

Rosemary Nursery
Burton Hall Road, Rossett
Geo-environmental Report
Gordon Mytton Developments



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1.0 INTRODUCTION

Gordon Mytton Developments (GMD) proposes to purchase the Rosemary Nursery site in Burton, near Wrexham to build some fifteen semi detached houses. Prior to purchase GMD have appointed GroundSolve Ltd (GSL) to carry out a desk study and site investigation with associated testing to satisfy the NHBC requirements if the development proceeds.

This report presents the findings of the desk study and a site investigation and presents firm geotechnical recommendations for the development. In addition, environmental comments are presented.

2.0 THE SITE

2.1 Site Location and Description

The site is located on the corner of Burton Hall Road and Rosemary Lane in the village of Burton to the north of Wrexham at National Grid Reference SJ 356 577, see Figure 1.

It is bounded by Rosemary Lane to the south, with housing and open fields to the west. Burton Hall Road defines the eastern site boundary with open fields to the north. Mature hedgerows and scattered trees form the general site boundaries.

The site is fairly flat and is currently occupied by greenhouses and polytunnels, see Figure 2. Concrete hardstandings are present at the southern end of the site and several oil tanks used to feed an old boiler were observed on the southern section of the site, see Figure 2. In addition, an above ground disused oil tank was observed on the central/western site boundary. At the far north western corner of the site a large stockpile of compost is present, some 2.5m high.

The development area is roughly rectangular in shape, being some 125m long and 60m wide. A topographic survey has been provided, which indicates that ground levels are generally around 19 to 19.50mOD on the western side of the site falling very gently to 18.3 to 18.60mOD on the eastern side of the site.

There is an excavation near the site entrance, which used to house a boiler. It has concrete sidewalls and measures 2.5m x 3.1m in plan, and is 1.9m deep. Its location is shown on Figure 2. An overhead cable was observed crossing the north east corner of the site.

Photographs of the site are presented in Appendix A.

2.2 Geology and Hydrogeology

The geology of the site has been studied on the 1:50,000 scale geology plan, Sheet 108, Flint and the associated geological memoirs, Reference 1. In addition, the Wrexham study containing maps at a scale of 1:25,000 has been consulted, Reference 2.

The geology plan shows the site to be underlain by river terrace deposits comprising sand and gravel overlying the Kinnerton Sandstone, which is Permo-Triassic in age. The river terrace deposits are surrounded by glacial till on the plan, suggesting it will be present beneath the terrace deposits.

The superficial deposits are described as undifferentiated sand and gravel and experience of this area shows the sands and gravel generally to be loose to medium dense and well graded. Reference 2 records these deposits to be some 25m thick.

The underlying sandstone is typically weathered at surface to dense, light brown, fine grained sand, grading into a weak sandstone with depth.

A major fault is shown to the south of the site trending in a NE to SW direction, with its downthrow to the north.

The soils are of high leaching potential (H2), described as deep permeable coarse textured soils, which readily transmit a wide range of pollutants because of their rapid drainage and low attenuation potential.

The underlying bedrock is classified as a principle aquifer, with the superficial aquifer classified as a secondary – A aquifer.

2.3 History

The history of the site has been studied on old Ordnance survey plans (OS) dating from 1872 and aerial photographs held by the Welsh Government dating from 1951.

The 1872 OS plan at a scale of 1:2,500 shows the site to comprise open fields, with Burton Hall Road and Rosemary Lane already in existence, see Figure 3a. Burton House had been constructed to the north of the site, with associated lodge, while several small houses were present close to the site. Several wells were also recorded close to the site. A benchmark on the south western corner of the site recorded an elevation of 62.2'OD (18.96mOD).

No changes are shown on the 1899 OS plan, see Figure 3b. By the 1912 plan the house opposite the south west corner had been constructed and the benchmark now recorded an elevation of 62.1'OD (18.93mOD), see Figure 3c.

The 1938 OS plan at a scale of 1:10,000, showed the presence of a small building in the south eastern corner of the site, see Figure 3d. No other changes were recorded in the vicinity of the site.

The 1951 aerial photograph shows three glass houses had been constructed on the south eastern corner of the site, with two more apparently under construction. The extent of the glass houses is shown on the 1954 OS plan, see Figure 3e.

The current site owner stated that he had purchased the Nursery in June 1954, and had traced the use of the site as a nursery back for over a 100years, when it produced herbs for selling in Liverpool.

The 1962 OS plan at a scale of 1:2,500 shows the site to be a nursery with the main structures fronting the road on the southern site boundary and a long thin structure in the north western

section of the site, see Figure 3f. The benchmark now records an elevation of 62.05'OD (18.92mOD). A spot height on the road junction records an elevation of 59OD (17.98mOD).

Aerial photographs dated 1958 and 1962 show these features to be glass houses, with the north eastern section of the site shown as grassed. The 1966 and 1974 aerial photographs show that a new glass house on the grassed area had been constructed.

The 1987 OS plan, see Figure 3g, shows the glass houses mentioned above with the new structure having a suffix of "gl" confirming it is a glass house. The benchmark records an elevation of 18.9mOD. The area to the south of Rosemary Lane had been developed with housing.

An aerial photograph dated 1989 shows that two of the glass houses in the south eastern corner of the site had been demolished. The glass house suffixed "gl" had now been demolished and only the base was visible. The empty eastern side of the site was being used for storage with large stockpiles visible, which are probably compost.

No changes are shown on the 2006 and 2014 OS plans at a scale of 1:10,000, see Figure 3j and 3k.

The changes in elevation on the benchmark adjacent to the site are considered to be due to the fact that the site will have been affected by deep underground mining.

3.0 ENVIRONMENTAL SEARCHES

An envirocheck report has been obtained for the site, which was for a distance of 1km around the site. The main points are summarised below and the report presented in full in Appendix B.

Agency and Hydrogeological

- There are no discharge consents within 500m of the site,
- The nearest water feature is some 262m to the NW,
- There are no recorded pollution incidents to controlled waters within 250m of the site,
- There are no water abstractions within 500m of the site,
- The site is in a Zone III source protection zone,
- It is not at risk of flooding from rivers without defenses.

Waste

- There are no recorded landfills within 500m of the site.

Estimated Soil Chemistry

The BGS estimated soil chemistry for this area is as follows:

- Arsenic <15mg/kg,
- Cadmium <1.8mg/kg,
- Chromium 60-90mg/kg,
- Lead <150mg/kg,
- Nickel 15-30mg/kg.

Geological

- The site is in a coal mining area, and it recommended that a Coal Authority report be obtained,
- No radon protection measures are required as the property is in an area where less than 1% of homes are above the action level.

Trade Entries

- The closest entry is some 331m to the SW of the site, and was for a forge which has since closed.

Sensitive Land Uses

- There are no sensitive land uses close to the site.

4.0 PROPOSED DEVELOPMENT

GMD propose to build some 15 detached houses on the site, with associated hardstandings and garages. An area of Public Open Space (POS) totaling 1016.69m² is also proposed on the eastern site boundary. The proposed development layout is presented in Figure 4.

Plots 1 to 9 will be constructed in conventional brick/block work, while Plots 10 to 15 will be of timber frame construction. At this stage design loads are not known, or the development levels. However, experience of similar developments has shown that foundation loads are generally not in excess of 50kN/m/ run, with floor slab loadings not exceeding 5kN/m². However, GMD generally use block and beam construction, which will give suspended floor slabs, but which may also increase the foundation loadings slightly.

The recommendations given in this report are based on these assumptions; they should therefore be reviewed and if necessary reviewed during the detailed design phase.

5.0 SITE INVESTIGATION

5.1 Previous Investigation

A nearby borehole log to the south of the site has been obtained from the BGS web site. This revealed the following strata.

Depth (m)	Strata
0.0-0.30	Topsoil
0.30 – 2.50	Terrace Gravels – fine to coarse, mainly sub rounded GRAVEL, with medium sand
2.50 – 20.0	Glacial Till – firm, reddish brown, silty, sandy CLAY.

No groundwater was encountered in the borehole.

5.2 This Investigation

Six machine dug trial pits were excavated on site on the 27th May 2014 using a JCB excavator to a maximum depth of 2.60m. The pits were logged by a chartered geologist from GSL in general accordance with BS5930, Reference 3. The trial pit logs are presented in Appendix C and the locations presented on Figure 5. The trial pit positions were dictated by the fact that the nursery was still in operation and the location of existing structures.

Soakaway tests were carried out in TP 1, TP 2 and TP 5 in accordance with BRE Digest 365, Reference 4, although the test in TP 2 was abandoned due to the trial pit sides collapsing. The soakaway test results are also presented in Appendix C.

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

The physical testing was carried out by Celtest in accordance with BS 1377, Reference 5. The results are discussed in Section 6.0 and presented in full in Appendix D.

- Moisture content,
- Atterberg Limits,
- Particle size distribution, wet sieving and pipette,
- Compaction,
- pH,
- Water soluble sulphate.

Soil samples were taken from the trial pits in the appropriate containers, placed in a cool box and taken immediately to the laboratories of Alcontrol in Chester for the following chemical testing.

CLEA Contaminants – Arsenic (As), Cadmium (Cd), Mercury (Hg), Nickel (Ni), Lead (Pb), Selenium (Se), Phenol, Benzene, MTBE, Toluene, Ethylbenzene, m,p-Xylene, o-Xylene.

GAC Contaminants – Boron (B), Copper (Cu), Zinc (Zn), Chromium total (Cr), PAH (Speciation), TPHCWG.

Other Contaminants

Sulphide, Sulphate (tot), Cyanide total, pH, Sulphur elemental, Total Organic Matter.

The results are summarised in Section 7 and the results presented in full in Appendix E.

6.0 GROUND CONDITIONS

6.1 General Stratigraphy

The investigation recorded the following general stratigraphy:

Borehole No	Topsoil (m)	River Terrace (m)	Glacial Till (m)
1	0.0-0.3	0.30 – 2.40	
2	0.00 -0.32	0.32 – 2.40	2.40 – 2.60
3	0.00 – 0.55	0.55 – 1.95	
4	0.00 – 2.00		
5	0.00 – 0.50	0.50 – 2.25	
6		0.00 -0.70	

6.2 Topsoil

The topsoil was described as loose, dark brown, organic topsoil. Compost was also encountered around the site, with a large stockpile in the north west corner of the site.

6.3 Terrace Deposits

Near surface the terrace deposits were described as loose/loose to medium dense, reddish brown, slightly silty, gravelly sand. With depth they became a medium dense, reddish brown, sandy to very sandy gravel, with occasional cobbles.

Three particle size distribution tests were carried out on the sand and gravel, which revealed them to be a well graded, with silt/clay contents between 5.9 and 25.2%.

A compaction test on the sand and gravel from TP 5 at 1.5-1.70m recorded an optimum moisture content of 7.5%, and a maximum dry density of 2.2Mg/m³. The natural moisture content of this sample was 4.5%. Three moisture content tests recorded natural moisture contents between 4.5 and 14.4%.

pH and sulphate testing on the sand and gravel recorded pH values between 6.7 and 7%, while two water soluble sulphate tests recorded values of <0.1g/l.

An atterberg limit test on the fines from TP 3 revealed them to be non-plastic.

6.4 Glacial Till

Glacial Till was only proved in TP 2, although the nearby borehole proved it to be greater than 17.50m thick. It was described as stiff, reddish brown, slightly sandy clay, with localised fine gravel.

6.5 Groundwater

No groundwater seepages were encountered in any of the trial pits.

6.6 Soakaway Test Results

The results of the soakaway testing, which was carried out in accordance with Reference 4, are summarised in the table below and presented in full in Appendix C.

Trial Pit	Test No	Depth (m)	Permeability (m/sec)
1	1	1.90	8.63×10^{-5}
	2	1.71	1.33×10^{-4}
5	1	2.10	1.11×10^{-4}
	2	2.02	8.69×10^{-5}

7.0 RESULTS OF CHEMICAL TESTING

Testing of the shallow ground was undertaken, with the exception of TP 6, where a hydrocarbon odour was encountered and samples were taken of the contaminated smelling material and the material below it which was free of any odour.

