

Eversley Court, Minera
Proposed Residential Development
Geo-environmental Report- Rev A
Gower Homes



GroundSolve Ltd

Consulting Geotechnical, Engineering Geology and Environmental Engineers

CONTENTS

1.0 INTRODUCTION	1
2.0 THE SITE	2
2.1 Site Location and Description	2
2.2 Geology & Hydrogeology	2
2.3 History	3
3.0 ENVIRONMENTAL SEARCHES	6
4.0 PROPOSED DEVELOPMENT	8
5.0 SITE INVESTIGATION	9
5.1 Fieldwork	9
5.2 Laboratory Work	9
6.0 GROUND CONDITIONS	11
6.1 General Stratigraphy	11
6.2 Topsoil	11
6.3 Glacial Till	11
6.4 Groundwater	12
6.5 Soakaway Testing	12
7.0 RESULTS OF CHEMICAL TESTING	13
8.0 CONCEPTUAL GROUND MODEL AND RISK ASSESSMENT	16
8.1 General	16
8.2 Hazard Identification	16
8.3 Summary of Conceptual Ground Model	17
8.4 Pathways	18
8.5 Receptors	18
8.6 Future Site users Risk Assessment	18
8.7 Controlled Waters Risk Assessment	18
8.8 Construction Workers	19
8.9 Ground Gases	19
8.10 Building Materials	19
8.11 Vegetation	19
8.12 Remediation Strategy	20
9.0 GEOTECHNICAL RECOMMENDATIONS	21
9.1 Excavations and Site Preparation	21
9.2 Foundations and Floor Slabs	21
9.3 Drainage	24
9.4 Reuse/Disposal of Materials	24
9.5 Protection of Buried Concrete	24
9.6 Roads and Hard standings	24
9.7 Landfill and Radon Gas	25
REFERENCES	26

FIGURES

1. Site Location
2. Site Layout & Trial Pit Locations
3. History
4. Proposed Development

APPENDICES

- A. Site Photographs
- B. Envirocheck Report
- C. Trial Pit Logs
- D. Physical Test Results
- E. Chemical Test Results
- F. WAC Analysis

1.0 INTRODUCTION

Gower Homes (GH) propose to purchase and develop a plot of land west of Eversley Court Minera, with nine conventional residential properties.

Prior to purchase GH appointed GroundSolve Ltd (GSL) to undertake a combined Phase I and Phase II geo-environmental report.

This report issued in April 2019 raised several other issues, as follows:

- Need to determine depth of lead contamination between the topsoil and underlying glacial till,
- An area of the site had recently been cleared of trees and the effect of any desiccation of the clay soil needed to be assessed,
- Waste Acceptance Criteria (WAC) analysis to enable a suitably licenced landfill to be found for any lead contamination spoil arisings.

This report presents the findings of the desk study and the varying phases of site investigation, and gives firm geotechnical recommendation for the development. In addition, conceptual ground models are presented along with an environmental risk assessment.

This report supersedes the April 2019 version.

2.0 THE SITE

2.1 Site Location and Description

The site is located immediately west of Eversley Court Minera, at National Grid Reference SJ 271 519, see Figure 1.

Directly east and south of the site is the existing housing that makes up the Eversley Court Estate, these houses are of various design and size. To the west and north of the site is open farm land, with a small wooded area to the north west.

The site itself is roughly rectangular in shape, and is approximately 130m long and up to 55m wide, widening to the north. At present the site is largely open grassland, with the northernmost part of the site having been recently cleared of trees and shrubs, with the site entrance situated in the south eastern corner.

A topographical survey has been provided, with the site observed to slope gently in a southerly direction from an elevation of 56mAOD on the northern boundary, falling to 49.5mAOD on the south eastern site boundary. Two small streams/drainage ditches were observed on the southern and northern site boundaries.

Photographs of the site area are presented in Appendix A.

2.2 Geology & Hydrogeology

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

- 1:50,000 scale geology plan Sheet 121 (Wrexham);
- 1:10,000 geology plan, Sheet SJ 25 SE;
- The Geology of the Country around Wrexham, Reference 1.

These show the site to be underlain by glacial till (Clay), overlying the Gwespys Sandstone, which is Carboniferous in age.

Experience of the glacial till in this area, confirms it to have a thin weathered layer, typically 0.50m thick, described as firm, yellow brown clay, quickly grading into a firm to stiff, brown clay, with gravel. The underlying bedrock comprises fine-grained, feldspathic and micaceous sandstones.

A fault, trending northwest-southeast, is shown passing through the middle of the site trending in a NW to SE direction, with its downthrow to the south east.

The Pennine Lower Coal Measures Formation outcrops immediately east of the site, which contains numerous coal seams, which have been worked throughout the local area. However, no coal seams are shown outcropping in the vicinity of the site, and as the strata generally dip towards the east, the Coal Measures strata will not underlie the site, and therefore the site will

not be underlain by any coal seams. The general area is also well known for historic lead mining. However, no recorded lead veins are shown in the vicinity of the site and the closest mine entrances are two adits some 400m south of the site.

The bedrock beneath the site is classified as a Secondary A Aquifer, with the glacial till classified as a Secondary Undifferentiated Aquifer. The glacial till is also classified as having a high leaching potential; however, this is based on the worst-case classification for urban areas or areas of restored mineral workings.

The water table would be anticipated to be at significant depth in the bedrock. Groundwater flows would be anticipated to be in a southerly direction following the topography, towards the Aber Sychnant.

2.3 History

The history of the site has been studied on old Ordnance Survey plans dating from 1872 at a scale of 1:2,500 unless otherwise stated. Recent aerial photographs have also been viewed.

The 1872 OS plan shows the site to be a single large open field, with several trees along its western field boundary and a railway track along its southern boundary. This is the Great Western Railway (Wrexham and Minera Branch), which is a single-track railway, leading to nearby quarries and lead mines in Minera. The surrounding area to the north and east is predominantly farm land, whilst the south and west is more developed with a Church and Vicarage having already been built, along with a number of residential properties to the south of the railway line, see Figure 3a.

The 1899 OS plan shows no change on site, although the trees along the western site boundary are no longer shown, see Figure 3b. Several properties had been constructed to the east of the site, north of the railway line.

The 1912 OS plan shows no change on site. Directly to the east a large residential property named Eversley had been constructed, along with further properties to the east of the site, see Figure 3c.

The 1938 OS plan at 1:10,560 scale shows no changes on site, or in the immediate vicinity. The railway line running along the southern boundary is shown as the Wrexham and Minera G.W.R, servicing the lead mines, Minera lime works, and several quarries to the east of the site, see Figure 3d.

No changes are shown on the 1954 OS plan at a scale of 1:10,560. However, the existing quarries and mines to the east and south are now much reduced in size or disused, see Figure 3e.

The 1964 OS plan shows no development on site. Whilst, the area to the south east has now been significantly developed with housing, see Figure 3f. in addition, the railway line is now referred to as a Mineral Railway.

The 1976 OS plan at 1:10,000 scale shows that the Mineral Railway along the southern boundary had been dismantled and is now a path. The road running approximately 50m to the east of the site is now named as Pen-y-Palmant Road, see Figure 3g.

The 1991 OS plan at 1:10,000 scale shows that there had been a number of properties built to the west of Pen-y-Palmant Road, including one directly bordering the site along the eastern boundary. A section of the path south of the site is no longer shown and a playground to the south west had been constructed. In addition, a number of other residential properties along Vicarage Hill and Pen-y-Nant to the south and east of the site had been constructed, see Figure 3h.

The 1993 OS plan shows that the Eversley Court housing estate had been built and now encompasses the entire southern boundary of the site, as well as a large portion of the eastern boundary, see Figure 3i.

The 2001 aerial photograph (1:2,500 scale) shows that the northern portion of the site is occupied by woodland, which had not been indicated on any previous OS maps, see Figure 3j.

A recent image obtained from google maps dated 2019 shows that the site is currently open fields, with the wooded area having been cleared, with only a few trees remaining, which have been felled following the photograph, see below.



2019 Aerial Photograph

3.0 ENVIRONMENTAL SEARCHES

An Envirocheck report has been obtained for the site, the main points are summarised below, and the full report presented in full in Appendix B.

Agency and Hydrological

- The BGS consider the site has the potential for groundwater flooding of property situated below ground level,
- They also consider the site has a limited potential for groundwater flooding to occur,
- The closest discharge consent is 215m west of the site, and is for the Dwr Cymru Sewerage Network,
- The nearest surface water feature is 74m south east of the site,
- The nearest pollution incident to controlled waters was 175m west of the site, and was a Category 3 incident due to runoff,
- A substantiated pollution incident occurred 123m east of the site and was organic chemical products,
- The nearest water abstraction is 315m south of the site, for public water supply.

Waste

- There are no recorded landfills close to the site,
- The nearest licensed waste management facility is 455m east of the site,
- There is potentially infilled land (pit, quarry, etc) some 254m northwest of the site,
- There are no registered waste treatment or disposal sites within 500m of the site boundary.

Geological

- There is a BGS recorded mineral site 300m northwest of the site, at Hafod-las Coal Pits,
- The site is in an area that may be affected by coal mining activity and it is recommended that a coal mining report be obtained,
- The site is in an area of conclusive metalliferous mining, although it was considered to be unlikely,
- The potential for compressible ground related stability hazards is very low,
- The potential for landslide ground stability hazards is very low,
- The potential for running sand hazards is very low,
- The potential for shrinking or swelling clay stability hazards is very low.

The BGS have also supplied estimated soil contaminant values, which are summarised below:

- Arsenic <15 mg/kg,
- Cadmium <1.8 mg/kg,
- Chromium 60-90 mg/kg,
- Lead >1,200,
- Nickel 15-30 mg/kg.

In addition, the site lies in an intermediate probability radon area, as between 1 to 3% of homes are estimated to be at or above the action level. Therefore, no radon protection measures are required for new dwellings or extensions on the site.

Industrial Land Use

- The closest active industrial land use is Ivor Owen and Sons Road Haulage Services, some 315m south east of the site.

Sensitive Land Use

- Ancient woodland is recorded 291m south of the site,
- An area of outstanding natural beauty lies 197m south west of the site,
- A site of special scientific interest lies 536m west of the site.

4.0 PROPOSED DEVELOPMENT

GH proposes to purchase and develop a plot of land west of Eversley Court Minera, with nine conventional detached houses with gardens, an access road and parking areas. The proposed layout is presented on Figure 4.

Foundation loads are not known at this stage, but based on experience are anticipated to be between 50 and 75 kN/m², with floor slab loadings not exceeding 5 kN/m².

The recommendations given in this report are based on the above assumptions, consequently, they should be reviewed, and if necessary revised, during the detailed design process.

5.0 SITE INVESTIGATION

5.1 Fieldwork

The initial investigation was undertaken on the 7th February and comprised;

- Four machine-dug trial pits to a maximum depth of 2.30m,
- Soakaway testing carried out in two of the trial pits.

GSL returned to site on 24th June 2019, in order to excavate a further nine trial pits, to undertake additional sampling for contamination (primarily lead in the topsoil), and to investigate the potential for clay desiccation.

The trial pits were logged by an engineer from GSL in general accordance with BS 5930, Reference 2. The soakaway tests were carried out by filling the pits quickly with water and monitoring the fall in water level in general accordance with BRE Digest 365, Reference 3.

The locations of the trial pits and soakaway tests are shown on Figure 2, with the trial pit logs presented in Appendix C.

5.2 Laboratory Work

Samples were taken from the trial pits for the following physical testing:

- Moisture content,
- Atterberg limits,
- pH & water-soluble sulphate (2:1 extract).

The testing was carried out in accordance with BS1377, Reference 4, the results are discussed in Section 6.0 and presented in full in Appendix D.

Samples for chemical testing were taken from the topsoil and underlying glacial till, placed in the appropriate containers and a cool box, and taken immediately to the laboratories of ALS in Chester.

Initially, four samples were taken (two from the topsoil and two from the underlying glacial till) at each end of the site, to cover the boundary nearest the historic railway line, and a control point further away.

These samples were scheduled for the following testing:

Metals & Non-metals - Arsenic (As), Boron (B), Cadmium (Cd), Chromium (Trivalent), Chromium (Hexavalent), 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 the four samples.

During the second phase of the site investigation in June 2019, an additional six samples of the glacial till were tested. One for the same range of contaminants listed above (including asbestos), and five for lead only, to determine if the lead contamination encountered in the topsoil extended into the underlying superficial deposits. A further sample of the topsoil was tested for lead testing only.

The results are summarised in Section 7.0, and all of the test results are presented in full in Appendix E.

In addition, Waste Acceptance Criteria (WAC) analysis was carried out on two samples of topsoil, one from northern section of the site (TP1) and one from the southern section of the site (TP02). The results are presented in Appendix F.

6.0 GROUND CONDITIONS

6.1 General Stratigraphy

The ground conditions encountered in the trial pits are summarised in the table below:

TP Ref.	Stratum Description / Depths (m)	
	Topsoil	Glacial Till
TP01	0.00 – 0.40	0.40 – 2.30
TP02	0.00 – 0.30	0.30 – 2.30
TP03	0.00 – 0.30	0.30 – 2.30
TP04	0.00 – 0.30	0.30 – 2.20
TP A	0.00 – 0.30	0.30 – 0.80
TP B	0.00 – 0.40	0.40 – 0.90
TP C	0.00 – 0.30	0.30 – 0.80
TP D	0.00 – 0.30	0.30 – 0.90
TP E	0.00 – 0.30	0.30 – 0.90
TP F	0.00 – 0.40	0.40 – 1.70
TP G	0.00 – 0.30	0.30 – 1.70
TP H	0.00 – 0.40	0.40 – 1.70
TP I	0.00 – 0.30	0.30 – 2.10

6.2 Topsoil

Topsoil was encountered in of the trial pits, and was described as soft, dark grey and sometimes dark brown, gravelly silt, or slightly silty/silty, slightly gravelly clay with rootlets. Some timber/metal fragments were found in TP F.

pH values between 6.69 to 7.91 were recorded within the topsoil, with water soluble sulphate values, when measured as a 2:1 water extract, ranging between <0.02g/l to 0.08g/l.

6.3 Glacial Till

Glacial till was encountered in all of the trial pits, proved to a maximum depth of 2.30m. It was typically described as firm/stiff, becoming very stiff, yellow brown and grey, slightly sandy, gravelly, becoming very gravelly clay, with some pockets of sand and low or occasionally high (in TP4) sandstone cobble and boulder content.

The deepest trial pits terminated in the glacial till between 2.2-2.3m depth, due to difficult excavation progress using a JCB 3CX excavator through the very stiff soil.

pH values between 7.41 and 8.33 were recorded, with water soluble sulphate values, when measured as a 2:1 water extract, ranging from 0.01g/l to 0.03g/l.

During the initial investigation three samples were taken near anticipated foundation level for Atterberg Limit testing to determine if shrinkability of the clay is an issue. The results recorded liquid limits between 35 and 42%, plastic limits between 16 and 25%, and plasticity indices between 17 and 19%, indicating clays of intermediate plasticity. Recorded natural moisture contents were between 13.6 and 20.2%.

The subsequent investigation in June 2019, only tested glacial till/clay within the area where trees had recently been felled. They recorded liquid limits between 33 and 44%, plastic limits between 15 and 24%, and plasticity indices between 16 and 23%, indicating clays of low to intermediate plasticity. Recorded natural moisture contents were between 13.7 and 24.6%.

Consequently, it can be seen that the results from the two investigations are very similar, however, they are analysed in more detail in Section 9.2.

6.4 Groundwater

Groundwater was not encountered in February 2019 during the initial site investigation. In the June 2019 investigation, a slight water seepage was encountered in TP A and TP D at shallow depth, between 0.50 and 0.80m.

6.5 Soakaway Testing

Soakaway testing was carried out in two of the trial pits, in general accordance with BRE 365, Reference 3. Each pit was rapidly filled with water, and the falling water levels monitored over a period of time.

The results of the soakaway testing are summarised in the table below.

TP Ref.	Depth (m)	Test No.	Fall in water (cm)	Time (Hours)	Permeability (m/sec)
TP01	2.30	1	0	3.5	None Calculated
TP02	2.30	1	0	3.5	None Calculated

No infiltration was observed in any of the trial pits over a 3.5-hour monitoring period, therefore permeabilities could not be calculated. Minor collapses were noted of the pit walls in both trial pits after 3.5 hours of monitoring, causing a slight rise in water levels, and further monitoring was therefore abandoned.

The glacial till material has therefore been shown to have a very low permeability, with estimated permeabilities of less than 1×10^{-7} m/sec.

7.0 RESULTS OF CHEMICAL TESTING

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

TP No	Depth (m)	Strata	Tests Scheduled
TP1	0.10	Topsoil	Full suite
TP1	0.80	Glacial Till	Full suite
TP2	0.10	Topsoil	Full suite
TP2	0.40	Topsoil	Full suite
TP A	0.60 – 0.70	Glacial Till	Lead only
TP B	0.70	Glacial Till	Lead only
TPC	0.60 – 0.70	Glacial Till	Lead only
TP D	0.10 – 0.30	Topsoil	Lead only
TP D	0.50 – 0.70	Glacial Till	Full suite
TP E	0.60 – 0.70	Glacial Till	Lead only
TP F	0.60 – 0.70	Glacial Till	Lead only

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 most-conservative SOM content of 1%.

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)	Count	Adopted Guideline (mg/kg)	Source	Exceedances
Arsenic	9.24	11.4	10.32	5	37	C4SL	0
Boron	2.24	3.94	2.92	5	290	S4UL	0
Cadmium	<0.02	2.12	0.92	5	22	C4SL	0
Chromium, Trivalent	9.8	16.6	12.92	5	910	S4UL	0
Chromium, Hexavalent	<0.6	<0.6	0.6	5	21	C4SL	0
Copper	9.85	23.6	19.15	5	2400	S4UL	0
Lead	67.2	380	172.12	11	200	C4SL	3
Mercury	<0.14	<0.14	0.14	5	1.2	S4UL	0
Nickel	12.5	32.7	17.8	5	130	S4UL	0
Phenol	<0.01	<0.01	0.01	3	120	S4UL	0
Selenium	<1	<1	1	5	250	S4UL	0
Zinc	38.7	395	169.62	5	3700	S4UL	0

Exceedances of the adopted GAC for lead were recorded in all three samples of topsoil, with all eight samples of the glacial till recording lead concentrations below the adopted GAC. No other contaminants exceeded the relevant values.

Petroleum Hydrocarbons	Min (mg/kg)	Max (mg/kg)	Average (mg/kg)	Count	Adopted Guideline (mg/kg)	Source	Exceedances
Benzene	<0.009	<0.009	0.01	5	0.87	C4SL	0
Toluene	<0.007	<0.007	0.01	5	130	S4UL	0
Ethylbenzene	<0.004	<0.004	0.004	5	47	S4UL	0
o-xylene	<0.01	<0.01	0.01	5	60	S4UL	0
Aliphatics >C5-C6	<0.01	0.0232	0.02	5	42	S4UL	0
Aliphatics >C6-C8	<0.01	0.0247	0.01	5	100	S4UL	0
Aliphatics >C8-C10	<0.01	0.0203	0.01	5	27	S4UL	0
Aliphatics >C10-C12	<0.01	0.0189	0.01	5	130	S4UL	0
Aliphatics >C12-C16	<0.1	1	0.28	5	1100	S4UL	0
Aliphatics >C16-C35	<0.1	<0.1	0.1	5	65000	S4UL	0
Aliphatics >C35-C44	<0.1	<0.1	0.1	5	65000	S4UL	0
Aromatics >EC5-EC7	<0.01	<0.01	0.01	5	70	S4UL	0
Aromatics >EC7-EC8	<0.01	<0.01	0.01	5	130	S4UL	0
Aromatics >EC8-EC10	<0.01	0.0131	0.01	5	34	S4UL	0
Aromatics >EC10-EC12	<0.01	0.0131	0.01	5	74	S4UL	0
Aromatics >EC12-EC16	<0.1	<0.1	0.1	5	140	S4UL	0
Aromatics >EC16-EC21	<0.1	2.43	0.92	5	260	S4UL	0
Aromatics >EC21-EC35	1.08	14.5	6.63	5	1100	S4UL	0
Aromatics >EC35-EC44	<0.1	3.89	1.68	5	1100	S4UL	0

No values exceeded the relevant guidelines for residential use with gardens.

Polyaromatic Hydrocarbons (PAH)	Min (mg/kg)	Max (mg/kg)	Average (mg/kg)	Count	Adopted Guideline (mg/kg)	Source	Exceedances
Acenaphthene	<0.008	<0.008	0.01	5	210	S4UL	0
Acenaphthylene	<0.012	<0.012	0.01	5	170	S4UL	0
Anthracene	<0.016	<0.016	0.02	5	2400	S4UL	0
Benz(a)anthracene	<0.014	0.0359	0.02	5	7.2	S4UL	0
Benzo(a)pyrene	<0.015	0.0378	0.02	5	5	C4SL	0
Benzo(b)fluoranthene	<0.015	0.0376	0.02	5	2.6	S4UL	0
Benzo(g,h,i)perylene	<0.024	0.0368	0.03	5	320	S4UL	0
Benzo(k)fluoranthene	<0.014	<0.014	0.01	5	77	S4UL	0
Chrysene	<0.01	0.0331	0.02	5	15	S4UL	0
Dibenzo(a,h)anthracene	<0.023	<0.023	0.02	5	0.24	S4UL	0
Fluoranthene	<0.017	0.0702	0.03	5	280	S4UL	0
Fluorene	<0.01	<0.01	0.01	5	170	S4UL	0
Indeno(1,2,3-cd)pyrene	<0.018	<0.018	0.02	5	27	S4UL	0
Naphthalene	<0.009	<0.009	0.01	5	2.3	S4UL	0
Phenanthrene	<0.015	0.0312	0.02	5	95	S4UL	0
Pyrene	<0.015	0.0643	0.03	5	620	S4UL	0

No values exceeded the relevant guidelines for residential use with gardens.

Other Contaminants / Testing	Min (mg/kg)	Max (mg/kg)	Average (mg/kg)	Count	Adopted Guideline (mg/kg)	Source	Exceedances
Soil Organic Matter (SOM)	0.612	7.29	2.93	5	-	-	-
pH	6.69	8.33	7.88	5	-	-	-
Sulphide, Easily liberated	<15	<15	15	5	-	-	-
Cyanide, Total	<1	<1	1	5	-	-	-
Total Sulphur (ASB)	<0.0016	<1	0.21	5	-	-	-
Water Soluble Sulphate as SO ₄ 2:1 Extract	0.0129	0.0768	0.03	5	-	-	-
p/m-Xylene	<0.01	<0.01	0.01	5	56	S4UL	0

No values of concern were recorded.

In addition, no asbestos, nor any fragments of asbestos-containing material (ACM), were encountered within any of the samples tested.

The WAC analysis failed to record any elevations above inert waste landfill values, with the exception of Total Organic Carbon, which was between 5.02 and 5.15 %, which is slightly above the stable non-reactive hazardous waste in non-hazardous landfill value of 5%.

However, the Loss on Ignition value in both samples exceeded the Hazardous waste landfill value of 10%. This is not surprising as the samples were taken from the organic topsoil on site.

8.0 CONCEPTUAL GROUND MODEL AND RISK ASSESSMENT

8.1 General

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

"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.

8.2 Hazard Identification

On Site

The desk study has revealed that the site's only previous uses were open fields and woodland, probably used as agricultural land. Therefore, the only contaminants of concern that would be anticipated would be localised fuel/oil spills or leaks from farm machinery, and general contamination from any localised made ground, which may have been used to infill depressions.

The trial pits failed to reveal any visual or olfactory evidence of contamination, and no made ground was encountered during the site investigation.

However, elevated concentrations of lead were detected in all three samples of the topsoil. High lead concentrations are typically encountered within the local area due to historic mining and smelting operations. No exceedances of lead were recorded in eight samples of the underlying glacial till, taken from across the site area.

Off Site

The desk study revealed an old mineral railway as a potential source of contamination close to the site, passing along the southern boundary. However, no elevated concentrations of any contaminants associated with railways were detected, including in topsoil and subsoil samples from TP1, which was excavated adjacent to the southern site boundary.

In addition, should there have been any contamination it would migrate downslope (southwards) on top of the low permeability clay away from the site.

8.3 Summary of Conceptual Ground Model

Potential Contamination Sources	Potential Contaminants of Concern	Potential Pathways	Receptor Group
Localised Made Ground Possible hydrocarbon spills Historic mineral railway Local Mining activity	Asbestos Ground Gases Heavy Metals PAH Petroleum Hydrocarbons	Inhalation of ground gas Inhalation/ingestion of contaminated dust Dermal contact Ingestion of soil or home-grown vegetables	Construction Workers Site end users
		Leaching of contaminated materials Lateral Migration and Infiltration of gas/water	Surface and groundwater Building materials and buried services

8.4 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 homegrown vegetables,
- Inhalation of ground gas,
- Inhalation of contaminated dust,
- Leaching of contaminated materials that may affect controlled waters,
- Direct contact with contaminated material during construction,
- Infiltration and accumulation of ground gas.

8.5 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.

8.6 Future Site users Risk Assessment

The site is to be developed with housing, which is the most sensitive end use.

Elevated concentrations of lead have been identified in the existing topsoil, with no contaminants identified in the existing glacial till. No evidence of any leaks or spills were recorded during the investigation, and no significant potentially contaminative activities are known to have occurred on the site.

Therefore, an active source-pathway-receptor link exists between the topsoil and the site end-users, and requires further action.

Removal of the topsoil would remove the source of lead contamination, and therefore sever the linkage. Given the limited thickness of the topsoil encountered, this is considered the most economical solution. Clean, imported topsoil would then be required for placement within all garden areas, and any areas of soft landscaping.

It would also be prudent to undertake a watching brief during shallow excavations. Any potentially contaminated material encountered should be excavated, stored safely on site, tested and then disposed of at a suitably licensed landfill facility.

8.7 Controlled Waters Risk Assessment

When considering the risk to controlled waters both surface waters and underlying aquifers have to be considered.

The closest water course is a minor stream located on the southern boundary of the site, and then the Aber Sychnant, 70m to the south. The underlying superficial deposits are classified as a Secondary – Undifferentiated aquifer.

No significant contamination has been identified at the site, which could affect controlled waters. In addition, the soakaway testing has proven the superficial deposits to be of very low permeability, which will result in negligible infiltration through the site into the underlying bedrock aquifer.

Finally, the proposed development will include removal of the topsoil, removing the source of lead contamination, together with formal drainage, which will reduce the potential for surface run-off entering the stream to the south of the site.

Therefore, the overall risk to controlled waters from the proposed development is considered to be negligible, reducing further on development of the site.

8.8 Construction Workers

The risk 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 accordance with current good practice, 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.

8.9 Ground Gases

No significant sources of ground gases have been identified during the desk study or site investigation works.

Therefore, there is considered to be a negligible risk to the development from ground gas.

The site is situated in an intermediate probability radon area where between 1-3% of houses are above the action level, however, the Envirocheck Report states that no radon protection measures are required in the construction of new dwellings or extensions.

8.10 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, who should be supplied with the laboratory test results.

8.11 Vegetation

The site is currently greenfield, and the existing topsoil will be removed as part of the development and replaced with clean, imported soil in garden areas due to elevated lead concentrations. Therefore, there will be no risk to vegetation following redevelopment.

8.12 Remediation Strategy

It is proposed to strip the existing topsoil, which was found to contain elevated concentrations of lead, and remove the material from site prior to development. The underlying glacial till formation has been proven to be uncontaminated, and therefore no further remediation will be required.

It will however be necessary to import suitable topsoil for use in garden and landscaping areas.

9.0 GEOTECHNICAL RECOMMENDATIONS

9.1 Excavations and Site Preparation

It will first be necessary to strip the topsoil, which will be taken off site to a suitably licenced landfill facility, due to the elevated lead concentrations recorded.

It is likely that some existing hedgerows and trees may need to be removed as part of the development, and any roots should be grubbed out. In addition, the existing stumps observed on the northern section of the site will need to be removed along with their root systems. The resulting excavations should then be backfilled with suitable material, which should be compacted in layers in accordance with an approved earthworks specification, such as the Dtp Highways Specification, Reference 5.

Subsequent excavations will be in firm/stiff or very stiff clay and will be possible using conventional earth moving equipment. However, it should be noted that boulders may be encountered in confined excavation, which will require breaking out. Excavation sides are likely to be stable in the short-term, although collapses of any excavations left open should be anticipated. Any excavations deeper than 1.2m that are to be entered will need to be shored or battered back for safety reasons.

The site slopes gently to the south, and significant cut and fill is not anticipated. However, if a degree of cut and fill is required to accommodate the plots, the glacial till is likely to be suitable for re-use as general fill material, provided it is suitably benched and compacted in accordance with a suitable earthwork's specification, Reference 5. It should also be noted that these materials will be prone to rapid deterioration on exposure to wet weather and trafficking.

Based on the results of this investigation, no significant inflows of groundwater are anticipated in shallow excavations. If any inflows are encountered, they should be slight and easily catered for by pumping from sumps cut within the excavations. In addition, it is always prudent to construct drainage runs up gradient to ensure excavations are self-draining.

9.2 Foundations and Floor Slabs

The desk study has proved that past coal or lead mining does not need to be considered at this site.

Therefore, conventional spread foundations are recommended for the development founded in the underlying firm/stiff or very stiff clay (glacial till), where an allowable bearing pressure of 150kN/m² should be used for the design of the foundations.

Given the anticipated loadings a standard 600mm wide bucket should suffice. A minimum founding depth of 0.90m below final external ground levels should be adopted, although this

should be assessed if plots are to be founded within influencing distance of existing or recently removed trees or hedgerows.

Where plots will be situated within an influencing distance of remaining or removed trees, the foundations may need to be deepened in accordance with the NHBC guidance for building near trees, Reference 6.

A tree survey is recommended to identify the species that are present. However, an assessment has been undertaken to determine if there is any evidence of desiccation of the clay caused by the trees, see below.

The volume change potential is calculated from Table 1 of the NHBC guidelines, where:

$$I'_p = I_p \times \frac{\% \text{ less than } 425\mu\text{m}}{100\%}$$

This gives modified plasticity indices corresponding to low volume change potential and this should be used in the assessment.

