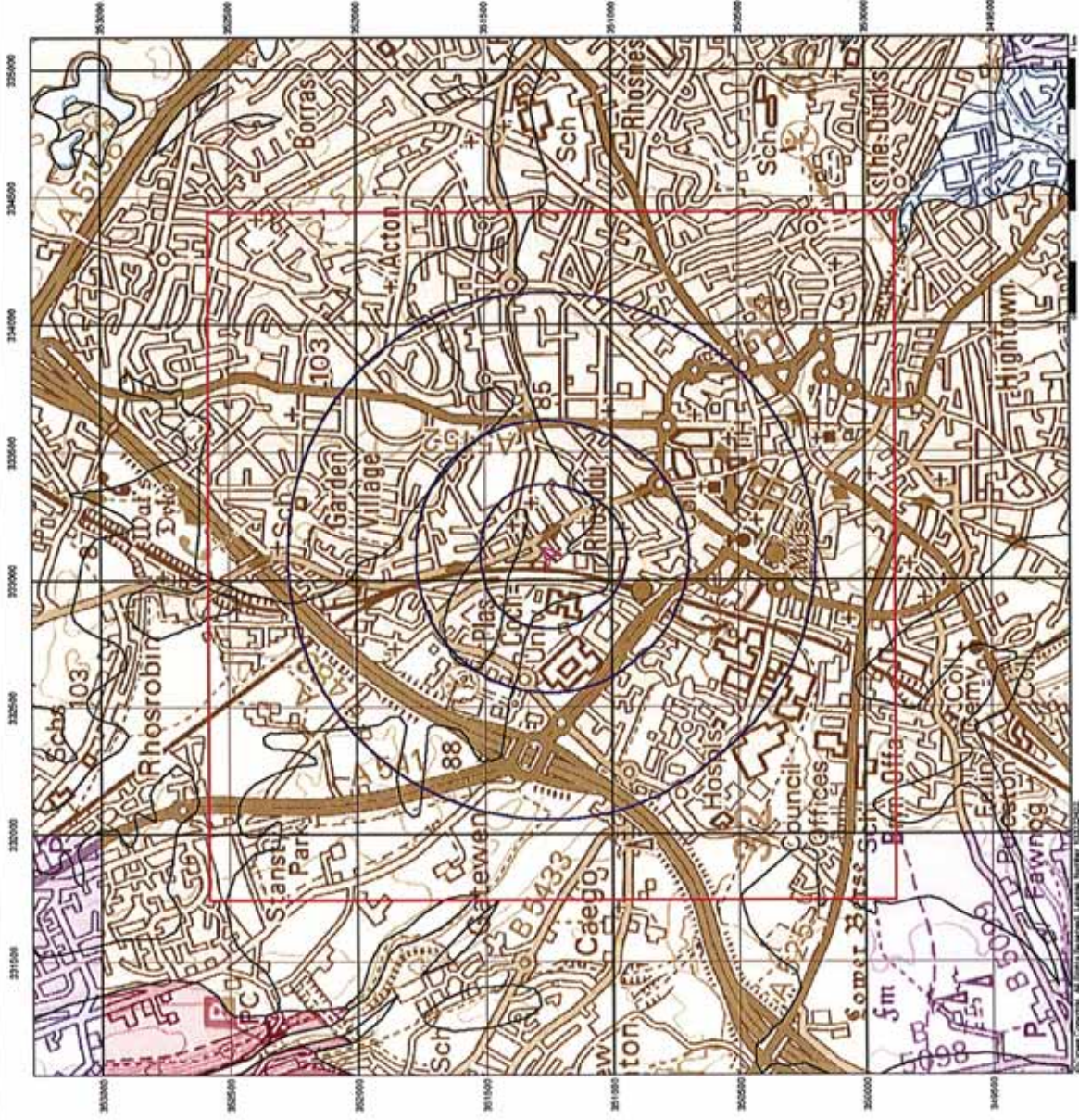


Order Details

Order Number: 219413571_1
 Customer Ref: 2289mgs
 National Grid Reference: 333000, 351240
 Site Area (Ha): 0.15
 Search Buffer (m): 1000

Site Details

Site at 333000, 351300



Bedrock Aquifer Designation

General Specified Site State Identified Subjects Map ID Bearing Reference Point

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landfill)

Site Sensitivity Context Map - Slice A



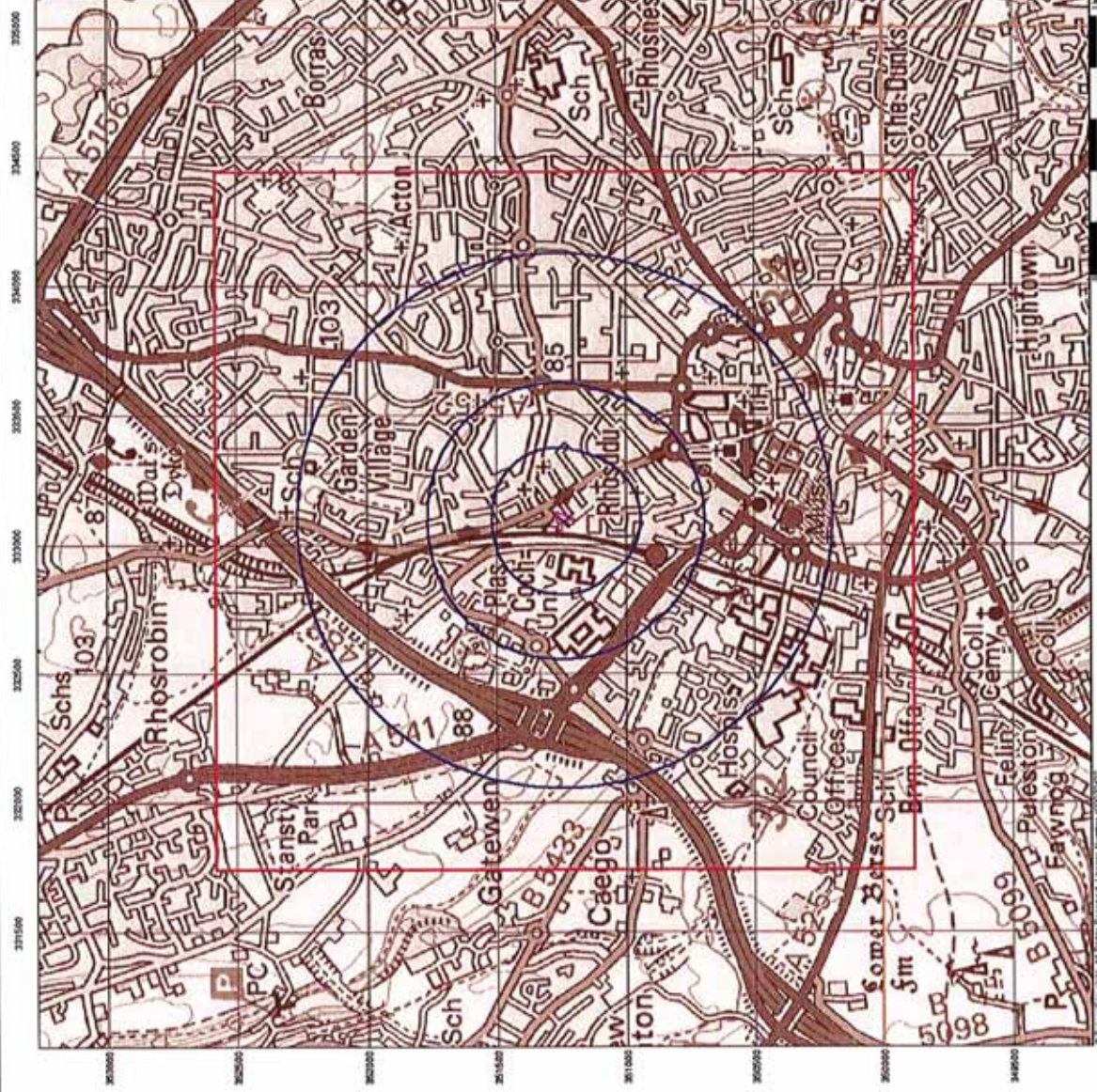
Order Details

Order Number	219413571_1_1
Customer Ref	2269mjs
National Cnd Reference	333090, 351240
Size	A
Site Area (Ha)	0.19
Search Buffer (m)	1000

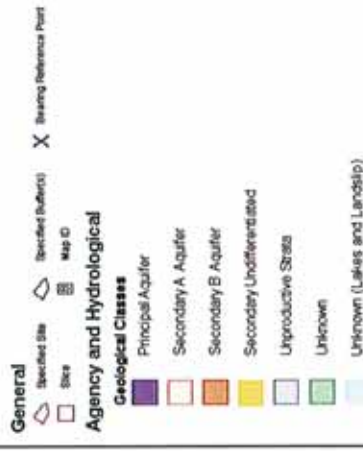
Site Details
Site at 333000, 351300

Landmark
■ COMMUNICATION GROUP

A Landmark Information Group Service v15.0 26-Sep-2019



Superficial Aquifer Designation



Site Sensitivity Context Map - Slice A

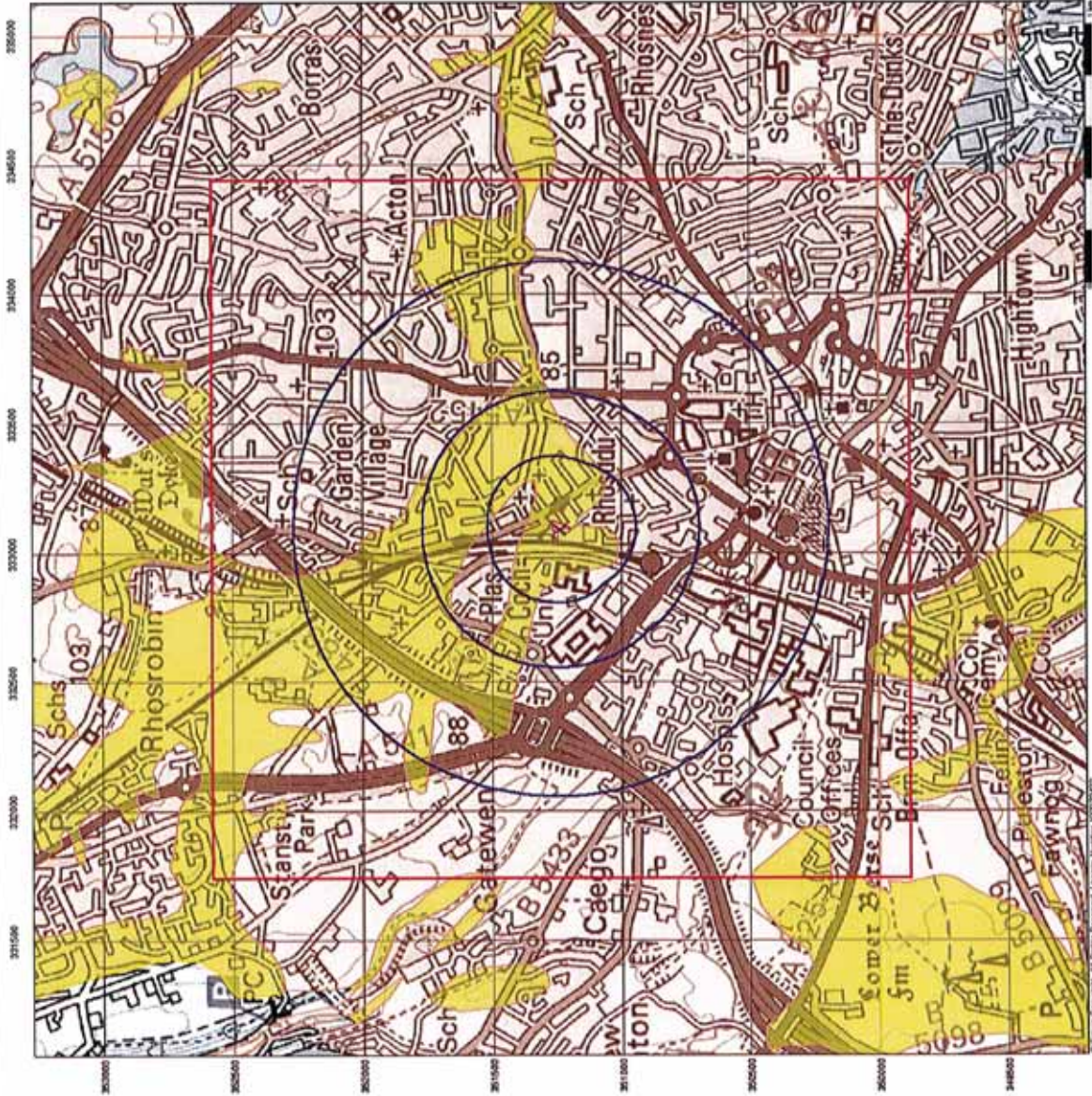


Order Details

Order Number: 215413571_1
 Customer Ref: 2265ms
 National Grid Reference: 333000, 351240
 Site Area (Ha): 0.10
 Search Buffer (m): 1000

Site Details

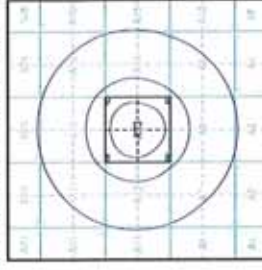
Site at 333000, 351300



Source Protection Zones

- General**
- Specified Site
 - Specified Subunit
 - Bearing Reference Point
 - Site
 - Map ID
- Agency and Hydrological**
- Inner zone (Zone 1)
 - Inner zone - subsurface activity only (Zone 1c)
 - Outer zone (Zone 2)
 - Outer zone - subsurface activity only (Zone 2c)
 - Total catchment (Zone 3)
 - Total catchment - subsurface activity only (Zone 3c)
 - Special interest (Zone 4)