The results of the soil analyses are presented below where they compared to human health critical values (CVs) for initial screening purposes. The CVs adopted are for residential use. They are taken primarily from CLEA Soil Guideline Values (SGVs) published by the Environment Agency (2009), and LQM/CIEH Generic Assessment Criteria (GACs-2nd edition 2009). These criteria are derived using the CLEA v1.04 model under a standard default residential land use scenario, assuming that the potentially contaminated soil is present in gardens and beneath houses, and assuming worst case soil organic matter levels where these affect the critical value.

Where published human health critical values are unavailable or inappropriate, then other widely-used screening values are used, as noted below. Results are summarised below and attached in full in Appendix E.

The SGV for lead was withdrawn in 2008 and has been replaced in April 2014 by a new Category 4 guidance value. This value is presented in the table below and is for residential use with plant uptake.

CLEA SGV Contaminants

Determinant	No of Soil Tests	Range (mg/kg) (Mean)	CLEA SGV Guidelines A*		% exceeding CLEA SGV
Arsenic	6	6.22 – 36.1 (15.5)	1	32	17
Cadmium	6	0.19 – 0.76 (0.46)	1	10	0
Lead	6	38.4 – 319 (124)	1	200	17
Mercury	6	<0.14*	1	1	0
Nickel	6	12.1 – 50.2 (22.8)	1	130	0
Selenium	6	<1 *	1	350	0
Phenol	6	<0.01*	1	420	0
Benzene	3	<10*	1	0.33	0
MTBE	3	<5*	1	NA	NA
Toluene	3	<2*	1	610	0
Ethylbenzene	3	<3*	1	350	0
m-p-Xylene	3	<6*	1	230-240	0
o-Xylene	3	<3*	1	250	0
Notes A* 1 SGV for residential use. NA Not Applicable * - mean value not applicable since all or most values below laboratory detection levels					

The only exceedances of the above values were for arsenic and lead in TP 6 from a depth of 0.1 – 0.20m. This was from the soil which had a hydrocarbon odour. The soil immediately below from a depth of 0.45m did not exceed the guidance values for arsenic or lead.

GAC Contaminants

Determinant (GAC Metals)	No of Tests	Range (Mean) (mg/kg)	GAC Value (mg/kg)	% exceeding GAC
Zinc	6	64.6 – 761 (224)	3750	0
Boron	6	3.29-9.94 (5.46)	291	0
Chromium	6	14.8 – 23.4 (18.5)	A	0
Copper	6	14.2 – 95 (40.1)	2330	0

While the SGV value for Chromium has been withdrawn it is still used in this instance as the values are very low and well below the previous SGV of 130mg/kg.

None of the above values exceed the relevant guidelines.

PAH Speciation

Determinant (GAC Speciated PAH)	No of Tests	Range (mg/kg)	GAC Value (mg/kg)	% exceeding GAC
Anthracene	6	0.0025–0.111	4900	0
Acenaphthylene	6	<0.0012-0.004	400	0
Acenaphthene	6	<0.008-0.0019	480	0
Benzo(a)anthracene	6	0.0084–0.433	4.7	0
Benzo(a)pyrene	6	0.0083–0.527	0.94	0
Benzo(b)fluoranthene	6	0.0087–0.699	6.5	0
Benzo(ghi)perylene	6	0.0077–0.343	46	0
Benzo(k)fluoranthene	6	0.0043–0.222	9.6	0
Chrysene	6	0.0073 –0.494	8	0
Dibenzo(ah)anthracene	6	<0.0023-0.009	0.86	0
Fluoranthene	6	0.009–0.706	460	0
Fluorene	6	<0.001-0.007	380	0
Indeno(123cd)pyrene	6	0.0050–0.288	3.9	0
Naphthalene	6	0.014– 0.375	3.7	0
Phenanthrene	6	0.0087 –0.22	200	0
Pyrene	6	0.0021 –0.682	1000	0

The above guidance values are based on a SOM of 2.5%. No values exceed the GAC values for residential use.

Other Contaminants

Determinant	No of Tests	Range (Mean) (mg/kg)	Published Guidelines
Sulphide	6	<15	1000 (ICRCL)
Sulphur	6	<10 – 26.4 (15.7)	0.5% (UU)
Sulphate(tot)	6	156-896 (357)	N/A
Total Cyanide	6	<1	NA
pH	6	6.47 – 8.31 (7.22)	<5 (UU)
Total organic Matter	6	1.62 – 15.7 (5.8)	6% (EA)
Notes. UU United Utilities EA Environment Agency			

The test results have not revealed any concentrations above the indicated guidance levels for residential locations.

Hydrocarbons

LQM 2.5% Organic Content	No of Tests	Range (mg/kg)	Published Guidelines (mg/kg)
Aliphatic EC 5-6	3	<0.001	55
Aliphatic EC >6-8	3	<0.001-0.0091	160
Aliphatic EC >8-10	3	<0.001-4.02	46
Aliphatic EC >10-12	3	<0.001-8.95	230
Aliphatic EC >12-16	3	<0.1 -288	1700
Aliphatic EC >16-35	3	<0.9 – 807	64000
Aliphatic EC >35-44	3	<0.1 – 4.61	64000
Aromatic EC >5-7(benzene)	3	<0.001	130
Aromatic EC >7-8(toluene)	3	<0.001	270
Aromatic EC >8-10	3	<0.001-2.68	65
Aromatic EC >10-12	3	<0.001-5.97	160
Aromatic EC >12-16	3	1.85 – 72.80	310
Aromatic EC >16-21	3	6.97 – 216	480
Aromatic EC >21-35	3	22.8 – 228	1100
Aromatic EC >35-44	3	4.32 – 12.6	1100

Note

Values for 2.5% SOM

None of the above values exceed the GAC guidance values for residential use.

8.0 GEOTECHNICAL RECOMMENDATIONS

8.1 Excavations and Site Preparation

Firstly it will be necessary to demolish the existing structures and remove any foundations where they interfere with the proposed development. It will also be necessary to divert the overhead cables crossing the north east corner of the site where they interfere with one of the Plots.

Topsoil, where present should be stripped and stored on site for later re use, as should the compost which would be ideal for the landscaped areas. Trees will need to be felled and their roots grubbed out and the resulting excavation backfilled with suitable site won granular material.

Excavations will be in sand and gravel and will be possible using conventional earth moving equipment. Excavations deeper than 1.20m that are to be entered should be shored or battered back for safety reasons.

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

The buried boiler house will have to be backfilled and will need to have the walls broken out. The excavation should be backfilled with suitable granular material compacted in accordance with an approved earthworks specification.

8.2 Foundations and Floor Slabs

Although the site is in a coal mining area the coal seams are at significant depth beneath the site and shallow abandoned mineworking do not need to be considered.

Conventional spread foundations are recommended for the development founded in the underlying sand and gravel, where an allowable bearing pressure of 150kN/m² can be used to proportion the foundations. Based on the anticipated foundation loads a standard 600mm wide bucket should be sufficient for the foundation excavation. Foundations should be founded a minimum of 750mm below final external ground levels.

However, the former boiler house position is beneath the units fronting Rosemary Lane. Two options are therefore available for these plots. Either extend the spread foundations up from depth and backfill around the foundations. Alternatively, the boiler house could be backfilled and the plots founded on raft foundations.

Floor slabs could be designed as ground bearing assuming a “good formation” as described in Deacon, Reference 6. However, it is likely that GMD will construct suspended slabs using block and beam type construction.

8.3 Access Roads and Hardstandings

No California Bearing Ratio (CBR) tests have been carried out as part of this investigation.

However, it is likely that the access road and hardstandings will be at grade, consequently as the sand and gravel is close to surface, this will comprise the formation level for all roads and hardstandings. Therefore for preliminary costing purposes a CBR value of 10% should be assumed at the top of the sand and gravel. This should be confirmed by on site testing once the formation level has been decided.

The exposed formation should be proof rolled, any soft/loose areas encountered should be further excavated, typically an additional 300mm and the excavation backfilled with suitable granular material compacted in accordance with an approved earthworks specification.

8.4 Protection of Buried Concrete

All of the tests in the results for pH and sulphate were such that chemical attack of buried concrete is not an issue and buried concrete can be designed as Class:

- DS – 1,
- AC – 1s.

This is in accordance with Reference 7.

8.5 Drainage

The underlying sands and gravels have been tested and found to have measured permeability's between 1.11×10^{-4} and 8.69×10^{-5} m/sec. It is therefore recommended that a design value of 8×10^{-5} m/sec is used for soakaway design.

8.6 Landfill and Radon Gas

The desk study has failed to reveal any landfills nearby. In addition, the Envirocheck report has confirmed that radon is not an issue at this site. Therefore no gas protection measures are deemed necessary for this development.

8.7 Re use of Materials

The topsoil and compost should be re used. In addition, foundation excavations and excavations for soakaways will generate sand and gravel, which can be used as an aggregate, especially beneath hardstandings and paved areas. It will also be suitable for backfilling the boiler house, although a regulating layer of imported material should be used near surface.

8.8 Environmental Issues

The desk study has failed to reveal any past contaminated land use, with the only use being as a nursery. However, an old buried boiler house has been observed on site fed by previous oil tanks, which were above ground structures. In addition, a dis used oil tank was observed in the central/western section of the site.

The site investigation and testing revealed slight evidence of hydrocarbon contamination in TP 6, although the values recorded were below those for public health protection. In addition, slightly elevated values of arsenic and lead were recorded. However, the odours only affected the surface materials, with the test from 0.45m being below the relevant guidance values.

The current site owner confirmed that there had been fuel spillages over time in this area.

It is therefore recommended that in the area of former fuel tanks that a surface scrape of the contaminated materials is undertaken with the arisings taken off site to a suitably licensed landfill facility. The underlying formation should than be re tested to confirm that the contaminated material has been removed. It was not possible to investigate the dis used oil tank area and this should be subject to additional investigation on demolition of all nearby structures.

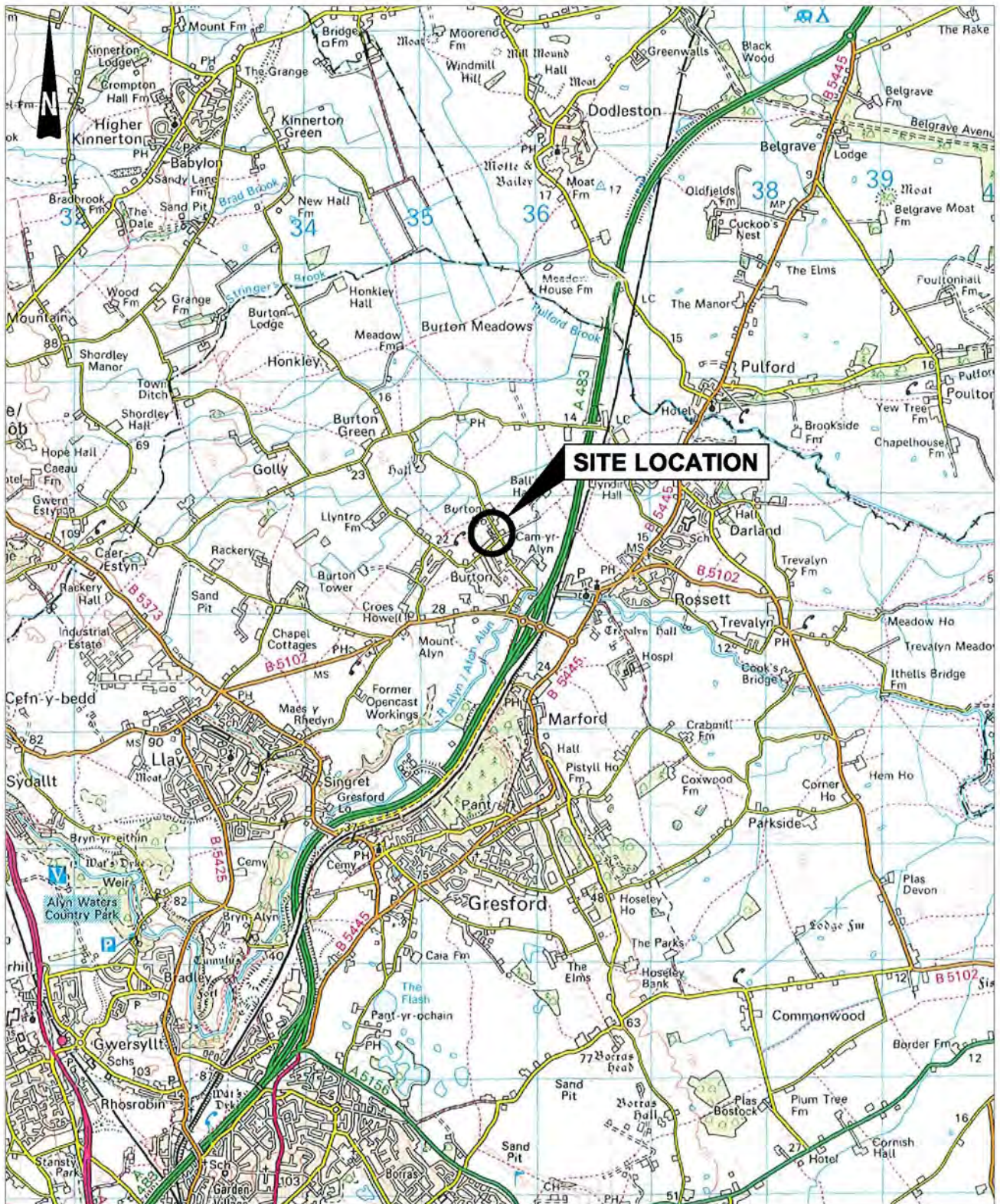
Following this treatment the site will be considered to be uncontaminated and suitable for its intended end use.