Work by the TRRL developed an apparatus that measures the pressure required to drive water out of soil and this was used to determine water content/suction relationships for very plastic soils. This work resulted in the recommendation that if:

$$W < 0.4 W_L$$

then significant desiccation of the clay may have occurred, where:

W = moisture content,

W_L = liquid limit of the clay.

However, it should be noted this is only a rough method, with the results presented below in Table 1. This method revealed possible slight desiccation in TP2 and TP4.

In addition, BRE Digest 412, Desiccation in clay soils 1996, refers to the liquidity index of the soil being used to assess desiccation levels, which is given by the equation:

$$I_L = \frac{W - W_p}{I_p}$$

Where:

I_p = Plasticity index of the soil.

W_p = Plastic limit of the clay.

Values of $I_L = 0$ means that the soils water content is at the Plastic Limit, while negative values indicate the soil is drier than the Plastic Limit, i.e. showing signs of desiccation.

Table 1 Clay Shrinkage Potential

TP No	Depth (m)	Ip %	WL %	Wp %	W %	0.4WL	IL=W-Wp/Ip
TP1	0.9	19.0	35	16	20.2	14.0	0.22
TP2	1.0	18.0	36	18	13.6	14.4	-0.24
TP4	1.1	17.0	42	25	14.9	16.8	-0.59
TP F	0.6	19.0	37	18	23.6	14.8	0.29
TP F	1.60	17.0	33	16	14.2	13.2	-0.10
TP G	0.5	23.0	44	21	24.6	17.6	0.156
TP G	1.50	16.0	35	19	15.7	14.0	-0.21
TP H	0.60	20.0	44	24	19.1	17.6	-0.24
TP H	1.60	18.0	33	15	13.7	13.2	-0.07
TP I	1.0	16.0	39	23	18.6	15.6	-0.27
TP I	2.0	16.0	33	17	13.9	13.2	-0.19

Probable desiccation

The above results show minor evidence of desiccation in several of the trial pits. Interestingly, there is no clear pattern between samples taken in the area recently cleared of trees and control points away from the trees such as TP 4. There is also no clear pattern between those sample locations close to existing trees and those in the area recently cleared.

It must therefore be concluded that most rehydration of the clays in the area where trees have been felled has already occurred and the potential for further movement is limited, especially with a further delay between this report and construction commencing. It should also be noted that no visual evidence of desiccation was observed in the trial pits.

The two issues that need consideration are as follows:

- Houses constructed close to existing trees outside of the site boundary,
- Possible heave of the glacial till following rehydration once the trees have been removed.

It is recommended that a tree survey be carried out of the existing trees, with the depth of foundations being calculated using Reference 6. It would also be prudent to inspect the foundations excavations for evidence of desiccation

In the northern section of the site previously covered with trees and those plots close to existing trees suspended floor slabs are recommended.

Ground bearing floor slabs could be used for the development, with floor slabs being designed assuming a "Poor" formation as described in Reference 7. However, this option could only be pursued in the southern section of the site unaffected by the previous trees. I.e. 10m south of the old tree line.

9.3 Drainage

The soakaway testing carried out has shown the glacial till deposits to be of very low permeability, and no infiltration rates could be calculated after 3.5 hours of monitoring.

Consequently, the site is considered unsuitable for soakaway drainage systems.

As the site slopes southwards to an existing stream/drainage ditch, the current site run off will flow into this ditch. Consideration could therefore be given to attenuation tanks on site with outflow matched to current greenfield run off rates.

9.4 Reuse/Disposal of Materials

The topsoil has been found to have exceedances of lead, and will therefore not be suitable for reuse on site. Clean, imported topsoil will be required to form all garden areas and any soft landscaping.

It is also recommended that the existing test data be provided to a suitable licensed landfill to enable costs to be established for disposal.

The underlying glacial till should be suitable as a structural fill for raising site levels, if required. However, it should be noted that this material is subject to rapid deterioration on exposure to wet weather and trafficking.

9.5 Protection of Buried Concrete

Chemical testing recorded concentrations of sulphate, when measured as 2:1 water extract, in the range of 0.0129g/l to 0.0768g/l within the topsoil and glacial till, with pH values ranging from 6.69 – 8.33.

Therefore, in accordance with Reference 8 and assuming mobile groundwater, the buried concrete can be classified as:

- DS-1,
- AC-1.

9.6 Roads and Hard standings

No California Bearing Ratio (CBR) testing was carried out as part of this investigation.

However, a CBR value of between 3% and 5% would typically be feasible in the glacial till, although this will need to be confirmed by on site testing. For preliminary costing purposes a value of 3% can be used.

All formations should be proof-rolled, and any loose or soft areas excavated, typically an additional 300mm, and the resultant excavation backfilled with suitable, well-compacted granular materials.

It would also be prudent to leave the formations slightly high until construction is imminent to protect the formation from deterioration.

9.7 Landfill and Radon Gas

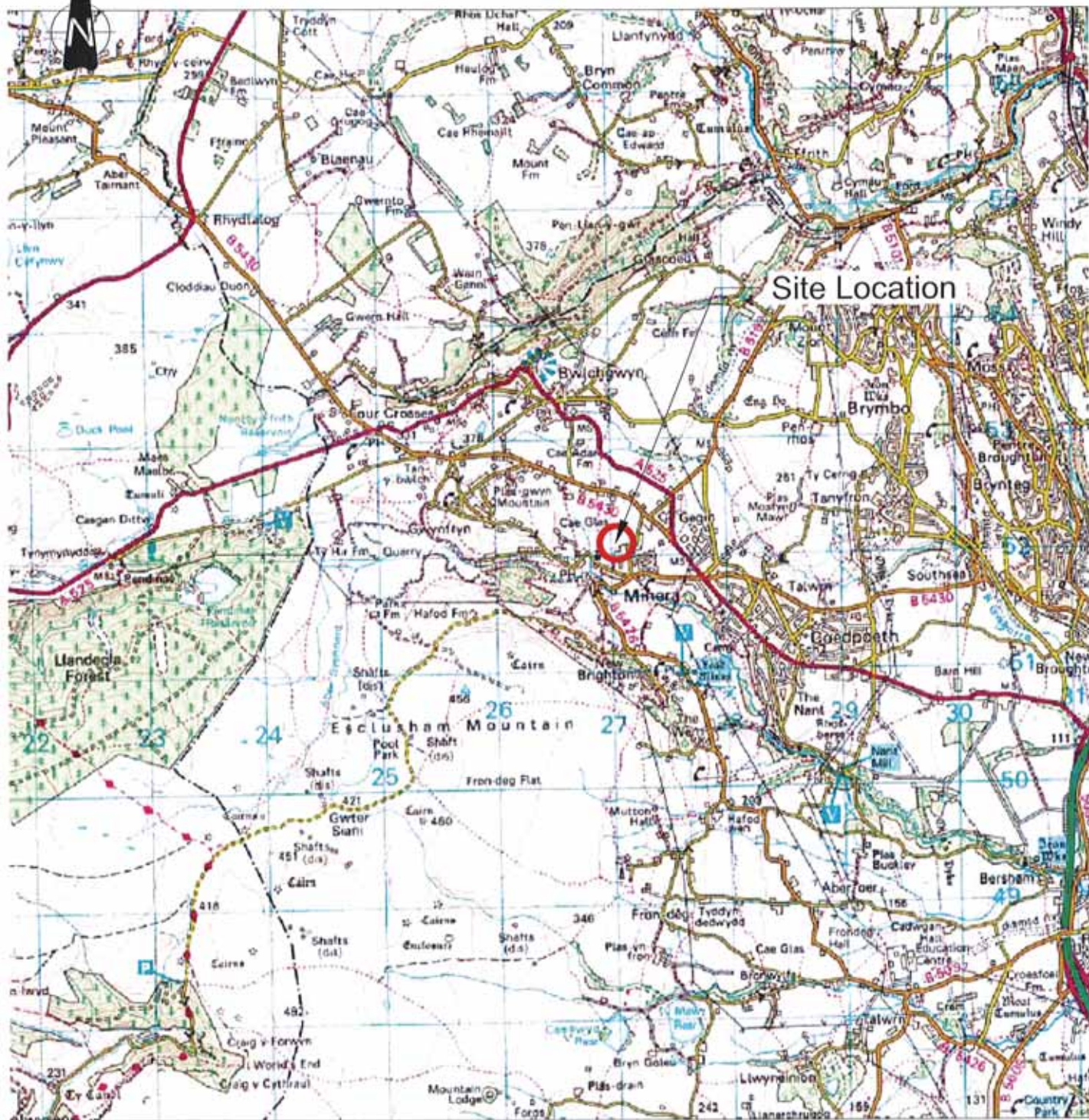
No sources of ground gas that may affect the site have been identified by the desk study or site investigation, therefore no gas protection measures are considered necessary.

The site is also located in an intermediate probability radon area; however, no radon protective measures are required for the proposed development.

REFERENCES

1. The Geology of the Country around Wrexham (Part II), British Geological Survey, 1928.
2. BS 5930:2015, Code of Practice for Site Investigation.
3. BRE Digest 365, Soakaway Design, 2003.
4. BS 1377:1991, British Standard Methods of Tests for Soils for Civil engineering Purposes.
5. Manual of Contract Documents for Highway Works, Volume 1, Specification for Highway Works - Series 600, Department of Transport, 2016.
6. NHBC Standards, Part 4 Foundations, 2019.
7. Cement & Concrete Association, Concrete Ground floors: their design, construction and finish, Deacon, R, Publication 48.034, 1986.
8. BRE Special Digest 1, 2005, Concrete in Aggressive Ground.

FIGURES



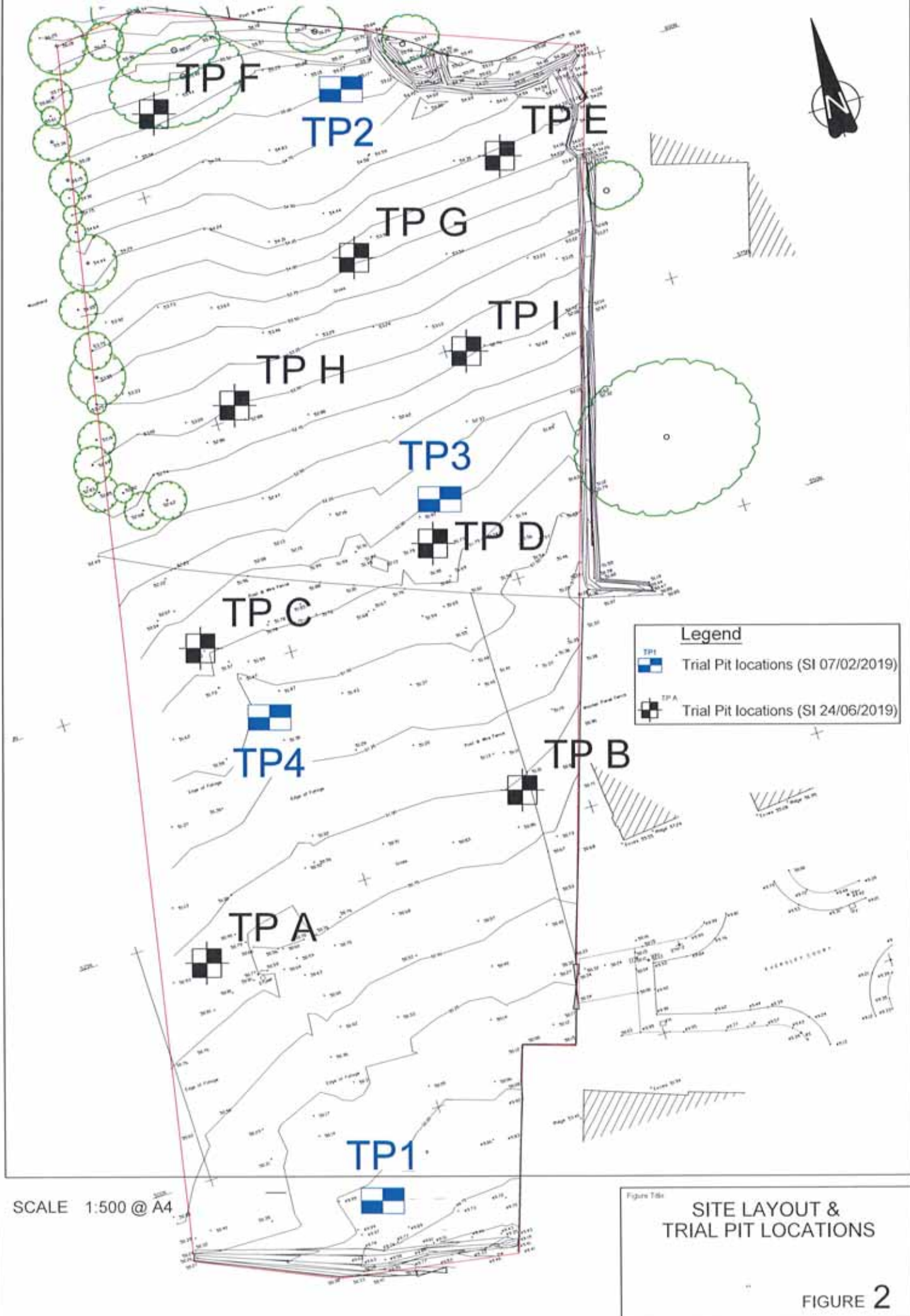
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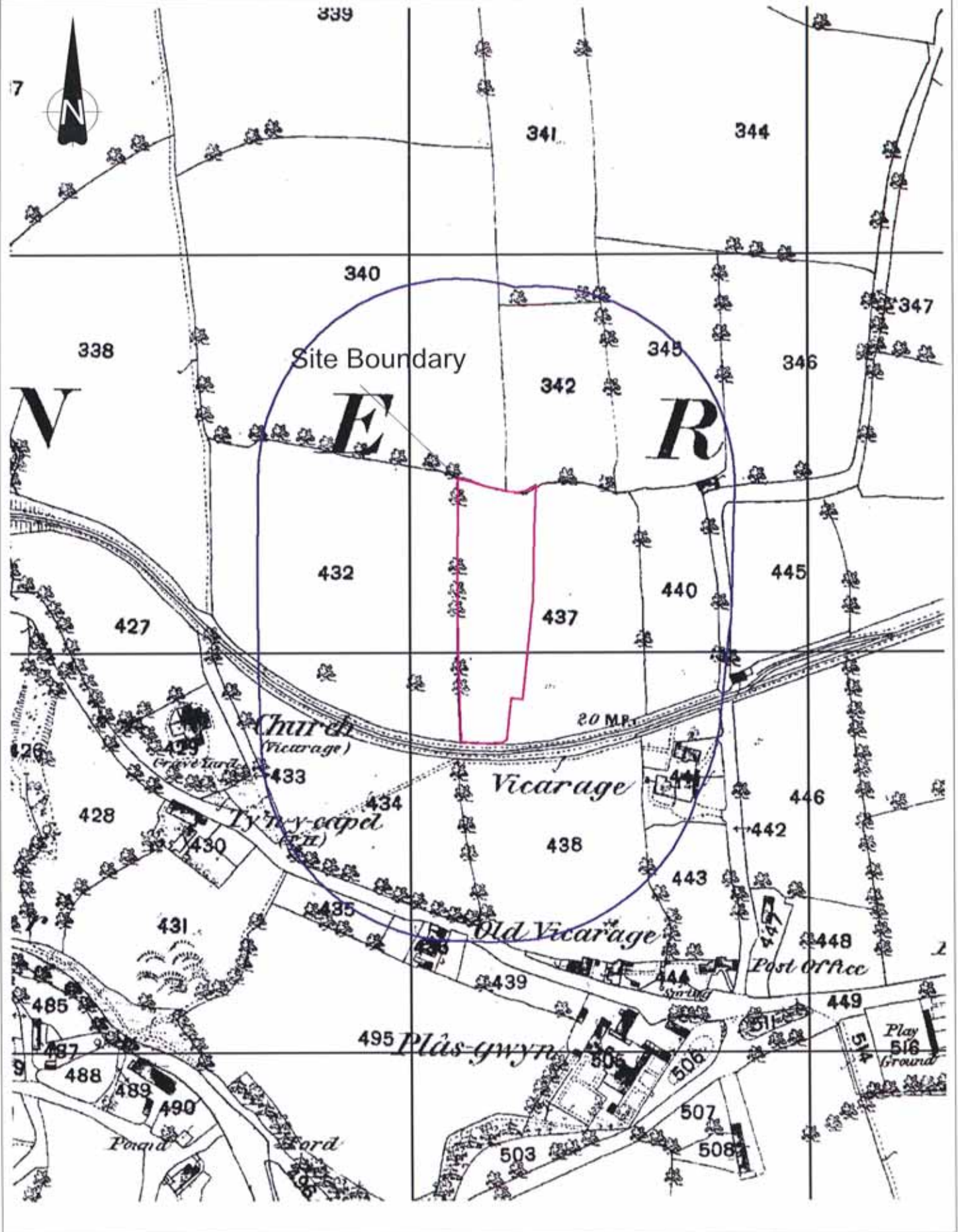
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Figure Title

SITE LOCATION

FIGURE 1



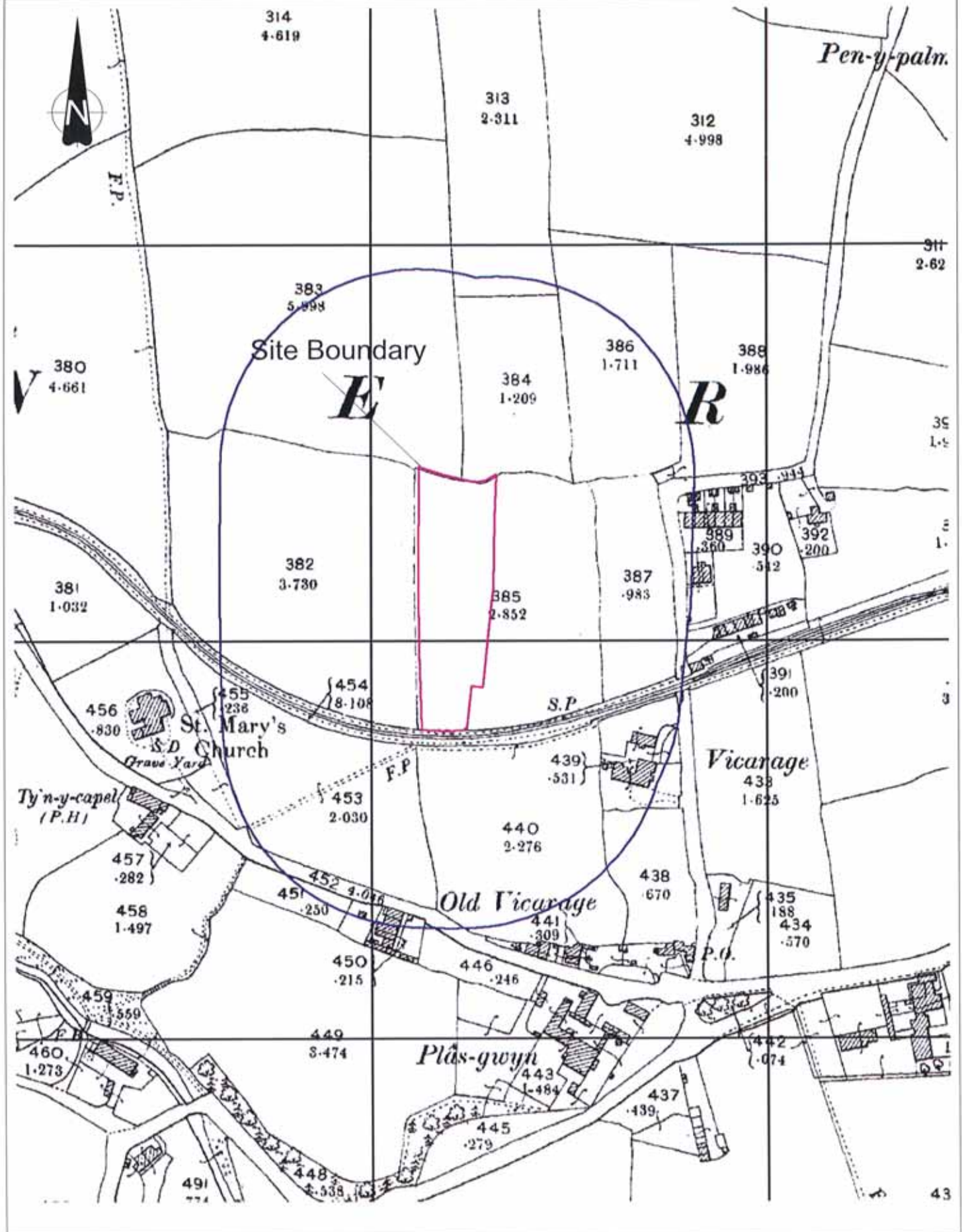


SCALE 1:2,500 @ A4

Figure Title

SITE HISTORY
1872

FIGURE 3a



SCALE 1:2,500 @ A4

Figure Title

SITE HISTORY
1899

FIGURE 3b

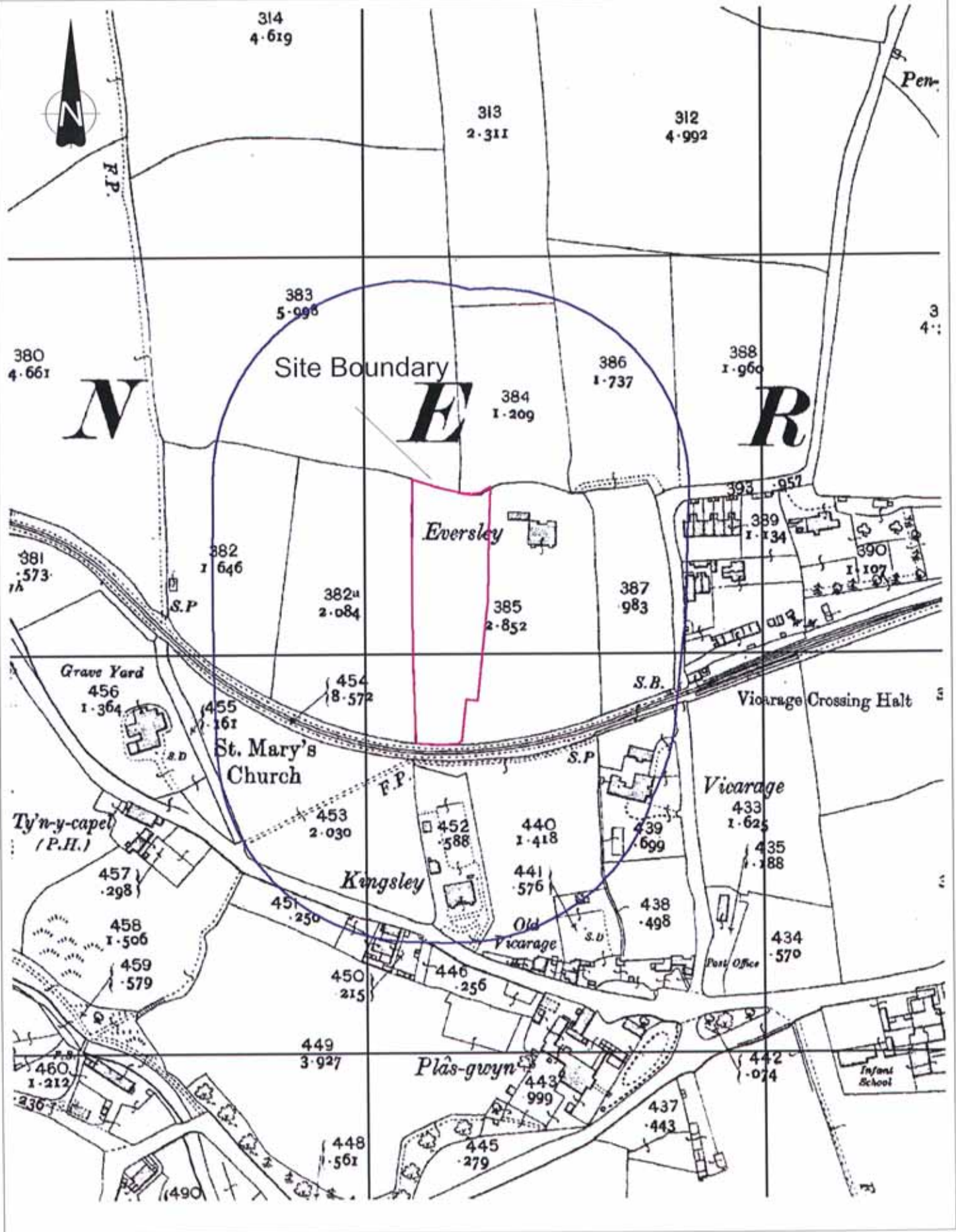
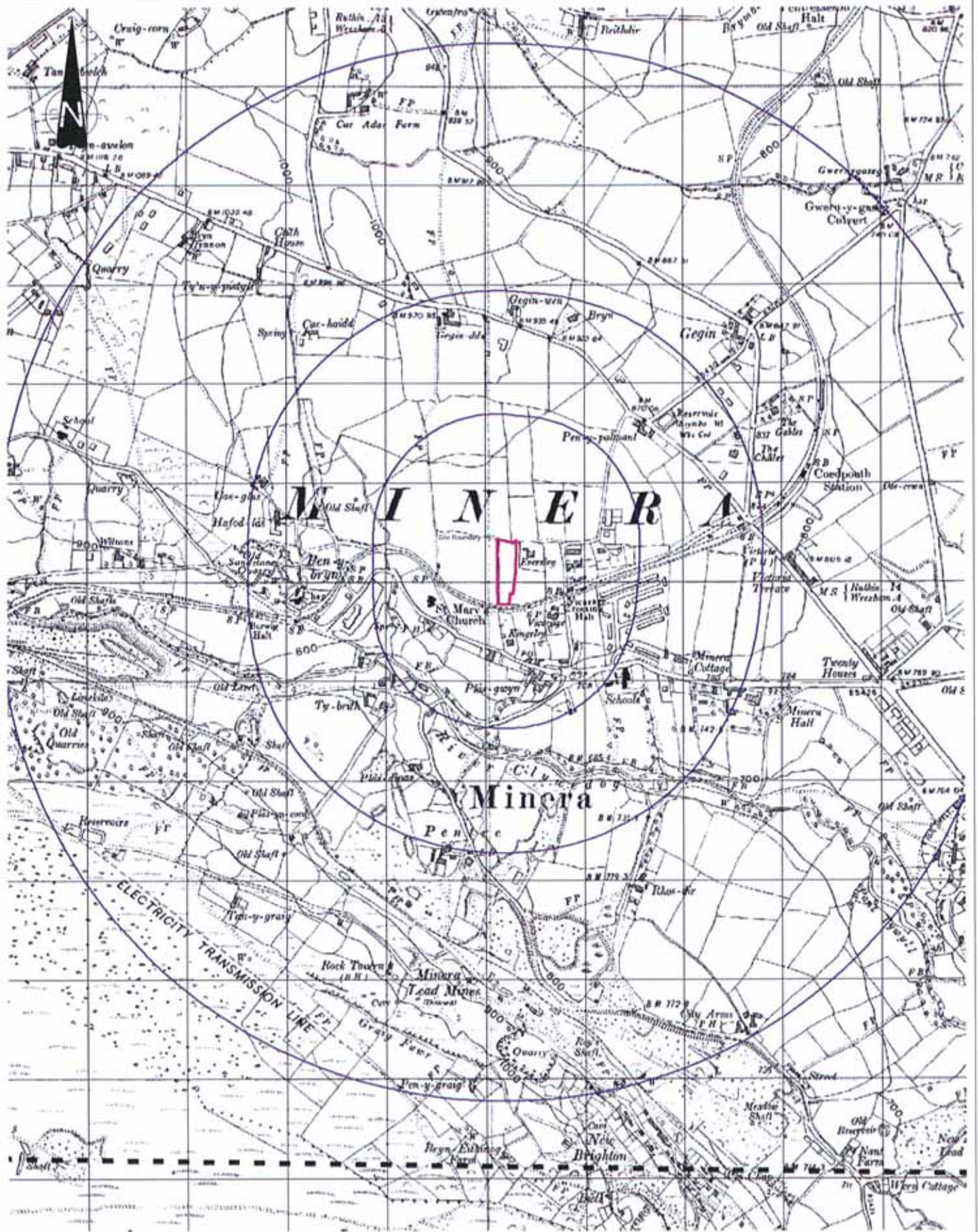