Site Sensitivity Context Map - Slice A

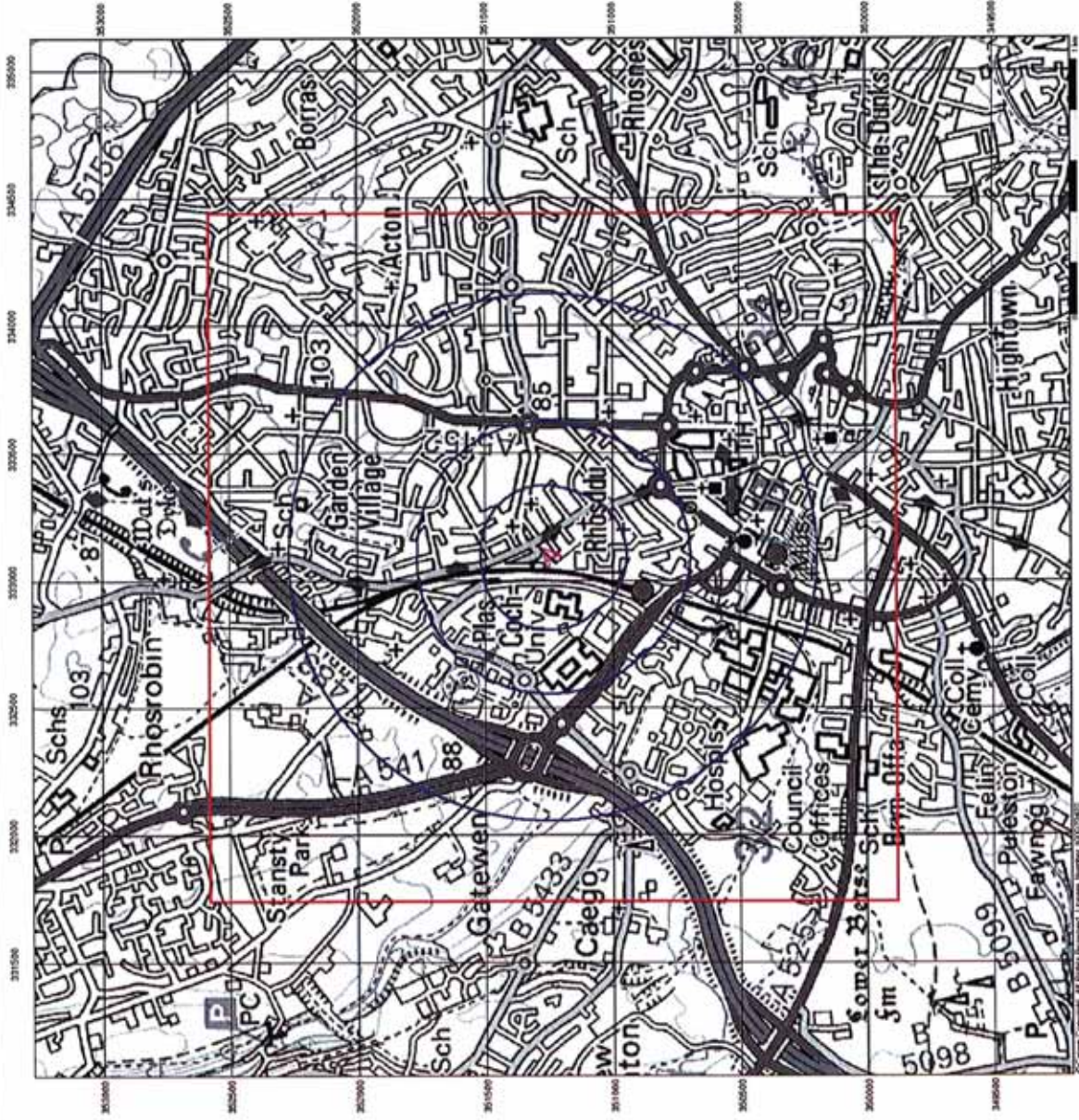


Order Details

Order Number: 219413571_1
 Customer Ref: 2265m
 National Grid Reference: 333000, 351240
 Scale: A
 Site Area (Hect): 0.16
 Search Buffer (m): 1000

Site Details

Site at: 333000, 351300



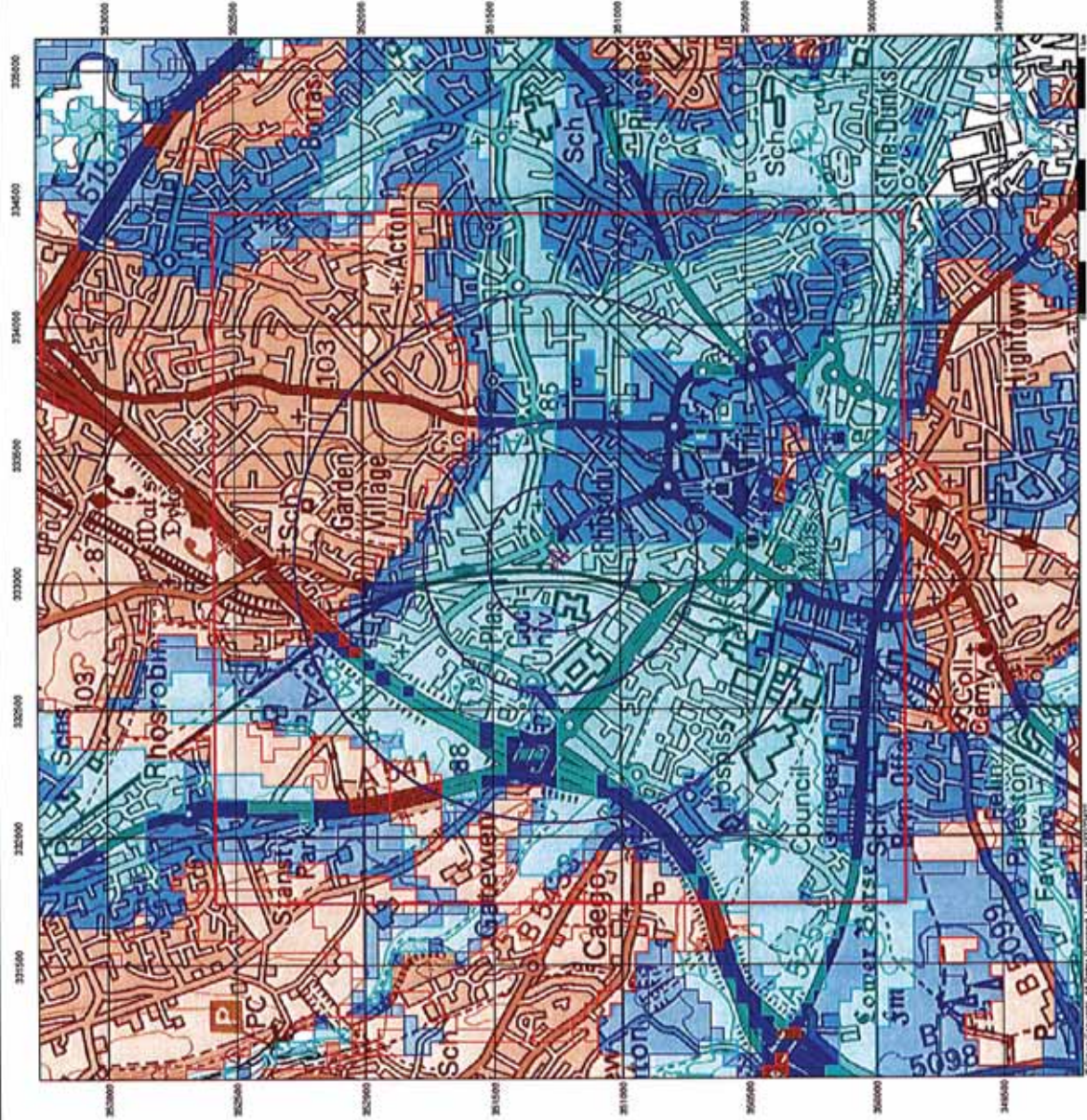
BGS Flood GFS Data

General

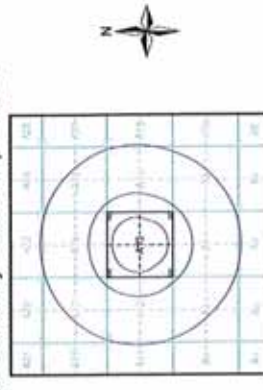
- | Specified Size | Specified Buffer(s) | Learning Reference Point |
|---|---|---|
|  |  |  |
|  |  |  |
| | | |

Agency and Hydrological (Flood)

- Limited Potential for Groundwater Flooding to Occur
■ Potential for Groundwater Flooding of Property Situated Below Ground Level
■ Potential for Groundwater Flooding to Occur at Surface



Site Sensitivity Context Map - Slice A



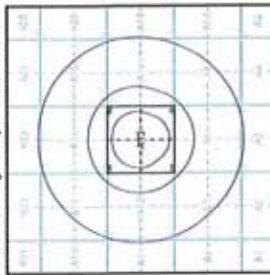
Order Details

Order Number	215413671_1_1
Customer Ref.	22859ms
National Grid Reference	333090, 351240
Size	A
Site Area (Ha)	0.19
Search Buffer (m)	1000

Site Details

Size at 333000, 351300



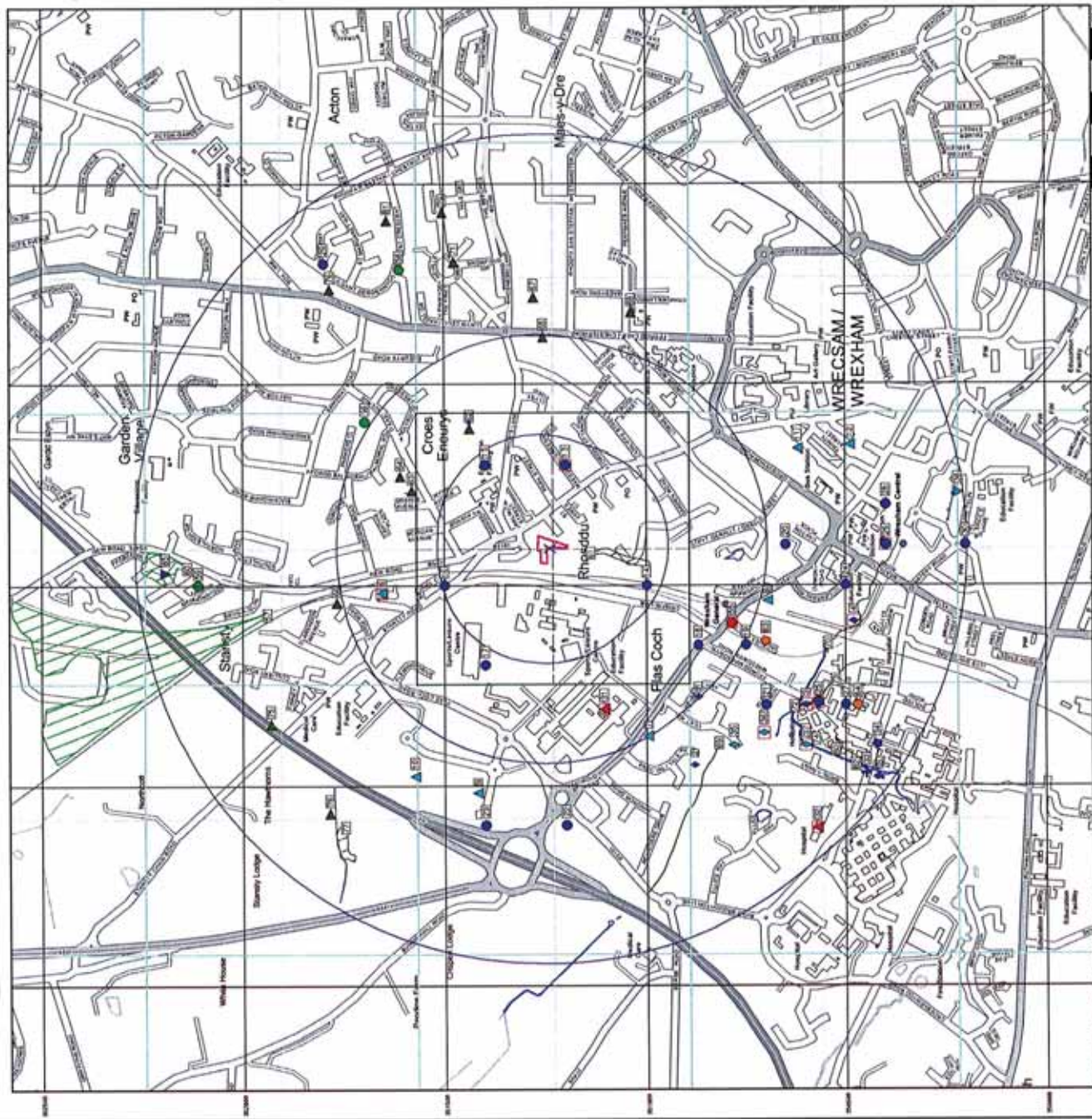


Order Number: 219413571_1_1
Customer Ref: Z260mjs
National Grid Reference: 333090, 351240
Slice: A
Site Area (Ha): 0.19
Search Buffer (m): 1000

Site Details
Site at 333000, 351300

Landmark

A Landmark Information Group Service v50.0 28-Sep-2019 Page 1 of 8



Industrial Land Use Map

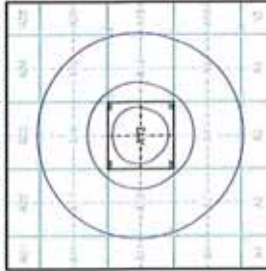
- General**

 - ★ Specified Size
 - ★ Specified Buffer(s)
 - ★ Bearing Relationship Point
 - ★ Size
 - ★ Map ID

Industrial Land Use

 - ★ Comprehensive Trade Directory Entry
 - ★ Fuel Station Entry
 - ★ Gas Pipeline
 - ★ Points of Interest - Commercial Services
 - ★ Points of Interest - Education and Health
 - ★ Points of Interest - Manufacturing and Production
 - ★ Points of Interest - Public Infrastructure
 - ★ Points of Interest - Recreational and Environmental
 - ★ Underground Electrical Cables