In addition, in accordance with current good practice a watching brief should be kept on all excavations, any contamination encountered should be excavated, stored safely on site, tested and then disposed of at a suitably licensed landfill facility.

REFERENCES

1. The geology of the Country around Flint Hawarden and Caergwrle, Memoirs of the Geological Survey, Sheet 108, 1924
2. Applied Geological Mapping in the Wrexham Area: Geology and Land use Planning: Technical Report WA/91/4
3. BS 5930, 1999, Code of Practice for Site Investigation,
4. BRE 365 Soakaway Design, 2003,
5. BS 1377, 1991, British Standard Methods of Tests for Soils for Civil engineering Purposes,
6. Cement & Concrete Association, Concrete Ground floors: their design, construction and finish, Deacon, R, Publication 48.034, 1986,
7. BRE Special Digest 1:2005, Concrete in aggressive ground.

FIGURES

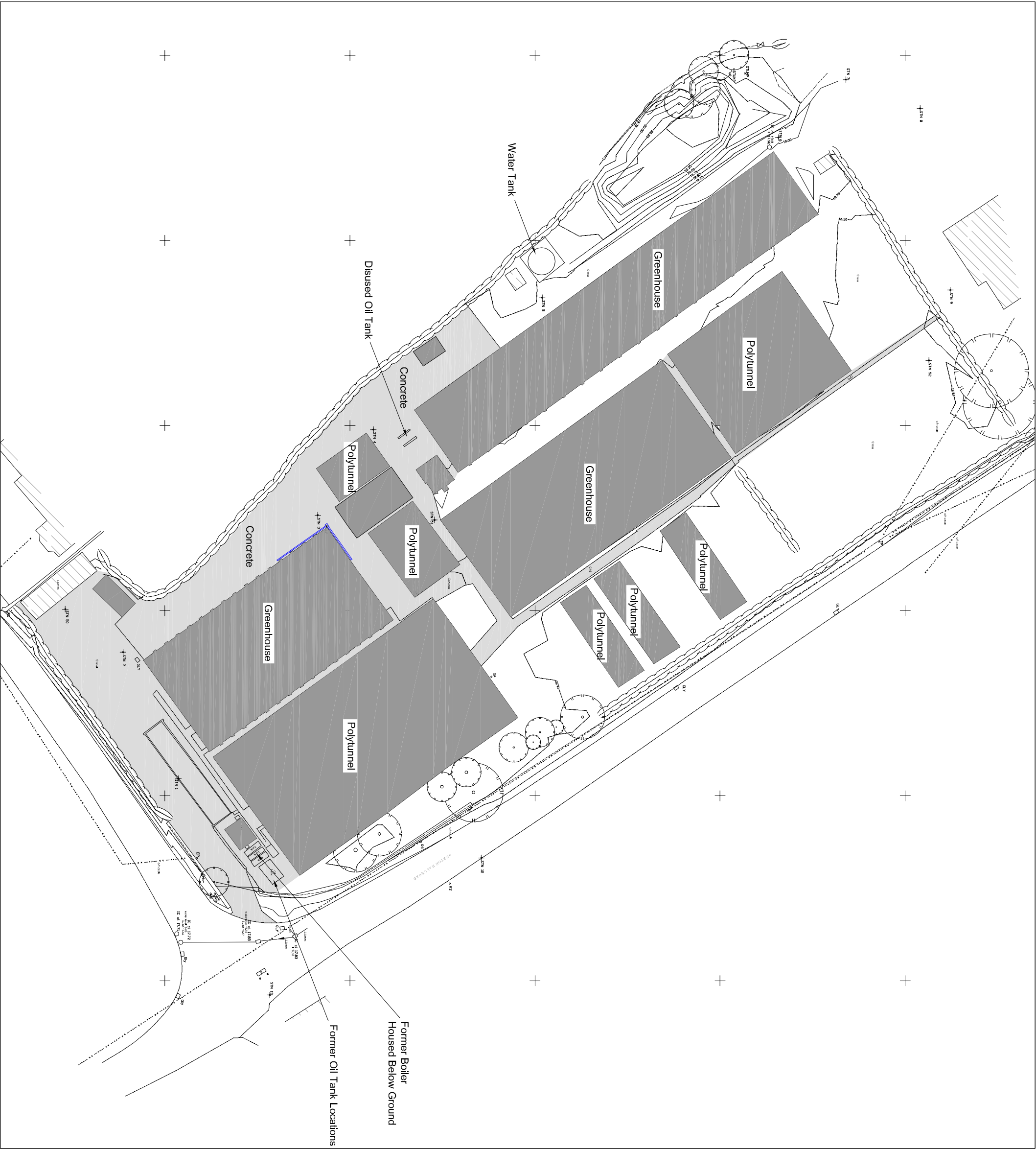


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SITE LOCATION

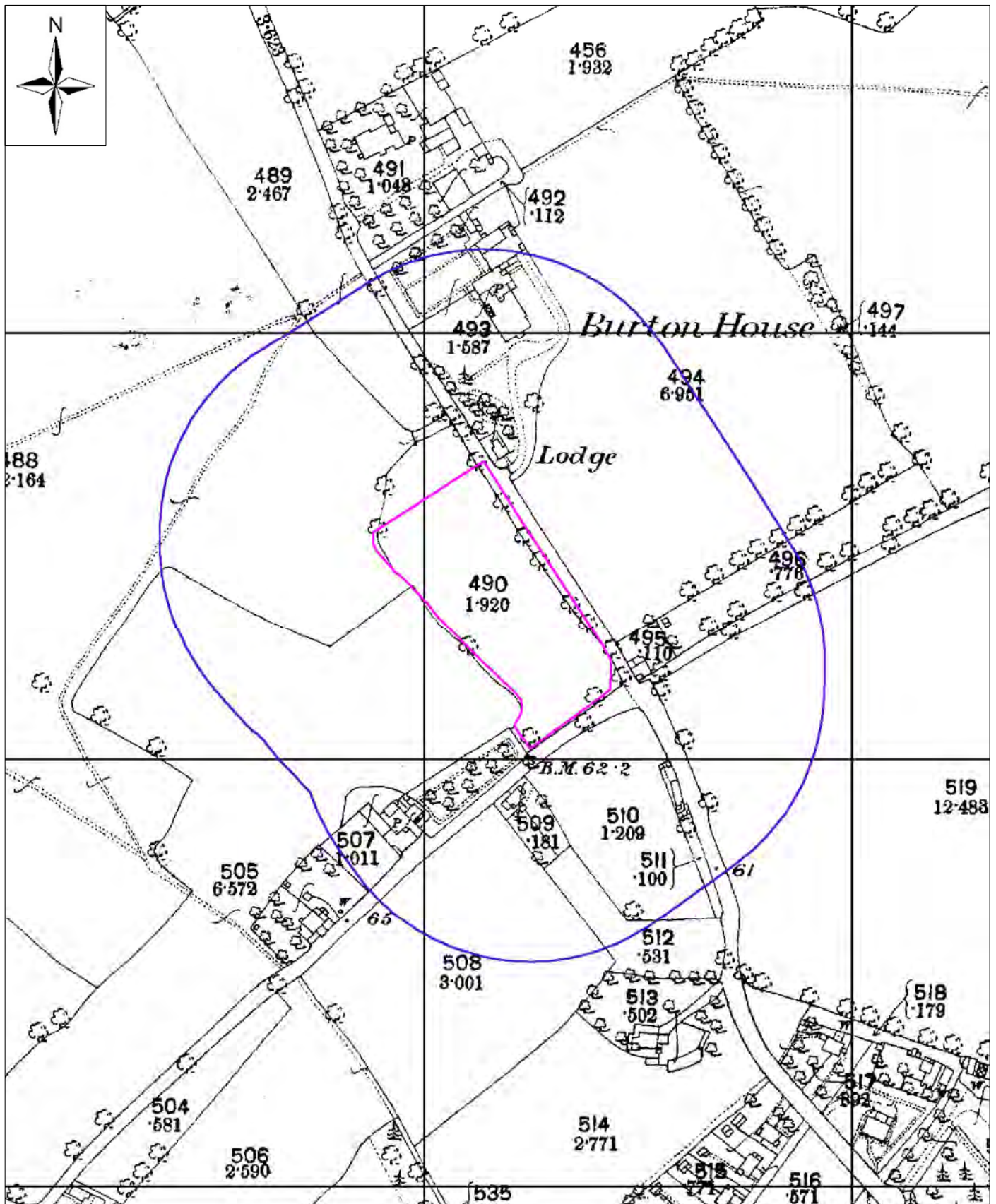
FIGURE 1



EXISTING SITE LAYOUT

1:500@A3