Figure Title

SITE HISTORY
1912

FIGURE 3c



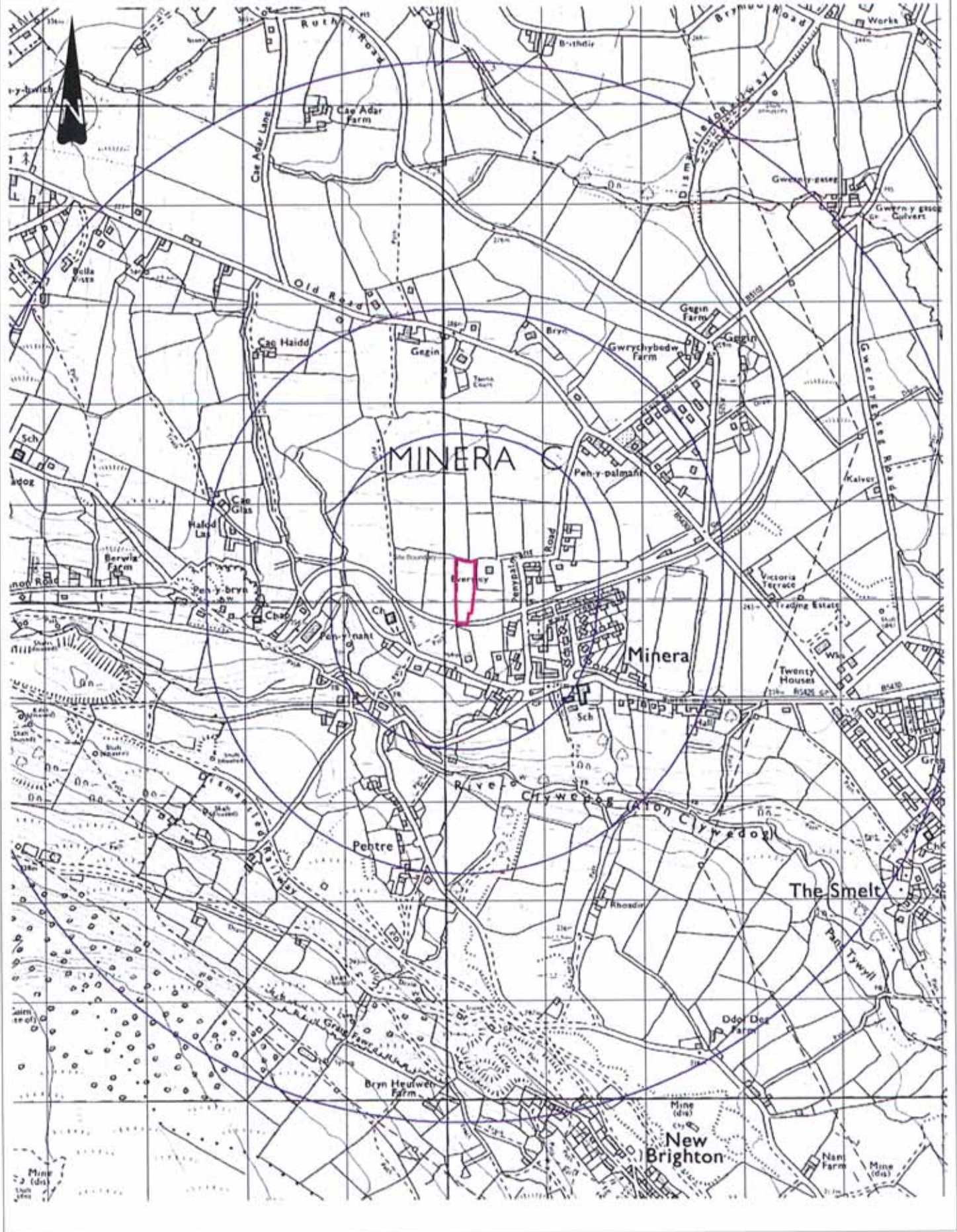


SCALE 1:10,560 @ A4

Figure Title

SITE HISTORY
1954

FIGURE 3e

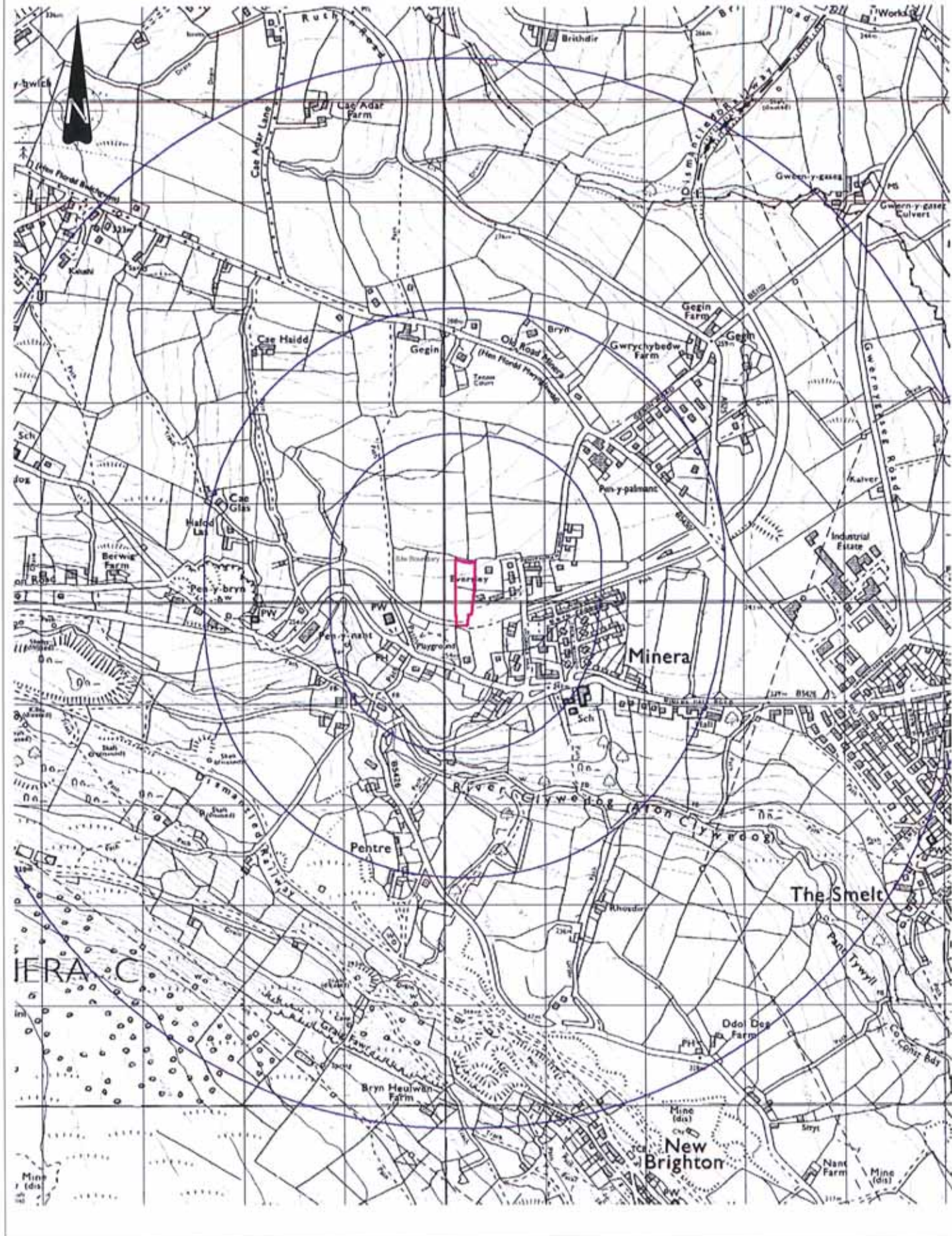


SCALE 1:10,000 @ A4

Figure Title

SITE HISTORY
1976

FIGURE 3g



SCALE 1:10,000 @ A4

Figure Title

SITE HISTORY
1991

FIGURE 3h





SCALE 1:2,500 @ A4

Figure Title

SITE HISTORY
2001

FIGURE 3j

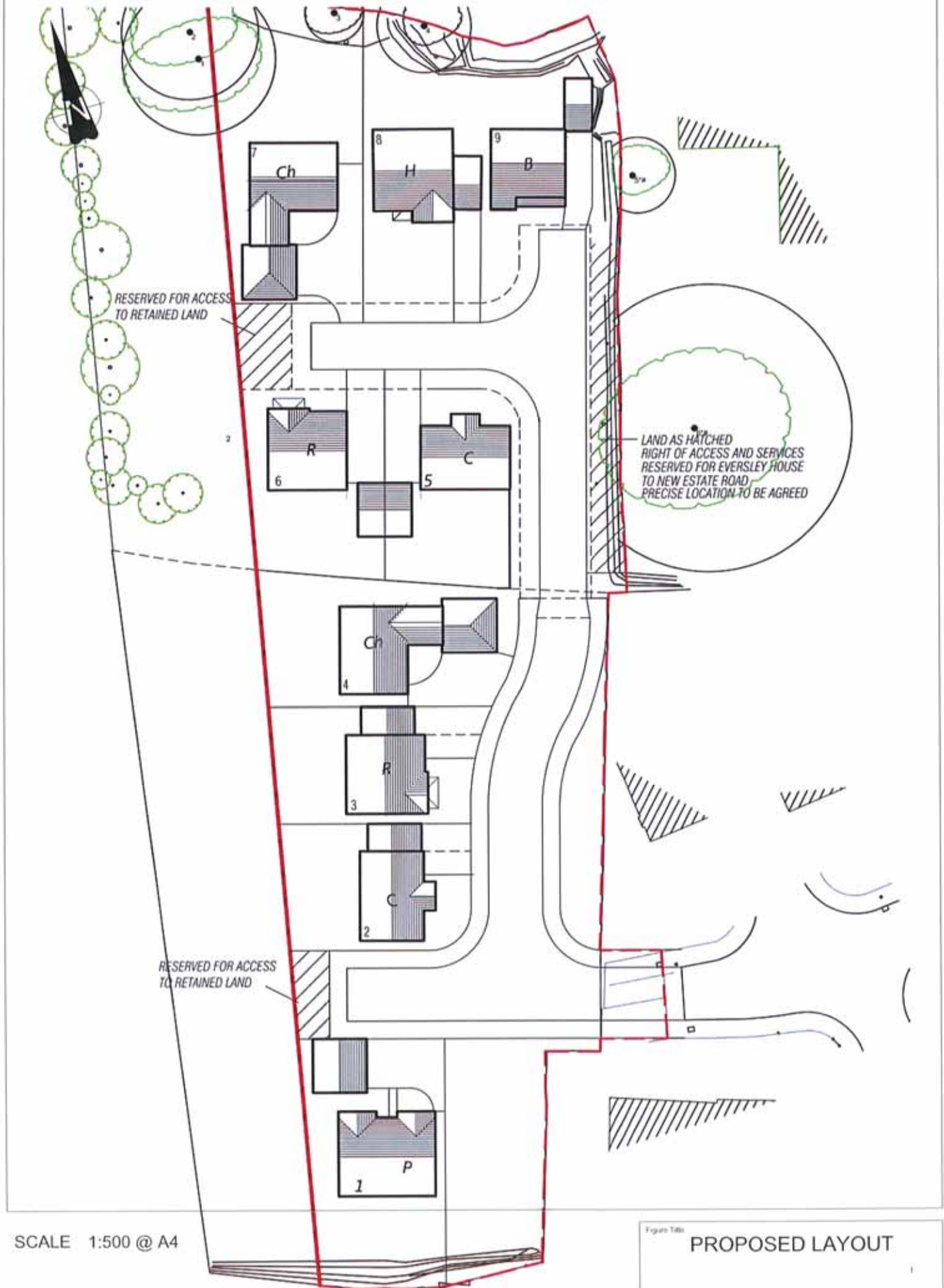


FIGURE 4

APPENDIX A

Site Photographs



Photograph 1 – Southern part of the site



Photograph 2 – Western site boundary



Photograph 3 – Northern part of the site following clearance works



Photograph 4 – Eastern site boundary with adjacent residential properties



Photograph 5 – Central part of the site, facing south

APPENDIX B

Envirocheck Report

Envirocheck® Report: Datasheet

Order Details:

Order Number:

191864158_1_1

Customer Reference:

2192-Eversley Court-JH

National Grid Reference:

327040, 352020

Slice:

A

Site Area (Ha):

0.44

Search Buffer (m):

1000

Site Details:

, Land West of, Eversley Court

Minera

Wrexham

LL11 3YZ

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	26
Hazardous Substances	-
Geological	28
Industrial Land Use	42
Sensitive Land Use	50
Data Currency	51
Data Suppliers	56
Useful Contacts	57

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	pg 3				2
Discharge Consents	pg 4		3	2	1
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 5				6
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 6		Yes		
Pollution Incidents to Controlled Waters	pg 6		1	3	3
Prosecutions Relating to Authorised Processes					
Registered Radioactive Substances					
River Quality					
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register	pg 7		1		
Water Abstractions	pg 7			1	1 (*4)
Water Industry Act Referrals					
Groundwater Vulnerability	pg 9	Yes	n/a	n/a	n/a
Drift Deposits	pg 9	1	n/a	n/a	n/a
Bedrock Aquifer Designations	pg 9	Yes	n/a	n/a	n/a
Superficial Aquifer Designations	pg 9	Yes	n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences	pg 9		Yes	n/a	n/a
Flooding from Rivers or Sea without Defences	pg 9		Yes	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 9		9	45	87

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 26			2	2
Local Authority Landfill Coverage	pg 26	1	n/a	n/a	n/a
Local Authority Recorded Landfill Sites					
Potentially Infilled Land (Non-Water)	pg 26			3	5
Potentially Infilled Land (Water)					
Registered Landfill Sites					
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites	pg 27				1
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 28	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 28	Yes	Yes	Yes	Yes
BGS Recorded Mineral Sites	pg 34			5	29
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
CBSCB Compensation District			n/a	n/a	n/a
Coal Mining Affected Areas	pg 39	Yes	n/a	n/a	n/a
Mining Instability	pg 39	Yes	n/a	n/a	n/a
Man-Made Mining Cavities	pg 39				4
Natural Cavities	pg 40				1
Non Coal Mining Areas of Great Britain	pg 40	Yes	Yes	n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 40	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 40		Yes	n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 40	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 41	Yes	Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 41	Yes		n/a	n/a
Radon Potential - Radon Affected Areas	pg 41	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 42		1	2	33
Fuel Station Entries					
Points of Interest - Commercial Services	pg 45		2	2	28
Points of Interest - Education and Health					
Points of Interest - Manufacturing and Production	pg 47			2	15
Points of Interest - Public Infrastructure	pg 49				2
Points of Interest - Recreational and Environmental	pg 49		3		
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	pg 50			2	2
Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty	pg 50		1		
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 50				1
Special Areas of Conservation	pg 50				1
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 of Property Situated Below Ground Level	A13NW (W)	0	1	327040 352024
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NE (E)	0	1	327050 352024
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (S)	6	1	327040 351950
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NE (NE)	13	1	327100 352050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NW (W)	24	1	327000 352024
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (SW)	25	1	327000 352000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NW (NW)	25	1	327000 352050
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (SW)	27	1	327000 351950
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NW (NW)	28	1	327000 352100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SE (SE)	52	1	327100 351950
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NW (NW)	76	1	326950 352100
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (SE)	78	1	327100 351900
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NW (NW)	97	1	326950 352150
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SW (W)	125	1	326900 352000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NW (NW)	125	1	326900 352100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A13NW (W)	125	1	326900 352050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SW (SW)	131	1	326950 351850
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NW (NW)	139	1	326900 352150
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (SE)	148	1	327150 351850
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SW (S)	158	1	327000 351800
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NW (NW)	168	1	326900 352200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SW (S)	206	1	327040 351750

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (S)	206	1	327050 351750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SE (SE)	229	1	327250 351850
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SW (SW)	235	1	326850 351800
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (SE)	256	1	327300 351900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SE (SE)	274	1	327300 351850
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SW (W)	275	1	326750 352000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SW (W)	276	1	326750 351950
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SE (S)	276	1	327150 351700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SW (SW)	282	1	326750 351900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SW (SW)	285	1	326900 351700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NW (S)	306	1	327040 351650
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A8NE (S)	306	1	327050 351650
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A13SW (SW)	311	1	326850 351700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NW (S)	316	1	326950 351650
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (SE)	321	1	327350 351850
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12SE (W)	326	1	326700 351950
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NE (S)	371	1	327150 351600
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12SE (W)	376	1	326650 351950
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A8NW (SW)	381	1	326800 351650
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A14SW (SE)	386	1	327400 351800
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NW (SW)	397	1	326850 351600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NE (S)	406	1	327050 351550

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NE (SE)	410	1	327250 351600
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A18SE (NE)	411	1	327250 352450
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NE (S)	419	1	327150 351550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NW (SW)	422	1	326800 351600
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12NE (W)	424	1	326600 352024
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12SE (W)	425	1	326600 352000
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12SE (W)	426	1	326600 351950
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14SW (SE)	432	1	327450 351800
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NE (S)	434	1	327200 351550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NE (SE)	437	1	327300 351600
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NW (S)	443	1	326850 351550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A14SW (SE)	453	1	327450 351750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NE (SE)	468	1	327350 351600
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12NE (W)	474	1	326550 352024
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SE (W)	476	1	326550 351950
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A12SE (W)	479	1	326550 351900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A14SW (SE)	498	1	327500 351750
1	Contaminated Land Register Entries and Notices Location: Rosebank, Smelt Road, Coedpoeth, Wrexham. LI11 3sh. Notice Type: Environmental Protection Act (1990) Part IIa Remediation Statement Reference: Not Supplied Dated: 5th March 2016 Positional Accuracy: Positioned by the supplier Boundary Quality: Good	A9NE (SE)	970	2	327898 351491
2	Contaminated Land Register Entries and Notices Location: Terfynfa, 12, Smelt Road, Coedpoeth, Wrexham. LI11 3sh. Notice Type: Environmental Protection Act (1990) Part IIa Remediation Statement Reference: Not Supplied Dated: 14th August 2015 Positional Accuracy: Positioned by the supplier Boundary Quality: Good	A9NE (SE)	984	2	327880 351432

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
3	Discharge Consents Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Gwynfryn Sewerage System Sso Authority: Natural Resources Wales Catchment Area: River Dee Reference: CM0072201 Permit Version: 1 Effective Date: 26th October 1972 Issued Date: 26th October 1972 Revocation Date: 30th March 2005 Discharge Type: Unspecified Discharge: Not Supplied Environment: Receiving Water: Un-Named Trib. Of Clywedog Status: New Consent, by Application (Water Resources Act 1991, Section 88) Positional Accuracy: Located by supplier to within 100m	A13SW (W)	215	3	326810 351980
3	Discharge Consents Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Gwynfryn Cso, Church Road, Minera, Wrexham, Wales, LI11 3da Authority: Natural Resources Wales Catchment Area: CLYWEDOG - ABOVE BLACK BROOK Reference: Cm0072201 Permit Version: 2 Effective Date: 31st March 2005 Issued Date: 19th March 2004 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: Un-Named Trib. Of Clywedog Status: Effective Positional Accuracy: Located by supplier to within 10m	A13SW (W)	223	3	326802 351993
3	Discharge Consents Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Minera Old Folks Home - Sso Authority: Natural Resources Wales Catchment Area: River Dee Reference: Cm0198001 Permit Version: 1 Effective Date: 20th October 1989 Issued Date: 20th October 1989 Revocation Date: 4th March 1994 Discharge Type: Unspecified Discharge: Not Supplied Environment: Receiving Water: Clywedog Status: Consent expired Positional Accuracy: Located by supplier to within 100m	A13SW (W)	225	3	326800 352000
4	Discharge Consents Operator: Mr E Roberts Property Type: Domestic Property (Single) Location: Minera Old Road Bryn - Swimming Poo, Old Road Bryn - Swimming Pool Authority: Natural Resources Wales Catchment Area: River Dee Reference: Cm0054901 Permit Version: 1 Effective Date: 18th March 1969 Issued Date: 18th March 1969 Revocation Date: 9th March 1993 Discharge Type: Unspecified Discharge: Not Supplied Environment: Receiving Water: Un-Named Trib. Of Clywedog Status: Consent expired Positional Accuracy: Located by supplier to within 10m	A18SE (N)	463	3	327140 352540

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
5	Discharge Consents Operator: Mr D I R Brown Property Type: Domestic Property (Single) Location: Bryn Cottage Bwlchgwyn Authority: Natural Resources Wales Catchment Area: Not Given Reference: Cm0143301 Permit Version: 1 Effective Date: 25th March 1968 Issued Date: 25th March 1968 Revocation Date: 31st October 1996 Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge: Land/Soakaway Environment: To Land Receiving Water: Lapsed (under Environment Act 1995, Schedule 23) Status: Lapsed (under Environment Act 1995, Schedule 23) Positional Accuracy: Located by supplier to within 100m	A18SE (N)	463	3	327050 352550
6	Discharge Consents Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Ruthin Road Gegin Authority: Natural Resources Wales Catchment Area: GWENFRO Reference: CG0358301 Permit Version: 1 Effective Date: 21st July 1994 Issued Date: 21st July 1994 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge: Freshwater Stream/River Environment: River Gwenfro Receiving Water: Effective Status: Effective Positional Accuracy: Located by supplier to within 100m	A18NW (N)	783	3	327030 352870
7	Local Authority Pollution Prevention and Controls Name: Minera Building Supplies Ltd Location: Five Crosses Industrial Estate, Ruthin Road, Minera, WREXHAM, Clwyd, LL11 3RD Authority: Wrexham County Borough Council, Environmental Health Department Permit Reference: WCBC/PG3/1(6)V2 Dated: 20th December 2002 Process Type: Local Authority Air Pollution Control Description: PG3/1 Blending, packing, loading and use of bulk cement Status: Authorised Positional Accuracy: Automatically positioned to the address	A14NW (E)	619	4	327682 352074
7	Local Authority Pollution Prevention and Controls Name: Prospects For Young People Location: Unit K & L Five Crosses Industrial Estate, Minera, Wrexham, LL11 3rd Authority: Wrexham County Borough Council, Environmental Health Department Permit Reference: WCBC-PG1-1-1-PYP Dated: Not Supplied Process Type: Local Authority Pollution Prevention and Control Description: PG1/1 Waste oil burners, less than 0.4MW net rated thermal input Status: Permitted Positional Accuracy: Manually positioned to the address or location	A14NW (E)	624	4	327685 352034
8	Local Authority Pollution Prevention and Controls Name: Minera Tyres And Exhausts Ltd Location: Unit 36, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3rd Authority: Wrexham County Borough Council, Environmental Health Department Permit Reference: WCBC/PG1/1/MTE Dated: Not Supplied Process Type: Local Authority Pollution Prevention and Control Description: PG1/1 Waste oil burners, less than 0.4MW net rated thermal input Status: Permitted Positional Accuracy: Manually positioned to the address or location	A14SE (E)	754	4	327808 351925
9	Local Authority Pollution Prevention and Controls Name: Minera Garage Location: Unit 3D, Five Crosses Industrial Estate, Minera Wrexham, LL11 3rd Authority: Wrexham County Borough Council, Environmental Health Department Permit Reference: WCBC/PG1/1/MG Dated: Not Supplied Process Type: Local Authority Pollution Prevention and Control Description: PG1/1 Waste oil burners, less than 0.4MW net rated thermal input Status: Permitted Positional Accuracy: Manually positioned to the address or location	A14SE (E)	798	4	327858 351977

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
9	Local Authority Pollution Prevention and Controls Name: Jones Automotive ServicesMinera Garage Location: Unit 30, Five Crosses Industrial Estate, Minera, Wrexham, LI11 3rd Authority: Wrexham County Borough Council, Environmental Health Department Permit Reference: WCBC/PG1/1/JAS Dated: Not Supplied Process Type: Local Authority Pollution Prevention and Control Description: PG1/1Waste oil burners, less than 0.4MW net rated thermal input Status: Permitted Positional Accuracy: Manually positioned to the address or location	A14SE (E)	819	4	327875 351937
9	Local Authority Pollution Prevention and Controls Name: D C Autos Location: Unit 23, Five Crosses Industrial Estate, Minera, Wrexham, LI11 3rd Authority: Wrexham County Borough Council, Environmental Health Department Permit Reference: WCBC/PG1/1/DC Dated: Not Supplied Process Type: Local Authority Pollution Prevention and Control Description: PG1/1Waste oil burners, less than 0.4MW net rated thermal input Status: Permitted Positional Accuracy: Manually positioned to the address or location	A14SE (E)	827	4	327884 351947
	Nearest Surface Water Feature	A13SE (SE)	74	-	327118 351936
10	Pollution Incidents to Controlled Waters Property Type: Not Given Location: COEDPOETH Authority: Environment Agency, Welsh Region Pollutant: Unknown Note: Weather Incident Date: 21st March 1996 Incident Reference: 27778 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 (W)	175	5	326850 352050
11	Pollution Incidents to Controlled Waters Property Type: Cattle (Dairy) Farming: Slurry Store/Waste Tank Location: Pant Tywyll Authority: Environment Agency, Welsh Region Pollutant: Miscellaneous - Fire water / Foam Note: Inadequate Design/Capacity Incident Date: 9th March 1995 Incident Reference: 22776 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)	338	5	327380 352200
12	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Footpath Adjacent To, Pen-Y-Bont House Authority: Environment Agency, Welsh Region Pollutant: Light Oil Note: Afon Clywedog; Spillage Incident Date: 8th September 1997 Incident Reference: 33594 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	A13SW (SW)	344	5	326750 351750
13	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Near Pen Y Palmant Farm Authority: Environment Agency, Welsh Region Pollutant: Mud/Clay/Soil Note: Afon Clywedog; Run-Off Incident Date: 20th January 1998 Incident Reference: 34613 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Weather Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A8NE (S)	370	5	327200 351620

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
14	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Road Adjacent To H K Motors Authority: Environment Agency, Welsh Region Pollutant: Oils - Diesel (Including Agricultural) Note: Poor Management Control Incident Date: 19th December 1996 Incident Reference: 30792 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	A8NE (S)	546	5	327250 351450
15	Pollution Incidents to Controlled Waters Property Type: Water Company Sewage: Surface Water Outfall Location: 5 Crosses, Industrial Estate Authority: Environment Agency, Welsh Region Pollutant: Sewage - Treated Effluent Note: Emergency Overflow Incident Date: 16th April 1995 Incident Reference: 23424 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	A14SE (E)	689	5	327750 352000
16	Pollution Incidents to Controlled Waters Property Type: Cattle Beef Farming: Yards Location: Greenacres Farm, Penrafron Authority: Environment Agency, Welsh Region Pollutant: Miscellaneous - Fire water / Foam Note: Accidental Spillage/Leakage Incident Date: 22nd July 1995 Incident Reference: 25243 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	A14NE (E)	738	5	327800 352050
17	Substantiated Pollution Incident Register Authority: Natural Resources Wales Incident Date: 13th September 2001 Incident Reference: 31619 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: Organic Chemicals/Products: Other Organic Chemical Or Product	A13NE (E)	123	3	327185 352074
18	Water Abstractions Operator: Dee Valley Water Plc Licence Number: 24/677/0035 Permit Version: 100 Location: Park Day Level Authority: Environment Agency, Welsh Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Speedwell Shaft Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 5th July 1966 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A8NE (S)	315	5	327050 351641

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
19	Water Abstractions Operator: Dee Valley Water Plc Licence Number: 24/67/7/0035 Permit Version: 100 Location: Speedwell Shaft Authority: Environment Agency, Welsh Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Park Day Level Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 5th July 1966 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A8SW (S)	646	5	326890 351325
	Water Abstractions Operator: Tarmac Aggregates Limited Licence Number: 24/67/7/0143 Permit Version: 103 Location: Stream Authority: Natural Resources Wales Abstraction: Mineral Products: Mineral Washing Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 16th November 2015 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11NW (W)	1602	3	325430 352240
	Water Abstractions Operator: Lafarge Aggregates Limited Licence Number: 24/67/7/0143 Permit Version: 102 Location: Stream Authority: Natural Resources Wales Abstraction: Mineral Products: Mineral Washing Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 12 July Permit Start Date: 1st April 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11NW (W)	1602	3	325430 352240
	Water Abstractions Operator: Lafarge Aggregates Limited Licence Number: 24/67/7/0143 Permit Version: 101 Location: Stream Authority: Environment Agency, Welsh Region Abstraction: Mineral Products: Mineral Washing Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 2nd January 2001 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11NW (W)	1602	5	325430 352240

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Redland Aggregates Ltd (Invoices Only) Licence Number: 24/677/0143 Permit Version: 100 Location: Stream Authority: Environment Agency, Welsh Region Abstraction: Mineral Products: Mineral Washing Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 8th January 1968 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A11NW (W)	1602	5	325430 352240
	Groundwater Vulnerability Soil Classification: Soils of High Leaching Potential (U) - Soil information for restored mineral workings and urban areas is based on fewer observations than elsewhere. A worst case vulnerability classification (H) assumed, until proved otherwise Map Sheet: Sheet 16 West Cheshire Scale: 1:100,000	A13NW (W)	0	5	327040 352024
	Drift Deposits Drift Deposit: Low permeability drift deposits occurring at the surface and overlying Major and Minor Aquifers are head, clay-with-flints, brickearth, peat, river terrace deposits and marine and estuarine alluvium Map Sheet: Sheet 16 West Cheshire Scale: 1:100,000	A13NW (W)	0	5	327040 352024
	Bedrock Aquifer Designations Aquifer Designation: Secondary Aquifer - A	A13NW (W)	0	3	327040 352024
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - Undifferentiated	A13NW (W)	0	3	327040 352024
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (SW)	200	3	326890 351810
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (SW)	200	3	326895 351805
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				
20	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 89.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A13SE (SE)	74	6	327118 351936
21	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 86.1 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A13SE (SE)	136	6	327130 351849

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
22	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 196.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Clywedog Catchment Name: Dee Primacy: 1	A13SW (SW)	215	6	326885 351794
23	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 127.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A13SE (SE)	216	6	327208 351812
24	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 247.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A13SW (W)	216	6	326804 352014
25	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 260.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A13NW (W)	221	6	326800 352084
26	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 72.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Clywedog Catchment Name: Dee Primacy: 1	A13SW (SW)	223	6	326863 351803
27	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 612.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A13NW (W)	225	6	326800 352084
28	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 442.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Clywedog Catchment Name: Dee Primacy: 1	A13SW (SW)	245	6	326807 351847
29	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 53.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NW (S)	295	6	326988 351664
30	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 168.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Clywedog Catchment Name: Dee Primacy: 1	A8NW (S)	295	6	326988 351664

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
31	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 207.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A13SE (SE)	299	6	327290 351783
32	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 85.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A13SE (SE)	316	6	327245 351711
33	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 154.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (S)	319	6	327085 351639
34	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 7.7 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (S)	327	6	327109 351635
35	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 19.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (S)	335	6	327113 351628
36	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 34.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Clywedog Catchment Name: Dee Primacy: 1	A8NE (S)	337	6	327145 351634
37	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 4.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (S)	337	6	327145 351634
38	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 12.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (S)	340	6	327142 351630
39	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 65.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (S)	345	6	327142 351624

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
40	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 15.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (S)	353	6	327122 351612
41	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 3.5 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (S)	353	6	327122 351612
42	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 18.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (S)	354	6	327119 351610
43	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 30.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (S)	362	6	327136 351605
44	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 51.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Clywedog Catchment Name: Dee Primacy: 1	A8NE (S)	363	6	327174 351616
45	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 79.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A14NW (E)	370	6	327432 352066
46	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 87.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Clywedog Catchment Name: Dee Primacy: 1	A8NE (SE)	372	6	327224 351629
47	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 24.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (S)	383	6	327123 351581
48	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 123.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (S)	392	6	327147 351578

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
49	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 40.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (S)	392	6	327147 351578
50	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 44.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (S)	417	6	327106 351544
51	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 3.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NW (SW)	420	6	326824 351587
52	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 27.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (S)	423	6	327132 351542
53	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 60.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NW (SW)	423	6	326826 351584
54	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 31.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 2	A8NW (SW)	423	6	326826 351584
55	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 110.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A14NW (NE)	430	6	327449 352273
56	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 236.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (SE)	434	6	327308 351610
57	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 50.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Clywedog Catchment Name: Dee Primacy: 1	A8NE (SE)	434	6	327308 351610