Industrial Land Use Map - Slice A

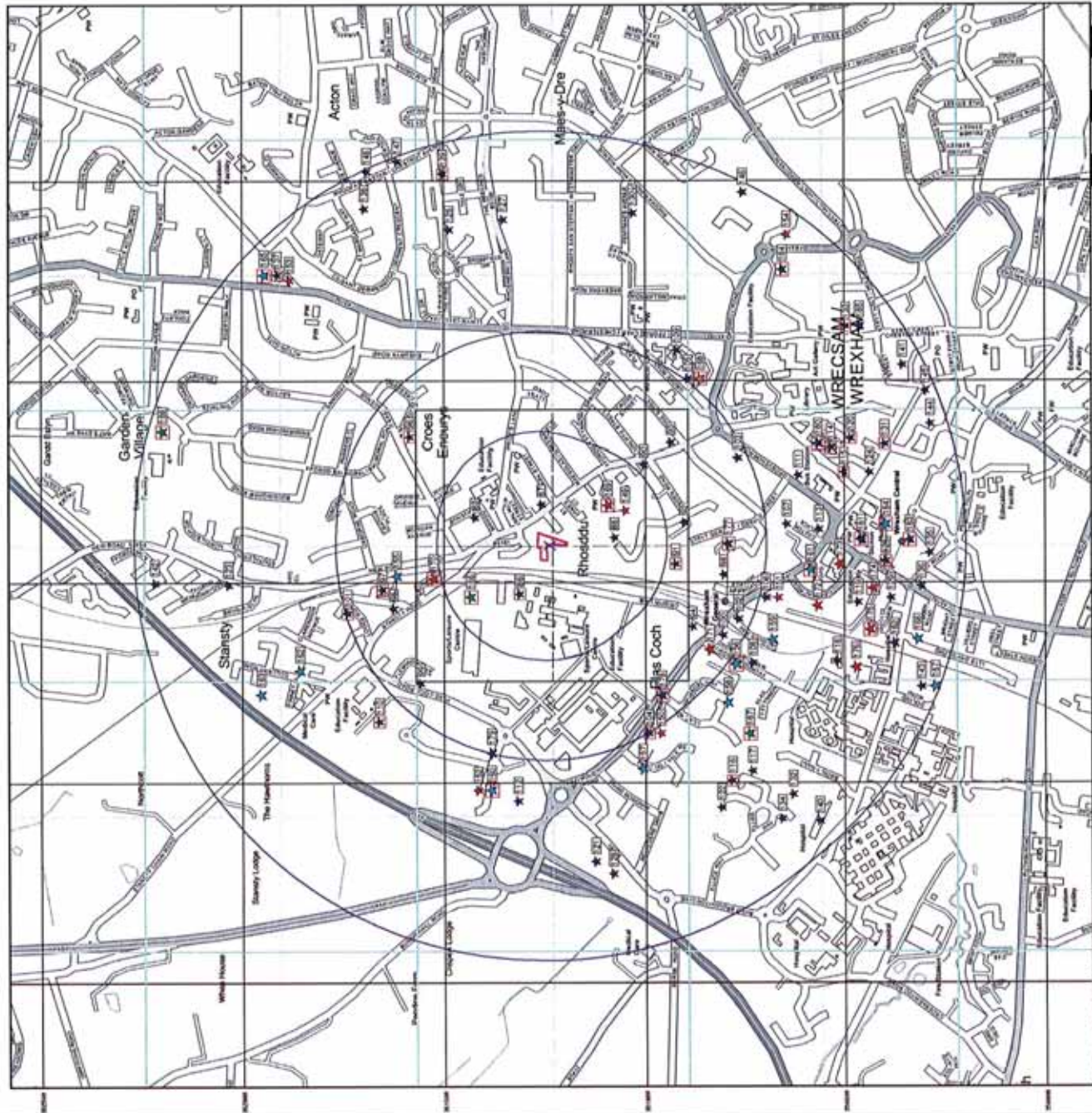


Order Details

Order Number: 219473571.1.1
Customer Ref: 2269mjs
National Grid Reference: 333090.351240
Slice: A
Site Area (Ha): 0.19
Search Buffer (m): 1000

Site Details

Site Details
Site at 333000, 351300



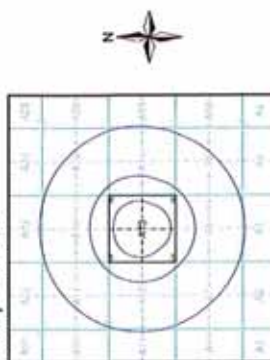
General

- Standard Site
- Standard Survey
- X Survey Reference Point

Agency and Hydrological (Flood)

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Resulting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Flood Map - Slice A



Order Details

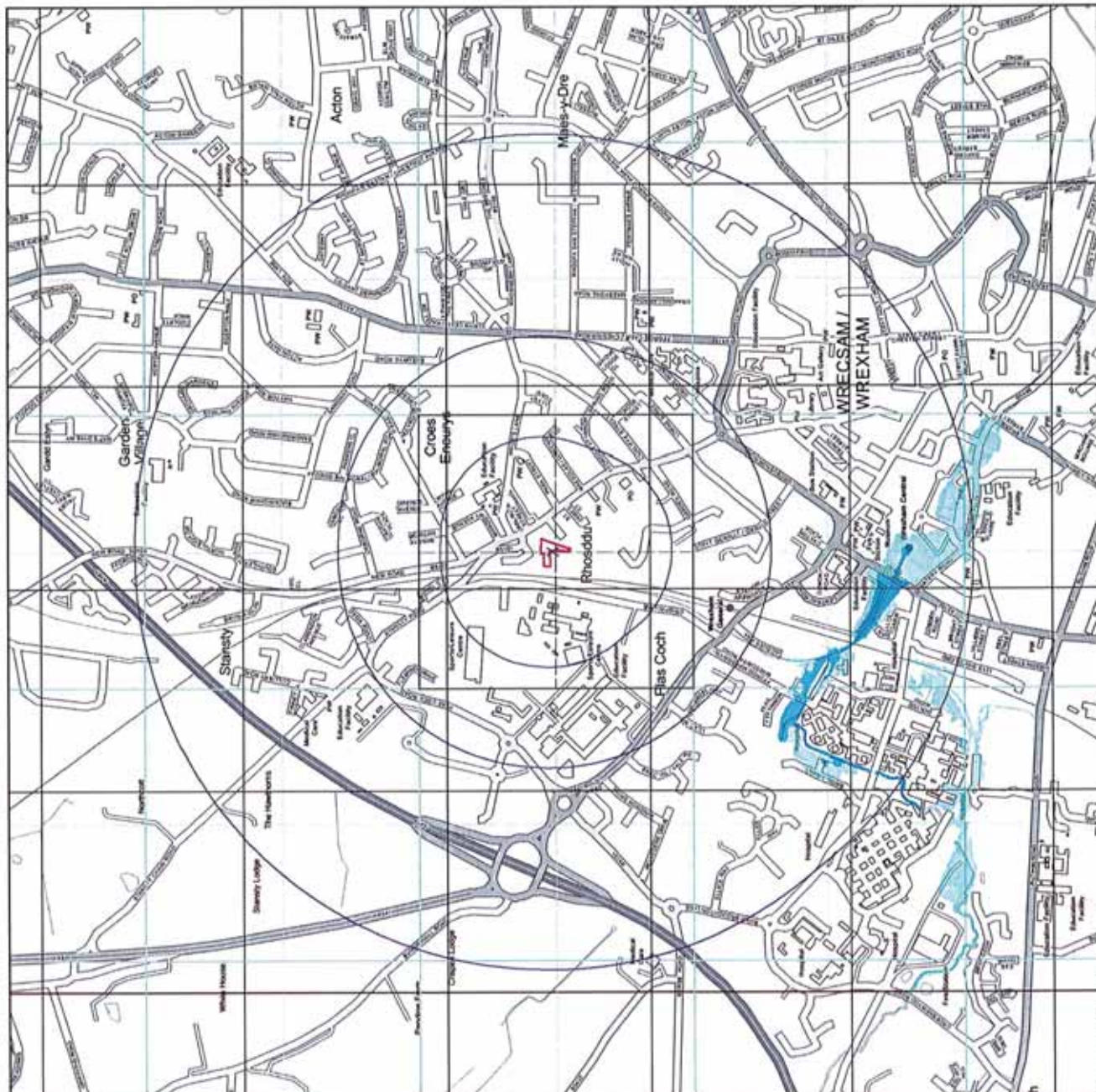
Order Number: 219413571_1_1
 Customer Ref: 2269m16
 National Grid Reference: 333050, 351240
 Slice: A
 Site Area (Ha): 0.19
 Search Buffer (m): 1000

Site Details

Site at 333000, 351300

Landmark®
 LANDMARK INFORMATION GROUP

Tel: 0844 844 8962
 Fax: 0844 844 8921
 Email: www.envirocheck.co.uk

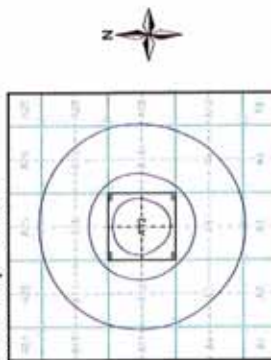


- General**
- ☐ Specified Site
 - ☒ Specified Bureaucy
 - ☒ Security Performance Point
 - ☐ Map ID
 - ☐ General or Type of Location
- Agency and Hydrological (Boreholes)**
- ☐ BGS Borehole Depth 0 - 1km
 - ☐ BGS Borehole Depth 10 - 30m
 - ☐ BGS Borehole Depth 30m +
 - ☐ Contaminant
 - ☐ Other

For Borehole information please refer to the Borehole .csv file which accompanied this slide.

A copy of the BGS Borehole Ordering Form is available to download from the Support section of www.environment.co.uk.

Borehole Map - Slice A



Order Details

Order Number: 219413571_1_1
Customer Ref: 2269mjs
National Grid Reference: 333090, 351240
A
Slice: 0.19
Site Area (Ha): 1000
Search Buffer (m):

Site Details

Size at 333000, 351300

General
 O Specified Site
 O Specified Buffer(s)
 X Bearing Reference Point

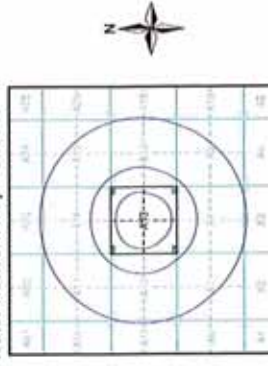
OS Water Network Data

Canal
 Reservoir
 Foreshore
 Marsh
 Tidal River
 Inland River
 Drain
 Other
 Lake
 Transfer
 Lock Or Flight Of Locks
 Sea

Contours (height in meters)

Standard Contour
 Master Contour
 Spot Height
 Mean Low Water
 Mean High Water

OS Water Network Map - Slice A



Order Details

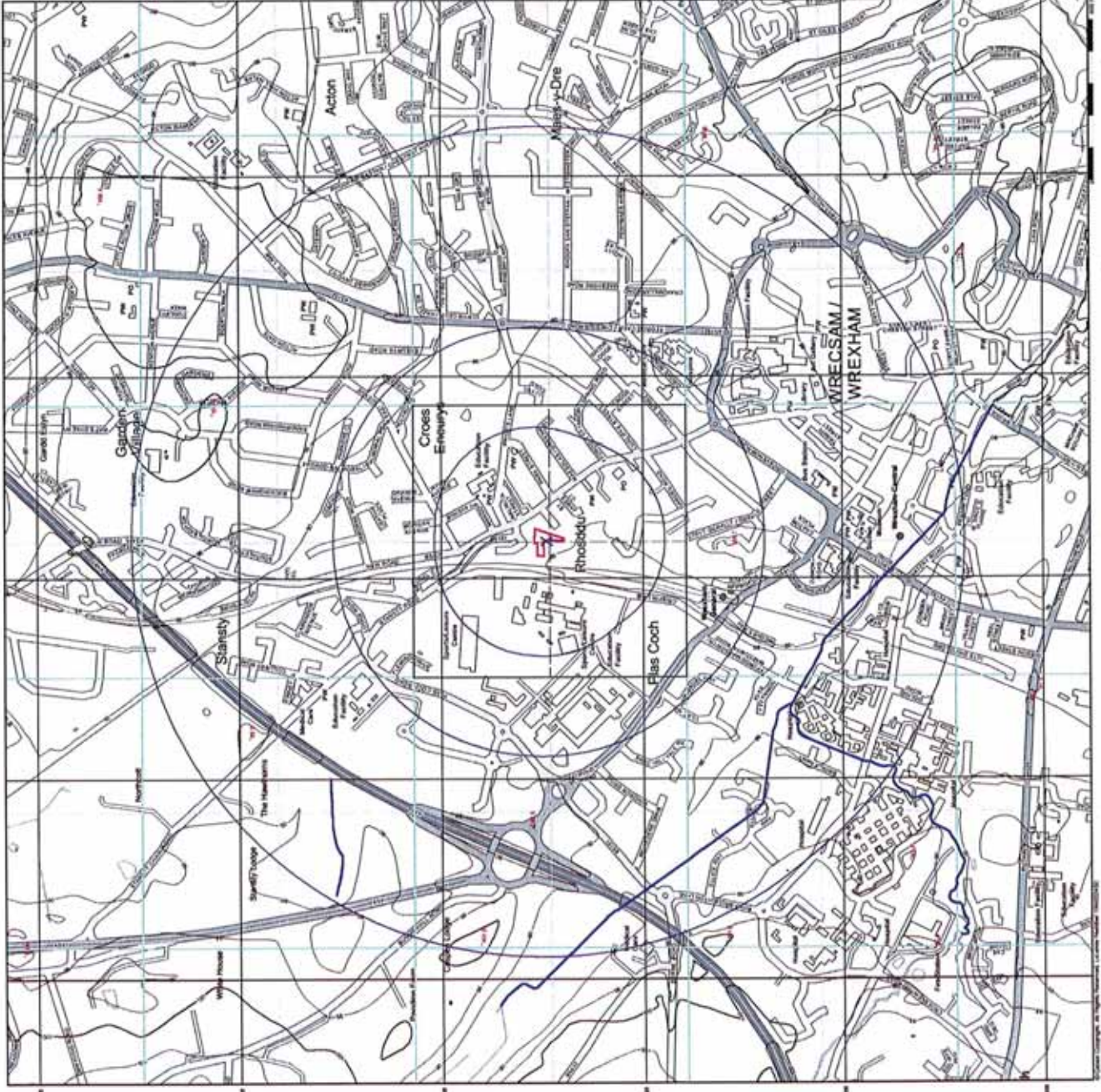
Order Number: 219413571_1_1
 Customer Ref: 2269m
 National Grid Reference: 333090, 351240
 Site: A
 Site Area (Ha): 0.19
 Search Buffer (m): 1000