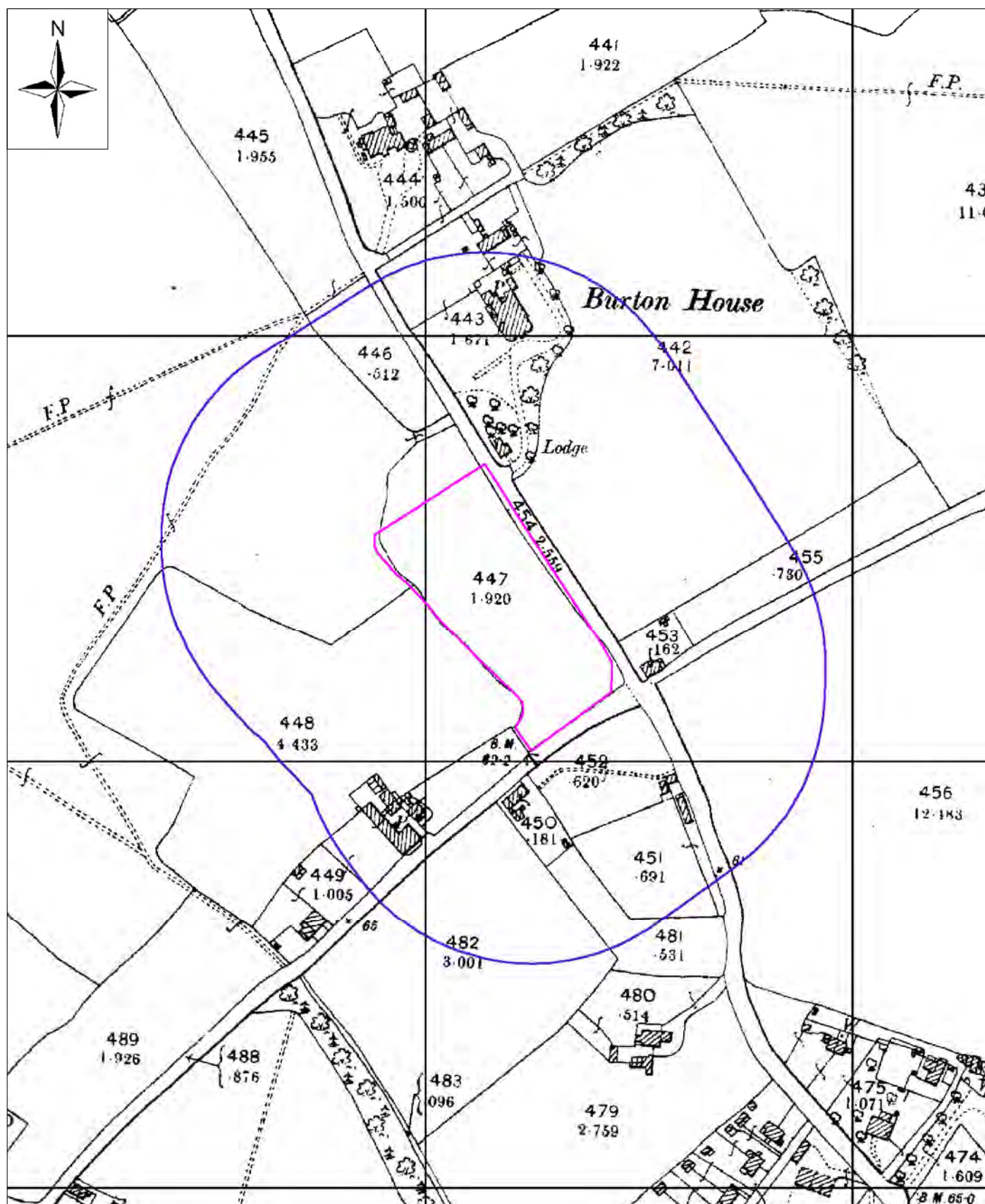
FIGURE 2



Scale 1:2500

HISTORY - 1872

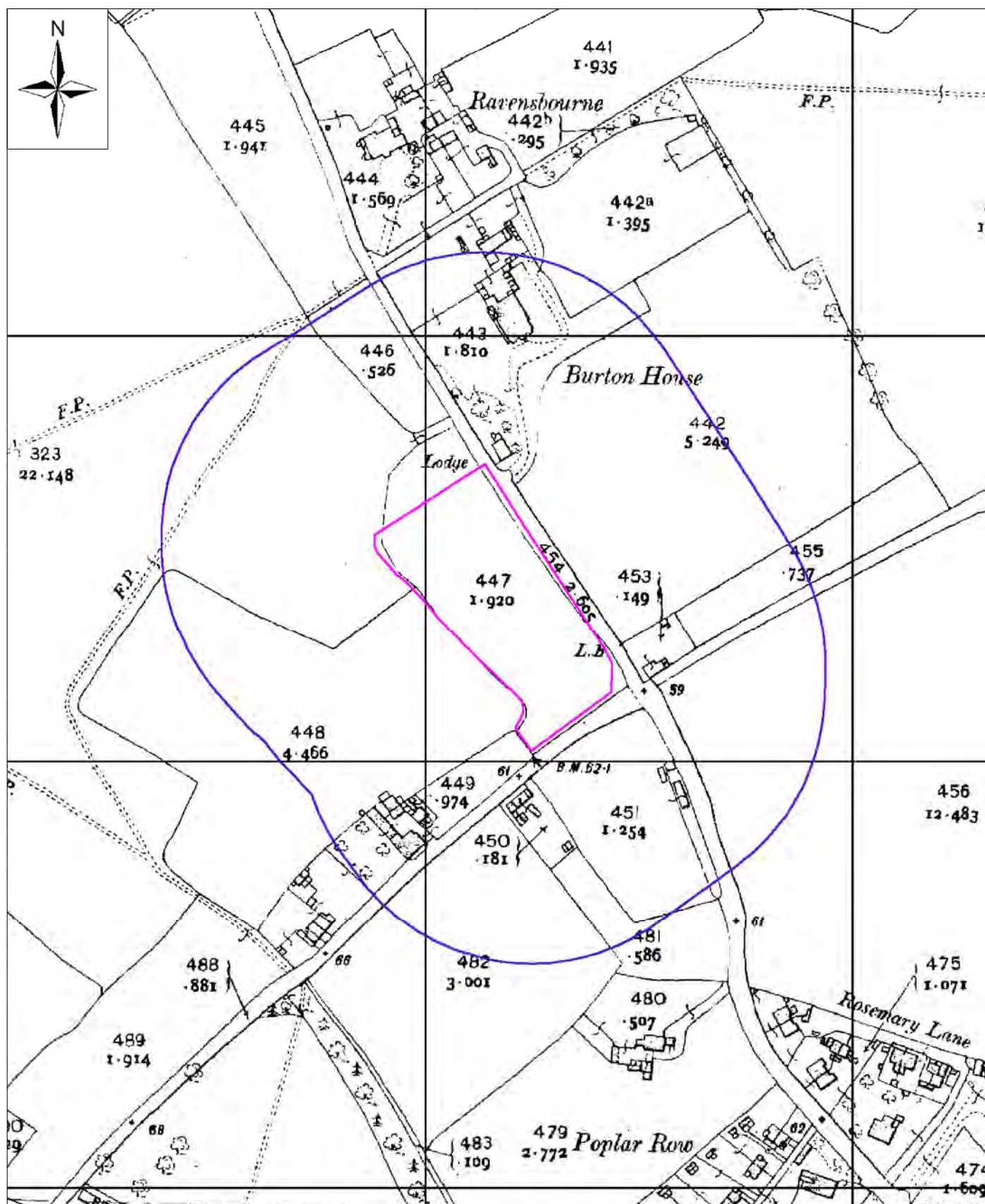
FIGURE **3a**



Scale 1:2500

HISTORY - 1899

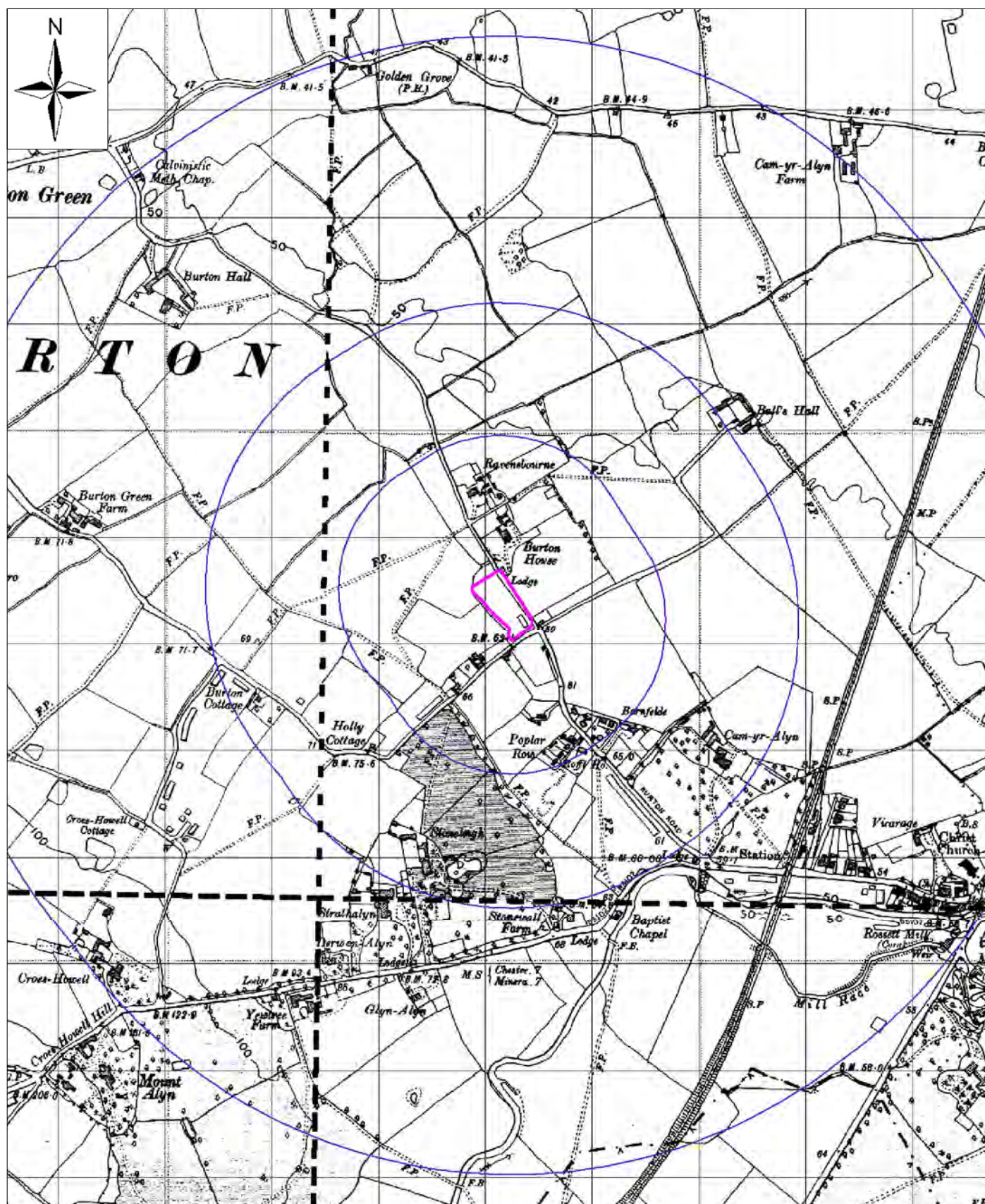
FIGURE **3b**



Scale 1:2500

HISTORY - 1912

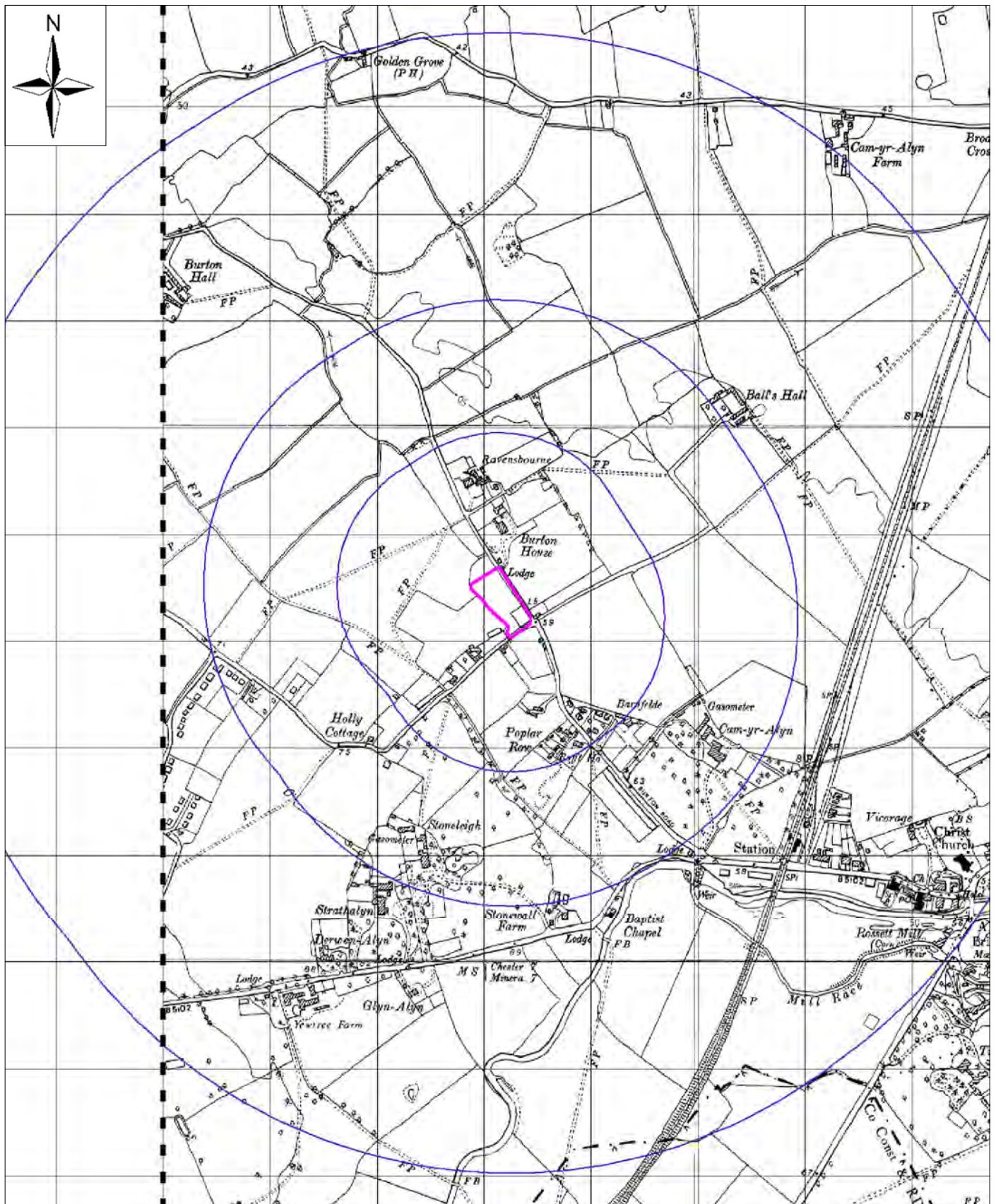
FIGURE **3c**



Scale 1:10,000

HISTORY - 1938

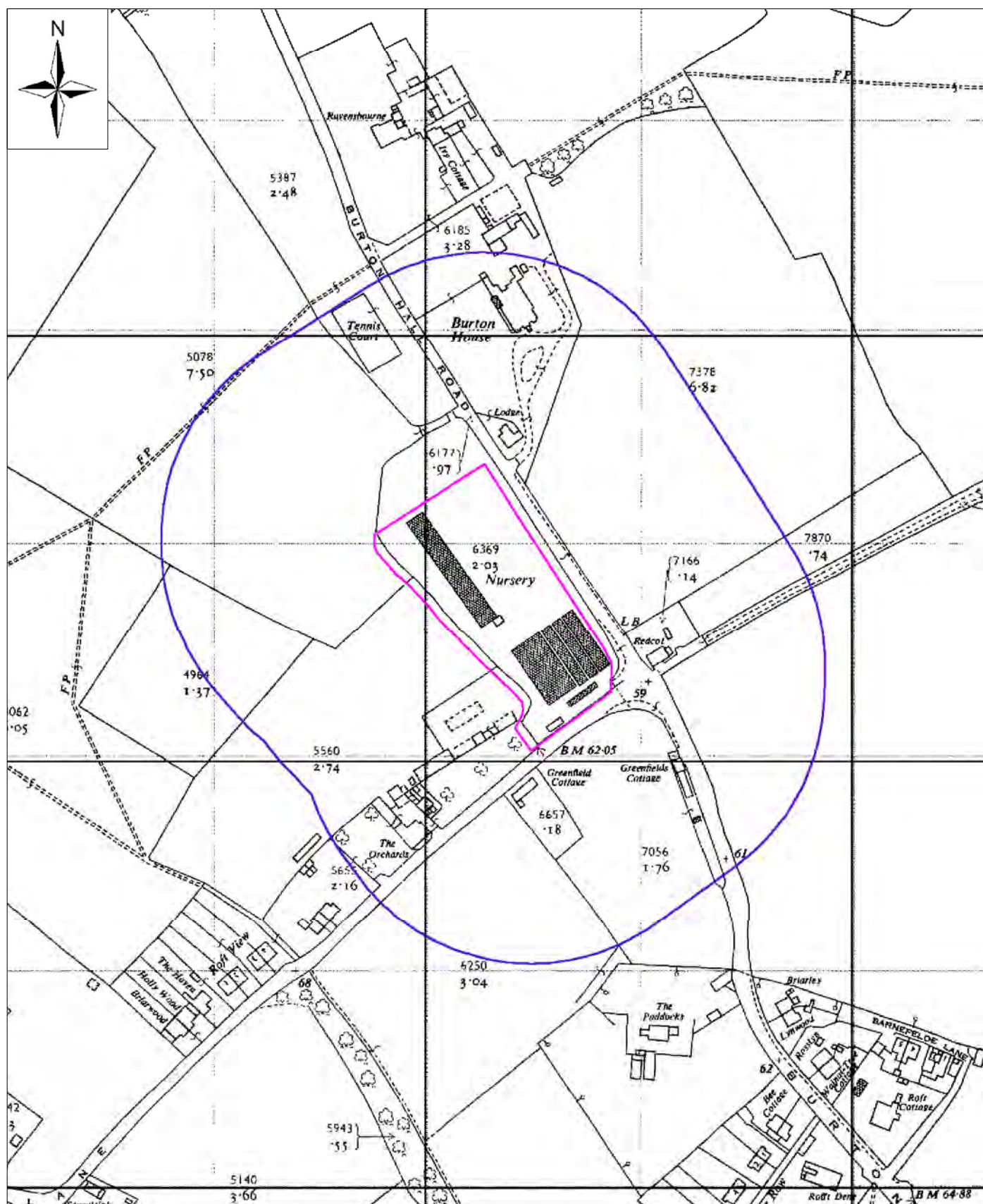
FIGURE **3d**



Scale 1:10,000

HISTORY - 1954

FIGURE **3e**



HISTORY - 1962

FIGURE 3f

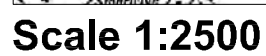
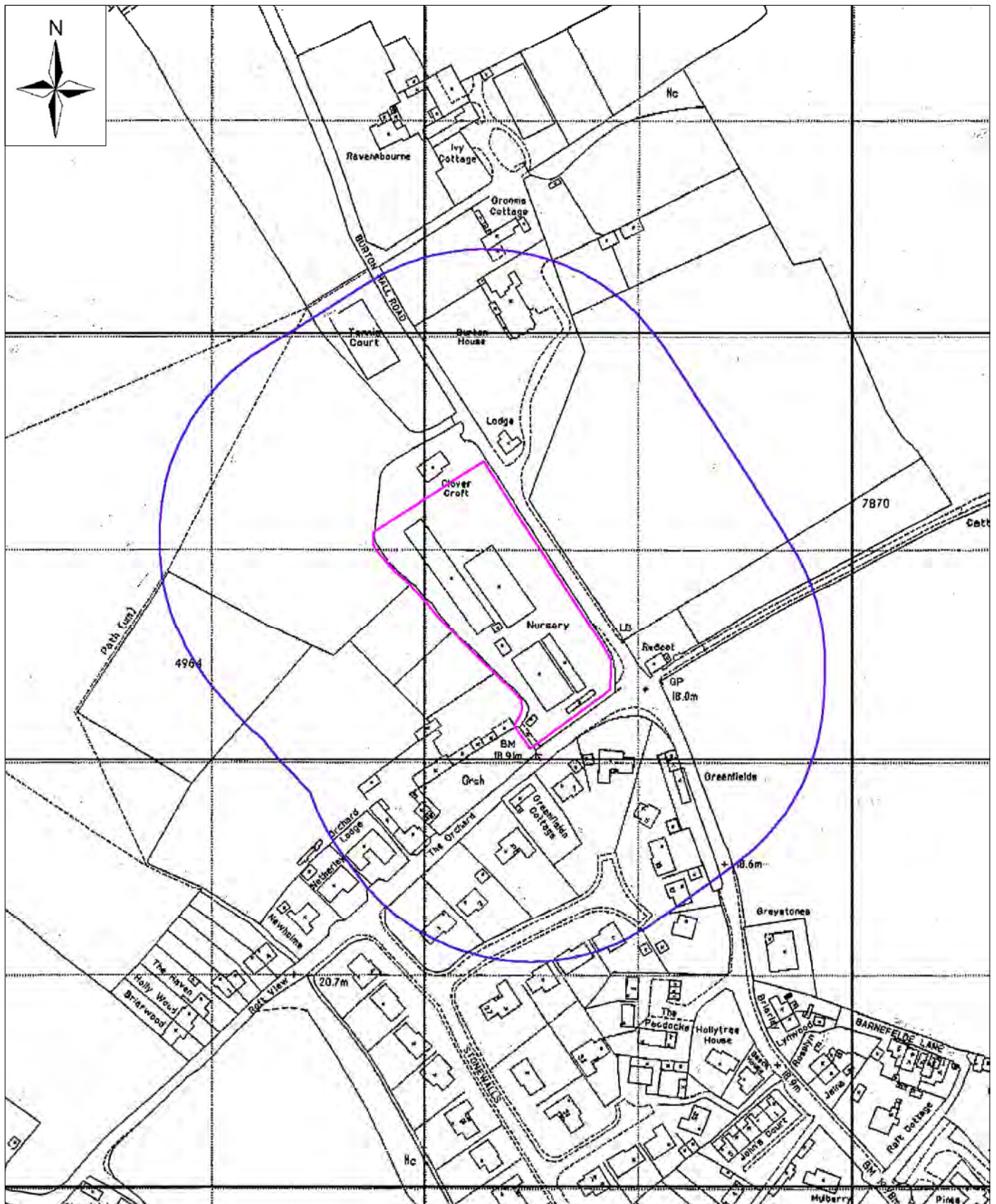