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
58	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 39.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (S)	444	6	327118 351518
59	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 1.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 2	A8NE (S)	444	6	327118 351518
60	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 6.3 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 2	A8NE (S)	445	6	327119 351517
61	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 119.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 2	A8NW (SW)	447	6	326796 351573
62	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 5.8 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A14NW (E)	449	6	327511 352055
63	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 49.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 2	A8NE (S)	451	6	327121 351511
64	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 5.7 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A14SW (E)	455	6	327508 351921
65	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 139.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A14SW (E)	455	6	327510 351948
66	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 115.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A14SW (E)	455	6	327507 351915

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
67	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 8.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (S)	461	6	327087 351497
68	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 104.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (S)	461	6	327087 351497
69	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 140.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Clywedog Catchment Name: Dee Primacy: 1	A8NE (SE)	464	6	327358 351612
70	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 152.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NW (SW)	464	6	326813 351545
71	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 62.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (S)	472	6	327097 351486
72	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 223.0 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A14SW (SE)	473	6	327495 351801
73	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 149.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NW (S)	485	6	326837 351510
74	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 107.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A19SW (NE)	529	6	327495 352391
75	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 63.0 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NW (S)	531	6	327011 351425

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
76	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 12.1 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A14NW (NE)	540	6	327538 352340
77	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 81.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NW (SW)	551	6	326745 351481
78	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 30.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A14NW (NE)	552	6	327548 352346
79	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 10.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NW (S)	568	6	326917 351399
80	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 115.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NW (S)	569	6	326935 351395
81	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 75.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NW (S)	575	6	326921 351391
82	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 1.6 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NW (S)	575	6	326922 351391
83	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 47.1 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A19SW (NE)	582	6	327572 352364
84	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 709.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Clywedog Catchment Name: Dee Primacy: 1	A9NW (SE)	583	6	327490 351578

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
85	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 0.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NW (S)	592	6	327024 351364
86	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 119.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NW (S)	593	6	327023 351363
87	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 4.2 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (S)	612	6	327280 351391
88	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 13.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (S)	615	6	327278 351387
89	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 76.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (S)	624	6	327230 351359
90	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 397.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NE (S)	626	6	327226 351357
91	OS Water Network Lines Watercourse Form: Lake Watercourse Length: 2.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NW (SW)	626	6	326757 351391
92	OS Water Network Lines Watercourse Form: Lake Watercourse Length: 7.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NW (SW)	626	6	326757 351391
93	OS Water Network Lines Watercourse Form: Lake Watercourse Length: 4.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NW (SW)	626	6	326757 351391

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
94	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 224.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NW (SW)	627	6	326768 351385
95	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 8.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NW (SW)	627	6	326751 351393
96	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 59.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A19SW (NE)	629	6	327612 352389
97	OS Water Network Lines Watercourse Form: Lake Watercourse Length: 7.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NW (SW)	630	6	326742 351394
98	OS Water Network Lines Watercourse Form: Lake Watercourse Length: 8.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NW (SW)	630	6	326728 351401
99	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 26.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8NW (SW)	631	6	326735 351396
100	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 288.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Clywedog Catchment Name: Dee Primacy: 1	A12SE (W)	635	6	326398 351856
101	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 251.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A17SE (NW)	642	6	326607 352575
102	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 51.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A17SE (NW)	642	6	326607 352575

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
103	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 17.6 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8SE (S)	668	6	327274 351328
104	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 229.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8SE (S)	668	6	327274 351328
105	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 27.6 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A17SE (NW)	674	6	326621 352627
106	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 3.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A17SE (NW)	682	6	326632 352645
107	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 4.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8SW (S)	683	6	326940 351279
108	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 8.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8SW (S)	684	6	326944 351278
109	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 69.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8SW (S)	686	6	326952 351275
110	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 21.2 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A19SW (NE)	687	6	327669 352407
111	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 111.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8SW (SW)	698	6	326716 351331

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
112	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 11.8 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8SW (SW)	698	6	326714 351332
113	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 9.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A7SE (SW)	701	6	326704 351333
114	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 2.5 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A7SE (SW)	704	6	326695 351335
115	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 486.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A7SE (SW)	705	6	326692 351335
116	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 89.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A19SW (NE)	708	6	327689 352413
117	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 63.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 2	A8SW (S)	719	6	326928 351244
118	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 55.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8SW (S)	724	6	326891 351245
119	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 58.2 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8SW (S)	731	6	326801 351261
120	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 115.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A14NE (NE)	738	6	327750 352354

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
121	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 41.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8SE (S)	757	6	327177 351210
122	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 170.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A8SW (S)	758	6	326843 351221
123	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 406.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A18NW (N)	779	6	326847 352846
124	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 232.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Gwenfro Catchment Name: Dee Primacy: 1	A18NE (N)	782	6	327276 352836
125	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 50.2 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A18NW (N)	788	6	326939 352870
126	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 259.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A18NW (N)	788	6	326939 352870
127	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 402.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Gwenfro Catchment Name: Dee Primacy: 1	A19NW (NE)	802	6	327440 352792
128	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 18.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A14NE (E)	807	6	327834 352321
129	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 42.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A18NE (N)	808	6	327231 352873

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
130	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 2.2 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A18NE (N)	810	6	327190 352884
131	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 301.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A18NE (N)	812	6	327188 352886
132	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 3.0 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A14NE (E)	825	6	327850 352330
133	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 7.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A14NE (E)	828	6	327853 352332
134	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 9.6 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A14NE (E)	835	6	327859 352336
135	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 143.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A14NE (E)	845	6	327868 352341
136	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 56.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A12NW (W)	851	6	326173 352090
137	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 104.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A9SW (SE)	851	6	327457 351211
138	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 166.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A9SW (SE)	851	6	327457 351211

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
139	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 12.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A14NE (E)	853	6	327916 352104
140	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 142.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A14NE (E)	857	6	327920 352093
141	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 108.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Clywedog Catchment Name: Dee Primacy: 1	A12SW (W)	876	6	326150 351951
142	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 203.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A12SW (W)	876	6	326150 351951
143	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 112.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A12NW (W)	901	6	326128 352184
144	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 64.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A12NW (W)	908	6	326133 352254
145	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 92.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A7NW (SW)	933	6	326231 351468
146	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 130.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A12NW (W)	936	6	326115 352306
147	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 1.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A14SE (E)	963	6	328024 352009

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
148	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 5.5 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A14SE (E)	964	6	328025 352008
149	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 98.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A14SE (E)	968	6	328029 352005
150	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 71.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A9SW (SE)	968	6	327469 351085
151	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 120.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A19SE (NE)	972	6	327976 352418
152	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 10.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Clywedog Catchment Name: Dee Primacy: 1	A12SW (W)	973	6	326053 351952
153	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 180.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A14SE (E)	978	6	328023 351832
154	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 186.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Aber Sychnant Catchment Name: Dee Primacy: 1	A12SW (W)	979	6	326047 351960
155	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 744.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A7NW (SW)	997	6	326143 351494
156	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 489.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A17NE (NW)	998	6	326535 352957

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
157	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 175.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A17NE (NW)	998	6	326535 352957
158	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 19.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A19NE (NE)	999	6	327782 352777
159	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 61.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Gwenfro Catchment Name: Dee Primacy: 1	A19NE (NE)	999	6	327782 352777
160	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 125.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Dee Primacy: 1	A15NW (E)	1000	6	328062 352114

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
161	Licensed Waste Management Facilities (Locations) Licence Number: JP3694FP Location: S And K Matthews Skip Hire, Minera, Wrexham, Clwyd, Wrexham, LL11 3YQ Operator Name: S And K Matthews Skip Hire Operator Location: Not Supplied Authority: Natural Resources Wales Site Category: Not Supplied Licence Status: Effective Issued: 29th November 2005 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A14NW (E)	455	3	327515 352131
161	Licensed Waste Management Facilities (Locations) Licence Number: 37287 Location: Station House, Old Road, Minera, Wrexham, LL11 3YQ Operator Name: S And K Matthews Skip Hire Operator Location: Not Supplied Authority: Natural Resources Wales Site Category: Household, Commercial And Industrial Transfer Stations Licence Status: Issued Issued: 29th November 2005 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A14NW (E)	455	3	327515 352131
162	Licensed Waste Management Facilities (Locations) Licence Number: XP3394FK Location: H K Motors, New Brighton, Minera, Wrexham, Wrexham, LL11 3DS Operator Name: H K Motors (Wales) Limited Operator Location: Not Supplied Authority: Natural Resources Wales Site Category: Not Supplied Licence Status: Effective Issued: 10th January 2018 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A8SE (S)	778	3	327254 351206
162	Licensed Waste Management Facilities (Locations) Licence Number: 37059 Location: Marions House, New Brighton, Minera, Wrexham, LL11 3DS Operator Name: Williams Henry Kingsley Operator Location: Not Supplied Authority: Natural Resources Wales Site Category: Metal Recycling Sites (Vehicle Dismantlers) Licence Status: Modified Issued: 16th February 1993 Last Modified: 28th January 2013 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A8SE (S)	778	3	327254 351206
	Local Authority Landfill Coverage Name: Wrexham County Borough Council - Has supplied landfill data		0	7	327040 352024
163	Potentially Infilled Land (Non-Water) Bearing Ref: NW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1991	A13NW (NW)	254	-	326784 352170
164	Potentially Infilled Land (Non-Water) Bearing Ref: NW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1991	A13NW (NW)	303	-	326738 352184

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
165	Potentially Infilled Land (Non-Water) Bearing Ref: S Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1991	A8NE (S)	391	-	327138 351576
166	Potentially Infilled Land (Non-Water) Bearing Ref: SW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1991	A12SE (SW)	517	-	326549 351754
167	Potentially Infilled Land (Non-Water) Bearing Ref: SW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1991	A12SE (SW)	535	-	326517 351791
168	Potentially Infilled Land (Non-Water) Bearing Ref: SW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1991	A7NE (SW)	665	-	326592 351451
169	Potentially Infilled Land (Non-Water) Bearing Ref: SW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1991	A12SE (SW)	696	-	326380 351698
170	Potentially Infilled Land (Non-Water) Bearing Ref: E Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1991	A14NE (E)	716	-	327778 352051
171	Registered Waste Treatment or Disposal Sites Licence Holder: H & K Motors Licence Reference: NOW-522-L (L74) Site Location: Marlons House, New Brighton, Minera, Wrexham, Clwyd 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 knownOperational Dated: 1st February 1993 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 Max.Stor Brake/Clutch Fluid Max.Stor Coolant (Water/Ethylene Glycol) M.Stor Fuel Oils Max.Stor Gearbox/Transmissions Max.Stor Int.Combust.Engines Max.Stor Mineral/Lubricating Oils Max.Stor Petrol Max.Stor Scrap Motor Tyres Max.Stor Prohibited Waste: Cadmium Compounds Elemental Sodium/Potassium Fine Powdered Waste Liquified Gas / Gas Under Pressure Mercury Compounds Percussive/Explosive Waste Radioactive Wastes Spec.Waste (Epa'90 :S62/1996 Regs)N.O.S Waste In Drums/Cont'Rs Waste N.O.S	A8SE (S)	783	5	327250 351200

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Millstone Grit Group [See Also Migr]	A13NW (W)	0	1	327040 352024
	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: >6.0 mg/kg Concentration: Chromium: 60 - 90 mg/kg Concentration: Lead Concentration: >1200 mg/kg Nickel: 15 - 30 mg/kg Concentration:	A13SW (S)	0	1	327040 352000
	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: >1200 mg/kg Nickel: 15 - 30 mg/kg Concentration:	A13NW (W)	0	1	327040 352024
	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: >6.0 mg/kg Concentration: Chromium: 60 - 90 mg/kg Concentration: Lead Concentration: >1200 mg/kg Nickel: <15 mg/kg Concentration:	A13SW (SW)	198	1	326891 351809
	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: >1200 mg/kg Nickel: <15 mg/kg Concentration:	A13NW (NW)	200	1	326831 352139
	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: >6.0 mg/kg Concentration: Chromium: 60 - 90 mg/kg Concentration: Lead Concentration: >1200 mg/kg Nickel: <15 mg/kg Concentration:	A13SW (W)	289	1	326736 352000
	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: >6.0 mg/kg Concentration: Chromium: 60 - 90 mg/kg Concentration: Lead Concentration: >1200 mg/kg Nickel: <15 mg/kg Concentration:	A13SW (SW)	348	1	326758 351734

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 Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: <15 mg/kg	A18SW (N)	413	1	327040 352500
	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: 600 - 1200 mg/kg Nickel Concentration: <15 mg/kg	A18SW (N)	413	1	327000 352500
	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: 600 - 1200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NW (E)	437	1	327500 352024
	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: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SE (N)	439	1	327203 352500
	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: >1200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SE (N)	439	1	327206 352499
	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: 3.0 - 6.0 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: >1200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SW (E)	440	1	327500 352000

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 Concentration: <15 mg/kg Cadmium Concentration: >6.0 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: >1200 mg/kg Nickel Concentration: <15 mg/kg	A12SE (W)	503	1	326542 351819
	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: 600 - 1200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SW (N)	509	1	327000 352596
	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: 3.0 - 6.0 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: >1200 mg/kg Nickel Concentration: <15 mg/kg	A12SE (W)	525	1	326500 352000
	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: 3.0 - 6.0 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: >1200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SE (W)	526	1	326500 351937
	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: 3.0 - 6.0 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: >1200 mg/kg Nickel Concentration: <15 mg/kg	A12SE (W)	536	1	326500 351853
	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: 3.0 - 6.0 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: >1200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SE (W)	546	1	326500 351811

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 Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 600 - 1200 mg/kg Nickel Concentration: <15 mg/kg	A19SW (NE)	555	1	327500 352426
	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: 300 - 600 mg/kg Nickel Concentration: <15 mg/kg	A19SW (NE)	558	1	327434 352500
	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: 3.0 - 6.0 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: >1200 mg/kg Nickel Concentration: <15 mg/kg	A14SW (E)	576	1	327643 352000
	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: 600 - 1200 mg/kg Nickel Concentration: <15 mg/kg	A14NW (E)	577	1	327641 352046
	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: 600 - 1200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SE (NW)	589	1	326616 352512
	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: 3.0 - 6.0 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: >1200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9NW (SE)	597	1	327500 351568

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 Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 600 - 1200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SE (W)	616	1	326409 352000
	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: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A19SW (NE)	668	1	327586 352500
	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: 3.0 - 6.0 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 600 - 1200 mg/kg Nickel Concentration: <15 mg/kg	A7NE (SW)	696	1	326500 351500
	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: >8.0 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: >1200 mg/kg Nickel Concentration: <15 mg/kg	A9NW (SE)	791	1	327694 351500
	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: 600 - 1200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12NW (W)	822	1	326204 352134
	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: 600 - 1200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NE (E)	826	1	327887 352031

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 Concentration: <15 mg/kg Cadmium Concentration: 3.0 - 6.0 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: >1200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SE (E)	834	1	327895 352000
	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: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NE (E)	937	1	328000 352024
	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: 300 - 600 mg/kg Nickel Concentration: <15 mg/kg	A14NE (E)	948	1	328000 352227
	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: 3.0 - 6.0 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 600 - 1200 mg/kg Nickel Concentration: <15 mg/kg	A3NW (S)	957	1	327000 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: 3.0 - 6.0 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 600 - 1200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A3NW (S)	958	1	326978 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: >6.0 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: >1200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A3NE (S)	959	1	327125 351000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
172	BGS Recorded Mineral Sites Site Name: Hafod-Las Coal Pits Location: Minera, Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 138280 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Coal Measures Group Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A13NW (NW)	300	1	326737 352172
173	BGS Recorded Mineral Sites Site Name: Park Day Level Location: Minera, Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 198627 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Not Available Geology: ! Commodity: Lead Positional Accuracy: Located by supplier to within 10m	A8NE (S)	345	1	327128 351621
173	BGS Recorded Mineral Sites Site Name: Park Day Level Workings Location: Minera, Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 198628 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Not Available Geology: ! Commodity: Lead Positional Accuracy: Located by supplier to within 10m	A8NE (S)	360	1	327143 351609
174	BGS Recorded Mineral Sites Site Name: Minera Lead Mines, Day Level Location: Minera, Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 138319 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Not Available Geology: ! Commodity: Lead Positional Accuracy: Located by supplier to within 10m	A12SE (SW)	465	1	326592 351790
175	BGS Recorded Mineral Sites Site Name: Berwig Location: Minera, Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 9704 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Gwespyr Sandstone Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A12SE (W)	469	1	326555 352020
176	BGS Recorded Mineral Sites Site Name: Cae-Glas Location: Minera, Wrexham, Denbighshire Source: British Geological Survey, National Geoscience Information Service Reference: 198767 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Gwespyr Sandstone Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A12NE (NW)	558	1	326494 352261

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
177	BGS Recorded Mineral Sites Site Name: Minera Lead Mines, Reid'S Shaft Location: Minera, Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 138320 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Not Available Geology: ! Commodity: Lead Positional Accuracy: Located by supplier to within 10m	A12SE (SW)	561	1	326534 351687
178	BGS Recorded Mineral Sites Site Name: Minera Lead Mines, Andrew'S Shaft Location: Minera, Wrexham, Denbighshire Source: British Geological Survey, National Geoscience Information Service Reference: 198585 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Not Available Geology: Main Vein, Minera Commodity: Lead Positional Accuracy: Located by supplier to within 10m	A7NE (SW)	599	1	326700 351454
179	BGS Recorded Mineral Sites Site Name: Minera Lead Mines, Lloyd'S Shaft Location: Minera, Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 138298 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Not Available Geology: ! Commodity: Lead Positional Accuracy: Located by supplier to within 10m	A8NW (S)	616	1	326804 351382
180	BGS Recorded Mineral Sites Site Name: Minera Lead Mines, Ellerton Shaft Location: Minera, Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 138299 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Not Available Geology: ! Commodity: Lead Positional Accuracy: Located by supplier to within 10m	A7NE (SW)	617	1	326619 351492
181	BGS Recorded Mineral Sites Site Name: Minera Lead Mines Location: Minera, Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 138321 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Not Available Geology: ! Commodity: Lead Positional Accuracy: Located by supplier to within 10m	A7NE (SW)	631	1	326519 351580
182	BGS Recorded Mineral Sites Site Name: Minera Lead Mines, Speedwell Shaft Location: Minera, Wrexham, Denbighshire Source: British Geological Survey, National Geoscience Information Service Reference: 198584 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Not Available Geology: Main Vein, Minera Commodity: Lead Positional Accuracy: Located by supplier to within 10m	A8SW (S)	657	1	326886 351314

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
183	BGS Recorded Mineral Sites Site Name: Minera Lead Mines, Royles Shaft Location: Minera, Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 138318 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Not Available Geology: ! Commodity: Lead Positional Accuracy: Located by supplier to within 10m	A12SE (SW)	678	1	326398 351701
184	BGS Recorded Mineral Sites Site Name: Minera Lead Mines Location: Minera, Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 138322 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Not Available Geology: ! Commodity: Lead Positional Accuracy: Located by supplier to within 10m	A7NE (SW)	700	1	326580 351416
185	BGS Recorded Mineral Sites Site Name: Minera Lead Mines Location: Minera, Wrexham, Denbighshire Source: British Geological Survey, National Geoscience Information Service Reference: 198583 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Not Available Geology: Main Vein, Minera Commodity: Lead Positional Accuracy: Located by supplier to within 10m	A8SW (S)	729	1	326828 351255
186	BGS Recorded Mineral Sites Site Name: Cae-Fadog Location: Minera, Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 138307 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Gwespyr Sandstone Commodity: Silica rock Positional Accuracy: Located by supplier to within 10m	A12NW (W)	754	1	326280 352203
187	BGS Recorded Mineral Sites Site Name: Minera Lead Mines, Taylor'S Engine Shaft Location: Minera, Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 138297 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Not Available Geology: ! Commodity: Lead Positional Accuracy: Located by supplier to within 10m	A8SW (S)	756	1	327023 351200
188	BGS Recorded Mineral Sites Site Name: Minera Lead Mines, Grand Turk Shaft Location: Minera, Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 138317 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Not Available Geology: ! Commodity: Lead Positional Accuracy: Located by supplier to within 10m	A12SW (SW)	770	1	326300 351698

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
189	BGS Recorded Mineral Sites Site Name: Minera Lead Mines Shaft Location: Minera, Wrexham, Denbighshire Source: British Geological Survey, National Geoscience Information Service Reference: 198588 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Not Available Geology: ! Commodity: Lead Positional Accuracy: Located by supplier to within 10m	A7SE (SW)	792	1	326589 351296
190	BGS Recorded Mineral Sites Site Name: Grosvenor New Shaft Location: The Smelt, Minera, Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 138281 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Coal Measures Group Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A14SE (E)	826	1	327886 351977
191	BGS Recorded Mineral Sites Site Name: Minera Union Mine Location: Minera, Wrexham, Denbighshire Source: British Geological Survey, National Geoscience Information Service Reference: 198586 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Not Available Geology: ! Commodity: Lead Positional Accuracy: Located by supplier to within 10m	A12SW (W)	864	1	326161 351961
192	BGS Recorded Mineral Sites Site Name: Minera Hall Coal Pit Location: Minera, Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 138291 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Coal Measures Group Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A9NE (SE)	865	1	327855 351645
193	BGS Recorded Mineral Sites Site Name: Minera Lead Mines, Busy Bee Shaft Location: Minera, Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 138311 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Not Available Geology: Busy Bee Vein Commodity: Lead Positional Accuracy: Located by supplier to within 10m	A12SW (W)	882	1	326167 351757
194	BGS Recorded Mineral Sites Site Name: Brighton Quarry Location: Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 15653 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Cefn Y Fedw Sandstone Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	ABSE (S)	901	1	327122 351058

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
195	BGS Recorded Mineral Sites Site Name: Minera Lime Quarries Location: Minera, Wrexham, Denbighshire Source: British Geological Survey, National Geoscience Information Service Reference: 138415 Type: Opencast Status: Ceased Operator: Minera Lime Co., Ltd. Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Cefn Mawr Limestone Formation Commodity: Limestone Positional Accuracy: Located by supplier to within 10m	A7NW (W)	904	1	326170 351665
196	BGS Recorded Mineral Sites Site Name: Minera Hall Coal Pit Location: Minera, Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 138292 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Coal Measures Group Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A9NE (SE)	905	1	327865 351569
197	BGS Recorded Mineral Sites Site Name: Minera Lead Mines, Roy'S Shaft Location: Minera, Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 138295 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Not Available Geology: ! Commodity: Lead Positional Accuracy: Located by supplier to within 10m	A8SE (S)	916	1	327261 351066
198	BGS Recorded Mineral Sites Site Name: Minera Union Mine, Boundary Shaft Location: Minera, Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 138310 Type: Underground Status: Ceased Operator: Individual'S Name Withheld Operator Location: Not Supplied Periodic Type: Not Available Geology: ! Commodity: Zinc Positional Accuracy: Located by supplier to within 10m	A12SW (W)	924	1	326112 351823
198	BGS Recorded Mineral Sites Site Name: Minera Union Mine, Boundary Shaft Location: Minera, Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 138310 Type: Underground Status: Ceased Operator: Individual'S Name Withheld Operator Location: Not Supplied Periodic Type: Not Available Geology: ! Commodity: Lead Positional Accuracy: Located by supplier to within 10m	A12SW (W)	924	1	326112 351823
199	BGS Recorded Mineral Sites Site Name: Minera Union Mine, Davies' Shaft Location: Minera, Wrexham, Denbighshire Source: British Geological Survey, National Geoscience Information Service Reference: 198587 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Not Available Geology: ! Commodity: Lead Positional Accuracy: Located by supplier to within 10m	A12SW (W)	937	1	326091 351889

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
200	BGS Recorded Mineral Sites Site Name: Minera Lead Trials Location: Minera, Wrexham, Denbighshire Source: British Geological Survey, National Geoscience Information Service Reference: 198590 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Not Available Geology: ! Commodity: Lead Positional Accuracy: Located by supplier to within 10m	A7SE (SW)	940	1	326382 351272
200	BGS Recorded Mineral Sites Site Name: Minera Lead Trials Location: Minera, Wrexham, Denbighshire Source: British Geological Survey, National Geoscience Information Service Reference: 198589 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Not Available Geology: ! Commodity: Lead Positional Accuracy: Located by supplier to within 10m	A7SW (SW)	948	1	326363 351278
201	BGS Recorded Mineral Sites Site Name: Minera Limestone Quarries Location: Minera, Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 138312 Type: Opencast Status: Ceased Operator: Minera Lime Co., Ltd. Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Cefn Mawr Limestone Formation Commodity: Limestone Positional Accuracy: Located by supplier to within 10m	A12SW (W)	979	1	326080 351703
202	BGS Recorded Mineral Sites Site Name: Minera Hall Coal Pit Location: Minera, Wrexham, Clwyd Source: British Geological Survey, National Geoscience Information Service Reference: 138290 Type: Underground Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Coal Measures Group Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A14SE (E)	992	1	328030 351790
	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.	A13NW (W)	0	8	327040 352024
	Mining Instability Mining Evidence: Conclusive Metaliferous Mining Source: Ove Arup & Partners Boundary Quality: As Supplied	A13NW (W)	0	-	327040 352024
	Man-Made Mining Cavities Easting: 326500 Northing: 351600 Distance: 635 Quadrant Reference: A7 Quadrant Reference: NE Bearing Ref: SW Cavity Type: Not supplied Commodity: Not Supplied Solid Geology Detail: No Details Superficial Geology: No Details Detail:	A7NE (SW)	635	9	326500 351600

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Man-Made Mining Cavities Easting: 326900 Northing: 351200 Distance: 767 Quadrant Reference: A8 Quadrant Reference: SW Bearing Ref: S Cavity Type: Not supplied Commodity: Not Supplied Solid Geology Detail: No Details Superficial Geology: No Details Detail:	A8SW (S)	767	9	326900 351200
	Man-Made Mining Cavities Easting: 326100 Northing: 351800 Distance: 939 Quadrant Reference: A12 Quadrant Reference: SW Bearing Ref: W Cavity Type: Not supplied Commodity: Not Supplied Solid Geology Detail: No Details Superficial Geology: No Details Detail:	A12SW (W)	939	9	326100 351800
	Man-Made Mining Cavities Easting: 327200 Northing: 351000 Distance: 968 Quadrant Reference: A3 Quadrant Reference: NE Bearing Ref: S Cavity Type: Not supplied Commodity: Not Supplied Solid Geology Detail: No Details Superficial Geology: No Details Detail:	A3NE (S)	968	9	327200 351000
	Natural Cavities Easting: 326100 Northing: 351800 Distance: 939 Quadrant Reference: A12 Quadrant Reference: SW Bearing Ref: W Cavity Type: Vadose Cave Solid Geology Detail: Carboniferous Limestone Supergroup, Lower Carboniferous Limestone, Upper Carboniferous Limestone Superficial Geology: No Details Detail:	A12SW (W)	939	9	326100 351800
	Non Coal Mining Areas of Great Britain Risk: Unlikely Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	0	1	327040 352024
	Non Coal Mining Areas of Great Britain Risk: Unlikely Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	23	1	327083 352019
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	0	1	327040 352024
	Potential for Collapsible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	201	1	326941 351774
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	0	1	327040 352024
	Potential for Compressible Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	201	1	326941 351774
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	0	1	327040 352024
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	0	1	327040 352024

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	124	1	326904 351917
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	153	1	326870 351912
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	198	1	326891 351809
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	205	1	326819 352015
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	228	1	326863 351796
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	233	1	326893 351765
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	249	1	326777 351928
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	0	1	327040 352024
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	198	1	326891 351809
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	200	1	326831 352139
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	201	1	326941 351774
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	211	1	326962 351755
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	0	1	327040 352024
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	198	1	326891 351809
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	200	1	326831 352139
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	211	1	326962 351755
	Radon Potential - Radon Affected Areas Affected Area: The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	0	1	327025 352051
	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	A13NW (W)	0	1	327040 352024
	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	A13NW (NW)	0	1	327025 352051
	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	A13NW (W)	0	1	327040 352024

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
203	Contemporary Trade Directory Entries Name: North & Mid Wales Pest Control Location: 47, Minera Hall Road, Minera, Wrexham, Clwyd, LL11 3YF Classification: Pest & Vermin Control Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SE (SE)	216	-	327245 351870
204	Contemporary Trade Directory Entries Name: Ivor Owen & Sons Location: 54, Minera Hall Road, Minera, Wrexham, Clwyd, LL11 3YD Classification: Road Haulage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SE (SE)	313	-	327345 351855
204	Contemporary Trade Directory Entries Name: Ivor Owen & Sons Location: 54, Minera Hall Road, Minera, Wrexham, LL11 3YD Classification: Road Haulage Services Status: Active Positional Accuracy: Automatically positioned to the address	A13SE (SE)	315	-	327346 351854
205	Contemporary Trade Directory Entries Name: Minera Building Supplies Location: Five Crosses Industrial Estate, Minera, Wrexham, Clwyd, LL11 3RD Classification: Builders' Merchants Status: Inactive Positional Accuracy: Automatically positioned to the address	A14NW (E)	620	-	327682 352075
206	Contemporary Trade Directory Entries Name: C J C Motor Services Location: Unit K-I, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Classification: Mot Testing Centres Status: Active Positional Accuracy: Automatically positioned to the address	A14NW (E)	626	-	327687 352036
206	Contemporary Trade Directory Entries Name: Williams Accident Repairs Location: Unit G, Five Crosses Industrial Estate, Minera, Wrexham, Clwyd, LL11 3RD Classification: Car Body Repairs Status: Inactive Positional Accuracy: Automatically positioned to the address	A14NW (E)	634	-	327695 352027
206	Contemporary Trade Directory Entries Name: Fat Dubbers Location: Unit G, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A14SW (E)	640	-	327702 352016
206	Contemporary Trade Directory Entries Name: Night & Day Ltd Location: Unit D, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Classification: Commercial Cleaning Services Status: Active Positional Accuracy: Automatically positioned to the address	A14NW (E)	656	-	327718 352041
206	Contemporary Trade Directory Entries Name: Hammy'S Location: Unit D, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Classification: Commercial Vehicle Servicing, Repairs, Parts & Accessories Status: Inactive Positional Accuracy: Automatically positioned to the address	A14NW (E)	656	-	327718 352041
206	Contemporary Trade Directory Entries Name: A & C Pierce Location: Unit C, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Classification: Garage Services Status: Active Positional Accuracy: Automatically positioned to the address	A14NE (E)	660	-	327722 352037
206	Contemporary Trade Directory Entries Name: Cam Gas Location: Five Crosses Industrial Estate, Minera, Wrexham, Clwyd, LL11 3RD Classification: Gas Suppliers Status: Active Positional Accuracy: Automatically positioned to the address	A14NE (E)	709	-	327771 352046
207	Contemporary Trade Directory Entries Name: Tomlinsons Dairy Ltd Location: Tomlinsons Dairy, Five Crosses Industrial Estate, Wrexham, LL11 3RD Classification: Dairies Status: Active Positional Accuracy: Automatically positioned to the address	A14NE (E)	688	-	327739 352210