Site Details

Site at 333000, 351300

Landmark
 LANDMARK INFORMATION GROUP

Tel: 0844 344 9922
 Fax: 0844 344 9927
 Web: www.envirocheck.co.uk

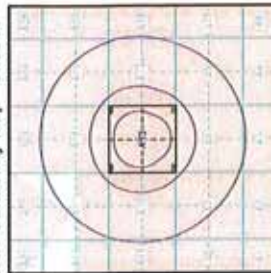


☒ Specified Reference Point

High - 30 Year Return
Medium - 100 Year Return
Low - 1250 Year Return

See the liability map below

EA/NRW Suitability Map - Slice A



Order Number: 219413571_1_1
Customer Ref: 2269mjs
National Grid Reference: 333090, 351240

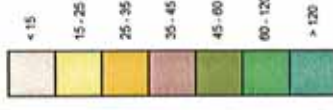
Site:
Site Area (Ha): 0.19
Search Buffer (m): 1000

Site at 333000, 351300

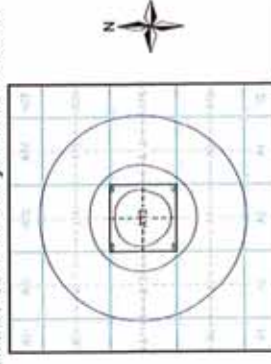
General
 Standard Site
 X Search Reference Map

Estimated Soil Chemistry Arsenic

Arsenic Concentrations mg/kg



Estimated Soil Chemistry Arsenic - Slice A



Order Details

Order Details:
 Customer Ref: 219413571_1_1
 National Grid Reference: 333090, 351240
 Slice: A
 Site Area (Ha): 0.19
 Search Buffer (m): 1000

Site Details

Site at 333000, 351300

General
 Specified Site: ☒ Specified Buffer(s): ☒ Search Buffer(s): ☒
Estimated Soil Chemistry Cadmium



Estimated Soil Chemistry Cadmium - Slice A



Order Details

Order Details:
 Order Ref: 219413571_1_1
 Customer Ref: 2269mjs
 National Grid Reference: 333090, 351240
 Slice: A
 Site Area (Ha): 0.19
 Search Buffer (m): 1000

Site Details

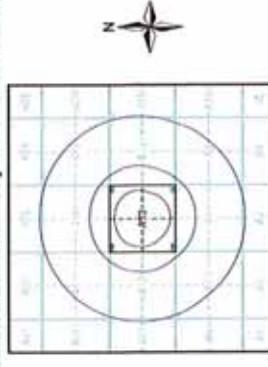
Site at 333090, 351300

General
 Estimated Site: Estimated Buffer(s): X: Bearing Reference Point
Estimated Soil Chemistry Chromium

Chromium Concentrations mg/kg



Estimated Soil Chemistry Chromium - Slice A



Order Details

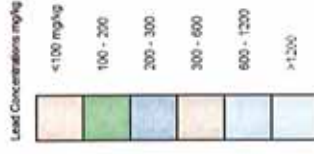
Order Details: 219413571_1_1
 Customer Ref: 3269mjs
 National Grid Reference: 333090, 351240
 Slice: A
 Site Area (Ha): 0.19
 Search Buffer (m): 1000

Site Details

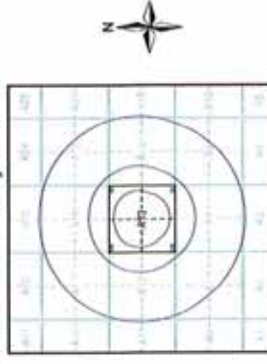
Site at 333090, 351300



General
 Sensitive Site ☐ Sensitive Buffer(s) ☒ Sensitive Resource Area ☒
Estimated Soil Chemistry Lead



Estimated Soil Chemistry Lead - Slice A



Order Details
 Order Details: 219413571_1_1
 Customer Ref: 2269mgs
 National Grid Reference: 333090, 351240
 Slice: A
 Site Area (Ha): 0.19
 Search Buffer (m): 1000
Site Details
 Site at 333090, 351300

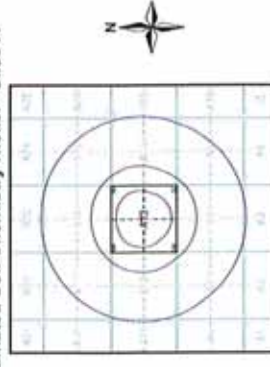
General
 Standard Site
 Standard Buffer(s)
 X Search by Geocheck Data

Estimated Soil Chemistry Nickel

Nickel Concentrations mg/kg



Estimated Soil Chemistry Nickel - Slice A

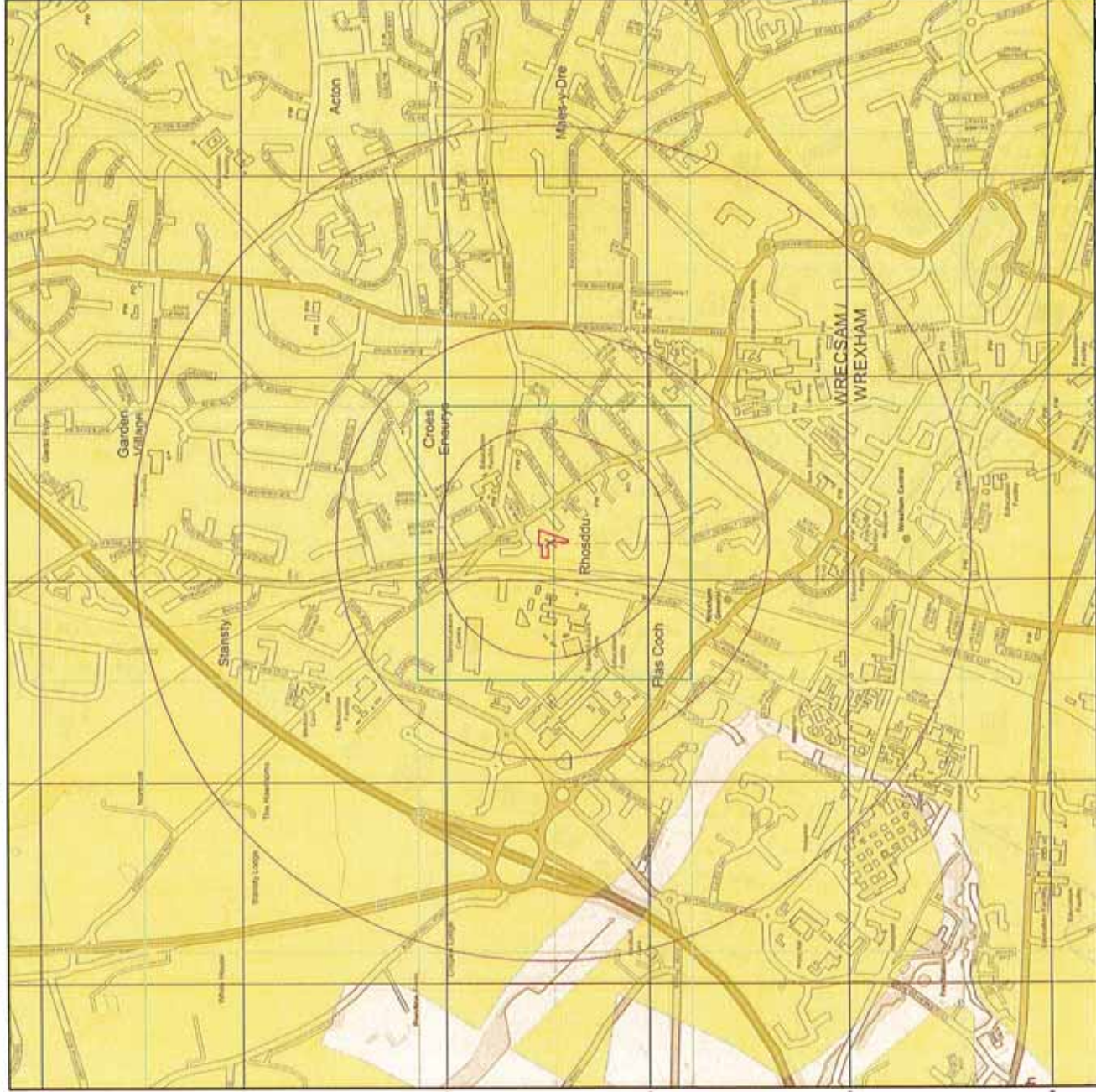


Order Details

Order Details:
 Customer Ref: 219413571_1_1
 National Grid Reference: 333090, 351240
 Slice: A
 Site Area (Ha): 0.19
 Search Buffer (m): 1000

Site Details

Site at 333090, 351300



APPENDIX D

Borehole Logs – Previous Investigation (IFA)

 IAN FARMER ASSOCIATES						Site Stanly Road, Wrexham		Borehole Number BH02A	
Boring Method Cable Percussion		Casing Diameter 150mm cased to 10.00m		Ground Level (mOD)		Client Urban Development Ltd		Job Number 41212	
		Location		Dates 17/07/2013		Engineer Hardie Brack		Sheet 1/1	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						0.10	MADE GROUND: Tarmacadam.		
						(0.70)	MADE GROUND: Road-stone with pockets of clay.		
						0.80	MADE GROUND: Firm, orange brown, slightly sandy, gravelly CLAY. Gravel is subangular to subrounded, fine to coarse including sandstone, siltstone, and limestone.		
						(1.80)			
1.20-1.65 1.20-1.65	SPT N=11 B1			1,2/2,3,3,3					
1.70	D2								
2.00-2.45 2.00-2.45	SPT N=9 B3	1.20	DRY	1,2/2,2,3,2					
2.50	D4					2.60	Between 2.50m and 2.60m: driller notes limestone gravel within the fill material.		
							Driller note no recovery of arisings.		
3.00-3.45	SPT N=10	3.00	DRY	2,2/2,3,2,3		(1.80)			
4.00-4.45	SPT N=6	4.00	DRY	1,2/1,2,1,2					
4.40	D5					4.40	Firm, orange brown, slightly sandy, gravelly CLAY. Gravel is subangular to subrounded, fine to coarse including sandstone, siltstone, mudstone and coal.		
5.00-5.45 5.00-5.45	SPT N=11 B6	5.00	DRY	1,2/3,2,3,3					
5.50	D7								
6.00-6.45 6.00-6.45	SPT N=7 B8	6.00	DRY	1,1/2,1,2,2		(4.10)			
7.00	D9								
7.50-7.95 7.50-7.95	SPT N=11 B10	7.50	DRY	1,2/2,3,3,3					
8.50	D11					8.50	Medium dense, brown grey, clayey, fine to coarse SAND and subangular to subrounded, fine to coarse GRAVEL including sandstone, siltstone and coal.		
						(1.50)			
9.00-9.45 9.00-9.45	SPT N=15 B12	9.00	DRY	2,3/4,3,4,4					
9.50-9.95 9.50	SPT N=14 D13	9.50	9.50	3,4/3,3,4,4					
10.00	D14					10.00			
Remarks Excavating from 0.00m to 1.20m for 1.00 hour.							Scale (approx) 1:50	Logged By TPB	Figure No. 41212.B1104



**IAN FARMER
ASSOCIATES**

Site
Stansly Road, Wrexham

Number
WS04

Excavation Method
Drive-In Window Sampler

Dimensions

Ground Level (mOD)

Client
Urban Development Ltd

**Job
Number**
41212

Location

Dates
15/07/2013

Engineer
Hardie Brack

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.80 0.80	D1 J2				(0.20) 0.20	MADE GROUND: Tarmacadam			
1.20-1.65 1.30	SPT N=12 D3		2,3/3,3,3,3		(0.55) 0.75	MADE GROUND: Grey, sandy, angular to subangular, fine to coarse GRAVEL with medium cobble content. Gravel includes limestone. Below 0.40m: high cobble content.			
1.80	D4				(1.45)	Firm, brown, sandy, slightly gravelly CLAY. Gravel is subangular to subrounded, fine to coarse including coal.			
2.00-2.45 2.10	SPT N=24 D5		1,2/6,7,5,6		2.20	Medium dense, brown, very sandy, angular to subrounded, fine to coarse GRAVEL including sandstone and limestone. Between 2.20m and 2.30m: gravel blackened by iron coating.			
2.60	D6				(2.25)	Below 3.00m: dense			
3.00-3.45 3.20	SPT N=46 D7		6,6/6,12,14,14						
3.80	D8								
4.00-4.45	SPT N=50		7,9/10,12,14,14		4.45	At 4.00m: very dense, unable to advance sampler.			
						Terminated at 4.45m			
Remarks							Scale (approx)	Logged By	
							1:50		
							Figure No. 41212.WS04		



**IAN FARMER
ASSOCIATES**

Site
Stansty Road, Wrexham

Number
WS05

Excavation Method
Drive-in Window Sampler

Dimensions

Ground Level (mOD)

Client
Urban Development Ltd

Job
Number
41212

Location

Dates
17/07/2013

Engineer
Hardie Brack

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20-1.00 0.40 0.40	B1 D2 J3				(1.00)	MADE GROUND: Dark brown, slightly clayey, gravelly, slightly organic, fine to coarse SAND with low cobble content including brick. Gravel is angular to subrounded, fine to coarse including sandstone, siltstone, clinker and brick. Below 0.60m: medium cobble content.		
1.20-1.65 1.20 1.40 1.40 1.80	SPT N=5 D4 D5 J6 D7	1,1/1,1,1,2			1.00 (0.30) 1.30	MADE GROUND: Firm, dark brown, sandy, gravelly CLAY. Gravel is angular to subangular, fine to coarse including limestone, sandstone, brick and siltstone. Firm, red brown, slightly silty, slightly sandy CLAY.		
2.00-2.45 2.30	SPT N=14 D8	2,3/3,3,4,4			(1.40)			
2.80	D9				2.70	Medium dense, brown, slightly gravelly, medium and coarse SAND. Gravel is subangular to rounded, fine to coarse including sandstone, siltstone, quartz and granite.		
3.00-3.45 3.30	SPT N=12 D10	3,3/3,3,3,3			(1.00)	Below 3.00m: becoming slightly clayey and gravelly. Below 3.30m: becoming clayey and very gravelly.		
3.80	D11				3.70	Firm, light brown, very sandy, slightly gravelly CLAY. Gravel is subangular to subrounded, fine to coarse including sandstone, siltstone and coal.		
4.00-4.45 4.10	SPT N=10 D12	2,2/2,3,2,3			(0.50) 4.20	Medium dense, brown, very clayey, sandy, subangular to subrounded, fine to coarse GRAVEL including sandstone, siltstone, coal, mudstone and quartz.		
4.80	D13				(1.25)			
5.00-5.45	SPT N=19	3,4/5,5,5,4			5.45	Complete at 5.45m		

Remarks
Excavating from 0.00m to 1.20m for 1.00 hour.