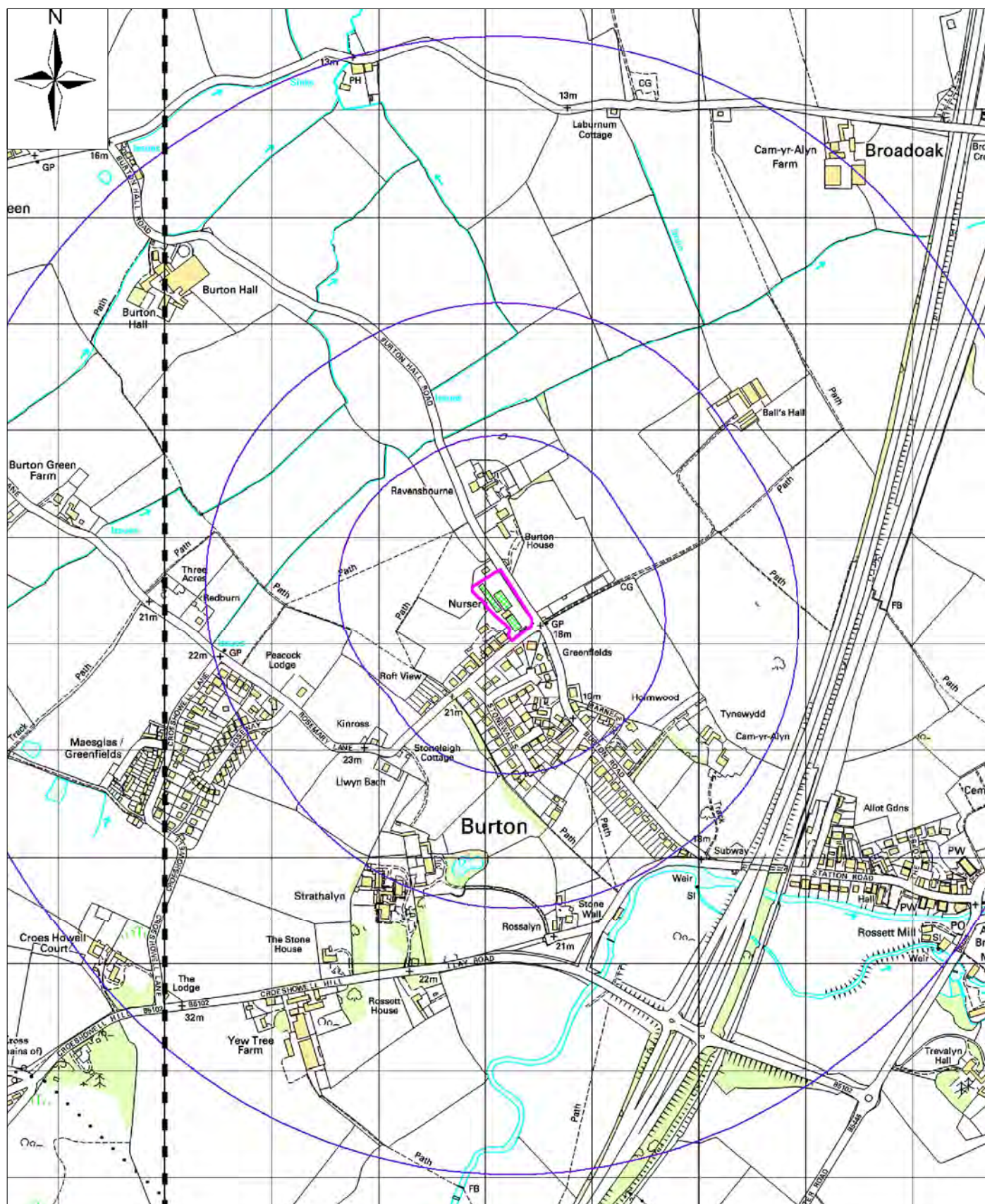
FIGURE 3g



Scale 1:2500

HISTORY - 1993

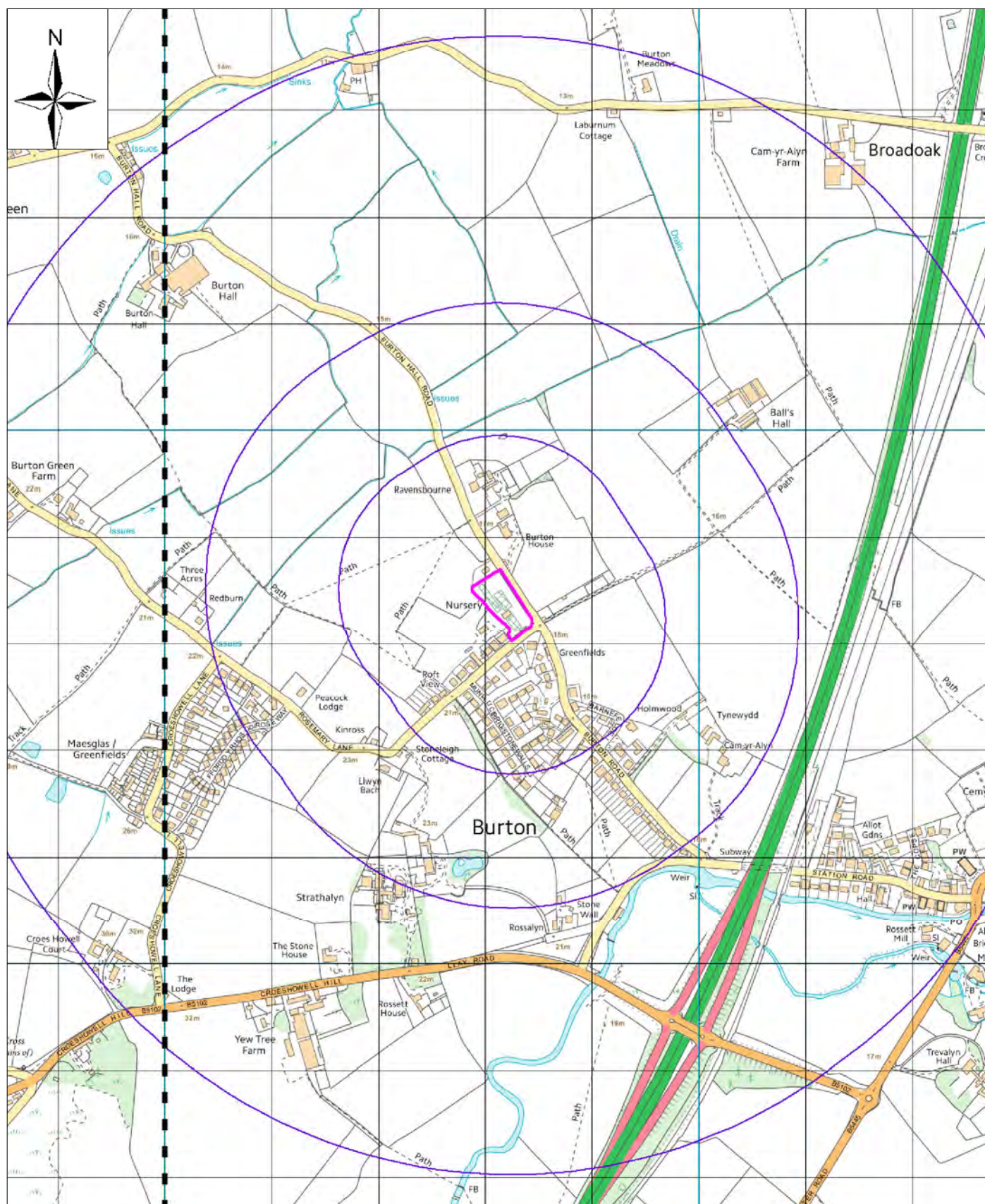
FIGURE **3h**



Scale 1:10,000

HISTORY - 2006

FIGURE **3j**



Scale 1:10,000

HISTORY - 2014

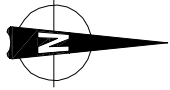
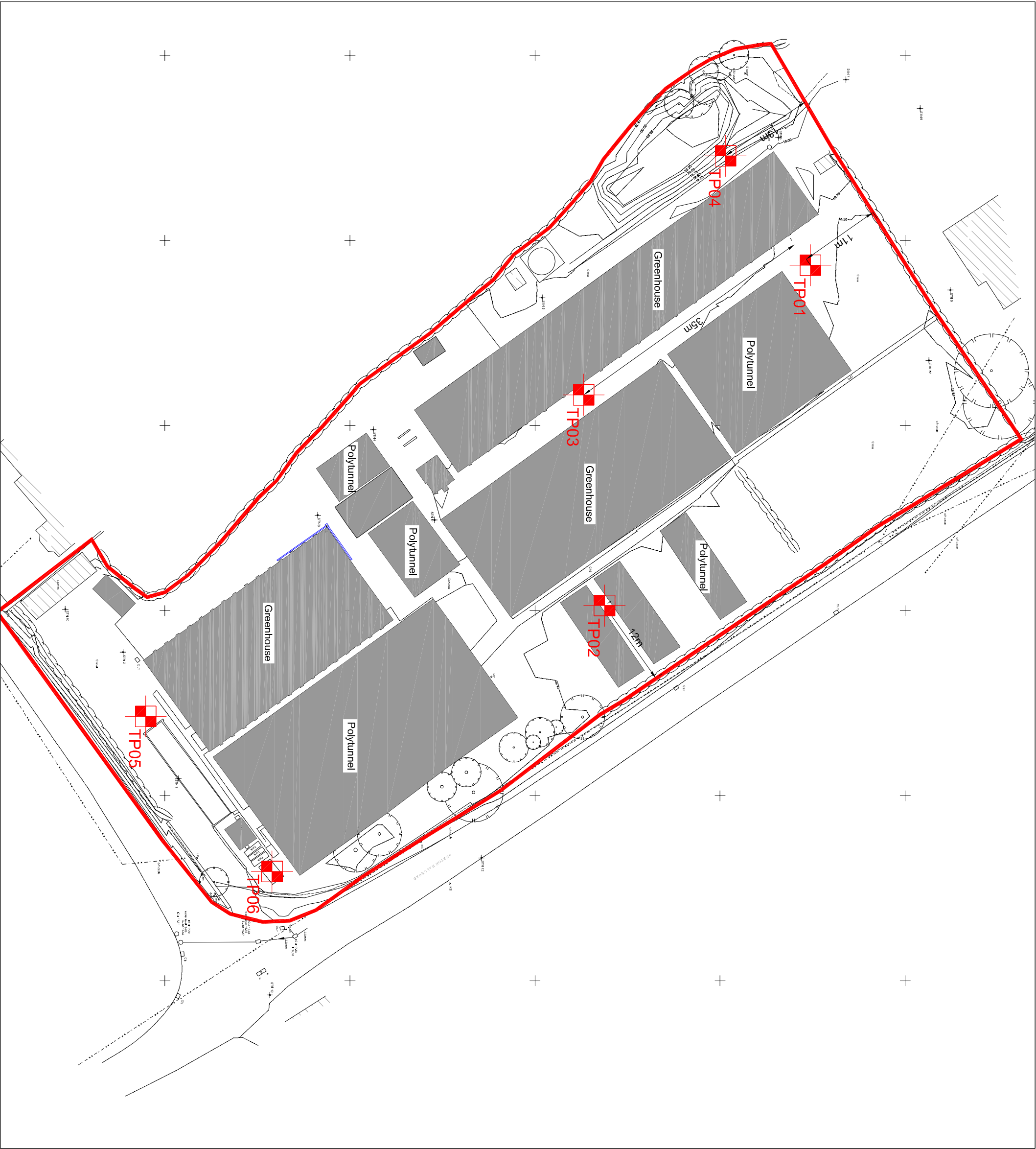
FIGURE **3k**



PROPOSED
DEVELOPMENT

1:500@A3

FIGURE
4



TRIAL PIT
LOCATION PLAN

1:500@A3

FIGURE
5

APPENDIX A
Site Photographs



Photograph 1 Southern boundary from entrance



Photograph 2 Polytunnels in centre of site



Photograph 3 Eastern site boundary from northern site boundary



Photograph 4 Site entrance from south east



Photograph 5 former oil tank locations near entrance



Photograph 6 Location of former underground boiler



Photograph 7 Underground boiler



Photograph 8 Underground boiler



Photograph 9 Inside Greenhouse 1



Photograph 10 Inside greenhouse 2



Photograph 11 Inside greenhouse 3



Photograph 12 Rosemary Lane adjacent to southern site boundary



Photograph 13 Looking south from NE corner



Photograph 14 Looking south from NW corner



Photograph 15 Looking south from Western site boundary



Photograph 16 Looking towards NE corner from northern site boundary



Photograph 17 Looking west from NE corner



Photograph 18 showing compost heap



Photograph 19 Oil tank and boiler in central section of site



Photograph 20 Burton Hall Lane



Photograph 21 Site entrance from SW corner



Photograph 21 temporary Tank

APPENDIX B

Envirocheck Report

Envirocheck[®] Report:

Datasheet

Order Details:

Order Number:

56795519_1_1

Customer Reference:

1583

National Grid Reference:

335630, 357670

Slice:

A

Site Area (Ha):

0.69

Search Buffer (m):

1000

Site Details:

Site at
Rossett
Wrexham

Client Details:

Mr M Scott
GroundSolve Ltd
Unit 7
Well House Barns
Chester Road
Bretton
Flintshire
CH4 0DH

Prepared For:

Mytton Homes Ltd.