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
208	Contemporary Trade Directory Entries Name: Reclaim Services Location: Unit 50, Five Crosses Industrial Estate, Minera, Wrexham, Clwyd, LL11 3RD Classification: Chemicals - Distributors & Wholesalers Status: Active Positional Accuracy: Automatically positioned to the address	A14SE (E)	713	-	327765 351900
209	Contemporary Trade Directory Entries Name: Site Solutions Engineering Ltd Location: Unit 1, Five Crosses Industrial Estate, Minera, Wrexham, Clwyd, LL11 3RD Classification: Engineering Services Status: Active Positional Accuracy: Automatically positioned to the address	A14NE (E)	716	-	327778 352030
209	Contemporary Trade Directory Entries Name: Huws Gray Location: Ruthin Road, Minera, Wrexham, Clwyd, LL11 3RD Classification: Builders' Merchants Status: Inactive Positional Accuracy: Manually positioned within the geographical locality	A14SE (E)	740	-	327801 352015
209	Contemporary Trade Directory Entries Name: G & R Rewinds Location: Unit A, Five Crosses Industrial Estate, Minera, Wrexham, Clwyd, LL11 3RD Classification: Electric Motor Sales & Service Status: Inactive Positional Accuracy: Automatically positioned in the proximity of the address	A14SE (E)	751	-	327812 351997
209	Contemporary Trade Directory Entries Name: A & P Auto Panels Location: Unit 31, Five Crosses Industrial Estate, Minera, Wrexham, Clwyd, LL11 3RD Classification: Car Body Repairs Status: Inactive Positional Accuracy: Automatically positioned to the address	A14SE (E)	792	-	327851 351980
210	Contemporary Trade Directory Entries Name: Minera Tyres & Exhausts Ltd Location: Unit 36, Five Crosses Industrial Estate, Minera, Wrexham, Clwyd, LL11 3RD Classification: Tyre Dealers Status: Active Positional Accuracy: Automatically positioned to the address	A14SE (E)	754	-	327808 351925
210	Contemporary Trade Directory Entries Name: Wrexham Auto Kraft Location: Unit 35, Five Crosses Industrial Estate, Wrexham, LL11 3RD Classification: Car Body Repairs Status: Active Positional Accuracy: Automatically positioned to the address	A14SE (E)	786	-	327839 351907
210	Contemporary Trade Directory Entries Name: Wrexham Auto Kraft Location: Wrexham, LL11 3RD Classification: Car Body Repairs Status: Inactive Positional Accuracy: Automatically positioned to the address	A14SE (E)	786	-	327839 351907
210	Contemporary Trade Directory Entries Name: Armon Location: Unit 34, Five Crosses Industrial Estate, Minera, Wrexham, Clwyd, LL11 3RD Classification: Frozen Food Processors & Distributors Status: Inactive Positional Accuracy: Automatically positioned to the address	A14SE (E)	789	-	327841 351902
211	Contemporary Trade Directory Entries Name: Industrial Engineering Services Wrexham Ltd Location: Unit 5, Five Crosses Industrial Estate, Minera, Wrexham, Clwyd, LL11 3RD Classification: Engineers - General Status: Active Positional Accuracy: Automatically positioned to the address	A14NE (E)	763	-	327826 352067
211	Contemporary Trade Directory Entries Name: Body Repairs Location: Unit 7.8, Five Crosses Ind Est, Minera, Wrexham, Clwyd, LL11 3RD Classification: Car Body Repairs Status: Inactive Positional Accuracy: Manually positioned to the address or location	A14NE (E)	781	-	327844 352078
211	Contemporary Trade Directory Entries Name: Strafford'S Coaches Location: Unit 7-8, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Classification: Bus & Coach Operators & Stations Status: Active Positional Accuracy: Automatically positioned to the address	A14NE (E)	782	-	327845 352079

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
212	Contemporary Trade Directory Entries Name: Minera Garage Location: Unit 30, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Classification: Garage Services Status: Active Positional Accuracy: Automatically positioned to the address	A14SE (E)	798	-	327858 351977
212	Contemporary Trade Directory Entries Name: Wrexham Installations Location: Unit 28-29, Five Crosses Industrial Estate, Minera, WREXHAM, Clwyd, LL11 3RD Classification: Conveyors & Conveyor Belts Status: Inactive Positional Accuracy: Automatically positioned to the address	A14SE (E)	803	-	327862 351967
212	Contemporary Trade Directory Entries Name: Speed Manufacturing & Trading Ltd Location: Unit 28-29, Five Crosses Industrial Estate, Minera, Wrexham, Clwyd, LL11 3RD Classification: Motor Cycle Repairs Status: Inactive Positional Accuracy: Automatically positioned to the address	A14SE (E)	803	-	327862 351967
212	Contemporary Trade Directory Entries Name: Winston Harris Location: Unit 27, Five Crosses Industrial Estate, Minera, Wrexham, Clwyd, LL11 3RD Classification: Mot Testing Centres Status: Inactive Positional Accuracy: Automatically positioned to the address	A14SE (E)	807	-	327866 351962
212	Contemporary Trade Directory Entries Name: T R Ogden Auto Body Repairs Location: Unit 24, Five Crosses Industrial Estate, Minera, Wrexham, Clwyd, LL11 3RD Classification: Car Body Repairs Status: Inactive Positional Accuracy: Automatically positioned to the address	A14SE (E)	819	-	327877 351949
212	Contemporary Trade Directory Entries Name: Wrexham Windscreens Ltd Location: Unit 23, Five Crosses Industrial Estate, Minera, Wrexham, Clwyd, LL11 3RD Classification: Window Tinting Status: Inactive Positional Accuracy: Automatically positioned to the address	A14SE (E)	824	-	327881 351944
212	Contemporary Trade Directory Entries Name: M A P Location: Unit 22, Five Crosses Industrial Estate, Minera, Wrexham, Clwyd, LL11 3RD Classification: Gearboxes Status: Inactive Positional Accuracy: Automatically positioned to the address	A14SE (E)	828	-	327885 351940
213	Contemporary Trade Directory Entries Name: Ron Austin Location: 24, Gwern y Gaseg Road, Coedpoeth, Wrexham, Clwyd, LL11 3RE Classification: Catering Equipment Status: Inactive Positional Accuracy: Automatically positioned to the address	A14SE (E)	861	-	327911 351879
214	Contemporary Trade Directory Entries Name: G Jones Location: Awel Bur, Old Road, Minera, Wrexham, Clwyd, LL11 3YS Classification: Road Haulage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A9NE (SE)	876	-	327876 351667
214	Contemporary Trade Directory Entries Name: Jordan'S Van Centre Location: Ruthin Road, Coedpoeth, Wrexham, Clwyd, LL11 3US Classification: Commercial Vehicle Dealers Status: Inactive Positional Accuracy: Manually positioned within the geographical locality	A9NE (SE)	890	-	327884 351652
215	Contemporary Trade Directory Entries Name: H K Motors Location: Marion House, New Brighton, Minera, Wrexham, LL11 3DS Classification: Car Breakdown & Recovery Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A3NE (S)	990	-	327272 350992

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
215	Contemporary Trade Directory Entries Name: H K Motors Location: Marion House, New Brighton, Minera, Wrexham, Clwyd, LL11 3DS Classification: Breakdown and Recovery Status: Inactive Positional Accuracy: Automatically positioned to the address	A3NE (S)	990	-	327272 350992
216	Points of Interest - Commercial Services Name: North & Mid Wales Pest Control Location: 47 Minera Hall Road, Minera, Wrexham, LL11 3YF Category: Contract Services Class Code: Pest and Vermin Control Positional Accuracy: Positioned to address or location	A13SE (SE)	216	10	327245 351870
216	Points of Interest - Commercial Services Name: North & Mid Wales Pest Control Location: 47 Minera Hall Road, Minera, Wrexham, LL11 3YF Category: Contract Services Class Code: Pest and Vermin Control Positional Accuracy: Positioned to address or location	A13SE (SE)	216	10	327245 351870
217	Points of Interest - Commercial Services Name: Ivor Owen & Sons Location: 54 Minera Hall Road, Minera, Wrexham, LL11 3YD Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A13SE (SE)	313	10	327345 351855
217	Points of Interest - Commercial Services Name: Ivor Owen & Sons Location: 54 Minera Hall Road, Minera, Wrexham, LL11 3YD Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A13SE (SE)	313	10	327344 351855
218	Points of Interest - Commercial Services Name: D E Jones & Son Location: Wyncote, Gegin Lane, Minera, Wrexham, LL11 3YT Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A19SW (NE)	511	10	327482 352377
219	Points of Interest - Commercial Services Name: G Jones Location: Awel Bur, Old Road, Minera, Wrexham, LL11 3YS Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A18SW (NW)	530	10	326794 352564
220	Points of Interest - Commercial Services Name: C J C Motor Services Location: Unit K-I, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14NW (E)	626	10	327687 352034
220	Points of Interest - Commercial Services Name: B Williams Accident Repairs Location: Unit G, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14NW (E)	634	10	327695 352027
220	Points of Interest - Commercial Services Name: Fat Dubbers Location: Unit G, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SW (E)	638	10	327699 352016
220	Points of Interest - Commercial Services Name: B Williams Accident Repair Centre Location: Unit G, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SW (E)	638	10	327699 352016
220	Points of Interest - Commercial Services Name: A & C Pierce Location: Unit C, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14NE (E)	658	10	327719 352039

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
220	Points of Interest - Commercial Services Name: A & C Pierce Location: Unit C, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14NE (E)	659	10	327721 352036
221	Points of Interest - Commercial Services Name: Minera Tyres Location: Unit 36, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SE (E)	754	10	327808 351925
221	Points of Interest - Commercial Services Name: Minera Tyres & Exhausts Location: Unit 36, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SE (E)	754	10	327808 351925
221	Points of Interest - Commercial Services Name: Minera Tyres Exhausts & Batteries Location: Unit 36, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SE (E)	754	10	327808 351925
221	Points of Interest - Commercial Services Name: Wrexham Auto Kraft Location: Unit 35, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SE (E)	766	10	327820 351918
221	Points of Interest - Commercial Services Name: Wrexham Auto Kraft Location: Unit 35, Five Crosses Industrial Estate, Wrexham, LL11 3RD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SE (E)	786	10	327839 351907
221	Points of Interest - Commercial Services Name: A & P Auto Panels Location: Unit 31, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SE (E)	792	10	327851 351980
221	Points of Interest - Commercial Services Name: A & P Auto Panels Location: Unit 31, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SE (E)	792	10	327851 351980
221	Points of Interest - Commercial Services Name: Minera Garage Location: Unit 30, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SE (E)	794	10	327853 351975
221	Points of Interest - Commercial Services Name: Speed Manufacturing & Trading Ltd Location: Unit 28-29, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SE (E)	803	10	327862 351967
221	Points of Interest - Commercial Services Name: Winston Harris Location: Unit 27, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SE (E)	807	10	327866 351962
221	Points of Interest - Commercial Services Name: Minera M O T Centre Location: Unit 27, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SE (E)	807	10	327865 351961

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
221	Points of Interest - Commercial Services Name: H K Motors Location: Unit 15, Five Crosses Industrial Estate, Wrexham, LL11 3RD Category: Recycling Services Class Code: Scrap Metal Merchants Positional Accuracy: Positioned to address or location	A14NE (E)	811	10	327872 352023
221	Points of Interest - Commercial Services Name: T R Ogden Location: Unit 24, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SE (E)	819	10	327877 351949
221	Points of Interest - Commercial Services Name: T R Ogden Auto Body Repairs Location: Unit 24, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SE (E)	819	10	327876 351948
221	Points of Interest - Commercial Services Name: D C Autos Location: Unit 23, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SE (E)	824	10	327881 351944
221	Points of Interest - Commercial Services Name: D C Auto's Location: Unit 23, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SE (E)	824	10	327881 351944
221	Points of Interest - Commercial Services Name: D C Autos Location: Unit 23, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3RD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SE (E)	824	10	327881 351944
222	Points of Interest - Commercial Services Name: Scrap Yard Location: LL11 Category: Recycling Services Class Code: Scrap Metal Merchants Positional Accuracy: Positioned to address or location	A8SE (S)	799	10	327249 351183
222	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	A8SE (S)	800	10	327245 351181
223	Points of Interest - Commercial Services Name: G Jones Location: Awel Bur, Old Road, Minera, Wrexham, LL11 3YS Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A9NE (SE)	876	10	327876 351667
224	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	A13NE (NE)	278	10	327307 352217
225	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	A8NE (S)	371	10	327163 351604
226	Points of Interest - Manufacturing and Production Name: Shaft Location: LL11 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to an adjacent address or location	A12SE (SW)	549	10	326548 351686

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
227	Points of Interest - Manufacturing and Production Name: Shaft Location: LL11 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to address or location	A7NE (SW)	631	10	326518 351582
228	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	A8SE (S)	656	10	327253 351333
229	Points of Interest - Manufacturing and Production Name: Industrial Estate Location: LL11 Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to an adjacent address or location	A14SE (E)	706	10	327764 351964
230	Points of Interest - Manufacturing and Production Name: Shaft Location: LL11 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to address or location	A8SW (S)	734	10	326826 351250
231	Points of Interest - Manufacturing and Production Name: Industrial Estate Location: LL11 Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to an adjacent address or location	A14NE (E)	740	10	327803 352094
232	Points of Interest - Manufacturing and Production Name: Shaft Location: LL11 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to address or location	A12SW (SW)	769	10	326301 351699
233	Points of Interest - Manufacturing and Production Name: Shaft Location: LL11 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to address or location	A12SW (W)	801	10	326225 351955
233	Points of Interest - Manufacturing and Production Name: Shaft Location: LL11 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to address or location	A12SW (W)	865	10	326160 351961
233	Points of Interest - Manufacturing and Production Name: Shafts Location: LL11 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to an adjacent address or location	A12SW (W)	868	10	326157 351963
233	Points of Interest - Manufacturing and Production Name: Shaft Location: LL11 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to address or location	A12SW (W)	875	10	326150 351961
234	Points of Interest - Manufacturing and Production Name: Shaft Location: LL11 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to address or location	A12SW (W)	880	10	326169 351758
234	Points of Interest - Manufacturing and Production Name: Boundary Shaft Location: LL11 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to address or location	A12SW (W)	923	10	326113 351823

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
235	Points of Interest - Manufacturing and Production Name: D Coventry Location: New Brighton, Minera, Wrexham, LL11 3DR Category: Farming Class Code: Livestock Farming Positional Accuracy: Positioned to address or location	A3NW (S)	971	10	326968 350987
235	Points of Interest - Manufacturing and Production Name: D Coventry Location: New Brighton, Minera, Wrexham, LL11 3DR Category: Farming Class Code: Livestock Farming Positional Accuracy: Positioned to address or location	A3NW (S)	971	10	326968 350987
236	Points of Interest - Public Infrastructure Name: Trafford's Coaches Location: Unit 7-8, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3DR Category: Public Transport, Stations and Infrastructure Class Code: Bus and Coach Stations, Depots and Companies Positional Accuracy: Positioned to address or location	A14NE (E)	782	10	327845 352079
236	Points of Interest - Public Infrastructure Name: Trafford's Coaches Location: Unit 7-8, Five Crosses Industrial Estate, Minera, Wrexham, LL11 3DR Category: Public Transport, Stations and Infrastructure Class Code: Bus and Coach Stations, Depots and Companies Positional Accuracy: Positioned to address or location	A14NE (E)	782	10	327845 352079
237	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	A13SW (S)	34	10	327015 351924
237	Points of Interest - Recreational and Environmental Name: Playground Location: Church Road, LL11 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A13SW (SW)	34	10	327002 351932
237	Points of Interest - Recreational and Environmental Name: Playground Location: Church Road, LL11 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location	A13SW (SW)	50	10	326978 351941

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
238	Ancient Woodland Name: Not Supplied Reference: 30648 Area(m²): 3037.51 Type: Ancient and Semi-Natural Woodland	A8NE (S)	291	3	327134 351678
239	Ancient Woodland Name: Not Supplied Reference: 30663 Area(m²): 7161.28 Type: Ancient and Semi-Natural Woodland	A12SE (SW)	437	3	326614 351809
240	Ancient Woodland Name: Not Supplied Reference: 30647 Area(m²): 27241.54 Type: Ancient and Semi-Natural Woodland	A9NW (SE)	601	3	327504 351565
241	Ancient Woodland Name: Not Supplied Reference: 37190 Area(m²): 10326.15 Type: Restored Ancient Woodland Site	A18NE (N)	774	3	327279 352827
242	Areas of Outstanding Natural Beauty Name: Bryniau Clwyd A Dyffryn Dyfrdwy/Clwydian Range And Dee Valley Multiple Areas: N Total Area (m2): 389277308.58 Designation Date: 22nd November 2011 Source: Natural Resources Wales	A13SW (SW)	197	3	326885 351819
243	Sites of Special Scientific Interest Name: Ruabon/Llantysilio Mountains And Minera Multiple Areas: Y Total Area (m2): 47844901.78 Source: Natural Resources Wales Reference: 48231wje Designation Details: Mixed Biological And Geological Designation Date: 1st January 1955 Date Type: Notified	A12SE (W)	536	3	326503 351840
244	Special Areas of Conservation Name: Berwyn A Mynyddoedd De Clwyd / Berwyn And South Clwyd Mountains Multiple Areas: Y Total Area (m2): 272169084.51 Source: Natural Resources Wales Reference: UK0012926 Status: Designated	A7NE (SW)	736	3	326422 351536

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices Flintshire Council - Environmental Health Department Wrexham County Borough Council - Public Protection Department Denbighshire County Council - Public Protection Department	April 2014 April 2016 January 2015	Annual Rolling Update Annually Annual Rolling Update
Discharge Consents Environment Agency - Welsh Region Natural Resources Wales	August 2014 October 2018	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 Environment Agency - Welsh Region Natural Resources Wales	October 2018 October 2018	Quarterly Quarterly
Local Authority Integrated Pollution Prevention And Control Wrexham County Borough Council - Environmental Health Department Flintshire Council - Environmental Health Department Denbighshire County Council - Environmental Health Department	April 2014 April 2016 March 2013	Variable Variable Variable
Local Authority Pollution Prevention and Controls Wrexham County Borough Council - Environmental Health Department Flintshire Council - Environmental Health Department Denbighshire County Council - Environmental Health Department	April 2014 April 2016 December 2014	Annual Rolling Update 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 Denbighshire County Council - Environmental Health Department	April 2014 April 2016 December 2014	Variable Variable Variable
Nearest Surface Water Feature Ordnance Survey	September 2017	
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 January 2015	Annually
Substantiated Pollution Incident Register Environment Agency Wales - North Area Natural Resources Wales	October 2018 October 2018	Quarterly Quarterly
Water Abstractions Environment Agency - Welsh Region Natural Resources Wales	October 2018 October 2018	Quarterly Quarterly
Water Industry Act Referrals Environment Agency - Welsh Region Natural Resources Wales	October 2017 October 2018	Quarterly Quarterly
Groundwater Vulnerability Environment Agency - Head Office	April 2015	Not Applicable
Drift Deposits Environment Agency - Head Office	January 1999	Not Applicable

Agency & Hydrological	Version	Update Cycle
Bedrock Aquifer Designations Natural Resources Wales	January 2018	Annually
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	February 2018	Quarterly
Flooding from Rivers or Sea without Defences Natural Resources Wales	February 2018	Quarterly
Areas Benefiting from Flood Defences Natural Resources Wales	February 2018	Quarterly
Flood Water Storage Areas Natural Resources Wales	February 2018	Quarterly
Flood Defences Natural Resources Wales	November 2018	Quarterly
OS Water Network Lines Ordnance Survey	October 2018	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	October 2018 October 2018	Quarterly Quarterly
Local Authority Landfill Coverage Denbighshire County Council - Environmental Health Department Flintshire Council - Environmental Health Department Wrexham County Borough Council	May 2000 May 2000 May 2000	Not Applicable Not Applicable Not Applicable
Local Authority Recorded Landfill Sites Wrexham County Borough Council Denbighshire County Council - Environmental Health Department Flintshire Council - Environmental Health Department	June 2003 May 2000 May 2000	Not Applicable 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	Variable
Notification of Installations Handling Hazardous Substances (NIHHS) Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements Denbighshire County Council - Planning Department Wrexham County Borough Council - Planning Department Flintshire Council	February 2016 February 2016 January 2016	Variable Variable Variable
Planning Hazardous Substance Consents Denbighshire County Council - Planning Department Wrexham County Borough Council - Planning Department Flintshire Council	February 2016 February 2016 January 2016	Variable 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	November 2018	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	November 2018	Quarterly
Fuel Station Entries Catalist Ltd - Experian	November 2018	Quarterly
Gas Pipelines National Grid	July 2014	
Points of Interest - Commercial Services PointX	September 2018	Quarterly
Points of Interest - Education and Health PointX	September 2018	Quarterly
Points of Interest - Manufacturing and Production PointX	September 2018	Quarterly
Points of Interest - Public Infrastructure PointX	September 2018	Quarterly
Points of Interest - Recreational and Environmental PointX	September 2018	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	August 2018	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 Denbighshire County Council Flintshire Council Wrexham County Borough Council	August 2018 August 2018 August 2018	Bi-Annually Bi-Annually Bi-Annually
Marine Nature Reserves Natural Resources Wales	August 2018	Bi-Annually
National Nature Reserves Natural Resources Wales	August 2018	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 2017 October 2005	Bi-Annually
Ramsar Sites Natural Resources Wales	February 2018	Bi-Annually
Sites of Special Scientific Interest Natural Resources Wales	February 2018	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	Wrexham County Borough Council - Public Protection Department Crown Buildings, P O Box 1297, Wrexham, Clwyd, LL13 8ZE	Telephone: 01978 297038 Fax: 01978 292502 Website: www.wrexham.gov.uk
3	Natural Resources Wales Ty Cambria, 29 Newport Road, Cardiff, CF24 0TP	Telephone: 0300 065 3000 Email: enquiries@naturalresourceswales.gov.uk
4	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
5	Environment Agency - National Customer Contact Centre (NCCC) PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk
6	Ordnance Survey Adanac Drive, Southampton, Hampshire, SO16 0AS	Telephone: 03456 05 05 05 Email: customerservices@ordnancesurvey.co.uk Website: www.ordnancesurvey.gov.uk
7	Wrexham County Borough Council Lampet Street, Guildhall, Wrexham, Clwyd, LL11 1WL	Telephone: 01978 292000 Fax: 01978 292502 Website: www.wrexham.gov.uk
8	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
9	Peter Brett Associates Caversham Bridge House, Waterman Place, Reading, Berkshire, RG1 8DN	Telephone: 0118 950 0761 Fax: 0118 959 7498 Email: reading@pba.co.uk Website: www.pba.co.uk
10	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

General
 Specified Site Specified Buffers Bearing Reference Point
 Slice Map ID

Agency and Hydrological

Geological Classes

Major Aquifer (Highly Permeable)
 Minor Aquifer (Virtually Permeable)
 Non Aquifer (Negligibly Permeable)
 Water or Sea
 Death Deposit

Soil Classes
 High (H) 1, 2, 3, U
 Intermediate (I) 1, 2
 Low
 High (H) 1, 2, 3, U
 Intermediate (I) 1, 2
 Low

Site Sensitivity Context Map - Slice A

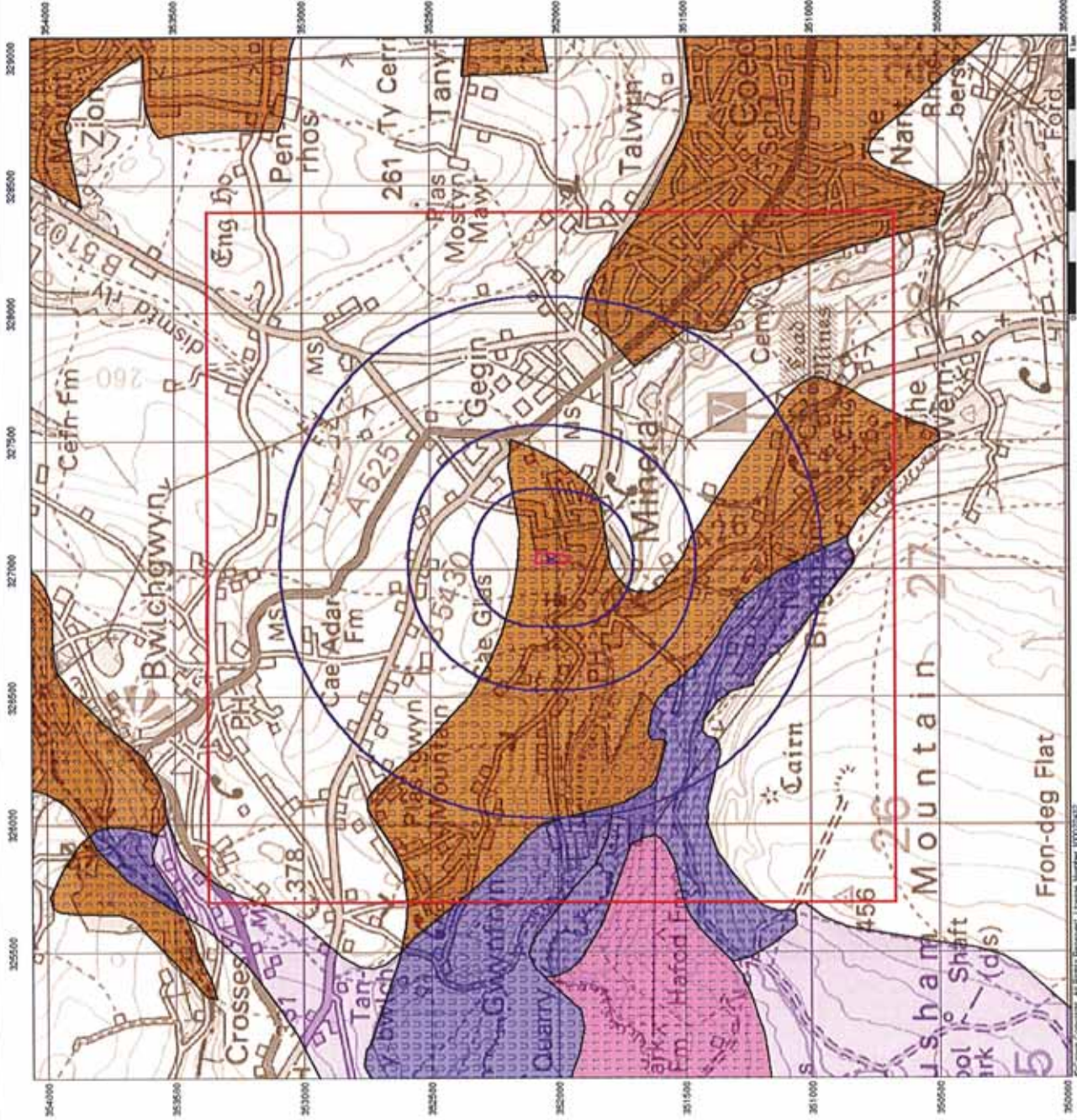


Order Details

Order Number: 191854158_1.1
 Customer Ref: 2152-Eversley Court-JH
 National Grid Reference: 327040, 352020
 Slice: A
 Site Area (Ha): 0.44
 Search Buffer (m): 1000

Site Details

Land West of Eversley Court, Minera, Wrexham, LL11 3YZ



Bedrock Aquifer Designation

General

- Specified Site
- Specified Buffer(s)
- Map ID
- Bearing Reference Point

Agency and Hydrological

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

Geological Classes

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

Site Sensitivity Context Map - Slice A

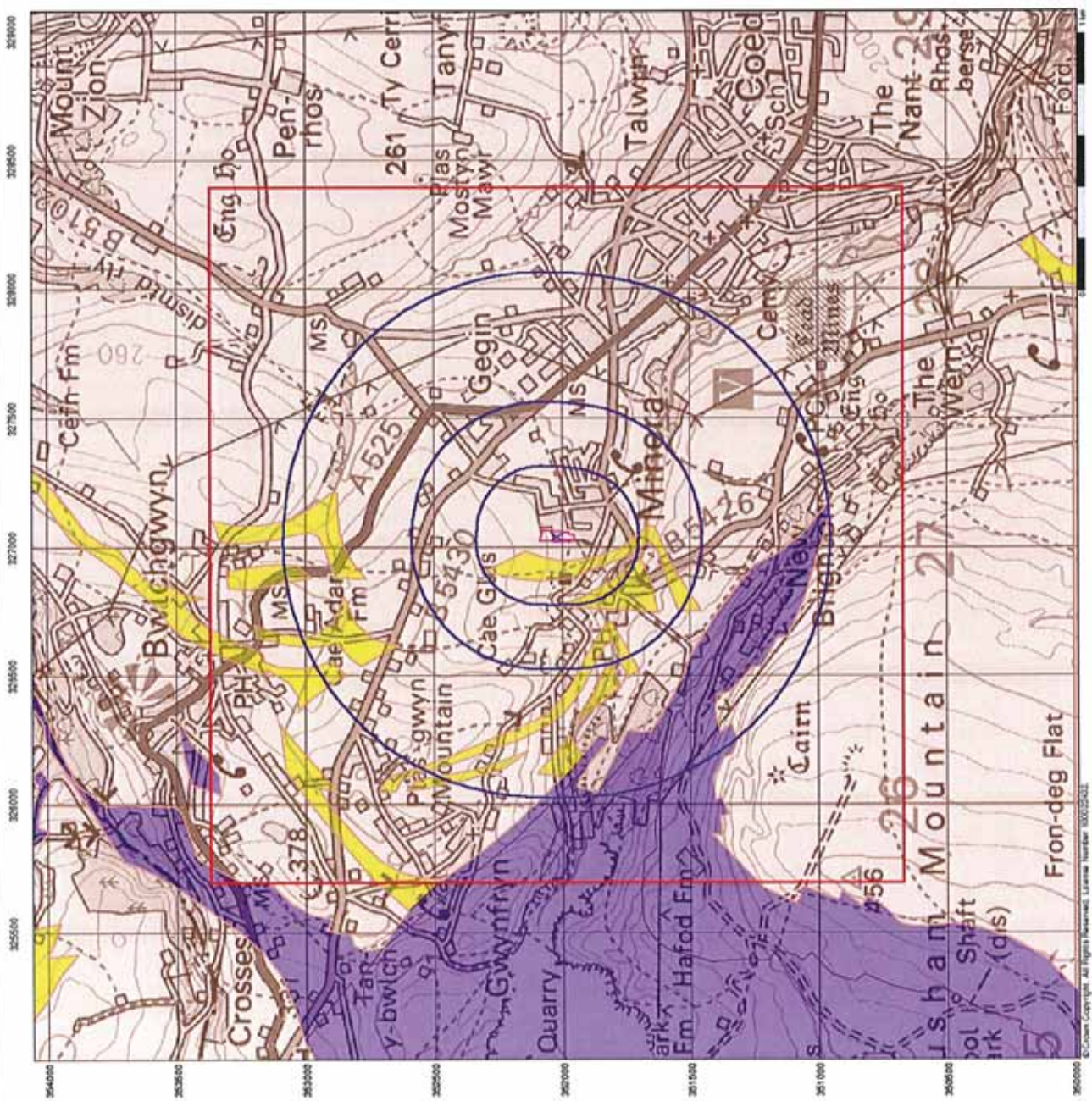


Order Details

Order Number: 191854156_1.1
 Customer Ref: 2152-Eversley Court-JH
 National Grid Reference: 327040, 352020
 Slice: A
 Site Area (Ha): 0.44
 Search Buffer (m): 1000