Scale
(approx)

Logged
By

1:50 TB
Figure No.
41212.WS05



**IAN FARMER
ASSOCIATES**

Site
Stansty Road, Wroxham

Number
WS06

Excavation Method
Drive-In Window Sampler

Dimensions

Ground Level (mOD)

Client
Urban Development Ltd

Job
Number
41212

Location

Dates
17/07/2013

Engineer
Hardie Brack

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.60 0.60-1.20	D2 B1				(0.20) 0.20 (0.30) 0.50	MADE GROUND: Tarmacadam. MADE GROUND: Grey, sandy, angular to subangular, fine to coarse GRAVEL including limestone. Below 0.30m: with high cobble content. Firm, brown, sandy, slightly gravelly CLAY. Gravel is angular to subrounded, fine to coarse including sandstone and coal.		
1.20-1.65 1.40	SPT N=8 D3		2,2/2,2,2,2			At 1.40m: very thin, 1 agor of coal/sand.		
1.90 2.00-2.45	D4 SPT N=13		3,3/4,3,3,3		(3.40)	Below 2.20m: gravelly.		
2.50	D5					Below 2.70m: very gravelly.		
3.00-3.45	SPT N=20		3,3/4,5,5,6			Below 3.00m: stiff.		
3.50	D6							
4.00-4.45	SPT N=27		6,7/6,7,6,8		3.90	Medium dense, brown, very sandy, angular to subrounded, fine to coarse GRAVEL including sandstone, quartz, limestone and coal.		
4.50	D7				(1.55)			
5.00-5.45	SPT N=19		3,3/4,4,5,6		5.45	Complete at 5.45m		
Remarks							Scale (approx) 1:50	Logged By TB
							Figure No. 41212.WS06	

APPENDIX E

Trial Pit Logs - Previous Investigation (GSL)

TRIAL PIT 03

Depth (m)	Strata
0.00-0.10	Grass over loose to medium dense dark brown gravelly clayey SILT. Gravel is sub angular to sub rounded fine to medium (TOPSOIL)
0.10-1.30	Loose to medium dense brown clayey gravelly SILT/ fine SAND with some cobble and boulder sized pockets of firm gravelly clay and a little to some sub angular brick and concrete cobble and a little roots. Gravel is angular to sub angular fine to coarse (MADE GROUND)
1.30-2.00	Medium dense light brown clayey gravelly medium to coarse SAND with a little to some cobble sized pockets of slightly sandy silty clay. Gravel is sub angular to sub rounded fine to coarse (GLACIAL DEPOSITS)
2.00-3.15	Firm brown locally mottled black slightly sandy slightly gravelly silty CLAY with a little to some cobble sized pockets of light brown silty fine sand. Gravel is sub rounded fine (GLACIAL TILL)
3.15-3.90	Medium dense to dense orangish brown slightly gravelly medium to coarse SAND with a little to some coarse gravel sized pockets of clay. Gravel is sub rounded to rounded medium to coarse (GLACIAL DEPOSITS)

Notes

1. Pit dimensions 0.70m x 2.60m x 3.90m,
2. Pit sides were stable,
3. A very slight seepage of groundwater was encountered in the northern pit wall at 1.00m,
4. National Grid Reference: SJ 33110 51268,
5. Concrete slab found in west of pit at 1.00m, pit extended 0.50m to the east.



Trial Pit 03



Trial Pit 03

Trial Pit 03 Soakaway results

Test 1		
Time (Mins)	Depth (m)	Head (m)
0	1.00	2.90
1	1.10	2.80
2	1.21	2.69
3	1.31	2.56
4	1.38	2.52
5	1.42	2.48
6	1.46	2.44
7	1.47	2.43
8	1.50	2.40
9	1.51	2.39
10	1.52	2.38
15	1.59	2.31
20	1.62	2.28
40	1.73	2.17
60	1.79	2.11
75	1.85	2.05
95	1.88	2.02
200	2.14	1.76

APPENDIX F

Trial Pit Logs – This Investigation

TRIAL PIT 1

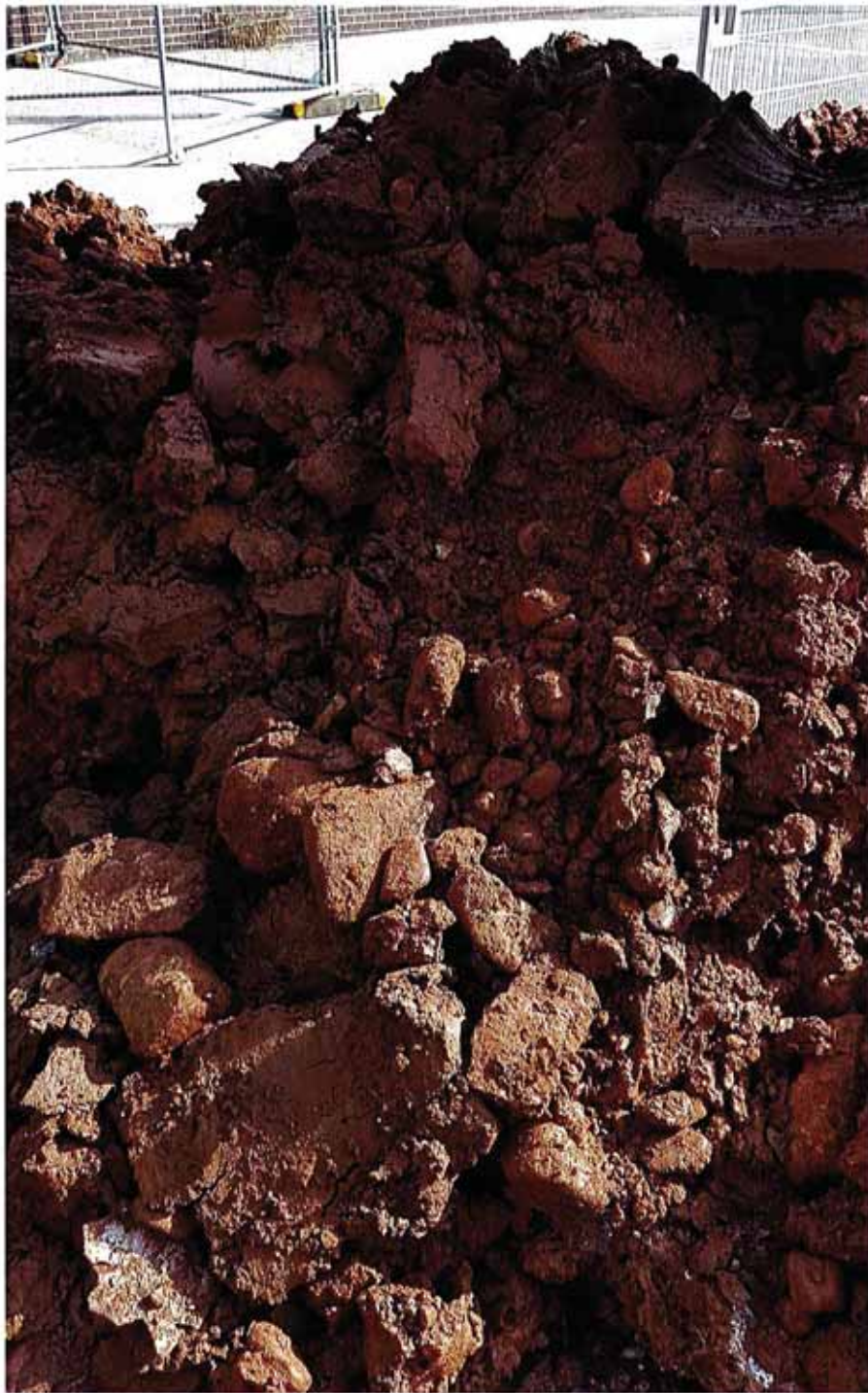
Depth (m)	Strata
0.00 – 0.10	TARMAC.
0.10 – 0.30	Dense light greyish brown sandy angular to subangular fine to coarse GRAVEL of limestone. (SUB-BASE)
0.30 – 0.60	Medium dense dark greyish brown silty gravelly SAND. Gravel is angular to subangular fine to coarse of brick and concrete fragments with whole bricks. (MADE GROUND)
0.60 – 0.70	TARMAC. (OLD CARPARK)
0.70 – 0.80	Dense light greyish brown sandy angular to subangular fine to coarse GRAVEL of limestone with a medium cobble content of subangular limestone. (SUB-BASE)
0.80 – 1.00	CONCRETE SLAB
1.00 – 3.50	Stiff becoming firm and soft at the base orangish brown slightly sandy becoming sandier with depth slightly gravelly CLAY. Gravel is subrounded to rounded fine to coarse of limestone and mudstone. (GLACIAL TILL)
3.50 – 4.00	Loose to medium dense brown slightly silty sandy subrounded to rounded fine to coarse GRAVEL. (GLACIAL DEPOSITS).

Notes

1. No groundwater observed.
2. Sides of pit stable.
3. Concrete slab broken out with pneumatic breaker.
4. Samples – ES @0.50m, D@1.50m.



TRIAL PIT 1



TRIAL PIT 1 SPOIL

TRIAL PIT 2

Depth (m)	Strata
0.00 – 0.30	Loose dark brown slightly gravelly sandy silty angular to subangular fine to coarse GRAVEL of brick and concrete fragments. (TOPSOIL/MADE GROUND)
0.30 – 0.90	Loose to medium dense dark brown slightly clayey sandy gravelly SILT. (SUBSOIL)
0.90- 1.00	TARMAC. (OLD CAR PARK)
1.00 – 1.10	Medium dense light greyish brown sandy fine to coarse angular to subangular GRAVEL of limestone with a medium cobble content of subangular limestone. (SUB-BASE)
1.10 – 1.20	Firm dark brown slightly silty slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse of limestone, sandstone and brick fragments. (MADE GROUND)
1.20 – 2.40	Soft to firm light brown to orangish brown slightly gravelly sandy to very sandy CLAY. Gravel is subrounded to rounded fine to coarse of limestone and mudstone. (GLACIAL TILL)