Report Section	Page Number
Summary	-
Agency & Hydrological	1
Waste	8
Hazardous Substances	-
Geological	9
Industrial Land Use	15
Sensitive Land Use	16
Data Currency	17
Data Suppliers	22
Useful Contacts	23

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 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 the attached 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 v47.0

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

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	pg 8				1
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)					
Local Authority Recorded Landfill Sites					
Registered Landfill Sites	pg 8				1
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites					
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					
Geological					
BGS 1:625,000 Solid Geology	pg 9	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 9	Yes	Yes	Yes	Yes
BGS Recorded Mineral Sites					
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
Brine Compensation Area			n/a	n/a	n/a
Coal Mining Affected Areas	pg 14	Yes	n/a	n/a	n/a
Mining Instability			n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 14	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards				n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 14	Yes		n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 14	Yes		n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards				n/a	n/a
Radon Potential - Radon Affected Areas			n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Industrial Land Use					
Contemporary Trade Directory Entries	pg 15			1	2
Fuel Station Entries					
Sensitive Land Use					
Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones	pg 16	1			
Ramsar Sites					
Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	Discharge Consents Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Level Crossing Rossett Authority: Environment Agency, Welsh Region Catchment Area: Not Given Reference: CG0356201 Permit Version: 1 Effective Date: 21st July 1994 Issued Date: 21st July 1994 Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge: Freshwater Stream/River Environment: Receiving Water: Afon Alun Status: New Consent, by Application (Water Resources Act 1991, Section 88) Positional Accuracy: Located by supplier to within 100m	A9NW (SE)	655	1	336160 357180
2	Discharge Consents Operator: David Hughes Property Type: Domestic Tip Location: Burton Green Farm, Rosemary Lane, Rossett, Wrexham, LI12 0la Authority: Environment Agency, Welsh Region Catchment Area: Not Supplied Reference: Cg0398401 Permit Version: 1 Effective Date: 23rd January 2002 Issued Date: 23rd January 2002 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: Un Named Trib Of Pulford Brook Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995) Positional Accuracy: Located by supplier to within 100m	A12NW (W)	782	1	334800 357800
3	Discharge Consents Operator: Mrs K M Morris Property Type: Public Houses & Bars Location: Golden Groves Public House, Llyndir Lane, Burton Green, Rossett, Wrexham, LI12 0as Authority: Environment Agency, Welsh Region Catchment Area: River Dee Reference: Cg0364101 Permit Version: 1 Effective Date: 28th September 1995 Issued Date: 28th September 1995 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge: Land/Soakaway Environment: Receiving Water: Into Land Via Soakaway Status: New Consent, by Application (Water Resources Act 1991, Section 88) Positional Accuracy: Located by supplier to within 10m	A18NW (N)	953	1	335350 358650
3	Discharge Consents Operator: Marston Thompson & Evershed Plc Property Type: Public Houses & Bars Location: Golden Groves Public House, Llyndir Lane, Burton Green, Rossett, Wrexham, LI12 0as Authority: Environment Agency, Welsh Region Catchment Area: River Dee Reference: CG0364101 Permit Version: 1 Effective Date: 28th September 1995 Issued Date: 28th September 1995 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge: Land/Soakaway Environment: Receiving Water: Into Land Via Soakaway Status: New Consent, by Application (Water Resources Act 1991, Section 88) Positional Accuracy: Located by supplier to within 100m	A18NW (N)	953	1	335350 358650
	Nearest Surface Water Feature	A13NW (NW)	262	-	335411 357910

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
4	Pollution Incidents to Controlled Waters Property Type: Waste Handling Facilities Location: Rossett Mill Authority: Environment Agency, Welsh Region Pollutant: Sewage - Septic Tank Effluent Note: Not Supplied Incident Date: 14th April 1992 Incident Reference: 4212 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Leakage Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A8NE (SE)	395	1	335900 357300
4	Pollution Incidents to Controlled Waters Property Type: Waste Handling Facilities Location: Rossett Mill Authority: Environment Agency, Welsh Region Pollutant: Heavy Fuel Oil Note: Not Supplied Incident Date: 14th April 1992 Incident Reference: 4212 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Leakage Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A8NE (SE)	399	1	335900 357295
4	Pollution Incidents to Controlled Waters Property Type: Waste Handling Facilities Location: Rossett Mill Authority: Environment Agency, Welsh Region Pollutant: Chemicals - Other Organic Note: Not Supplied Incident Date: 14th April 1992 Incident Reference: 4212 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Leakage Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A8NE (SE)	402	1	335905 357295
5	Pollution Incidents to Controlled Waters Property Type: Not Given Location: ROSSETT Authority: Environment Agency, Welsh Region Pollutant: Unknown Note: Not Supplied Incident Date: 14th April 1995 Incident Reference: 23421 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	A8NE (S)	638	1	335850 357000
5	Pollution Incidents to Controlled Waters Property Type: Other Location: Footbridge Rossett Weir, ROSSETT Authority: Environment Agency, Welsh Region Pollutant: Rubble/Litter Or Solids Note: Deliberate Act Incident Date: 25th July 1991 Incident Reference: 2997 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Direct Discharge Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A8NE (S)	655	1	335900 357000
6	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, Welsh Region Pollutant: Mud/Clay/Soil Note: Not Supplied Incident Date: 26th June 1991 Incident Reference: 2946 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A9NE (SE)	972	1	336500 357100

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
7	Pollution Incidents to Controlled Waters Property Type: Private Sewage (Non-PLC): Other Location: Golden Groves Inn, ROSSETT Authority: Environment Agency, Welsh Region Pollutant: Mud/Clay/Soil Note: Inadequate Design/Capacity Incident Date: 10th March 1995 Incident Reference: 22952 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Effluent Discharge Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A23SW (N)	988	1	335400 358700
	River Quality Name: Alyn GQA Grade: River Quality A Reach: Conf.Dee Nr.A.Ferry - Rosset Weir Estimated Distance (km): 4.8 Flow Rate: Flow less than 5 cumecs Flow Type: River Year: 2000	A8NE (SE)	490	1	335922 357198
	River Quality Name: Alyn GQA Grade: River Quality B Reach: Rosset Weir - Gresford Lodge Estimated Distance (km): 3.2 Flow Rate: Flow less than 5 cumecs Flow Type: River Year: 2000	A8NE (S)	557	1	335821 357076
8	River Quality Biology Sampling Points Name: Alyn / Alun Reach: Confluence River Dee Nriver A.Ferry To Rosset Weir Estimated Distance: 4.80 Positional Accuracy: Located by supplier to within 100m Year: 1990 GQA Grade: River Quality Biology GQA Grade Not Supplied Year: 1995 GQA Grade: River Quality Biology GQA Grade B - Good Year: 2000 GQA Grade: River Quality Biology GQA Grade C - Fairly Good Year: 2002 GQA Grade: River Quality Biology GQA Grade Not Supplied Year: 2003 GQA Grade: River Quality Biology GQA Grade Not Supplied Year: 2004 GQA Grade: River Quality Biology GQA Grade B - Good Year: 2005 GQA Grade: River Quality Biology GQA Grade B - Good Year: 2006 GQA Grade: River Quality Biology GQA Grade B - Good Year: 2007 GQA Grade: River Quality Biology GQA Grade A - Very Good Year: 2008 GQA Grade: River Quality Biology GQA Grade A - Very Good Year: 2009 GQA Grade: River Quality Biology GQA Grade A - Very Good	A8NE (SE)	564	1	335900 357100

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
9	River Quality Chemistry Sampling Points Name: Alyn Reach: Rosset Weir To Gresford Lodge Estimated Distance: 3.20 Objective: Not Supplied Positional Accuracy: Located by supplier to within 10m Year: 1990 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 1993 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 1994 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 1995 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 1996 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 1997 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 1998 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 1999 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2000 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2001 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2002 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2003 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2004 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2005 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 2006 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2007 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2008 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2009 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied	A8SE (S)	666	1	335850 356970
10	Water Abstractions Operator: H E Jones And Son Licence Number: 24/67/8/0086 Permit Version: 100 Location: River Alyn Authority: Environment Agency, Welsh Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Licenced from 01-Jan to 31-Dec Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2007 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A8SW (S)	854	1	335530 356760

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Mr G Walton Licence Number: 24/67/9/0065 Permit Version: 100 Location: Borehole Authority: Environment Agency, Welsh Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 25th October 1966 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A11NE (W)	1057	1	334520 357720
	Water Abstractions Operator: Mr L Lister Licence Number: 24/67/9/0146 Permit Version: 100 Location: Borehole Authority: Environment Agency, Welsh Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 7th October 1974 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A11SE (W)	1124	1	334500 357380
	Water Abstractions Operator: H E Jones And Son Licence Number: 24/67/8/0086 Permit Version: Not Supplied Location: Location Description Not Available Authority: Environment Agency, Welsh Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Not Supplied Source: Surface Daily Rate (m3): 272 Yearly Rate (m3): 6164.4 Details: River Alyn Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A3NW (S)	1310	1	335310 356340
	Water Abstractions Operator: Dp Williams Holdings Ltd Licence Number: 24/67/8/0108 Permit Version: 2 Location: Lagoon At Ballswood Quarry Wrexham 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: Lagoon At Ballswood Quarry, Wrexham Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 3rd October 2012 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A2NE (SW)	1369	1	335000 356400

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Cemex Uk Materials Ltd. Licence Number: 24/67/8/0108 Permit Version: 1 Location: Lagoon At Ballswood Quarry Wrexham 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: Lagoon At Ballswood Quarry, Wrexham Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 30th June 2006 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A2NE (SW)	1369	1	335000 356400
	Groundwater Vulnerability Soil Classification: Soils of High Leaching Potential (H2) - Deep, permeable, coarse textured soils which readily transmit a wide range of pollutants because of their rapid drainage and low attenuation potential Map Sheet: Sheet 16 West Cheshire Scale: 1:100,000	A13NE (W)	0	1	335634 357673
	Drift Deposits None				
	Bedrock Aquifer Designations Aquifer Desination: Principal Aquifer	A13NE (W)	0	2	335634 357673
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - A	A13NE (W)	0	2	335634 357673
11	Source Protection Zones Name: Various Source: Environment Agency, Head Office Reference: Not Supplied Type: Zone III (Total Catchment): The total area needed to support the discharge from the protected groundwater source.	A13NE (W)	0	1	335634 357673
	Extreme Flooding from Rivers or Sea without Defences None				
	Flooding from Rivers or Sea without Defences None				
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				
12	Detailed River Network Lines River Type: Tertiary River River Name: Not Supplied Hydrographic Area: D010 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk: Other Rivers Management Status: Water Course: Not Supplied Name: Water Course: Not Supplied Reference:	A13NW (NW)	262	1	335411 357910

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
13	Detailed River Network Lines River Type: Tertiary River River Name: Not Supplied Hydrographic Area: D010 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk: Other Rivers Management Status: Water Course: Not Supplied Name: Water Course: Not Supplied Reference:	A18SW (N)	356	1	335492 358068
14	Detailed River Network Lines River Type: Tertiary River River Name: Not Supplied Hydrographic Area: D010 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk: Other Rivers Management Status: Water Course: Not Supplied Name: Water Course: Not Supplied Reference:	A18SW (NW)	413	1	335313 358024
	Detailed River Network Offline Drainage None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
15	Historical Landfill Sites Licence Holder: Mr P R Kilgannon Location: Chester Road, Rossett, Wrexham, Clwyd Name: Rossett Mill Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD13893 First Input Date: 30th August 1981 Last Input Date: 31st May 1984 Specified Waste: Deposited Waste included Inert Waste Type: EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 6955/0073 BGS Ref: Not Supplied Other Ref: Not Supplied	A9NE (SE)	841	1	336327 357088
	Local Authority Landfill Coverage Name: Wrexham County Borough Council - Has supplied landfill data		0	9	335634 357673
16	Registered Landfill Sites Licence Holder: M T R Kilgannon Licence Reference: L35 Site Location: Rossett Mill, Rossett, Wrexham, Clwyd Licence Easting: 336400 Licence Northing: 357050 Operator Location: Bryn Cottage, Bretton, Chester, Cheshire Authority: Environment Agency Wales, North Area Site Category: Landfill Max Input Rate: Undefined Waste Source: No known restriction on source of waste Restrictions: Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st August 1981 Preceded By: Not Given Licence: Superseded By: Not Given Licence: Positional Accuracy: Manually positioned to the road within the address or location Boundary Accuracy: Not Applicable Authorised Waste: Earth Graded Brick, Hardcore	A9NE (SE)	821	1	336323 357114