Site Details

Land West of Eversley Court, Minera, Wrexham, LL11 3YZ



Superficial Aquifer Designation

General



Agency and Hydrological

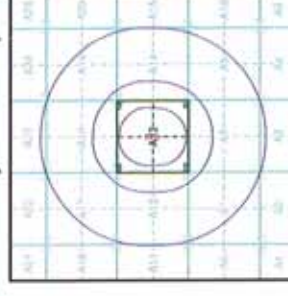
Geological Classes

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

Source Protection Zones

- General**
- Specified Site
 - Specified Buffer(s)
 - Map ID
 - Bearing Reference Point
- 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

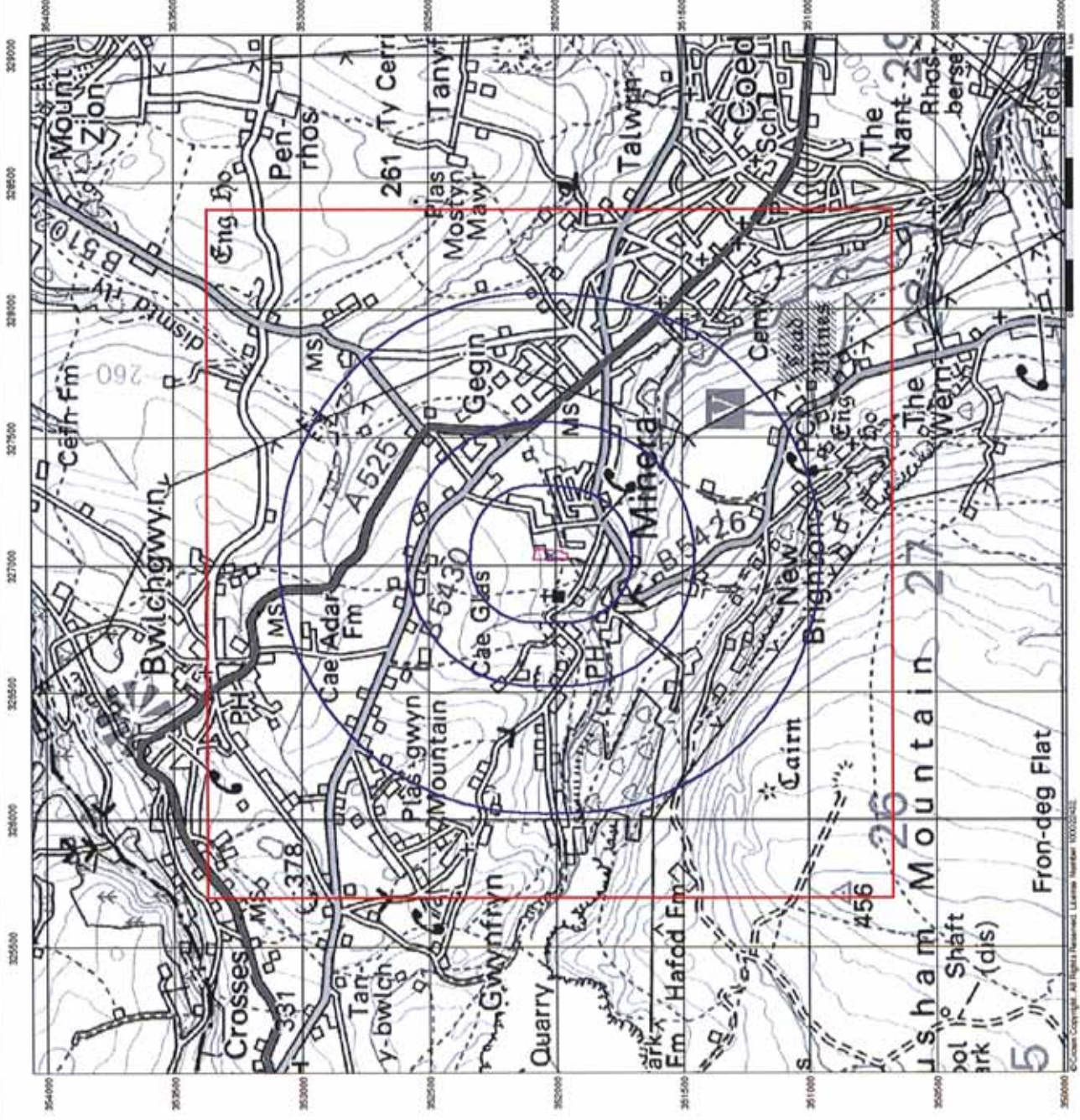


Order Details

Order Number: 191864158_1_1
 Customer Ref: 2152-Eversley Court-JH
 National Grid Reference: 327040, 352020
 Slice: A
 Site Area (Ha): 0.44
 Search Buffer (m): 1000

Site Details

Land West of, Eversley Court, Minera, Wrexham, LL11 3YZ



Sensitive Land Uses

- General**
- Specified Site
 - Specified Buffer(s)
 - Map ID
 - Bearing Reference Point
- Sensitive Land Uses**
- Ancient Woodland
 - Area of Adopted Green Belt
 - Area of Undeveloped Green Belt
 - Area of Outstanding Natural Beauty
 - Environmentally Sensitive Area
 - Forest Park
 - Local Nature Reserve
 - Marine Nature Reserve
 - National Nature Reserve
 - National Park
 - Nitrates Sensitive Area
 - Nitrates Vulnerable Zone
 - Ramsar Site
 - Site of Special Scientific Interest
 - Special Area of Conservation
 - Special Protection Area
 - World Heritage Sites

Site Sensitivity Context Map - Slice A

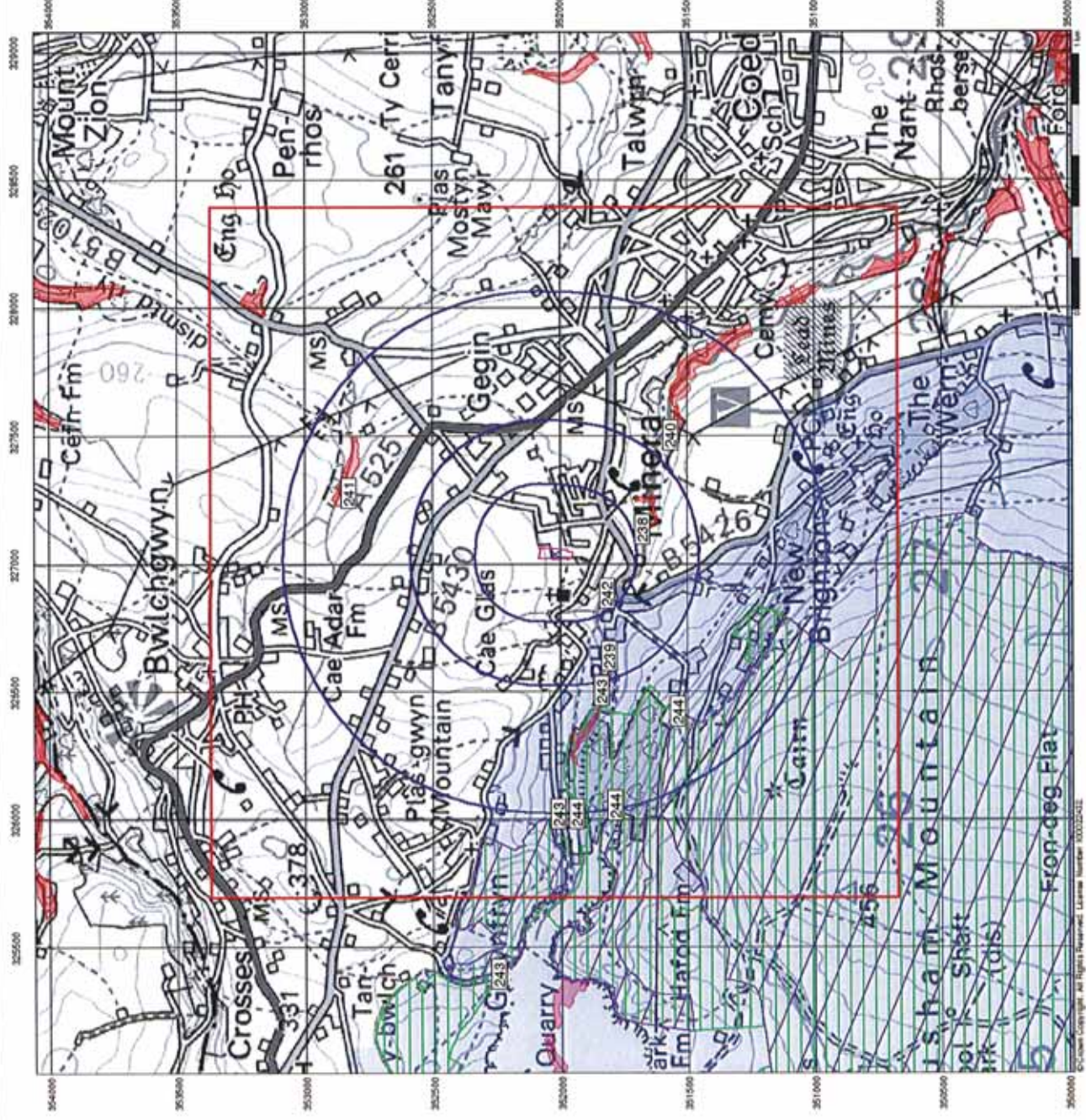


Order Details

Order Number: 191954158_1.1
 Customer Ref: 2152-Eversley Court-JH
 National Grid Reference: 327040, 352020
 Slice: A
 Site Area (Ha): 0.44
 Search Buffer (m): 1000

Site Details

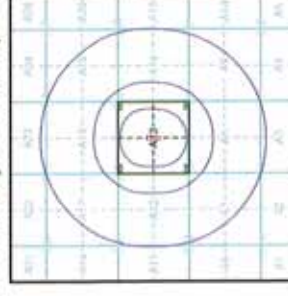
Land West of, Eversley Court, Minera, Wrexham, LL11 3YZ



BGS Flood GFS Data

- General**
- Specified Site
 - Specified Buffer(s)
 - Heating Reference Point
 - Site
- 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

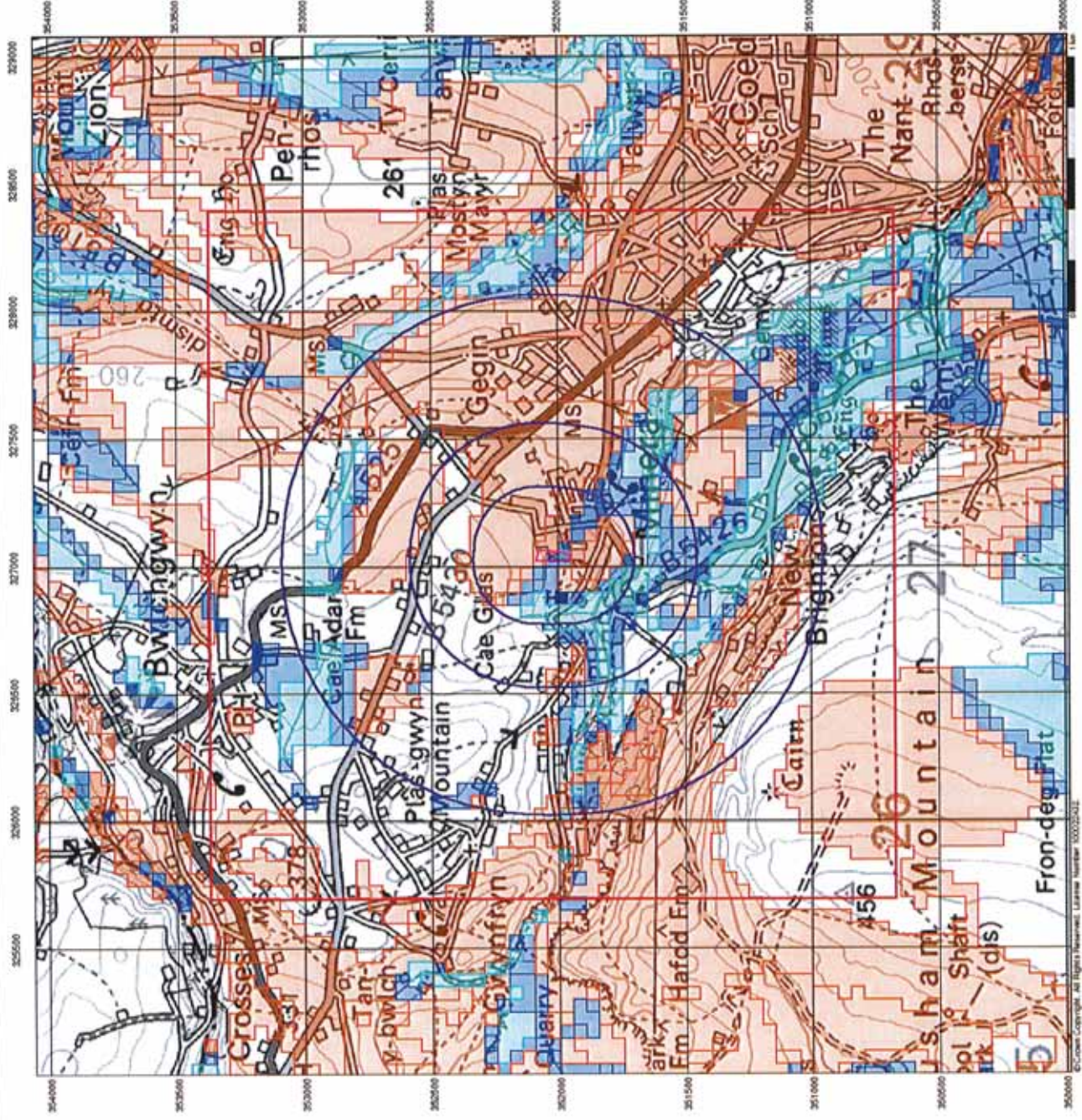


Order Details

Order Number: 191964159_1_1
 Customer Ref: 2152-Eversley Court-JH
 National Grid Reference: 327040, 352020
 Slice: A
 Site Area (Ha): 0.44
 Search Buffer (m): 1000

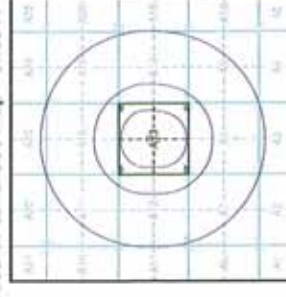
Site Details

Land West of, Eversley Court, Minera, Wrexham, LL11 3YZ



- General**
- Identified Site
 - Specified Buffer(s)
 - Sealing Reference Point
 - Site
 - Map ID
- Industrial Land Use**
- Contaminated Trade Disposal Sites
 - Fuel Storage Sites
 - Gas Pipeline
 - Ports of Interest - Commercial Services
 - Ports of Interest - Education and Health
 - Ports of Interest - Manufacturing and Production
 - Ports of Interest - Public Infrastructure
 - Ports of Interest - Recreational and Environmental
 - Underground Electrical Cables

Industrial Land Use Map - Slice A

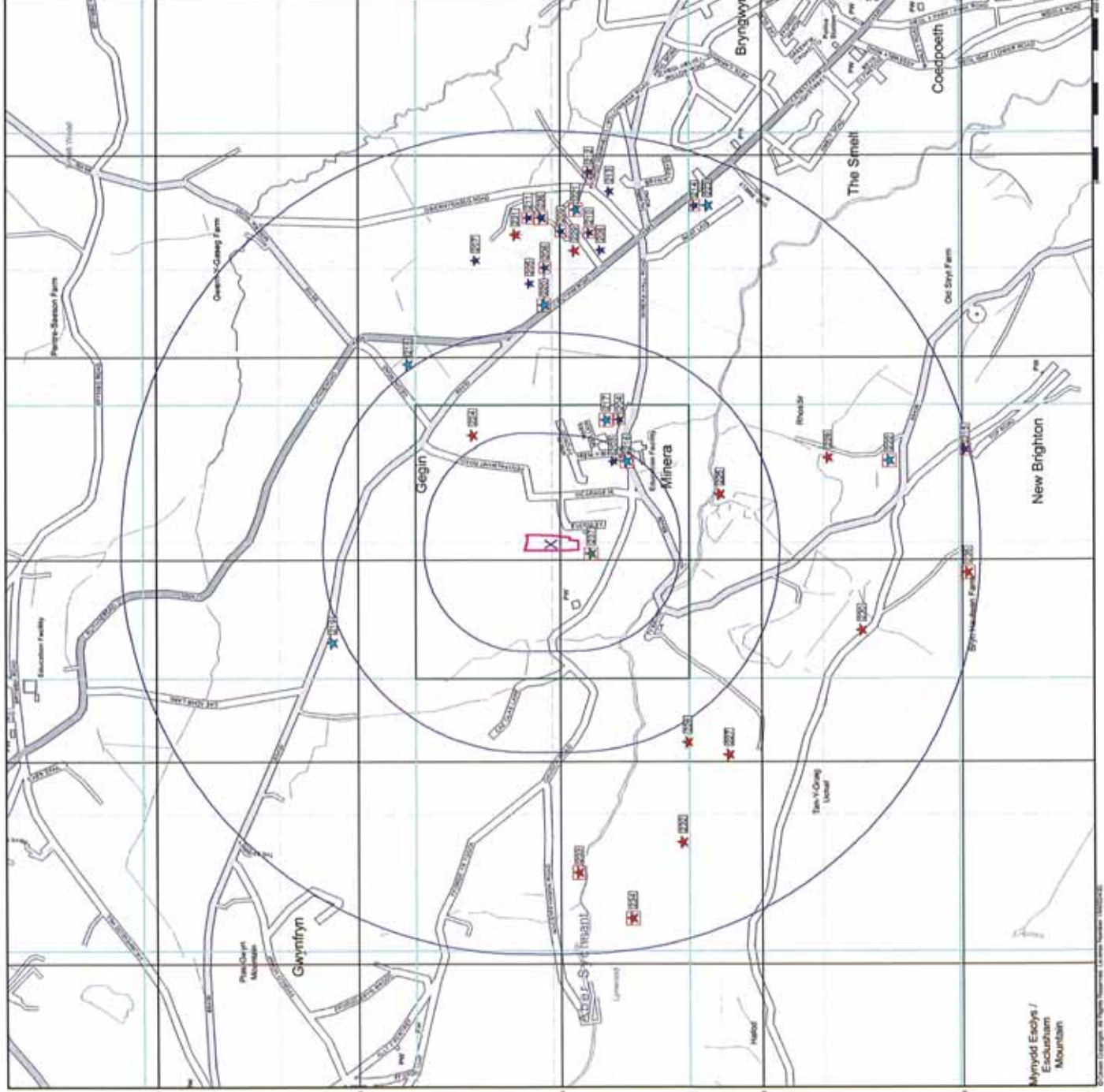


Order Details

Order Number: 191864159_1_1
 Customer Ref: 2192-Eversley Court-JH
 National Grid Reference: 327040, 352020
 Slice: A
 Site Area (Ha): 0.44
 Search Buffer (m): 1000

Site Details

Land West of Eversley Court, Minera, Wrexham, LL11 3YZ



Quantified the

- Specified Number
- Specified Number(s)
- ✕ Bearing Reference Point

Extreme Flooding from Rivers or Seas without Dikes/Lakes (Zone 2)

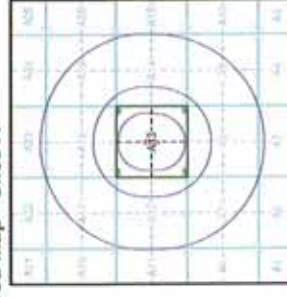
Extreme Flooding from Rivers or Sea without Disturbances (Zone 2)

Flooded from Rivers or Sea without Detention (Zone 3)

[illegible]

1

Figure 1



Order Number: 191864158-1-1
Customer: 0000 Customer Code: 0000

Customer Ref: 2192-Eversley Court-JH

Nation

Slice: A

Site Area (Ha): 0.44

Site Details

General

- Specified Site
- Specified Buffer (m)
- X Shoring Infrastructure Point
- E Easement
- General of Type at Location

Agency and Hydrological (Boreholes)

- BGS Borehole Depth 0 - 10m
- BGS Borehole Depth 10 - 30m
- BGS Borehole Depth 30m +
- Confidential
- Other

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

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

Borehole Map - Slice A



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

OS Water Network Data

- Canal
- Reservoir
- Freshwater
- 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

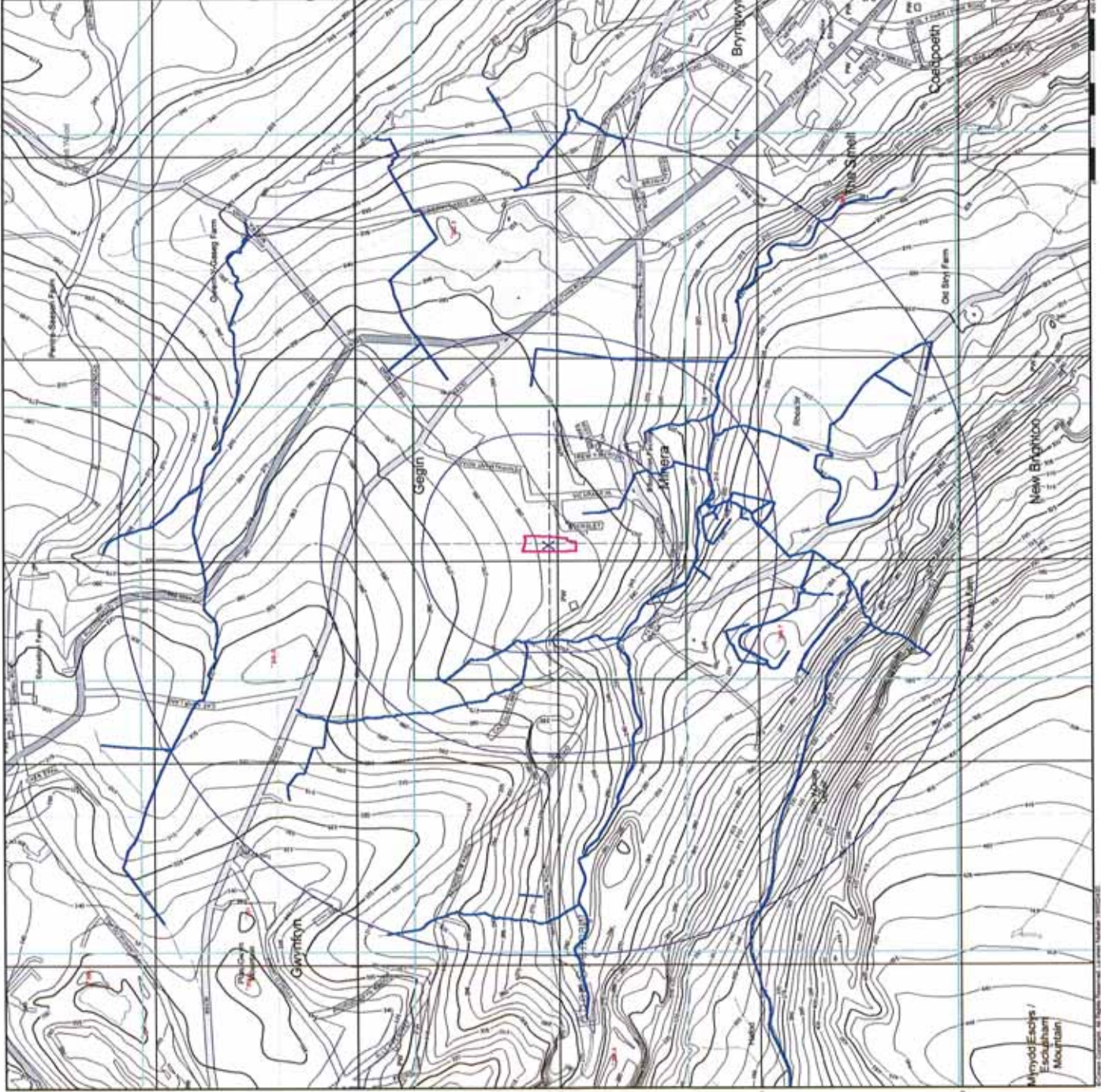


Order Details

Order Number: 101864158_1_1
 Customer Ref: 2192-Eversley Court-JH
 National Grid Reference: 327040, 352020
 Slice: A
 Site Area (Ha): 0.44
 Search Buffer (m): 1000

Site Details

Land West of Eversley Court, Minera, Wrexham, LL11 3YZ



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

Risk of Flooding from Surface Water

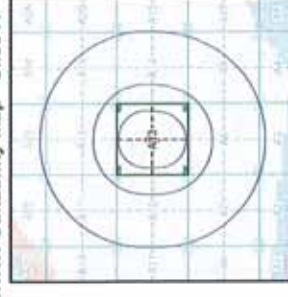
High - 20 Year Return
 Medium - 100 Year Return
 Low - 1000 Year Return

Suitability

See the suitability map below

National Grid Reference
 Country to Search
 Town to Search
 Shaded to indicate level of risk
 Property

EA/NRW Suitability Map - Slice A

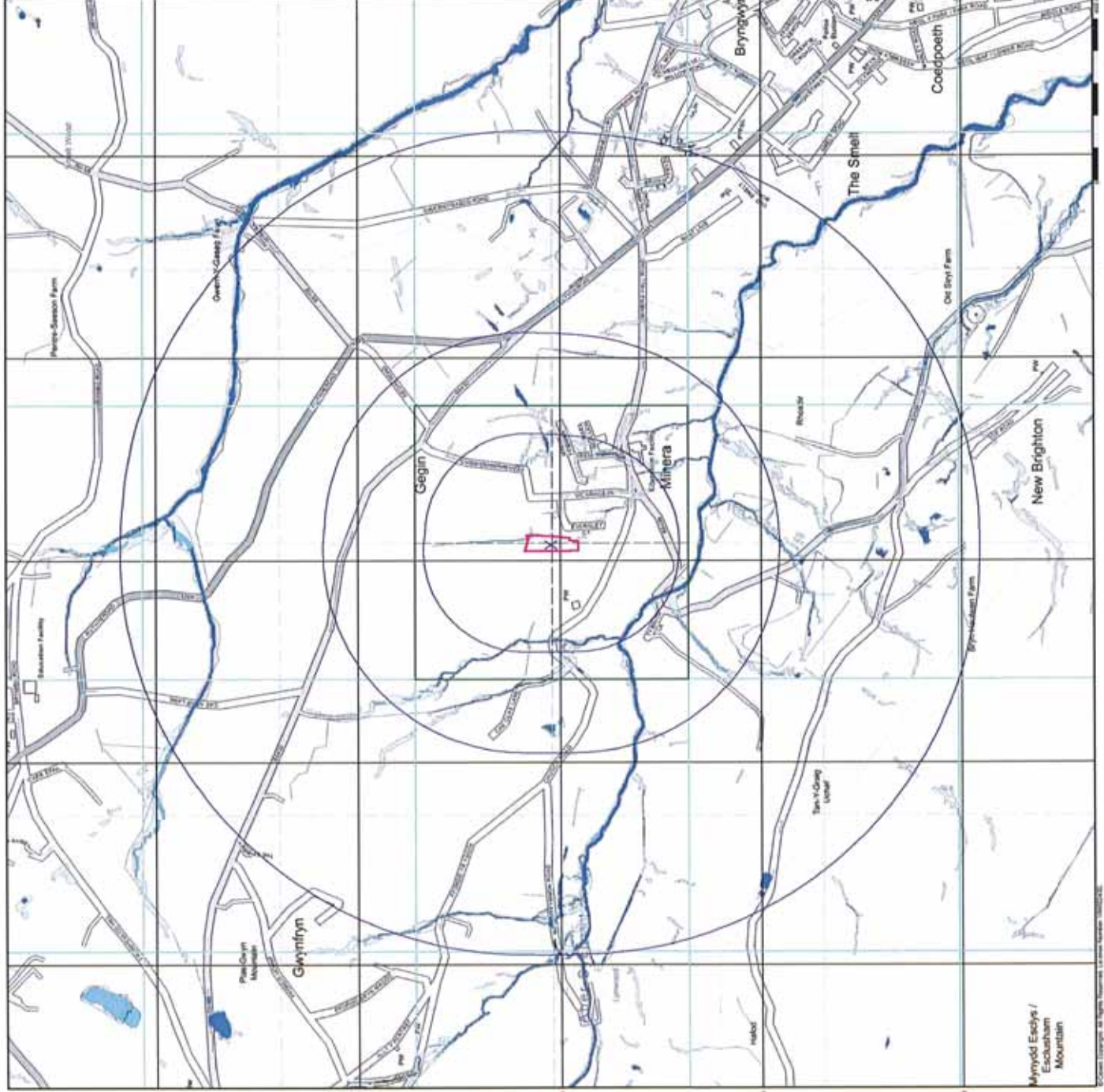


Order Details

Order Number: 191864158_1_1
 Customer Ref: 2192-Eversley Court-JH
 National Grid Reference: 327040, 352020
 Slice: A
 Site Area (Ha): 0.44
 Search Buffer (m): 1000