Notes

1. No groundwater observed.
2. Sides of pit stable.
3. Samples – ES@0.60m, D@1.10m, CS@1.50m, B@1.50m.



TRIAL PIT 2



TRIAL PIT 2 SPOIL

TRIAL PIT 3

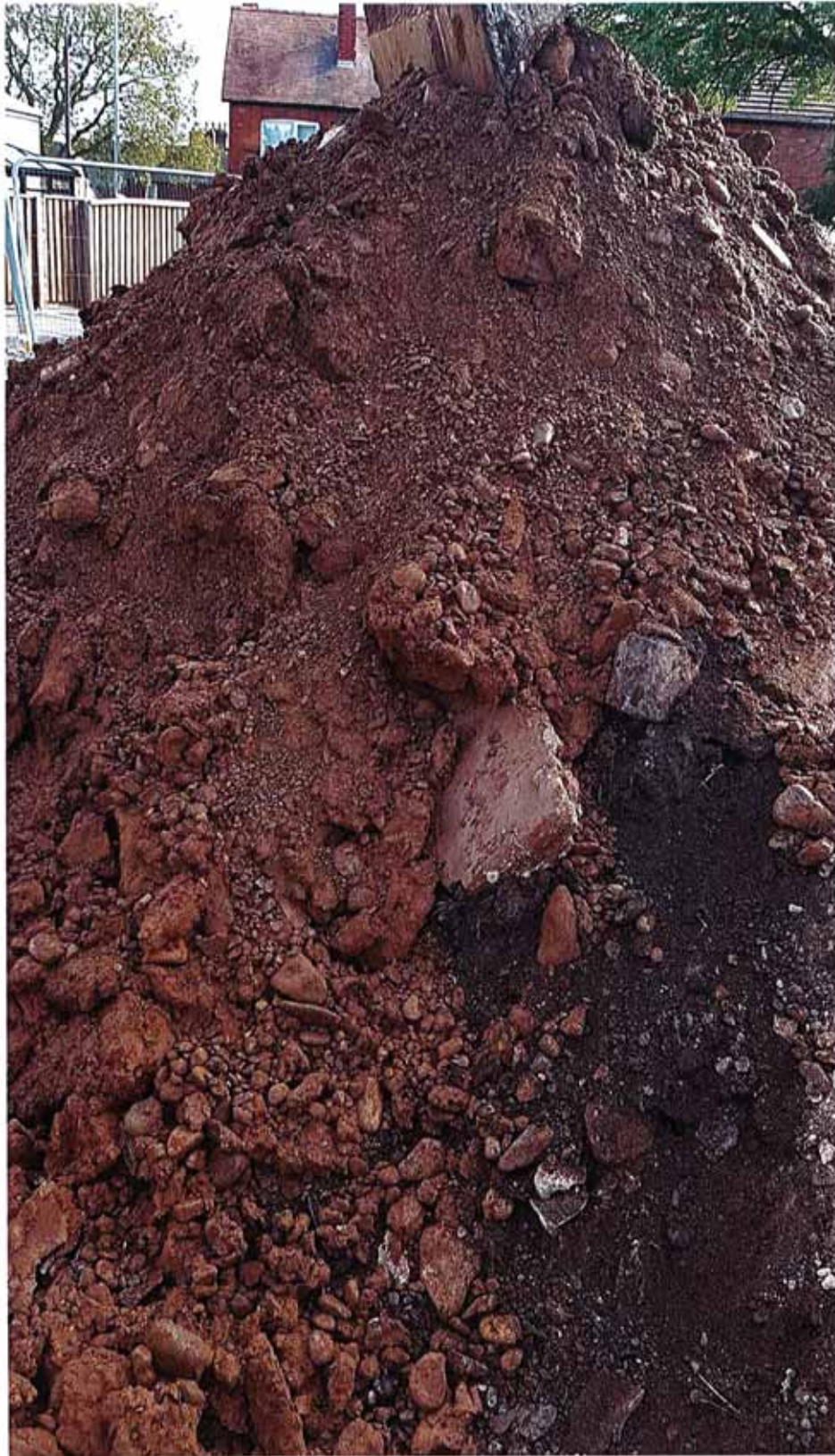
Depth (m)	Strata
0.00 – 0.40	Loose black sandy SILT with rootlets. (TOPSOIL)
0.40 – 0.80	Medium dense black to dark brown gravelly silty fine to coarse SAND. Gravel is angular to subangular fine to coarse of brick and concrete fragments. (MADE GROUND)
0.80 - 0.90	TARMAC. (OLD CARPARK)
0.90 – 1.20	Medium dense light greyish brown sandy angular to subangular fine to coarse GRAVEL of limestone with a medium cobble content of subangular limestone. (SUB-BASE)
1.20 – 3.50	Stiff brown slightly gravelly sandy CLAY with occasional fine sand lenses, coal fragments and soft clay pockets. Gravel is subrounded to rounded fine to coarse of limestone and mudstone. (GLACIAL TILL)
3.50 – 4.00	Loose to medium dense brown slightly silty sandy subrounded to rounded fine to coarse GRAVEL. (GLACIAL DEPOSITS).

Notes

1. No groundwater observed.
2. Sides of pit stable.
3. Samples – ES@0.50m, D@1.30m.



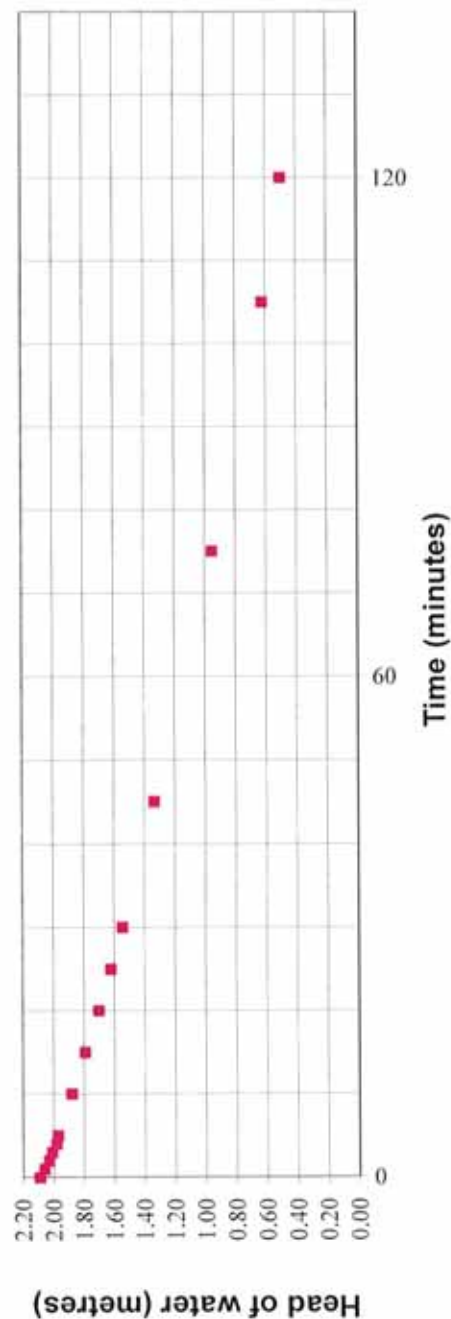
TRIAL PIT 3



TRIAL PIT 3 SPOIL

APPENDIX G

Soakaway Test Results – This Investigation

[illegible]

Depth	Length	Width	Head at 75% Vol	Head at 25% Vol	Water depth(t=0)	Effective Area	Vp75-Vp25	Adjustment Factor *	t75 (mins)	t25 (mins)	Infiltration rate m/s
4.00	2.10	0.60	1.568	0.52	2.09	6.903	1.317	1.00	28	118	3.532E-05

* with gravel filter adjustment factor = 0.30, with no filter = 1.0

Depth (m)	Length (m)	Width (m)	Head at 75% Vol (m)	Head at 25% Vol (m)	Water depth(t=0) (m)	Effective Area Ap50 m2	Vp75-Vp25 Volume of water m3	Adjustment Factor *	t75 (mins)	t25 (mins)	Infiltration rate m/s
3.85	2.10	0.60	1.425	0.48	1.90	8.390	1.197	1.00	51	172	2.580E-05

* with gravel filter adjustment factor = 0.30, with no filter = 1.0

A scatter plot showing the relationship between the head of water (metres) and time (minutes) for a 100 mm diameter orifice. The y-axis represents the head of water in metres, ranging from 0.00 to 1.40. The x-axis represents time in minutes, ranging from 0 to 60. The data points show a decreasing trend, starting at approximately 1.25 metres at 0 minutes and reaching about 0.25 metres at 55 minutes.

Time (minutes)	Head of water (metres)
0	1.25
2	1.22
4	1.18
6	1.15
8	1.12
10	1.08
12	1.05
15	1.02
20	0.95
25	0.88
30	0.82
35	0.75
40	0.68
45	0.62
50	0.55
55	0.25

Depth (m)	Length (m)	Width (m)	Head at 75% Vol (m)	Head at 25% Vol (m)	Water depth(=0) (m)	Effective Area Ap50 m2	Vp75-Vp25 Volume of water m3	Adjustment Factor *	175 (mins)	125 (mins)	Infiltration rate m/s
2.40	2.70	0.60	0.900	0.30	1.20	5.580	0.972	1.00	9.75	44.5	8.356E-05

- with gravel filter adjustment factor = 0.50, with no filter = 1.0

Time (minutes)	Head of water (metres)
0	0.00
1	0.05
2	0.10
3	0.15
4	0.20
5	0.25
6	0.30
7	0.35
8	0.40
10	0.45
15	0.55
20	0.65
25	0.75
30	0.85
35	0.95
40	1.05
45	1.15
50	1.25
55	1.35
60	1.45

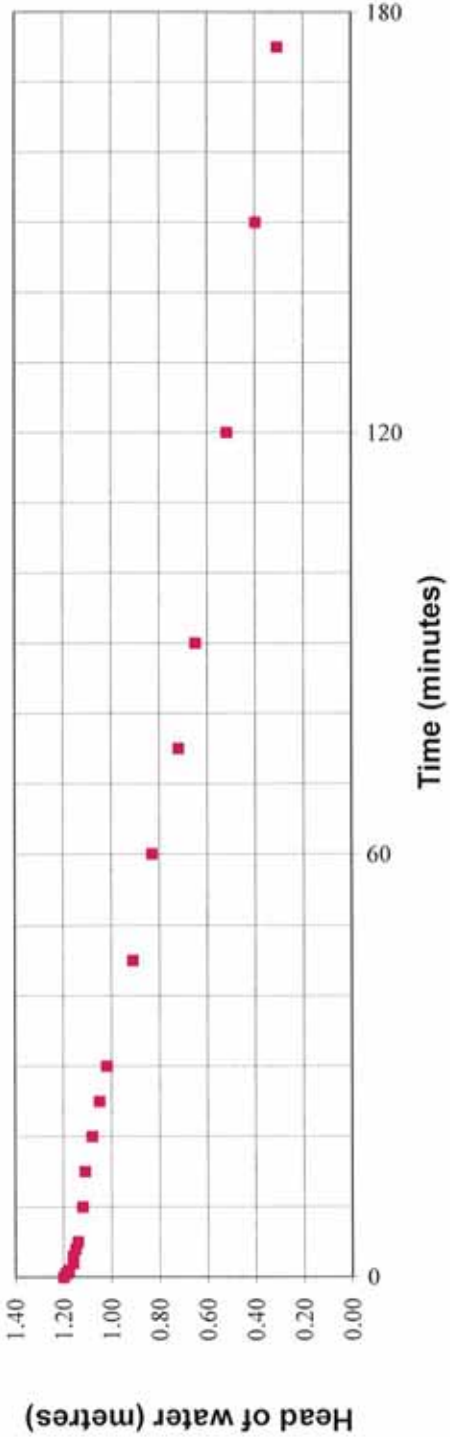
Depth (m)	Length (m)	Width (m)	Head at 75% Vol (m)	Head at 25% Vol (m)	Water depth (m0) (m)	Effective Area Ap50 m2	Vp75-Vp25 Volume of water m3	Adjustment Factor *	t75 (mins)	t25 (mins)	Infiltration rate m/s
2.40	2.70	0.60	0.900	0.30	1.20	5.580	0.972	1.00	16	76	4.839E-05

* with gravel filter adjustment factor = 0.30, with no filter = 1.0

Time (Mins)	Depth of Water	Head of Water
0	1.20	1.20
0.5	1.21	1.19
1	1.22	1.18
2	1.24	1.16
3	1.24	1.16
4	1.25	1.15
5	1.26	1.14
10	1.28	1.12
15	1.29	1.11
20	1.32	1.08
25	1.35	1.05
30	1.38	1.02
45	1.49	0.91
60	1.57	0.83
75	1.68	0.72
90	1.75	0.65
120	1.88	0.52
150	2.00	0.40
175	2.09	0.31

GroundSolve Ltd

Total Fitness Car Park,
Stansty Road, Wrexham,
LL11 2BU.
TP2 Test 3
22/08/19



Depth (m)	Length (m)	Width (m)	Head at 75% Vol (m)	Head at 25% Vol (m)	Water depth(h=0) (m)	Effective Area Ap50 m2	Vp75-Vp25 Volume of water m3	Adjustment Factor *	175 (mins)	125 (mins)	Infiltration rate m/s
2.40	2.70	0.60	0.900	0.30	1.20	5.560	0.972	1.00	47.5	177.5	2.233E-05

* with gravel filter adjustment factor = 0.30, with no filter = 1.0

Time (minutes)	Head of water (metres)
0	0.00
10	0.05
20	0.10
30	0.15
40	0.20
50	0.25
60	0.35
70	0.50
80	0.70
90	0.90
100	1.10
110	1.30
120	1.85

Depth (m)	Length (m)	Width (m)	Head at 75% Vol. (m)	Head at 25% Vol. (m)	Water depth($\eta=0$) (m)	Effective Area Ap50 m ²	Vp75-Vp25 Volume of water m ³	Adjustment Factor *	t75 (mins)	t25 (mins)	Infiltration rate m/s
4.00	2.10	0.70	1.485	0.50	1.98	7.014	1.455	1.00	6.5	114	3.217E-05

* with gravel filter adjustment factor = 0.30, with no filter = 1.0

Scatter plot showing the Head of water (metres) versus Time (minutes) for the 100% scenario. The y-axis ranges from 0.00 to 2.00 metres, and the x-axis ranges from 0 to 120 minutes. The data points show a rapid initial rise in head, followed by a plateau around 1.8 metres, and then a gradual decline after 60 minutes.