Site Details

Land West of, Eversley Court, Minera, Wrexham, LL11 3YZ

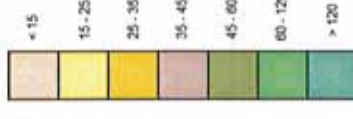


General

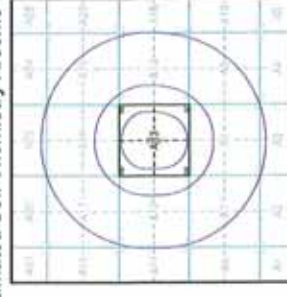
Site Name: ☐ Specified (Survey) ☒ Surveyed (Survey) ☒ Surveyed (Survey) ☒ Surveyed (Survey)

Estimated Soil Chemistry Arsenic

Arsenic Concentrations mg/kg



Estimated Soil Chemistry Arsenic - Slice A

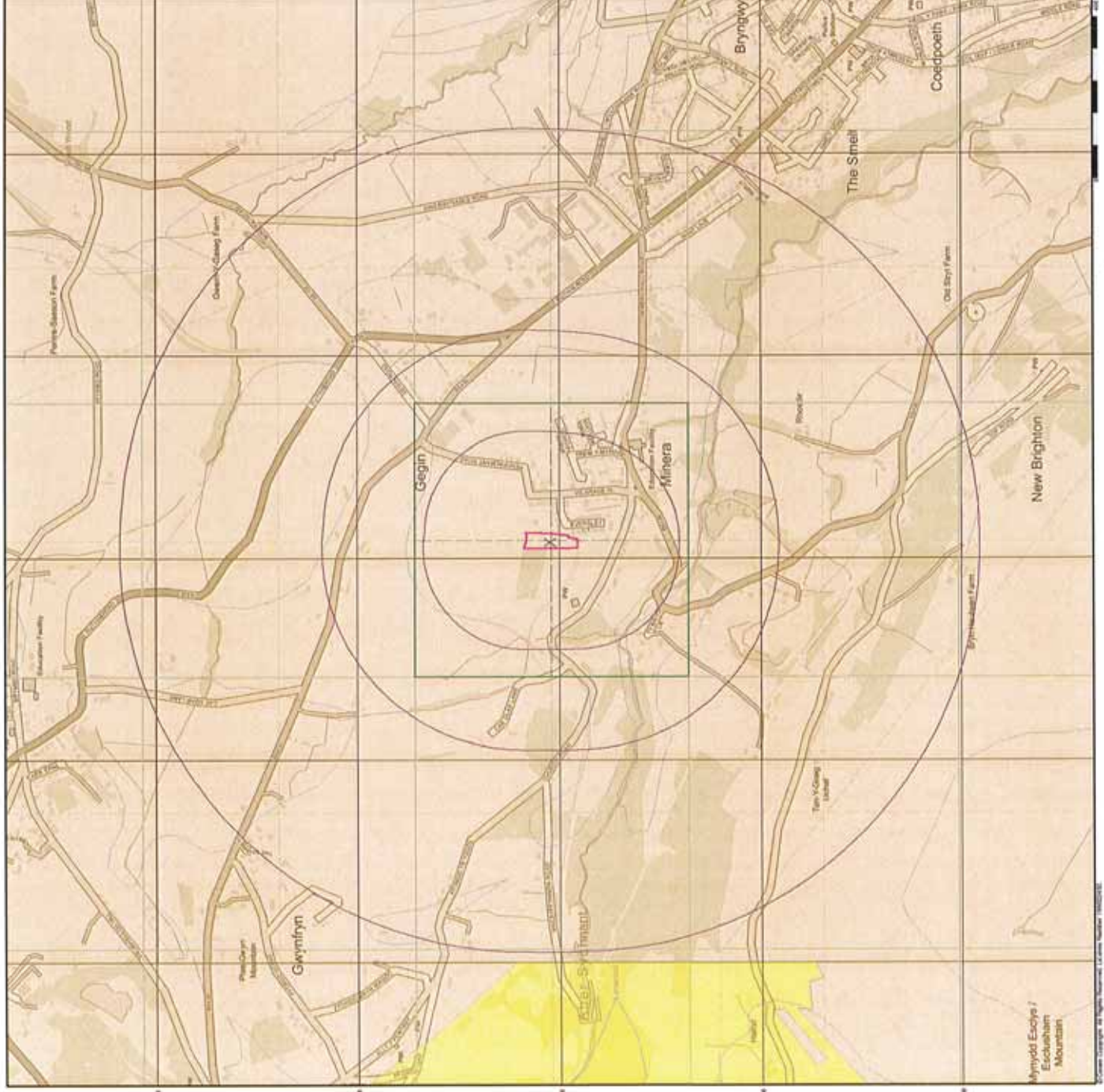


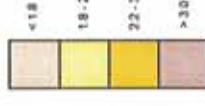
Order Details

Order Details: 191864158_1_1
Customer Ref: 2192-Eversley Court-JH
National Grid Reference: 327040, 352020
Site: A
Site Area (Ha): 0.44
Search Buffer (m): 1000

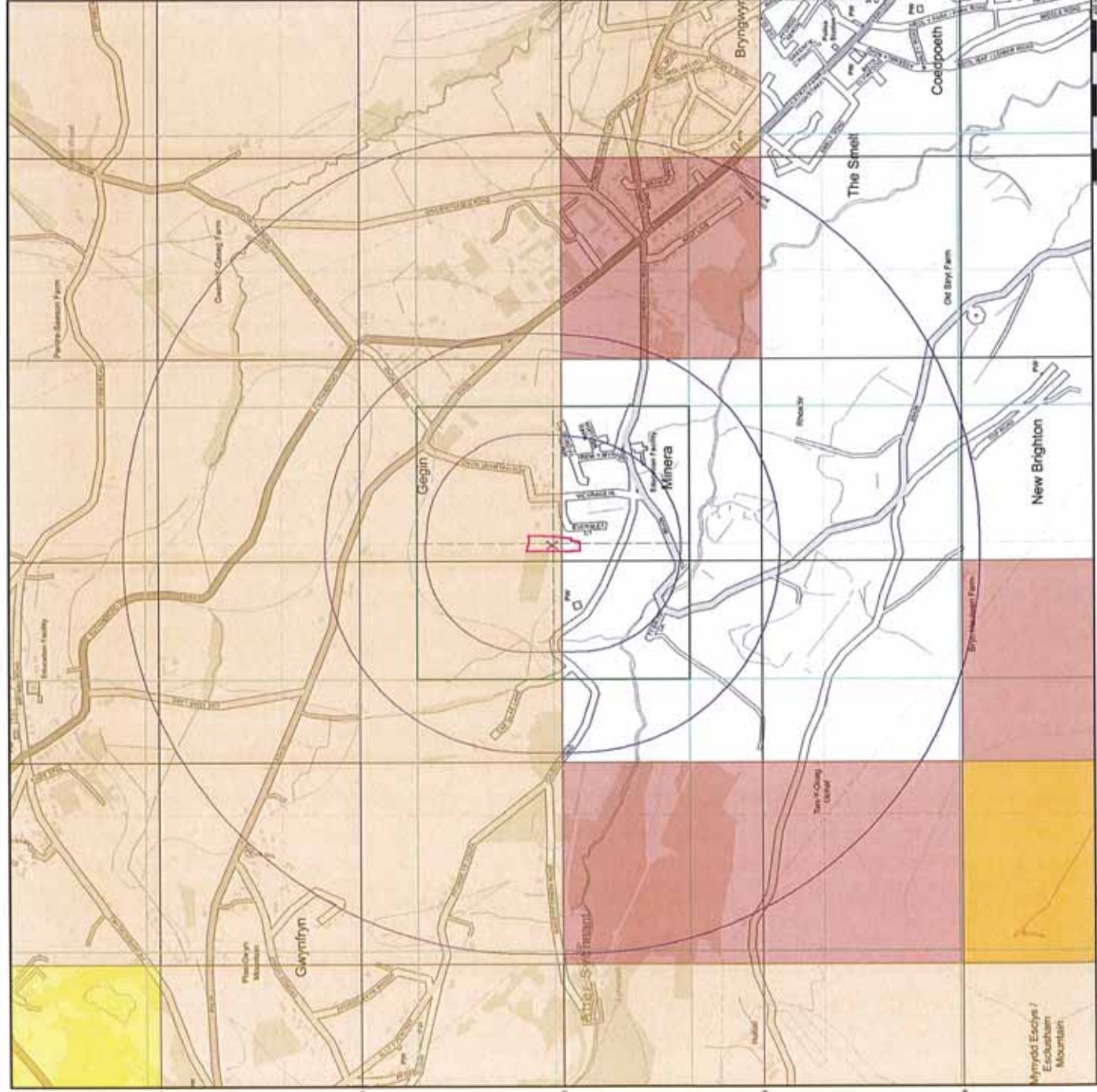
Site Details

Land West of Eversley Court, Minera, Wrexham, LL11 3VZ





Site Details



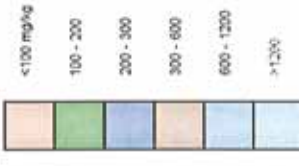
General

Site: ☒ Selected Site

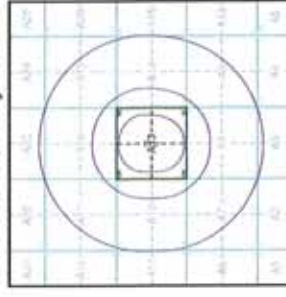
Search: ☐ Search Reference Point

Estimated Soil Chemistry Lead

Lead Concentrations mg/kg



Estimated Soil Chemistry Lead - Slice A

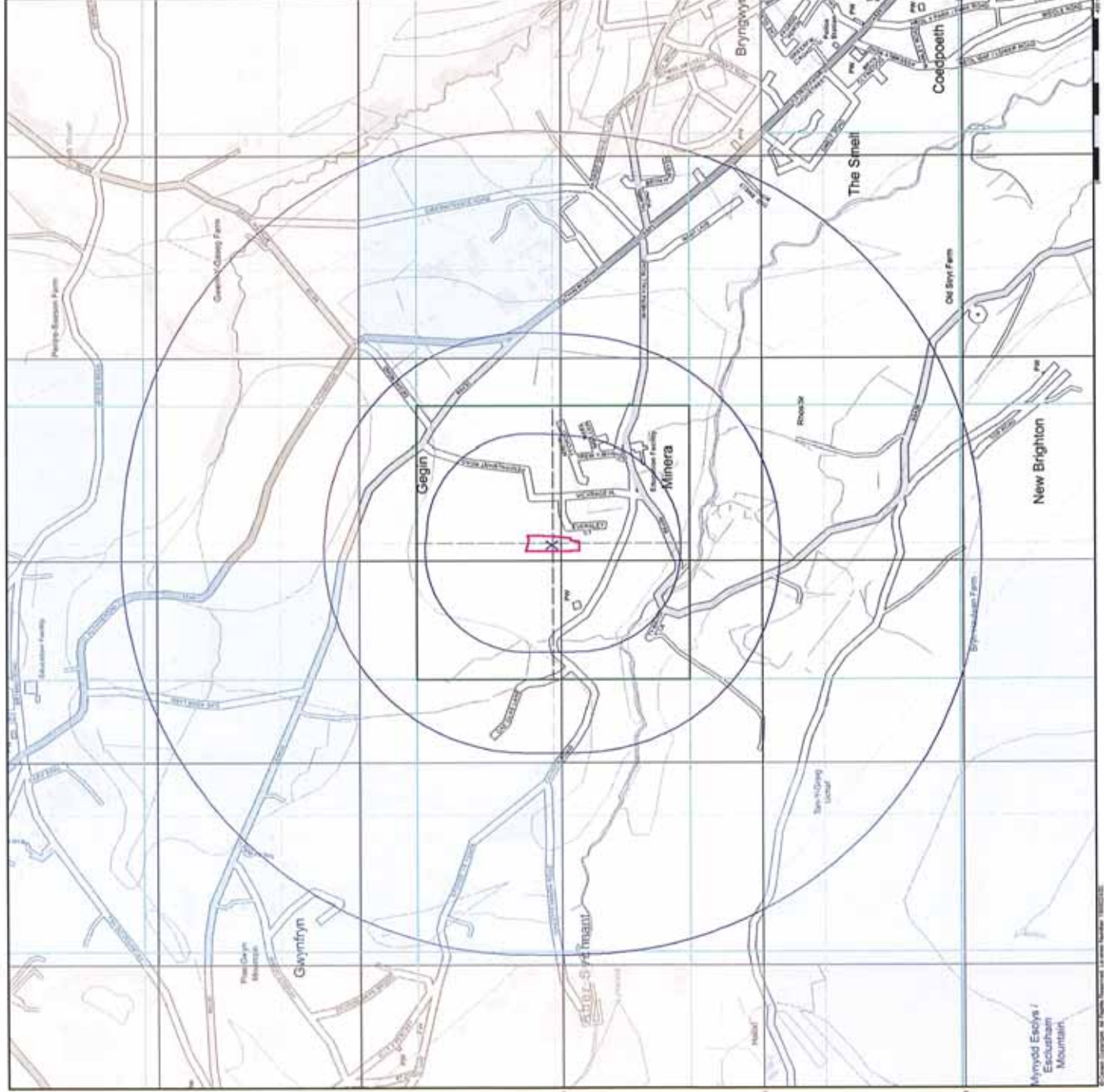


Order Details

Order Details:
191864158_1_1
Customer Ref: 2192-Eversley Court-JH
National Grid Reference: 327040, 352020
Site:
Site Area (Ha): 0.44
Search Buffer (m): 1000

Site Details

Land West of, Eversley Court, Minera, Wrexham, LL11 3YZ



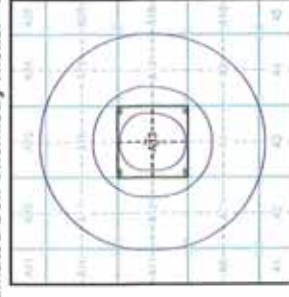
Specified Title	Specified Number(s)

9

11

X **Learning objectives**

< 15	15 - 30	30 - 45	45 - 60	60 - 80	80 - 100	> 100
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Landmark
INFORMATION GROUP

Economic strategies. An explicit statement is given regarding economic

APPENDIX C

Trial Pit Logs

Trial Pit 1

Depth (m)	Strata
0.0-0.4	Grass over soft dark brown and grey gravelly SILT. (TOPSOIL)
0.4-2.3	Stiff becoming very stiff below 1.8m depth yellow brown and grey slightly gravelly CLAY with low cobble content of sandstone. Gravel is fine to coarse subangular and subrounded sandstone. (GLACIAL TILL)

Notes

1. Trial pit terminated at 2.3m depth for soakway test.
2. Pit sides stable.
3. No groundwater encountered.
4. Jar samples taken at 0.1m and 0.8m depth, tub sample taken at 0.9m depth.



TP1



TP1 – Spoil

Trial Pit 2

Depth (m)	Strata
0.0-0.3	Grass over soft dark brown and grey gravelly SILT. (TOPSOIL)
0.3-2.3	Stiff becoming very stiff yellow brown and grey sandy slightly gravelly becoming very gravelly CLAY with low cobble and boulder content of sandstone, up to 0.4m in diameter. Gravel is fine to coarse subangular and subrounded sandstone. (GLACIAL TILL)

Notes

1. Trial pit terminated at 2.3m depth for soakway test.
2. Pit sides stable.
3. No groundwater encountered.
4. Jar samples taken at 0.1m and 0.4m depth, tub sample taken at 1.0m depth.



TP2



TP2 – Spoil

Trial Pit 3

Depth (m)	Strata
0.0-0.3	Grass over soft dark grey SILT. (TOPSOIL)
0.3-2.3	Stiff becoming very stiff yellow brown and grey slightly gravelly becoming very gravelly below 2.0m depth CLAY with high cobble and boulder content of sandstone, up to 0.4m in diameter. Gravel is fine to coarse subangular and subrounded sandstone. (GLACIAL TILL)

Notes

1. Trial pit terminated at 2.3m depth due to difficult excavation.
2. Pit sides stable.
3. No groundwater encountered.

Trial Pit 4

Depth (m)	Strata
0.0-0.3	Grass over soft dark grey SILT. (TOPSOIL)
0.3-2.2	Stiff becoming very stiff yellow brown and grey slightly gravelly becoming very gravelly below 2.0m depth CLAY with high cobble and boulder content of sandstone, up to 0.4m in diameter. Gravel is fine to coarse subangular and subrounded sandstone. (GLACIAL TILL)

Notes

1. Trial pit terminated at 2.2m depth due to difficult excavation.
2. Pit sides stable.
3. No groundwater encountered.
4. Tub sample taken at 1.1m depth.



TP4



TP4 - Spoil

Trial Pit A

Depth (m)	Strata
0.00 – 0.30	Grass over soft dark brown slightly silty CLAY with rootlets (TOPSOIL)
0.30 - 0.80	Firm yellowish-brown mottled grey slightly sandy slightly gravelly CLAY with some pockets of sand. Gravel is fine to coarse (GLACIAL TILL)

Notes

1. Pit sides stable.
2. Slight water seepage at 0.50m depth.
3. Jar samples taken at 0.60 – 0.70m depth.



TP A



TP A – Pit walls



TP A – Spoil

Trial Pit B

Depth (m)	Strata
0.00 – 0.40	Grass over soft dark brown CLAY with rootlets (TOPSOIL)
0.40 – 0.90	Firm yellowish-brown mottled grey slightly sandy slightly gravelly CLAY with some pocket of sand. Gravel is fine to coarse (GLACIAL TILL)

Notes

1. Pit sides stable.
2. No groundwater encountered.
3. Land drain encountered at 0.80m depth.
4. Jar samples taken at 0.70m depth.



TP B



TP B – Pit walls



TP B – Spoil

Trial Pit C

Depth (m)	Strata
0.00 – 0.30	Grass over soft dark brown/brown slightly silty CLAY with rootlets (TOPSOIL)
0.30 – 0.80	Firm yellow brown mottled grey slightly sandy gravelly CLAY with some pockets of yellow sand. Gravel is fine to coarse of sandstone (GLACIAL TILL)

Notes

1. Pit sides stable.
2. No groundwater encountered.
3. Jar sample taken at 0.60 – 0.70m depth.



TP C



TP C – Pit walls



TP C – Spoil

Trial Pit D

Depth (m)	Strata
0.00 – 0.30	Grass over soft dark brown slightly silty CLAY with roots and rootlets (TOPSOIL)
0.30 – 0.90	Stiff yellow brown mottled grey slightly sandy gravelly CLAY with some pockets of yellow sand and few cobbles. Gravel is fine to coarse (GLACIAL TILL)

Notes

1. Pit sides stable.
2. Slight water seepage at 0.80m depth.
3. Tree stumps nearby.
4. Jar samples taken at 0.10 – 0.30m depth.
5. Jar samples taken at 0.50 – 0.70m depth.



TP D



TP D – Pit walls



TP D – Spoil

Trial Pit E

Depth (m)	Strata
0.00 – 0.30	Grass over soft dark brown slightly silty slightly gravelly CLAY with rootlets (TOPSOIL)
0.30 – 0.90	Firm yellowish-brown mottled grey locally grading to brown and grey slightly sandy gravelly CLAY with some pocket of yellow sand and few cobbles of sandstone. Gravel is fine to coarse (GLACIAL TILL)

Notes

1. Pit sides stable.
2. No groundwater encountered.
3. Jar sample taken at 0.60 – 0.70m depth.



TP E



TP E – Pit walls



TP E – Spoil

Trial Pit F

Depth (m)	Strata
0.00 – 0.40	Grass over soft dark brown slightly silty CLAY with roots, rootlets and some timber/metal fragments (TOPSOIL)
0.40 – 1.70	Firm becoming stiff/very stiff brown yellow mottled grey slightly sandy gravelly locally very gravelly CLAY with some cobbles. Gravel is fine to coarse (GLACIAL TILL)

Notes

1. Pit sides stable.
2. No groundwater encountered.
3. Tree nearby.
4. Below 1.30m depth material became slightly dry.
5. Jar sample taken at 0.60 – 0.70m depth.
6. Tub samples taken at 0.60m and 1.60m depth.



TP F



TP F – Pit walls



TP F – Spoil

Trial Pit G

Depth (m)	Strata
0.00 – 0.30	Grass over soft dark brown silty CLAY with rootlets (TOPSOIL)
0.30 – 1.70	Firm becoming stiff/very stiff brown yellow mottled gradually becoming brown and grey slightly sandy gravelly locally very gravelly CLAY with some cobbles and boulders of sandstone. Gravel is fine to coarse (GLACIAL TILL)

Notes

1. Pit sides stable.
2. No groundwater encountered.
3. Tub samples taken at 0.50m and 1.50m depth.



TP G



TP G – Pit walls



TP G – Spoil

Trial Pit H

Depth (m)	Strata
0.00 – 0.40	Grass over soft dark brown silty CLAY with rootlets (TOPSOIL)
0.40 – 1.70	Stiff becoming very stiff yellowish brown mottled grey grading to brown and grey slightly sandy gravelly locally very gravelly CLAY with some pockets of grey sand and cobbles. Gravel is fine to coarse (GLACIAL TILL)

Notes

1. Pit sides stable.
2. Very slight water seepage at 0.90m depth.
3. Pockets of sand are in the shallowest part of the glacial till (up to 1.0m depth)
4. Tree stumps nearby.
5. Material became slightly dry with depth.
6. Tub samples taken at 0.60m and 1.60m depth.



TP H



TP H – Pit walls



TP H – Spoil

Trial Pit 1

Depth (m)	Strata
0.00 – 0.30	Grass over soft dark brown silty CLAY with rootlets (TOPSOIL)
0.30 – 2.10	Firm becoming stiff/very stiff yellowish brown mottled grey grading to brown and grey slightly sandy gravelly becoming very gravelly with depth CLAY with some pockets of grey/yellow sand and cobbles. Gravel is fine to coarse, sub-rounded and sub-angular (GLACIAL TILL)

Notes

1. Pit sides stable.
2. No groundwater encountered.
3. Land drain encountered at 0.60m depth.
4. Pocket of sand are in the shallowest part of the glacial till (up to 1.0m depth)
5. Cobble content increased with depth.
6. Tub samples taken at 1.00m and 2.00m depth.



TP 1



TP 1 – Pit walls



TP 1 – Spoil

APPENDIX D

Physical Test Results

Form REP008 Rev 2



Schiano

#REF!

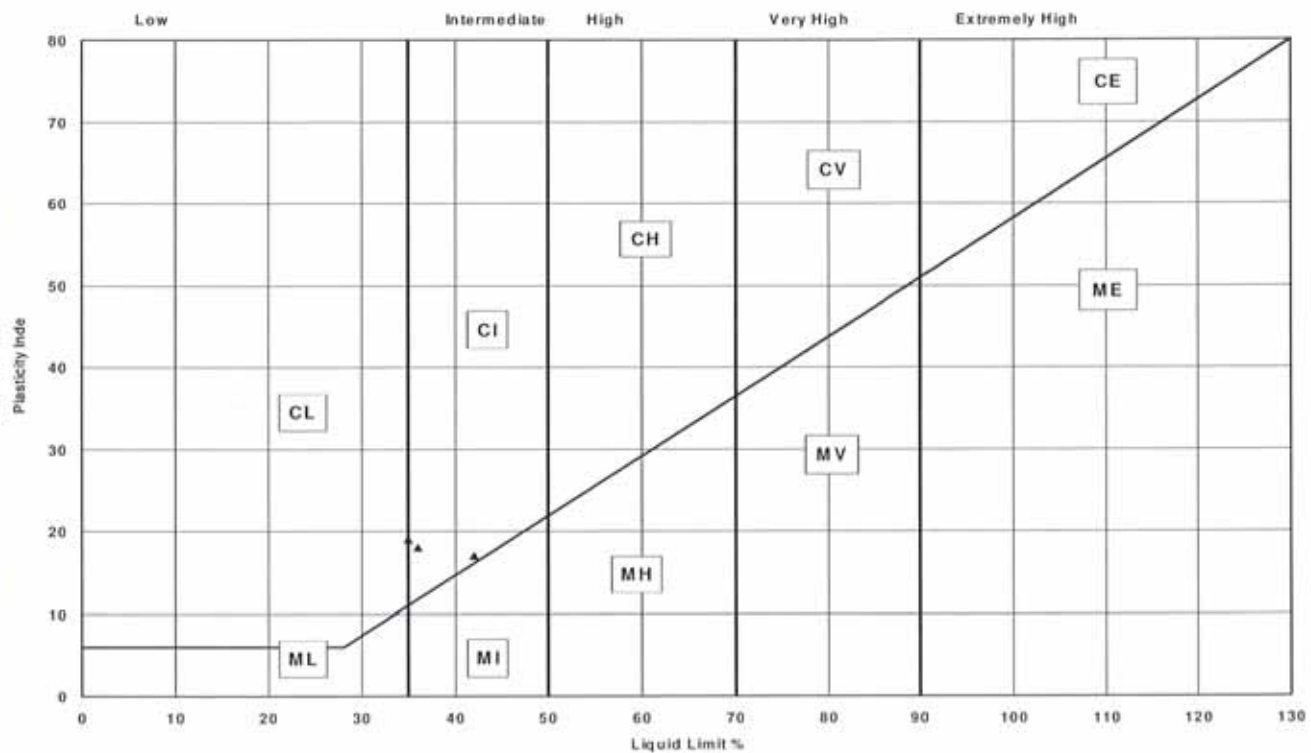
Project No: PC197422

Remarks	NST - Not suitable for Test For Standards followed see Laboratory Test Certificate
---------	---

Project: EVERSLEY COURT, MINERA

Project No: PC197422

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT for all items tested



Soil Type	Plasticity Characteristics
C Clay	L Low
	I Intermediate
M Silt	H High
	V Very High
	E Extremely High

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

Remarks

20/02/2019

Project No: PC197422

Remarks  For Standards followed please see Laboratory Test Certificate
Sulphate reported as SO₃, results in brackets reported as SO₄

Laboratory Test Certificate

Form REP008 Rev 3

Issued To	Rosario Sottile	Date of issue	22/07/2019
	Groundsolve Ltd	Issue No.	1
	Unit 1 Charter Court, Well House Barns	Client Ref. No.	2192/ECM/Geot/RS
	Chester Road, Bretton	Samples / Material Source	
	Flintshire, CH4 0DH	Samples Recv'd	01/07/2019
Testing Start Date	01/07/2019	Sample State	As received
Testing Complete	16/07/2019	Sampled by	Groundsolve Ltd
Comments			
Project No	PC197575		
Project Name	EVERLEY COURT, MINERA		

Summary of Tests

Standard	Test Description	Test Quantity	UKAS
BS EN ISO 17892-1:2014	Water Content	8	Yes
BS EN ISO 17892-12:2018 Cl. 5.3 & 5.5	Liquid Limit and Plastic Limit	8	Yes

Note: Any descriptions, opinions or interpretations are outside the scope of UKAS accreditation.