Time (minutes)	Head of water (metres)
0	0.00
5	0.05
10	0.10
15	0.15
20	0.20
25	0.25
30	0.30
35	0.35
40	0.40
45	0.45
50	0.50
55	0.55
60	0.60
65	0.65
70	0.70
75	0.75
80	0.80
85	0.85
90	0.90
95	0.95
100	1.00
105	1.05
110	1.10
115	1.15
120	1.20
125	1.25
130	1.30
135	1.35
140	1.40
145	1.45
150	1.50
155	1.55
160	1.60
165	1.65
170	1.70
175	1.75
180	1.80
185	1.80
190	1.80
195	1.80
200	1.80
205	1.80
210	1.80
215	1.80
220	1.80
225	1.80
230	1.80
235	1.80
240	1.80
245	1.80
250	1.80
255	1.80
260	1.80
265	1.80
270	1.80
275	1.80
280	1.80
285	1.80
290	1.80
295	1.80
300	1.80
305	1.80
310	1.80
315	1.80
320	1.80
325	1.80
330	1.80
335	1.80
340	1.80
345	1.80
350	1.80
355	1.80
360	1.80
365	1.80
370	1.80
375	1.80
380	1.80
385	1.80
390	1.80
395	1.80
400	1.80
405	1.80
410	1.80
415	1.80
420	1.80
425	1.80
430	1.80
435	1.80
440	1.80
445	1.80
450	1.80
455	1.80
460	1.80
465	1.80
470	1.80
475	1.80
480	1.80
485	1.80
490	1.80
495	1.80
500	1.80
505	1.80
510	1.80
515	1.80
520	1.80
525	1.80
530	1.80
535	1.80
540	1.80
545	1.80
550	1.80
555	1.80
560	1.80
565	1.80
570	1.80
575	1.80
580	1.80
585	1.80
590	1.80
595	1.80
600	1.80
605	1.80
610	1.80
615	1.80
620	1.80
625	1.80
630	1.80
635	1.80
640	1.80
645	1.80
650	1.80
655	1.80
660	1.80
665	1.80
670	1.80
675	1.80
680	1.80
685	1.80
690	1.80
695	1.80
700	1.80
705	1.80
710	1.80
715	1.80
720	1.80
725	1.80
730	1.80
735	1.80
740	1.80
745	1.80
750	1.80
755	1.80
760	1.80
765	1.80
770	1.80
775	1.80
780	1.80
785	1.80
790	1.80
795	1.80
800	1.80
805	1.80
810	1.80
815	1.80
820	1.80
825	1.80
830	1.80
835	1.80
840	1.80
845	1.80
850	1.80
855	1.80
860	1.80
865	1.80
870	1.80
875	1.80
880	

Depth (m)	Length (m)	Width (m)	Head at 75% Vol (m)	Head at 25% Vol (m)	Water depth _l ($t=0$) (m)	Effective Area Ap50 m ²	Vp75-Yp25 Volume of water m ³	Adjustment Factor *	t75 (mins)	t25 (mins)	Infiltration rate ml/s
3.90	2.10	0.70	1.485	0.50	1.98	7.014	1.455	1.00	18	162	2.401E-05

* with gravel filter adjustment factor = 0.30, with no filter = 1.0

Time (minutes)	Head of water (metres)
0	1.55
2	1.50
4	1.45
6	1.42
8	1.40
10	1.38
15	1.25
20	1.10
25	1.00
30	0.95
35	0.85
40	0.70
55	0.55

[illegible]

* with gravel filter adjustment factor = 0.30, with no filter = 1.0

The scatter plot displays the relationship between the head of water (metres) and time (minutes) for a 1000mm rainfall event. The y-axis, labeled 'Head of water (metres)', ranges from 0.00 to 2.00 with major grid lines every 0.20 units. The x-axis, labeled 'Time (minutes)', ranges from 0 to 60 with major grid lines every 10 units. The data points, represented by red squares, show a rapid increase in head of water from approximately 1.55 metres at 0 minutes to about 1.25 metres at 10 minutes. After this initial rise, the head of water continues to increase more slowly, reaching approximately 1.05 metres by 20 minutes and remaining relatively constant at that level until 60 minutes.

Time (minutes)	Head of water (metres)
0	1.55
2	1.50
4	1.45
6	1.40
8	1.35
10	1.25
15	1.05
20	1.05
25	1.05
30	1.05
40	1.05
50	1.05
60	1.05

Depth	Length	Width	Head at 75% Vol	Head at 25% Vol	Water depth(l=0)	Effective Area	Vp75-Vp25	Adjustment Factor *	t25	Infiltration rate m/s
(m)	(m)	(m)	(m)	(m)	(m)	Ap50 m2	Volume of water m3	(mins)	(mins)	
4.10	2.10	0.70	1.163	0.39	1.55	5.810	1.139	1.00	12	2.553E-05

* with gravel filter adjustment factor = 0.30, with no filter = 1.0

APPENDIX H

Physical Test Results

Laboratory Test Certificate

Form REP008 Rev 3

Issued To	Tyler Goodrick Groundsolve Ltd Unit 1 Charter Court, Well House Barns Chester Road, Bretton Flintshire, CH4 0DH	Date of issue	06/09/2019
		Issue No.	1
		Client Ref. No.	2269/TF/Geot/G
		Samples / Material Source	
		Samples Recv'd	29/08/2019
Testing Start Date	29/08/2019	Sample State	As received
Testing Complete	06/09/2019	Sampled by	Groundsolve Ltd
Comments			
Project No	PC197654		
Project Name	TOTAL FITNESS CAR PARK		
Summary of Tests			
Standard	Test Description	Test Quantity	UKAS
BS EN ISO 17892-1:2014	Water Content	3	Yes
BS EN ISO 17892-12:2018 Cl. 5.3 & 5.5	Liquid Limit and Plastic Limit	3	Yes
BS EN ISO 17892-4:2016 Cl. 5.2	Particle Size Distribution by Sieving Method	1	Yes

Note: Any descriptions, opinions or interpretations are outside the scope of UKAS accreditation.
The results within this report relate only to the samples tested and received from the client.



Test Results checked and approved for issue.
Signed for and on behalf of Geotechnics Limited

Schiano

Stephane Schiano (Laboratory Testing Manager)

GEOTECHNICS
geotechnical and geoenvironmental specialists
203 Torrington Avenue, Tile Hill,
Coventry, CV4 9UT

Project No: PC197654

GEOTECHNICS
geotechnical and geoenvironmental specialists

LABORATORY RESULTS - Classification Chart

Project: TOTAL FITNESS CAR PARK

Project No: PC197654

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT for all items tested

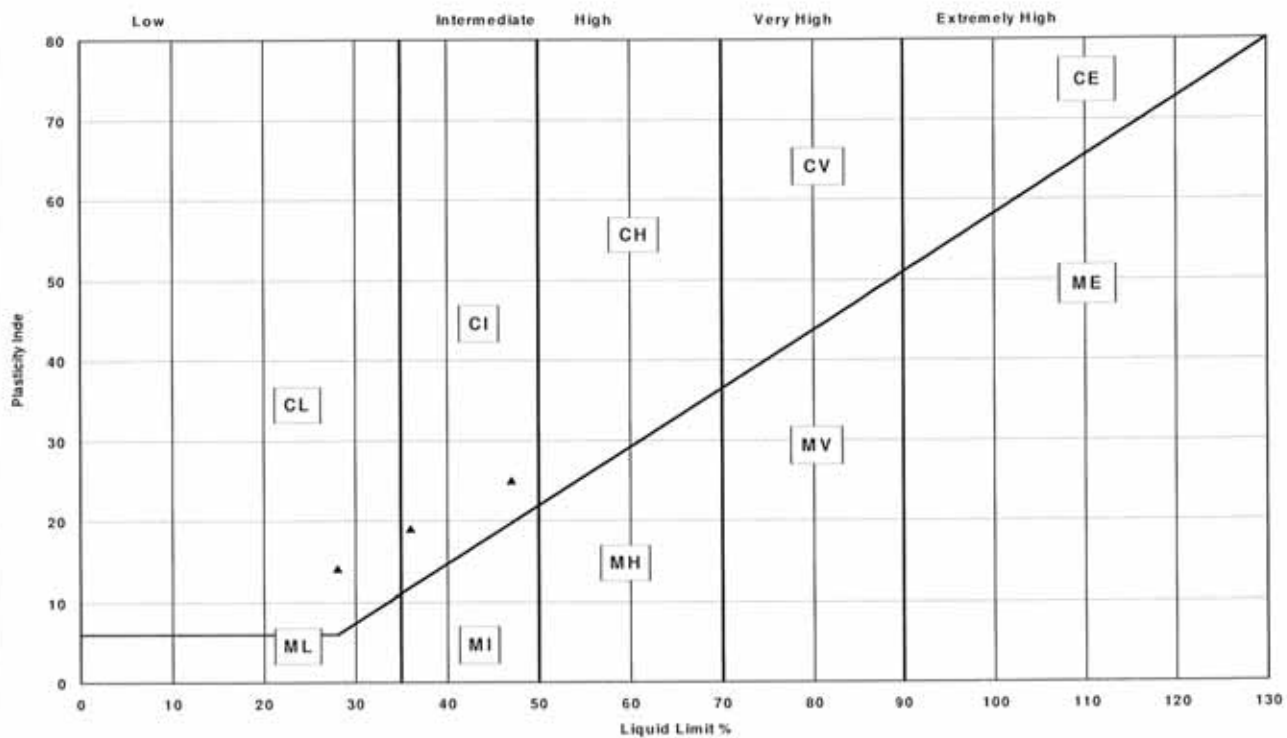


Table of Soil Types and Plasticity Characteristics from BS 5930 : 1999

Remarks

05/09/2019

Project No: PC197654

GEOTECHNICS
geotechnical and geoenvironmental specialists

LABORATORY RESULTS - Particle Size Distribution

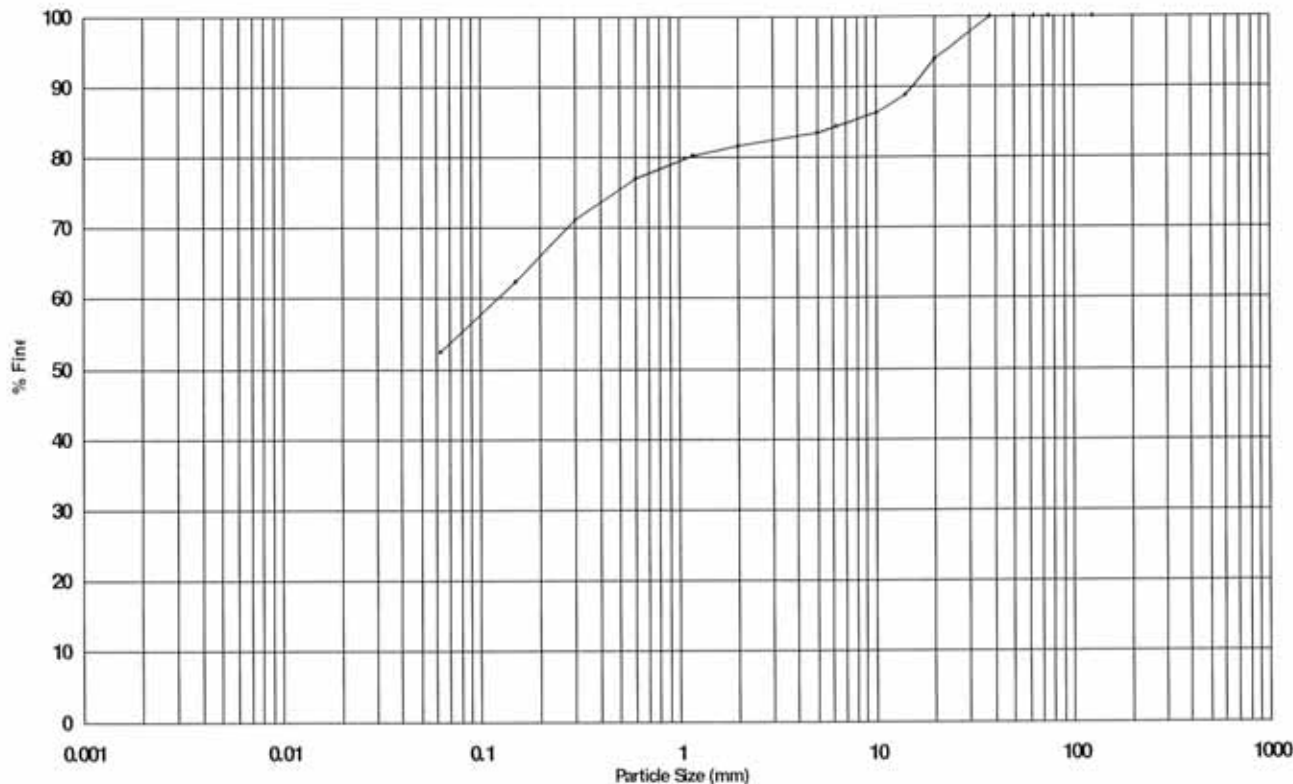
Project: TOTAL FITNESS CAR PARK

Hole TP02
Sample Depth 1.50m
Sample Type B
Sample Ref C25887

Project No: PC197654

Sample Description

Brown very sandy gravelly SILT.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	52
SAND	30
GRAVEL	18
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	94
14 mm	89
10 mm	86
6.3 mm	84
5 mm	83
2 mm	82
1.18 mm	80
600 µm	77
300 µm	71
150 µm	62

Size	% Finer
63 µm	52

Uniformity Coefficient	
Not Available	
Sieving Method	
Wet sieve	
Fine Particle Analysis	
Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

05/09/2019

APPENDIX I

Chemical Test Results



Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US

Tel: (01244) 528700

Fax: (01244) 528701

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

Ground Solve
Unit 1
Well House Barns
Chester Road
Bretton
Cheshire
CH4 0DH

Attention: Tyler Goodrick

CERTIFICATE OF ANALYSIS

Date: 27 September 2019
Customer: Ground Solve
Sample Delivery Group (SDG): 190828-73
Your Reference: Not Specified
Location: Total Fitness Car Park
Report No: 523270

This report has been revised and directly supersedes 521063 in its entirety.

We received 4 samples on Tuesday August 27, 2019 and 4 of these samples were scheduled for analysis which was completed on Wednesday September 11, 2019. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

Approved By:

Sonia McWhan
Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 190828-73 Client Reference: Not Specified Report Number: 523270
Location: Total Fitness Car Park Order Number: 2269/TG Superseded Report: 521063

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
20602717	TP1		0.50	22/08/2019
20602721	TP2		0.50	22/08/2019
20602722	TP2		1.50	22/08/2019
20602724	TP3		0.50	22/08/2019

Maximum Sample/Coolbox Temperature (°C) : 18.5

ISO5667-3 Water quality - Sampling - Part 3 -

During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 190828-73 Client Reference: Not Specified Report Number: 523270
 Location: Total Fitness Car Park Order Number: 2269/TG Superseded Report: 521063

Results Legend			Lab Sample No(s)			
X Test N No Determination Possible						
Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other						
Customer Sample Reference						
AGS Reference						
Depth (m)						
Container						
Sample Type						
			20602724	20602721	20602722	20602717
			TP3	TP2	TP2	TP1
			0.50	0.50	1.50	0.50
			250g Amber Jar (ALE210) 1kg TUB	250g Amber Jar (ALE210) 1kg TUB	250g Amber Jar (ALE210) 1kg TUB	250g Amber Jar (ALE210) 1kg TUB
			S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 4	X	X	X	X
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 4	X	X	X	X
Asbestos Quantification - Full	All	NDPs: 0 Tests: 2	X	X		
Chromium III	All	NDPs: 0 Tests: 4	X	X	X	X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 4	X	X	X	X
Easily Liberated Sulphide	All	NDPs: 0 Tests: 4	X	X	X	X
Elemental Sulphur	All	NDPs: 0 Tests: 4	X	X	X	X
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 4	X	X	X	X
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 4	X	X	X	X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 4	X	X	X	X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 4	X	X	X	X
Metals in solid samples by OES	All	NDPs: 0 Tests: 4	X	X	X	X
PAH by GCMS	All	NDPs: 0 Tests: 4	X	X	X	X
pH	All	NDPs: 0 Tests: 4	X	X	X	X
Phenols by HPLC (S)	All	NDPs: 0 Tests: 4	X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 190828-73 Client Reference: Not Specified Report Number: 523270
 Location: Total Fitness Car Park Order Number: 2269/TG Superseded Report: 521063

Results Legend			Lab Sample No(s)			
X Test N No Determination Possible						
Sample Types - S - Soil/Solid UNS - Unspecified Solid CW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other						
Customer Sample Reference						
AGS Reference						
Depth (m)						
Container						
Sample Type						
Sample description	All	NDPs: 0 Tests: 4	20602717	20602721	20602722	20602724
Total Organic Carbon	All	NDPs: 0 Tests: 4	TP1	TP2	TP2	TP3
TPH CWG GC (S)	All	NDPs: 0 Tests: 4				
VOC MS (S)	All	NDPs: 0 Tests: 4				
			0.50	0.50	1.50	0.50
			250g Amber Jar (ALE210) 1kg TUB	250g Amber Jar (ALE210) 1kg TUB	250g Amber Jar (ALE210) 1kg TUB	250g Amber Jar (ALE210) 1kg TUB
			S	S	S	S
			X	X	X	X
			X	X	X	X
			X	X	X	X
			X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 190828-73

Client Reference: Not Specified

Report Number: 523270

Location: Total Fitness Car Park

Order Number: 2269/TG

Superseded Report: 521063

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
-----------	----------	------	-----------------	--------	-------------	--------	------------	-------------	-------

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
20602717	TP1	0.50	Light Brown	Loamy Sand	Stones	Vegetation
20602721	TP2	0.50	Dark Brown	Sandy Loam	Crushed Brick	Stones
20602722	TP2	1.50	Light Brown	Sandy Loam	Stones	Vegetation
20602724	TP3	0.50	Dark Brown	Sandy Loam	Crushed Brick	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 190828-73
Location: Total Fitness Car Park

Client Reference: Not Specified
Order Number: 2269/TG

Report Number: 523270
Superseded Report: 521063

Results Legend		Customer Sample Ref.	TP1	TP2	TP2	TP3		
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.50	0.50	1.50	0.50		
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
aq	Aqueous / settled sample.		22/08/2019	22/08/2019	22/08/2019	22/08/2019		
dis.filt	Disolved / filtered sample.							
tot.solid	Total / undiluted sample.							
+	Subcontracted - refer to subcontractor report for accreditation status.							
---	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds aren't corrected for the recovery		27/08/2019	27/08/2019	27/08/2019	27/08/2019		
(F)	Trigger breach confirmed		190828-73	190828-73	190828-73	190828-73		
1-5A+5B	Sample deviation (see appendix)		20602717	20602721	20602722	20602724		
d	Dilution Applied							
Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	9.2	9.4	15	11		
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M d1.0	<0.01 M d1.0	<0.01 M d1.0	<0.01 M d1.0		
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M d1.0	<0.01 M d1.0	<0.01 M d1.0	<0.01 M d1.0		
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M d1.0	<0.015 M d1.0	<0.015 M d1.0	<0.015 M d1.0		
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M		
Soil Organic Matter (SOM)	<0.35 %	TM132	3.28 #	3.57 #	<0.35 #	5.95 #		
pH	1 pH Units	TM133	9.25 M	8.45 M	8.21 M	8.28 M		
Sulphur, Elemental	<10 mg/kg	TM136	95.6 M	14.4 M	<10 M	45.5 M		
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #	<0.6 # d1.0	<0.6 # d1.0	<0.6 # d1.0		
Cyanide, Total	<1 mg/kg	TM153	<1 M d1.0	<1 M d1.0	<1 M d1.0	<1 M d1.0		
Sulphide, Easily liberated	<15 mg/kg	TM180	<15 M	<15 @ M	<15 @ M	<15 @ M		
Chromium, Trivalent	<0.9 mg/kg	TM181	11.8	9.6	10.5	10.2		
Arsenic	<0.6 mg/kg	TM181	7.69 M	11.5 M	5.32 M	8.65 M		
Boron	<0.7 mg/kg	TM181	5.81 #	4.36 #	2.42 #	4.22 #		
Cadmium	<0.02 mg/kg	TM181	0.153 M	0.301 M	<0.02 M	0.348 M		
Chromium	<0.9 mg/kg	TM181	11.8 M	9.6 M	10.5 M	10.2 M		
Copper	<1.4 mg/kg	TM181	20.2 M	4440 M d10	5.63 M	36.5 M		
Lead	<0.7 mg/kg	TM181	73.3 M	293 M	13.7 M	95.2 M		
Mercury	<0.14 mg/kg	TM181	<0.14 M	<0.14 M	<0.14 M	<0.14 M		
Nickel	<0.2 mg/kg	TM181	16.4 M	21.3 M	13.3 M	18.9 M		
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #		
Zinc	<1.9 mg/kg	TM181	65.8 M	209 M	42.3 M	227 M		
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.119 M d1.0	0.0243 M d1.0	0.0138 M d1.0	0.0709 M d1.0		
Asbestos Quantification - Gravimetric - %	<0.001 %	TM304	<0.001 #	0.002 #				
Asbestos Quantification - PCOM Evaluation - %	<0.001 %	TM304	<0.001 #	<0.001 #				
Additional Asbestos Components (Using TM048)		TM304	None #	None #				
Analysts Comments		TM304	0	N/C				
Asbestos Quantification - Total - %	<0.001 %	TM304	<0.001 #	0.002 #				



CERTIFICATE OF ANALYSIS

Validated

SDG: 190828-73
Location: Total Fitness Car Park

Client Reference: Not Specified
Order Number: 2269/TG

Report Number: 523270
Superseded Report: 521063

Asbestos Identification - Solid Samples

Results Legend

ISO17025 accredited.
M mCERTS accredited.
* Subcontracted test.
(F) Trigger breach confirmed
1-55+9@ Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP1 0.50 SOLID 22/08/2019 00:00:00 27/08/2019 14:00:00 190828-73 20602717 TM048	03/09/2019	Marcin Magdziarek	Loose fibres in soil	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP2 0.50 SOLID 22/08/2019 00:00:00 27/08/2019 14:00:00 190828-73 20602721 TM048	03/09/2019	Marcin Magdziarek	Loose fibres in soil	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP2 1.50 SOLID 22/08/2019 00:00:00 27/08/2019 14:00:00 190828-73 20602722 TM048	03/09/2019	Agnieszka Chelmonska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP3 0.50 SOLID 22/08/2019 00:00:00 27/08/2019 14:00:00 190828-73 20602724 TM048	03/09/2019	Agnieszka Chelmonska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Asbestos Quantification - Full

Results Legend

ISO17025 accredited.
M mCERTS accredited.
* Subcontracted test.
(F) Trigger breach confirmed
1-55+9@ Sample deviation (see appendix)

		Additional Asbestos Components	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM	Asbestos Quantification - Total - %
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP1 0.50 SOLID 22/08/2019 00:00:00 27/08/2019 14:00:00 190828-73 20602717 TM304	None (#)	-	<0.001 (#)	<0.001 (#)	<0.001 (#)
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP2 0.50 SOLID 22/08/2019 00:00:00 27/08/2019 14:00:00 190828-73 20602721 TM304	None (#)	N/C	0.0020 (#)	<0.001 (#)	0.002 (#)



CERTIFICATE OF ANALYSIS

Validated

SDG: 190828-73 Client Reference: Not Specified Report Number: 523270
Location: Total Fitness Car Park Order Number: 2269/TG Superseded Report: 521063

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990; BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM136	Method 17.10, Second Site property, March 2003	Determination of Sulphur by HPLC
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media - Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID
TM180	Sulphide in waters and waste waters 1991 ISBN 01 175 7186 SCA rec. 2007 (unpublished)	The Determination Of Easily Liberated Sulphide In Soil Samples by Ion Selective Electrode Technique
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM243		Mixed Anions In Soils By Kone
TM304	HSE Contract research Report no 83/1996	Asbestos Quantification in Soil: Fibres identified by morphology only

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 190828-73

Client Reference: Not Specified

Report Number: 523270

Location:

Total Fitness Car Park

Superseded Report: 521063

Order Number: 2269/TG

Test Completion Dates

Lab Sample No(s)	20602717	20602721	20602722	20602724
Customer Sample Ref.	TP1	TP2	TP2	TP2
AGS Ref.				
Depth	0.50	0.50	1.50	0.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	02-Sep-2019	02-Sep-2019	02-Sep-2019	02-Sep-2019
Asbestos ID in Solid Samples	03-Sep-2019	03-Sep-2019	03-Sep-2019	03-Sep-2019
Asbestos Quantification - Full	11-Sep-2019	11-Sep-2019		
Chromium III	03-Sep-2019	03-Sep-2019	03-Sep-2019	03-Sep-2019
Cyanide Comp/Free/Total/Thiocyanate	03-Sep-2019	03-Sep-2019	03-Sep-2019	03-Sep-2019
Easily Liberated Sulphide	02-Sep-2019	02-Sep-2019	02-Sep-2019	02-Sep-2019
Elemental Sulphur	03-Sep-2019	03-Sep-2019	03-Sep-2019	03-Sep-2019
EPH CWG (Aliphatic) GC (S)	03-Sep-2019	03-Sep-2019	03-Sep-2019	03-Sep-2019
EPH CWG (Aromatic) GC (S)	03-Sep-2019	03-Sep-2019	03-Sep-2019	03-Sep-2019
GRO by GC-FID (S)	03-Sep-2019	03-Sep-2019	03-Sep-2019	03-Sep-2019
Hexavalent Chromium (s)	03-Sep-2019	03-Sep-2019	03-Sep-2019	03-Sep-2019
Metals in solid samples by OES	02-Sep-2019	03-Sep-2019	02-Sep-2019	02-Sep-2019
PAH by GC/MS	06-Sep-2019	06-Sep-2019	06-Sep-2019	06-Sep-2019
pH	03-Sep-2019	03-Sep-2019	03-Sep-2019	03-Sep-2019
Phenols by HPLC (S)	03-Sep-2019	03-Sep-2019	03-Sep-2019	03-Sep-2019
Sample description	31-Aug-2019	31-Aug-2019	31-Aug-2019	31-Aug-2019
Total Organic Carbon	02-Sep-2019	02-Sep-2019	03-Sep-2019	02-Sep-2019
TPH CWG GC (S)	03-Sep-2019	03-Sep-2019	03-Sep-2019	03-Sep-2019
VOC MS (S)	02-Sep-2019	02-Sep-2019	02-Sep-2019	02-Sep-2019



CERTIFICATE OF ANALYSIS

SDG: 190828-73 Client Reference: Not Specified Report Number: 523270
Location: Total Fitness Car Park Order Number: 2269/TG Superseded Report: 521063

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

General

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
§	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Anhydrite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2107).

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

APPENDIX J

Gas Monitoring Results



Gas and Groundwater Monitoring Results

[illegible]



Gas and Groundwater Monitoring Results

Contract Number:		41212		Gas Monitor:				GA2000					
Contract Name:		Stansty Road, Wrexham				Readings Taken By:				DW			
Date:		08/08/2013				Checked By:				HH			
Background Readings:		Weather Conditions:				Sunny		O ₂ % v/v	CO ₂ % v/v	CH ₄ % v/v	CO ppm	H ₂ S ppm	LNAPL or DNAPL
		Ground Conditions (dry / wet etc):				Dry							
		Atmospheric Pressure (Start):				1010mb		20.3	0.0	0.0	0	0	SWL
		Atmospheric Pressure (Finish):				1010mb							
		Hole No:	VOC ppm	O ₂ % v/v	CO ₂ % v/v	CH ₄ % v/v	LEL	CO ppm	H ₂ S ppm	Diff Pressure (Pa)	Gas flow Rate (l/hr)	Range	mBGL
BH03	0.0	16.2	2.9	0.1	1	0	0	0.00	-0.1	9.98	9.98	6.60	NR
WS04	0.0	18.6	1.1	0.1	1	0	0	0.00	-0.1	3.80	3.80	Dry	NR
WS08	0.0	11.5	1.0	0.1	1	0	0	0.00	0.0	2.95	2.95	Dry	NR
WS11*	0.6	19.5	0.5	0.1	1	0	0	0.00	-0.1	5.25	5.25	Dry	NR
WS12	0.0	18.9	1.2	0.1	1	0	0	0.00	-0.1	2.50	2.50	Dry	NR
>>>> = Flow above detection limit of 30 l/hr, <<<< = Negative flow greater than -10 l/hr, >Max = In excess of lower explosive limit.													
Remarks: * Hydrocarbon odour and residue on dip meter													



Gas and Groundwater Monitoring Results

Contract Number:		41212		Gas Monitor: GA2000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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Background Readings:		Weather Conditions:		Overcast		O ₂ % v/v	CO ₂ % v/v	CH ₄ % v/v	CO ppm	H ₂ S ppm	LNAPL or DNAPL mBGL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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Hole No:	VOC ppm	O ₂ % v/v	CO ₂ % v/v	CH ₄ % v/v		LEL	CO ppm	H ₂ S ppm	Diff Pressure (Pa)	Gas flow Rate (l/hr)	Depth to base of well	SWL	mBGL	NR	NR	NR																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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