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: PC197575

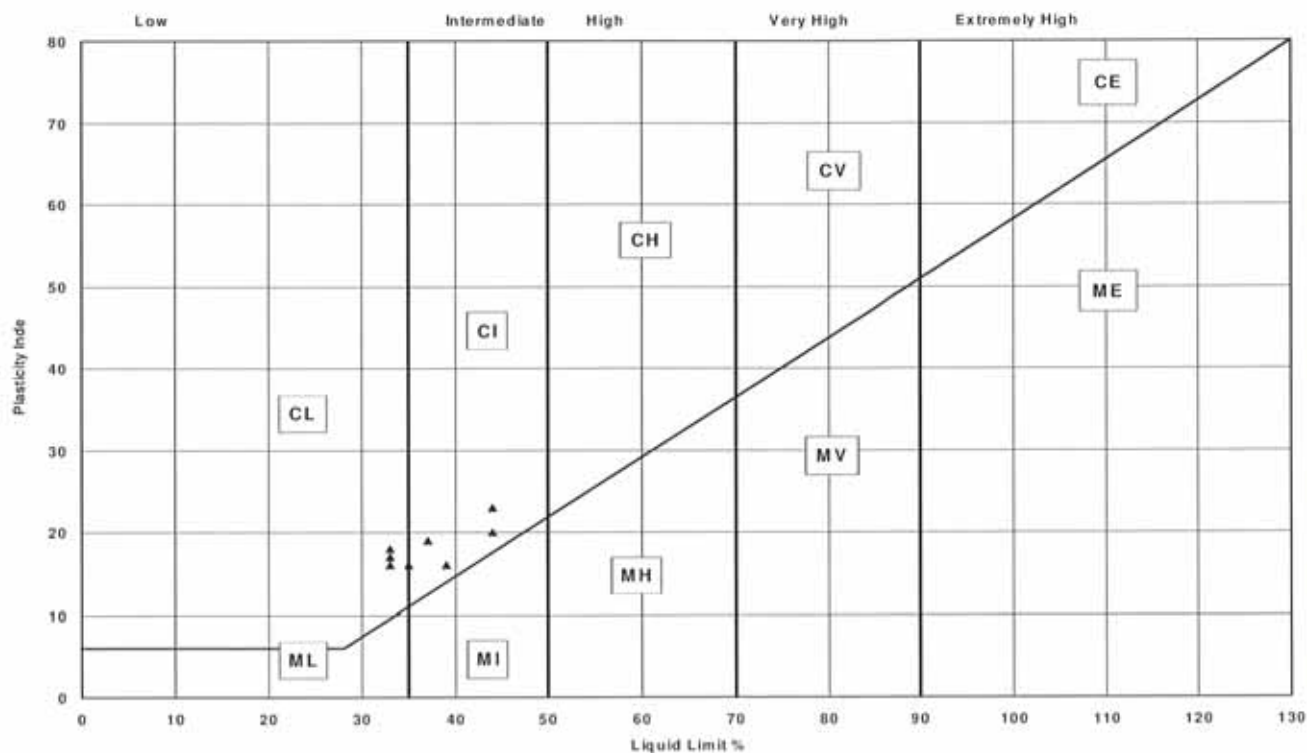
Remarks  NST - Not suitable for Test
For Standards followed see Laboratory Test Certificate
^ Rock water content test

Sample					Results							
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Test Type	Point Data		Sym bol	p %	>425 sieve µm	w _L %	w _p %
						Cone Pene.	Water % (Factor)					
TPF	0.60 (0.60)	D	C23133	Brown occasionally grey slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425µm sieve			CI	19	18%	37	18
TPF	1.60 (1.60)	D	C23134	Brown slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425µm sieve			CL	17	29%	33	16
TPG	0.50 (0.50)	D	C23135	Orange brown mottled light grey slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425µm sieve			CI	23	11%	44	21
TPG	1.50 (1.50)	D	C23136	Dark greenish brown occasionally grey slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425µm sieve			CI	16	29%	35	19
TPH	0.60 (0.60)	D	C23137	Orange brown mottled light grey slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425µm sieve			CI	20	14%	44	24
TPH	1.60 (1.60)	D	C23138	Dark brown occasionally grey slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425µm sieve			CL	18	27%	33	15
TPI	1.00 (1.00)	D	C23139	Brown mottled grey slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425µm sieve			CI	16	20%	39	23
TPI	2.00 (2.00)	D	C23140	Brown mottled grey slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425µm sieve			CL	16	25%	33	17
Remarks 												

Project: EVERSLEY COURT, MINERA

Project No: PC197575

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT for all items tested



Soil Type	Plasticity Characteristics
C Clay	L Low
	I Intermediate
M Silt	H High
	V Very High
	E Extremely High

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

Remarks

16/07/2019

APPENDIX E

Chemical Test Results



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

Attention: Stefan Imiolczyk

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

CERTIFICATE OF ANALYSIS

Date of report Generation: 22 February 2019
Customer: H_GRSOLVE_BRE
Sample Delivery Group (SDG): 190211-62
Your Reference: 2192/SDI
Location: Eversley Court, Minera
Report No: 493666

We received 4 samples on Friday February 08, 2019 and 4 of these samples were scheduled for analysis which was completed on Friday February 22, 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).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG:	190211-62	Client Reference:	2192/SDI	Report Number:	493666
Location:	Eversley Court, Minera	Order Number:		Superseded Report:	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
19323422	TP1		0.10 - 0.10	07/02/2019
19323423	TP1		0.80 - 0.80	07/02/2019
19323424	TP2		0.10 - 0.10	07/02/2019
19323425	TP2		0.40 - 0.40	07/02/2019

Maximum Sample/Coolbox Temperature (°C) :

10.6

ISO5667-3 Water quality - Sampling - Part3 -

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: 190211-62
Location: Eversley Court, Minera

Client Reference: 2192/SD1
Order Number:

Report Number: 493666
Superseded Report:

Results Legend			Lab Sample No(s)							
X Test N No Determination Possible			Customer Sample Reference							
Sample Types -			AGS Reference							
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			Depth (m)							
			Container							
			Sample Type							
			19023425 TP2 0.40 - 0.40 60g VOC (ALE215) S 19023424 TP2 0.10 - 0.10 60g VOC (ALE215) S 19023423 TP1 0.80 - 0.80 60g VOC (ALE215) S 19023422 TP1 0.10 - 0.10 60g VOC (ALE215) S 250g Amber Jar (ALE210) S 250g Amber Jar (ALE210) S 250g Amber Jar (ALE210) S 250g Amber Jar (ALE210) S							
Anticore 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				
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				
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	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				
Sample description	All	NDPs: 0 Tests: 4	X	X	X	X				
Total Organic Carbon	All	NDPs: 0 Tests: 4	X	X	X	X				



CERTIFICATE OF ANALYSIS

Validated

SDG: 190211-62 Client Reference: 2192/SDI Report Number: 493666
Location: Eversley Court, Minera Order Number: Superseded Report:

Results Legend

- 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

Lab Sample No(s)			19323422	19323423	19323424	19323425
Customer Sample Reference			TP1	TP1	TP2	TP2
AGS Reference						
Depth (m)			0.10 - 0.10	0.80 - 0.80	0.10 - 0.10	0.40 - 0.40
Container			250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S
Total Sulphate	All	NDPs: 0 Tests: 4	X	X	X	X
TPH CWG GC (S)	All	NDPs: 0 Tests: 4	X	X	X	X
VOC MS (S)	All	NDPs: 0 Tests: 4	X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 190211-62
Location: Eversley Court, Minera

Client Reference: 2192/SDI
Order Number:

Report Number: 493666
Superseded Report:

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
19323422	TP1	0.10 - 0.10	Dark Brown	Clay Loam	Stones	Vegetation
19323423	TP1	0.80 - 0.80	Dark Brown	Clay	Stones	Vegetation
19323424	TP2	0.10 - 0.10	Dark Brown	Clay Loam	Vegetation	None
19323425	TP2	0.40 - 0.40	Dark Brown	Clay Loam	Stones	None

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: 190211-62 Client Reference: 2192/SDI Report Number: 493666
 Location: Eversley Court, Minera Order Number: Superseded Report:

Results Legend		Customer Sample Ref.	TP1	TP1	TP2	TP2		
#	ISO17025 accredited.	Depth (m)	0.10 - 0.10	0.80 - 0.80	0.10 - 0.10	0.40 - 0.40		
M	acCERTS accredited.	Sample Type	Solid/Solid (S)	Solid/Solid (S)	Solid/Solid (S)	Solid/Solid (S)		
aq	Aqueous / settled sample.	Date Sampled	07/02/2019	07/02/2019	07/02/2019	07/02/2019		
dis.filt	Dissolved / filtered sample.	Sample Time						
tot.unfilt	Total / unfiltered sample.	Date Received	06/02/2019	09/02/2019	06/02/2019	06/02/2019		
*	Subcontracted test.	SDG Ref	190211-62	190211-62	190211-62	190211-62		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery trigger breach confirmed	Lab Sample No (4)	19023422	19023423	19023424	19023425		
(F)	1-3x@	AGS Reference						
Sample deviation (see appendix)								
Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	23	18	31	9.5		
Catechol	<0.01 mg/kg	TM062 (S)	<0.01	<0.01	<0.01	<0.01		
Phenol	<0.01 mg/kg	TM062 (S)	<0.01	<0.01	<0.01	<0.01		
			M	M	M	M		
Cresols	<0.01 mg/kg	TM062 (S)	0.013	<0.01	<0.01	<0.01		
			M	M	M	M		
Resorcinol	<0.05 mg/kg	TM062 (S)	<0.05	<0.05	<0.05	<0.05		
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015	<0.015	<0.015	<0.015		
			M	M	M	M		
1-Naphthol	<0.01 mg/kg	TM062 (S)	<0.01	<0.01	<0.01	<0.01		
2,3,5-Trimethylphenol	<0.01 mg/kg	TM062 (S)	<0.01	<0.01	<0.01	<0.01		
			M	M	M	M		
2-Isopropylphenol	<0.015 mg/kg	TM062 (S)	<0.015	<0.015	<0.015	<0.015		
			M	M	M	M		
Phenols, Total Detected 5 speciated	<0.06 mg/kg	TM062 (S)	<0.06	<0.06	<0.06	<0.06		
			M	M	M	M		
Phenols, Total Detected 8 Speciated	<0.13 mg/kg	TM062 (S)	<0.13	<0.13	<0.13	<0.13		
Soil Organic Matter (SOM)	<0.35 %	TM132	7.29	0.921	5.12	0.715		
			#	#	#	#		
pH	1 pH Units	TM133	7.91	8.32	6.69	8.33		
			M	M	M	M		
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	<0.6	<0.6	<0.6		
			#	#	#	#		
Cyanide, Total	<1 mg/kg	TM153	<1	<1	<1	<1		
			M	M	M	M		
Sulphide, Easily liberated	<15 mg/kg	TM180	<15	<15	<15	<15		
			@ M	@ M	@ M	@ M		
Chromium, Trivalent	<0.9 mg/kg	TM181	16.6	9.8	13.9	13.2		
			M	M	M	M		
Arsenic	<0.6 mg/kg	TM181	9.24	10.9	10.3	9.76		
			M	M	M	M		
Boron	<0.7 mg/kg	TM181	3.94	2.44	3.4	2.6		
			#	#	#	#		
Cadmium	<0.02 mg/kg	TM181	1.84	0.208	2.12	0.426		
			M	M	M	M		
Chromium	<0.9 mg/kg	TM181	16.6	9.8	13.9	13.2		
			M	M	M	M		
Copper	<1.4 mg/kg	TM181	23.6	9.85	18.7	21.6		
			M	M	M	M		
Lead	<0.7 mg/kg	TM181	380	170	316	83.7		
			M	M	M	M		
Mercury	<0.14 mg/kg	TM181	<0.14	<0.14	<0.14	<0.14		
			M	M	M	M		
Nickel	<0.2 mg/kg	TM181	12.6	14.8	12.5	32.7		
			M	M	M	M		
Selenium	<1 mg/kg	TM181	<1	<1	<1	<1		
			#	#	#	#		
Zinc	<1.9 mg/kg	TM181	302	38.7	396	70.7		
			M	M	M	M		
Total Sulphur (ASB)	<0.0016 %	TM221	0.0162	<0.0016	0.0111	<0.0016		
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0768	0.0129	0.0212	0.0268		
			M	M	M	M		

SDG:	190211-62
Location:	Eversley Court, Minera

Client Reference: 2192/SDI
Order Number:

Report Number: 493666
Superseded Report:

PAH by GCMS

[illegible]

SDG:	190211-62
Location:	Eversley Court, Minera

Client Reference: 2192/SDI
Order Number:

Report Number:	493666
Superseded Report:	

TPH CWG (S)

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 190211-62 Client Reference: 2192/SDI Report Number: 493666
Location: Eversley Court, Minera Order Number: Superseded Report:

Asbestos Identification - Solid Samples

Results Legend

ISO17025 accredited.
M UKAS accredited.
* Subcontracted test.
(F) Trigger breach confirmed.
1-5ö 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 0.10 - 0.10 SOLID 07/02/2019 00:00:00 08/02/2019 13:10:00 190211-62 19323422 TM048	18/02/2019	Lucy Caroe	-	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	TP1 0.80 - 0.80 SOLID 07/02/2019 00:00:00 08/02/2019 13:10:00 190211-62 19323423 TM048	15/02/19	Andrzej Ferecki	-	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	TP2 0.10 - 0.10 SOLID 07/02/2019 00:00:00 08/02/2019 13:10:00 190211-62 19323424 TM048	18/02/19	Andrzej Ferecki	-	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	TP2 0.40 - 0.40 SOLID 07/02/2019 00:00:00 08/02/2019 13:10:00 190211-62 19323425 TM048	18/02/19	Andrzej Ferecki	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG: 190211-62 Client Reference: 2192/SD1 Report Number: 493666
Location: Eversley Court, Minera Order Number: Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
PM001		Preparation of Samples for Metals Analysis
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
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
TM221	Inductively Coupled Plasma - Atomic Emission Spectroscopy. An Atlas of Spectral Information: Winge, Fassel, Peterson and Floyd	Determination of Acid extractable Sulphate in Soils by IRIS Emission Spectrometer
TM243		Mixed Anions In Soils By Kone

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: 190211-62
Location: Eversley Court, MineraClient Reference: 2192/SDI
Order Number:Report Number: 493666
Superseded Report:

Test Completion Dates

Lab Sample No(s)	19323422	19323423	19323424	19323425
Customer Sample Ref.	TP1	TP1	TP2	TP2
AGS Ref.				
Depth	0.10 - 0.10	0.80 - 0.80	0.10 - 0.10	0.40 - 0.40
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	20-Feb-2019	20-Feb-2019	20-Feb-2019	20-Feb-2019
Asbestos ID in Solid Samples	18-Feb-2019	15-Feb-2019	18-Feb-2019	18-Feb-2019
Chromium III	19-Feb-2019	19-Feb-2019	20-Feb-2019	19-Feb-2019
Cyanide Comp/Free/Total/Thiocyanate	19-Feb-2019	19-Feb-2019	19-Feb-2019	19-Feb-2019
Easily Liberated Sulphide	18-Feb-2019	18-Feb-2019	15-Feb-2019	15-Feb-2019
EPH CWG (Aliphatic) GC (S)	18-Feb-2019	19-Feb-2019	19-Feb-2019	19-Feb-2019
EPH CWG (Aromatic) GC (S)	18-Feb-2019	19-Feb-2019	19-Feb-2019	19-Feb-2019
GRO by GC-FID (S)	19-Feb-2019	20-Feb-2019	19-Feb-2019	20-Feb-2019
Hexavalent Chromium (s)	18-Feb-2019	18-Feb-2019	20-Feb-2019	19-Feb-2019
Metals in solid samples by OES	19-Feb-2019	19-Feb-2019	19-Feb-2019	18-Feb-2019
PAH by GCMS	19-Feb-2019	19-Feb-2019	19-Feb-2019	19-Feb-2019
pH	17-Feb-2019	17-Feb-2019	17-Feb-2019	17-Feb-2019
Phenols by HPLC (S)	22-Feb-2019	22-Feb-2019	21-Feb-2019	21-Feb-2019
Sample description	13-Feb-2019	13-Feb-2019	13-Feb-2019	13-Feb-2019
Total Organic Carbon	17-Feb-2019	17-Feb-2019	17-Feb-2019	17-Feb-2019
Total Sulphate	19-Feb-2019	19-Feb-2019	18-Feb-2019	19-Feb-2019
TPH CWG GC (S)	19-Feb-2019	20-Feb-2019	19-Feb-2019	20-Feb-2019
VOC MS (S)	20-Feb-2019	20-Feb-2019	20-Feb-2019	20-Feb-2019



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. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. 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.

4. 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.

5. 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.

6. 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 ISO 17025. 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 asbestos present is not determined unless specifically requested.

7. 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.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

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

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

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

13. **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.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethylphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

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

18. 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.

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

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

General

21. 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.

22. 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.

23. 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.

24. **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.

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

Asbestos

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 Actinolite	-
Fibrous Anorthophyllite	-
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.

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.



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

Attention: Rosario Sottile

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

CERTIFICATE OF ANALYSIS

Date of report Generation: 01 July 2019
Customer: Ground Solve
Sample Delivery Group (SDG): 190624-41
Your Reference: 2192/RS
Location: EVERSLEY COURT, MINERA
Report No: 512464

We received 7 samples on Monday June 24, 2019 and 7 of these samples were scheduled for analysis which was completed on Monday July 01, 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).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 190624-41 Client Reference: 2192/RS Report Number: 512464
Location: EVERSLEY COURT, MINER Order Number: 2192/RS Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
20214884	TP A		0.60 - 0.70	24/06/2019
20214885	TP B		0.70 - 0.70	24/06/2019
20214886	TP C		0.60 - 0.70	24/06/2019
20214887	TP D		0.10 - 0.30	24/06/2019
20214888	TP D		0.50 - 0.70	24/06/2019
20214889	TP E		0.60 - 0.70	24/06/2019
20214890	TP F		0.60 - 0.70	24/06/2019

Maximum Sample/Coolbox Temperature (°C) :

14.2

ISO5667-3 Water quality - Sampling - Part3 -

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: 190624-41 Client Reference: 2192/RS Report Number: 512464
Location: EVERSLEY COURT, MINER Order Number: 2192/RS Superseded Report:

Results Legend			Lab Sample No(s)							
X Test N No Determination Possible			Customer Sample Reference							
Sample Types -			AGS Reference							
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			Depth (m)							
			Container							
			Sample Type							
Anions by Kone (soil)	All	NDPs: 0 Tests: 1						X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1						X		
Chromium III	All	NDPs: 0 Tests: 1						X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 1						X		
Easily Liberated Sulphide	All	NDPs: 0 Tests: 1						X		
Elemental Sulphur	All	NDPs: 0 Tests: 1						X		
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 1						X		
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 1						X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1							X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1						X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 7	X	X	X	X	X		X	X
PAH by GCMS	All	NDPs: 0 Tests: 1						X		
pH	All	NDPs: 0 Tests: 1						X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1						X		
Sample description	All	NDPs: 0 Tests: 7	X	X	X	X	X		X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 190624-41 Client Reference: 2192/RS Report Number: 512464
 Location: EVERSLEY COURT, MINER Order Number: 2192/RS Superseded Report:

Results Legend			Lab Sample No(s)					
X Test N No Determination Possible			Customer Sample Reference					
Sample Types -			AGS Reference					
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			Depth (m)					
			Container					
			Sample Type					
Total Organic Carbon	All	NDPs: 0 Tests: 1	20214894	20214895	20214896	20214897	20214898	20214899
TPH CWG GC (S)	All	NDPs: 0 Tests: 1	TP A	TP B	TP C	TP D	TP E	TP F
VOC MS (S)	All	NDPs: 0 Tests: 1	0.60 - 0.70	0.70 - 0.70	0.60 - 0.70	0.10 - 0.30	0.50 - 0.70	0.60 - 0.70
			250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)
			S	S	S	S	S	S
						X		
						X		
							X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 190624-41 Client Reference: 2192/RS Report Number: 512464
Location: EVERSLEY COURT, MINER Order Number: 2192/RS Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
20214884	TP A	0.60 - 0.70	Dark Brown	Sandy Clay Loam	Stones	Vegetation
20214885	TP B	0.70 - 0.70	Dark Brown	Sandy Clay Loam	Stones	Vegetation
20214886	TP C	0.60 - 0.70	Dark Brown	Silty Clay Loam	Stones	Vegetation
20214887	TP D	0.10 - 0.30	Dark Brown	Loamy Sand	Stones	Vegetation
20214888	TP D	0.50 - 0.70	Dark Brown	Sandy Silt Loam	Stones	Vegetation
20214889	TP E	0.60 - 0.70	Dark Brown	Sandy Loam	Stones	Vegetation
20214890	TP F	0.60 - 0.70	Dark Brown	Sandy Loam	Stones	Vegetation

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.

SDG:	190624-41	Client Reference:	2192/RS	Report Number:	512464
Location:	EVERSLEY COURT, MINER	Order Number:	2192/RS	Superseded Report:	

[illegible]

SDG:	190624-41	Client Reference:	2192/RS	Report Number:	512464
Location:	EVERSLEY COURT, MINER	Order Number:	2192/RS	Superseded Report:	

PAH by GCMS

[illegible]

SDG:	190624-41	Client Reference:	2192/RS	Report Number:	512464
Location:	EVERSLEY COURT, MINER	Order Number:	2192/RS	Superseded Report:	

TPH CWG (S)

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 190624-41 Client Reference: 2192/RS Report Number: 512464
Location: EVERSLEY COURT, MINER Order Number: 2192/RS Superseded Report:

Asbestos Identification - Solid Samples

Results Legend

ISO17025 accredited
M acCERTS accredited
* Subcontracted test
(F) Trigger breach confirmed
1-55+5@ 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.	TP D	26/06/2019	Renata Bozhikov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	0.50 - 0.70										
Sample Type	SOLID										
Date Sampled	24/06/2019 00:00:00										
Date Received	24/06/2019 16:00:00										
SDG	190624-41										
Original Sample	20214888										
Method Number	TM048										



CERTIFICATE OF ANALYSIS

Validated

SDG:	190624-41	Client Reference:	2192/RS	Report Number:	512464
Location:	EVERSLEY COURT, MINER	Order Number:	2192/RS	Superseded Report:	

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 3545	The determination of PAH in soil samples by GC-MS
TM243		Mixed Anions In Soils By Kone

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: 190624-41 Client Reference: 2192/RS Report Number: 512464
Location: EVERSLEY COURT, MINER Order Number: 2192/RS Superseded Report:

Test Completion Dates

Lab Sample No(s)	20214884	20214885	20214886	20214887	20214888	20214889	20214890
Customer Sample Ref.	TPA	TPB	TPC	TPD	TPD	TPF	TPF
AGS Ref.							
Depth	0.60 - 0.70	0.70 - 0.70	0.60 - 0.70	0.10 - 0.30	0.50 - 0.70	0.60 - 0.70	0.60 - 0.70
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)					28-Jun-2019		
Asbestos ID in Solid Samples					26-Jun-2019		
Chromium III					28-Jun-2019		
Cyanide Comp./Free/Total/Thiocyanate					28-Jun-2019		
Easily Liberated Sulphide					27-Jun-2019		
Elemental Sulphur					28-Jun-2019		
EPH CWG (Aliphatic) GC (S)					28-Jun-2019		
EPH CWG (Aromatic) GC (S)					28-Jun-2019		
GRO by GC-FID (S)					27-Jun-2019		
Hexavalent Chromium (s)					26-Jun-2019		
Metals in solid samples by OES	28-Jun-2019	28-Jun-2019	28-Jun-2019	28-Jun-2019	01-Jul-2019	28-Jun-2019	28-Jun-2019
PAH by GCMS					27-Jun-2019		
pH					26-Jun-2019		
Phenols by HPLC (S)					27-Jun-2019		
Sample description	25-Jun-2019	25-Jun-2019	25-Jun-2019	25-Jun-2019	25-Jun-2019	25-Jun-2019	25-Jun-2019
Total Organic Carbon					27-Jun-2019		
TPH CWG GC (S)					28-Jun-2019		
VOC MS (S)					27-Jun-2019		



Appendix

General

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.

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 Actinolite	-
Fibrous Anorthophyllite	-
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 F

WAC Analysis



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

Attention: Mike Scott

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

CERTIFICATE OF ANALYSIS

Date of report Generation:	09 August 2019
Customer:	Ground Solve
Sample Delivery Group (SDG):	190802-108
Your Reference:	2192/MS
Location:	Eversley Court, Minera
Report No:	517337

We received 2 samples on Friday August 02, 2019 and 2 of these samples were scheduled for analysis which was completed on Friday August 09, 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).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager



CERTIFICATE OF ANALYSIS

Validated

SDG: 190802-108 Client Reference: 2192/MS Report Number: 517337
Location: Eversley Court, Minera Order Number: 2192/MS Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
20450573	TP01			02/08/2019
20450574	TP02			02/08/2019

Maximum Sample/Coolbox Temperature (°C) :

18.4

ISO5667-3 Water quality - Sampling - Part3 -

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: 190802-108
Location: Eversley Court, Minera

Client Reference: 2192/MS
Order Number: 2192/MS

Report Number: 517337
Superseded Report:

Results Legend								
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	Lab Sample No(s)							
	Customer Sample Reference							
	AGS Reference							
	Depth (m)							
	Container	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	
	Sample Type	S	S	S	S	S	S	
ANC at pH4 and ANC at pH 6	All	NDP: 0 Tests: 2	X			X		
Anions by Kone (w)	All	NDP: 0 Tests: 2	X			X		
CEN Readings	All	NDP: 0 Tests: 2	X			X		
Coronene	All	NDP: 0 Tests: 2		X			X	
Dissolved Metals by ICP-MS	All	NDP: 0 Tests: 2	X			X		
Dissolved Organic/Inorganic Carbon	All	NDP: 0 Tests: 2	X			X		
Fluoride	All	NDP: 0 Tests: 2	X			X		
Loss on Ignition in soils	All	NDP: 0 Tests: 2		X			X	
Mercury Dissolved	All	NDP: 0 Tests: 2	X			X		
Mineral Oil	All	NDP: 0 Tests: 2		X			X	
PAH 16 & 17 Calc	All	NDP: 0 Tests: 2		X			X	
PAH by GCMS	All	NDP: 0 Tests: 2		X			X	
PCBs by GCMS	All	NDP: 0 Tests: 2		X			X	
pH	All	NDP: 0 Tests: 2		X			X	
Phenols by HPLC (W)	All	NDP: 0 Tests: 2	X			X		



CERTIFICATE OF ANALYSIS

Validated

SDG: 190802-108
Location: Eversley Court, Minera

Client Reference: 2192/MS
Order Number: 2192/MS

Report Number: 517337
Superseded Report:

Results Legend

- 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

	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	20450573	20450574
							TP01	TP02
Sample description	All	NDPs: 0 Tests: 2					X	X
Total Dissolved Solids	All	NDPs: 0 Tests: 2					X	X
Total Organic Carbon	All	NDPs: 0 Tests: 2					X	X
VOC MS (S)	All	NDPs: 0 Tests: 2					X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 190802-108
Location: Eversley Court, Minera

Client Reference: 2192/MS
Order Number: 2192/MS

Report Number: 517337
Superseded Report:

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
20450573	TP01		Dark Brown	Sandy Clay Loam	Stones	Vegetation
20450574	TP02		Dark Brown	Silty Clay Loam	Stones	Vegetation

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.

SDG:	190802-108
Location:	Eversley Court, Minera

Client Reference:	2192/MS
Order Number:	2192/MS

Report Number: 517337
Superseded Report:

[illegible]

SDG:	190802-108
Location:	Eversley Court, Minera

Client Reference: 2192/MS
Order Number: 2192/MS

Report Number: 517337
Superseded Report:

VOC MS (S)

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 190802-108
Location: Eversley Court, Minera

Client Reference: 2192/MS
Order Number: 2192/MS

Report Number: 517337
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference

Mass Sample taken (kg) 0.134

Mass of dry sample (kg) 0.090

Particle Size <4mm >95%

Site Location

Natural Moisture Content (%) 49.3

Dry Matter Content (%) 67

Eversley Court, Minera

Case

SDG 190802-108

Lab Sample Number(s) 20450573

Sampled Date 02-Aug-2019

Customer Sample Ref. TP01

Depth (m)

Landfill Waste Acceptance Criteria Limits

Solid Waste Analysis

Result

Total Organic Carbon (%)

5.15

Loss on Ignition (%)

14.9

Sum of BTEX (mg/kg)

-

Sum of 7 PCBs (mg/kg)

<0.021

Mineral Oil (mg/kg)

4.55

PAH Sum of 17 (mg/kg)

<10

pH (pH Units)

7.69

ANC to pH 6 (mol/kg)

0.0336

ANC to pH 4 (mol/kg)

0.108

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Eluate Analysis

C2

Concⁿ in 10:1 eluate (mg/l)

A2

10:1 concⁿ leached (mg/kg)

Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg

	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00171	<0.0005	0.0171	<0.005	0.5	2	25
Barium	0.0133	<0.0002	0.133	<0.002	20	100	300
Cadmium	0.000208	<0.00008	0.00208	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00445	<0.0003	0.0445	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000693	<0.0004	0.00693	<0.004	0.4	10	40
Lead	0.00758	<0.0002	0.0758	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0157	<0.001	0.157	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	61.4	<5	614	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	9.98	<3	99.8	<30	500	800	1000

Leach Test Information

Date Prepared 04-Aug-2019
pH (pH Units) 7.97
Conductivity (µS/cm) 78.10
Temperature (°C) 21.20
Volume Leachant (Litres) 0.856

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
09/08/2019 11:23:42

11:23:26 09/08/2019



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CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference
Mass Sample taken (kg) 0.134
Mass of dry sample (kg) 0.090
Particle Size <4mm >95%

Site Location Eversley Court, Minera
Natural Moisture Content (%) 49.3
Dry Matter Content (%) 67

Case
SDG 190802-108
Lab Sample Number(s) 20450574
Sampled Date 02-Aug-2019
Customer Sample Ref. TP02
Depth (m)

Landfill Waste Acceptance Criteria Limits

Solid Waste Analysis

Result

Total Organic Carbon (%) 5.02
Loss on Ignition (%) 14.8
Sum of BTEX (mg/kg) -
Sum of 7 PCBs (mg/kg) <0.021
Mineral Oil (mg/kg) 2.46
PAH Sum of 17 (mg/kg) <10
pH (pH Units) 7.2
ANC to pH 6 (mol/kg) <0.03
ANC to pH 4 (mol/kg) 0.0937

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Eluate Analysis

C2 Concⁿ in 10:1 eluate (mg/l)
A2 10:1 concⁿ leached (mg/kg)

	Result	Limit of Detection	Result	Limit of Detection	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
Arsenic	0.0019	<0.0005	0.019	<0.005	0.5	2	25
Barium	0.00551	<0.0002	0.0551	<0.002	20	100	300
Cadmium	0.000156	<0.00008	0.00156	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.0115	<0.0003	0.115	<0.003	2	50	100
Mercury Dissolved (CVAF)	0.0000102	<0.00001	0.000102	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00161	<0.0004	0.0161	<0.004	0.4	10	40
Lead	0.011	<0.0002	0.11	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0114	<0.001	0.114	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	41.2	<5	412	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	11.5	<3	115	<30	500	800	1000

Leach Test Information

Date Prepared 04-Aug-2019
pH (pH Units) 7.22
Conductivity (µS/cm) 49.00
Temperature (°C) 21.50
Volume Leachant (Litres) 0.856

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
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Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition
TM061	Method for the Determination of EPH, Massachusetts Dept. of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
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
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM182	CEN/TC 292 - WI 292046-characterization of waste-leaching Behaviour Tests- Acid and Base Neutralization Capacity Test	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS

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).



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Order Number: 2192/MSReport Number: 517337
Superseded Report:

Test Completion Dates

Lab Sample No(s)	20450573	20450574
Customer Sample Ref.	TP01	TP02
AGS Ref.		
Depth		
Type	Unspecified So	Unspecified So

ANC at pH4 and ANC at pH 6	07-Aug-2019	07-Aug-2019
Anions by Kone (W)	08-Aug-2019	08-Aug-2019
CEN 10:1 Leachate (1 Stage)	04-Aug-2019	04-Aug-2019
CEN Readings	07-Aug-2019	07-Aug-2019
Coronene	08-Aug-2019	08-Aug-2019
Dissolved Metals by ICP-MS	08-Aug-2019	08-Aug-2019
Dissolved Organic/Inorganic Carbon	08-Aug-2019	08-Aug-2019
Fluoride	07-Aug-2019	07-Aug-2019
Loss on Ignition in soils	07-Aug-2019	07-Aug-2019
Mercury Dissolved	07-Aug-2019	07-Aug-2019
Mineral Oil	08-Aug-2019	08-Aug-2019
PAH 16 & 17 Calc	08-Aug-2019	09-Aug-2019
PAH by GCMS	08-Aug-2019	08-Aug-2019
PCBs by GCMS	09-Aug-2019	09-Aug-2019
pH	07-Aug-2019	07-Aug-2019
Phenols by HPLC (W)	09-Aug-2019	08-Aug-2019
Sample description	02-Aug-2019	02-Aug-2019
Total Dissolved Solids	07-Aug-2019	07-Aug-2019
Total Organic Carbon	07-Aug-2019	08-Aug-2019
VOC MS (S)	07-Aug-2019	07-Aug-2019



Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and GEN 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.

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 Actinolite	-
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.