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Permian and Triassic sandstones, undifferentiated, including Bunter and Keuper	A13NE (W)	0	2	335634 357673
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A13NE (W)	0	3	335634 357673
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A13SE (S)	110	3	335690 357503
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A13NE (N)	261	3	335634 358000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A14NW (E)	313	3	336000 357673
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A14SW (E)	315	3	336000 357606
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A14NW (NE)	455	3	336000 358000

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: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A8NE (SE)	478	3	335903 357201
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A9NW (SE)	539	3	336000 357195
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A7NE (SW)	546	3	335244 357235
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A12NE (W)	577	3	335000 357673
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A8NE (S)	605	3	335634 357000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A8NE (S)	605	3	335648 357000

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: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A8NE (S)	613	3	335747 357000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 90 - 120 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A8SE (S)	631	3	335738 356980
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A12NE (NW)	647	3	335000 358000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A9NW (SE)	700	3	336000 357000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 90 - 120 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A18NW (NW)	712	3	335323 358382
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A7NE (SW)	732	3	335000 357249

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: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A9SW (SE)	754	3	336000 356938
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A19NW (NE)	780	3	336019 358413
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A19NW (NE)	781	3	336000 358425
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A7NE (SW)	855	3	334995 357055
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A7NE (SW)	857	3	335000 357047
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A7NE (SW)	877	3	335015 357000

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: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A7NE (SW)	888	3	335000 357000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A7NW (SW)	906	3	334869 357134
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A7NW (SW)	919	3	334816 357180
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A18NE (N)	943	3	335752 358674
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A9SW (SE)	944	3	336064 356757
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: RuSoilExAs Arsenic <15 mg/kg Concentration: Cadmium <1.8 mg/kg Concentration: Chromium 60 - 90 mg/kg Concentration: Lead Concentration: <150 mg/kg Nickel 15 - 30 mg/kg Concentration:	A8SE (S)	959	3	335893 356678
	BGS Measured Urban Soil Chemistry No data available				
	BGS Urban Soil Chemistry Averages No data available				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Coal Mining Affected Areas Description: In an area which may be affected by coal mining activity. It is recommended that a coal mining report is obtained from the Coal Authority. Contact details are included in the Useful Contacts section of this report.	A13NE (W)	0	4	335634 357673
	Non Coal Mining Areas of Great Britain No Hazard				
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	2	335634 357673
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	2	335634 357673
	Potential for Ground Dissolution Stability Hazards No Hazard				
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	2	335634 357673
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	2	335634 357673
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	2	335634 357673
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	2	335634 357673
	Radon Potential - Radon Affected Areas Affected Area: The property is in a lower probability radon area, as less than 1% of homes are above the action level Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	2	335634 357673

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
17	Contemporary Trade Directory Entries Name: The Vulcans Forge Location: Llwyn Bach, Rosemary Lane, Rossett, Wrexham, Clwyd, LL12 0LA Classification: Wrought Ironwork Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SW (SW)	331	-	335417 357370
18	Contemporary Trade Directory Entries Name: Bernard H Barkley Location: Station Yard, Rossett, Wrexham, Clwyd, LL12 0HE Classification: Agricultural Merchants Status: Inactive Positional Accuracy: Manually positioned within the geographical locality	A9NE (SE)	891	-	336458 357186
19	Contemporary Trade Directory Entries Name: Prestige Vehicle Solutions Location: Bridge House, Station Rd, Rossett, Wrexham, Clwyd, LL12 0HE Classification: Car Dealers Status: Active Positional Accuracy: Manually positioned to the address or location	A9NE (SE)	951	-	336498 357137

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
20	Nitrate Vulnerable Zones Name: Not Supplied Description: Not Supplied Source: The National Assembly for Wales, GI Services (Department of Planning & Countryside)	A13SW (SW)	0	6	335619 357656

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices Flintshire Council - Environmental Health Department Chester City Council (now part of Cheshire West and Chester Council) - Environmental Health Department Wrexham County Borough Council - Public Protection Department Cheshire West and Chester Council - Environmental Health Department	April 2014 August 2008 December 2013 November 2013	Annual Rolling Update Not Applicable Monthly Annually
Discharge Consents Environment Agency - Welsh Region	May 2014	Quarterly
Enforcement and Prohibition Notices Environment Agency - North West Region Environment Agency - Welsh Region	March 2013 March 2013	As notified As notified
Integrated Pollution Controls Environment Agency - North West Region Environment Agency - Welsh Region	October 2008 October 2008	Not Applicable Not Applicable
Integrated Pollution Prevention And Control Environment Agency - North West Region Environment Agency - Welsh Region	May 2014 May 2014	Quarterly Quarterly
Local Authority Integrated Pollution Prevention And Control Wrexham County Borough Council - Environmental Health Department Chester City Council (now part of Cheshire West and Chester Council) - Environmental Health Department Flintshire Council - Environmental Health Department Cheshire West and Chester Council - Environmental Health Department	April 2014 December 2008 January 2013 October 2013	Annual Rolling Update Not Applicable Annual Rolling Update Annually
Local Authority Pollution Prevention and Controls Wrexham County Borough Council - Environmental Health Department Chester City Council (now part of Cheshire West and Chester Council) - Environmental Health Department Flintshire Council - Environmental Health Department Cheshire West and Chester Council - Environmental Health Department	April 2014 December 2008 January 2013 October 2013	Annual Rolling Update Not Applicable Annual Rolling Update Annually
Local Authority Pollution Prevention and Control Enforcements Wrexham County Borough Council - Environmental Health Department Chester City Council (now part of Cheshire West and Chester Council) - Environmental Health Department Flintshire Council - Environmental Health Department Cheshire West and Chester Council - Environmental Health Department	April 2014 December 2008 January 2013 October 2013	Annual Rolling Update Not Applicable Annual Rolling Update Annually
Nearest Surface Water Feature Ordnance Survey	July 2012	Quarterly
Pollution Incidents to Controlled Waters Environment Agency - Welsh Region	December 1998	Not Applicable
Prosecutions Relating to Authorised Processes Environment Agency - North West Region Environment Agency - Welsh Region	March 2013 March 2013	As notified As notified
Prosecutions Relating to Controlled Waters Environment Agency - North West Region Environment Agency - Welsh Region	March 2013 March 2013	As notified As notified
Registered Radioactive Substances Environment Agency - North West Region Environment Agency - Welsh Region	May 2014 May 2014	Quarterly Quarterly
River Quality Environment Agency - Head Office	November 2001	Not Applicable
River Quality Biology Sampling Points Environment Agency - Head Office	July 2012	Annually
River Quality Chemistry Sampling Points Environment Agency - Head Office	July 2012	Annually

Agency & Hydrological	Version	Update Cycle
Substantiated Pollution Incident Register Environment Agency - North West Region - South Area Environment Agency Wales - North Area	May 2014 May 2014	Quarterly Quarterly
Water Abstractions Environment Agency - Welsh Region	December 2014	Quarterly
Water Industry Act Referrals Environment Agency - North West Region Environment Agency - Welsh Region	May 2014 May 2014	Quarterly Quarterly
Groundwater Vulnerability Environment Agency - Head Office	January 2011	Not Applicable
Drift Deposits Environment Agency - Head Office	January 1999	Not Applicable
Bedrock Aquifer Designations British Geological Survey - National Geoscience Information Service	October 2012	Annually
Superficial Aquifer Designations British Geological Survey - National Geoscience Information Service	October 2012	Annually
Source Protection Zones Environment Agency - Head Office	December 2014	Quarterly
Extreme Flooding from Rivers or Sea without Defences Environment Agency - Head Office	February 2014	Quarterly
Flooding from Rivers or Sea without Defences Environment Agency - Head Office	February 2014	Quarterly
Areas Benefiting from Flood Defences Environment Agency - Head Office	February 2014	Quarterly
Flood Water Storage Areas Environment Agency - Head Office	February 2014	Quarterly
Flood Defences Environment Agency - Head Office	February 2014	Quarterly
Detailed River Network Lines Environment Agency - Head Office	March 2012	Annually
Detailed River Network Offline Drainage Environment Agency - Head Office	March 2012	Annually

Waste	Version	Update Cycle
BGS Recorded Landfill Sites British Geological Survey - National Geoscience Information Service	June 1996	Not Applicable
Historical Landfill Sites Environment Agency - North West Region - South Area Environment Agency - South East Region - Kent & South London Area Environment Agency - South East Region - North East Thames Area Environment Agency - South East Region - Solent & South Downs Area Environment Agency - South East Region - West Thames Area Environment Agency Wales - North Area	February 2014 February 2014 February 2014 February 2014 February 2014 February 2014	Quarterly Quarterly Quarterly Quarterly Quarterly Quarterly
Integrated Pollution Control Registered Waste Sites Environment Agency - North West Region Environment Agency - Welsh Region	October 2008 October 2008	Not Applicable Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries) Environment Agency - North West Region - South Area Environment Agency - South East Region - Kent & South London Area Environment Agency - South East Region - North East Thames Area Environment Agency - South East Region - Solent & South Downs Area Environment Agency - South East Region - West Thames Area Environment Agency Wales - North Area	February 2014 February 2014 February 2014 February 2014 February 2014 February 2014	Quarterly Quarterly Quarterly Quarterly Quarterly Quarterly
Licensed Waste Management Facilities (Locations) Environment Agency - North West Region - South Area Environment Agency Wales - North Area	February 2014 February 2014	Quarterly Quarterly
Local Authority Landfill Coverage Cheshire County Council (now part of Cheshire East Council) - Environmental Planning Department Chester City Council (now part of Cheshire West and Chester Council) - Environmental Health Department Flintshire Council - Environmental Health Department Wrexham County Borough Council	May 2000 May 2000 May 2000 May 2000	Not Applicable Not Applicable Not Applicable Not Applicable
Local Authority Recorded Landfill Sites Cheshire County Council (now part of Cheshire East Council) - Environmental Planning Department Wrexham County Borough Council Chester City Council (now part of Cheshire West and Chester Council) - Environmental Health Department Flintshire Council - Environmental Health Department	February 2005 June 2003 May 2000 May 2000	Not Applicable Not Applicable Not Applicable Not Applicable
Registered Landfill Sites Environment Agency - North West Region - South Area Environment Agency Wales - North Area	March 2003 March 2003	Not Applicable Not Applicable
Registered Waste Transfer Sites Environment Agency - North West Region - South Area Environment Agency Wales - North Area	March 2003 March 2003	Not Applicable Not Applicable
Registered Waste Treatment or Disposal Sites Environment Agency - North West Region - South Area Environment Agency Wales - North Area	March 2003 March 2003	Not Applicable Not Applicable

Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH) Health and Safety Executive	March 2014	Bi-Annually
Explosive Sites Health and Safety Executive	November 2013	Bi-Annually
Notification of Installations Handling Hazardous Substances (NIHHS) Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements Flintshire Council Wrexham County Borough Council - Planning Department Cheshire County Council (now part of Cheshire East Council) - Planning Department Chester City Council (now part of Cheshire West and Chester Council) Cheshire West and Chester Council - Planning Department	April 2013 April 2014 July 2008 October 2008 October 2013	Annual Rolling Update Annual Rolling Update Annual Rolling Update Not Applicable Annually
Planning Hazardous Substance Consents Flintshire Council Wrexham County Borough Council - Planning Department Cheshire County Council (now part of Cheshire East Council) - Planning Department Chester City Council (now part of Cheshire West and Chester Council) Cheshire West and Chester Council - Planning Department	April 2013 April 2014 July 2008 October 2008 October 2013	Annual Rolling Update Annual Rolling Update Annual Rolling Update Not Applicable Annually
Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	August 1996	Not Applicable
BGS Estimated Soil Chemistry British Geological Survey - National Geoscience Information Service	January 2010	Variable
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	April 2014	Bi-Annually
Coal Mining Affected Areas The Coal Authority - Mining Report Service	December 2013	As notified
Mining Instability Ove Arup & Partners	October 2000	Not Applicable
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	February 2011	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	October 2013	As notified
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	October 2013	As notified
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	October 2013	As notified
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	October 2013	As notified
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	October 2013	As notified
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	October 2013	As notified
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	July 2011	As notified
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	July 2011	As notified

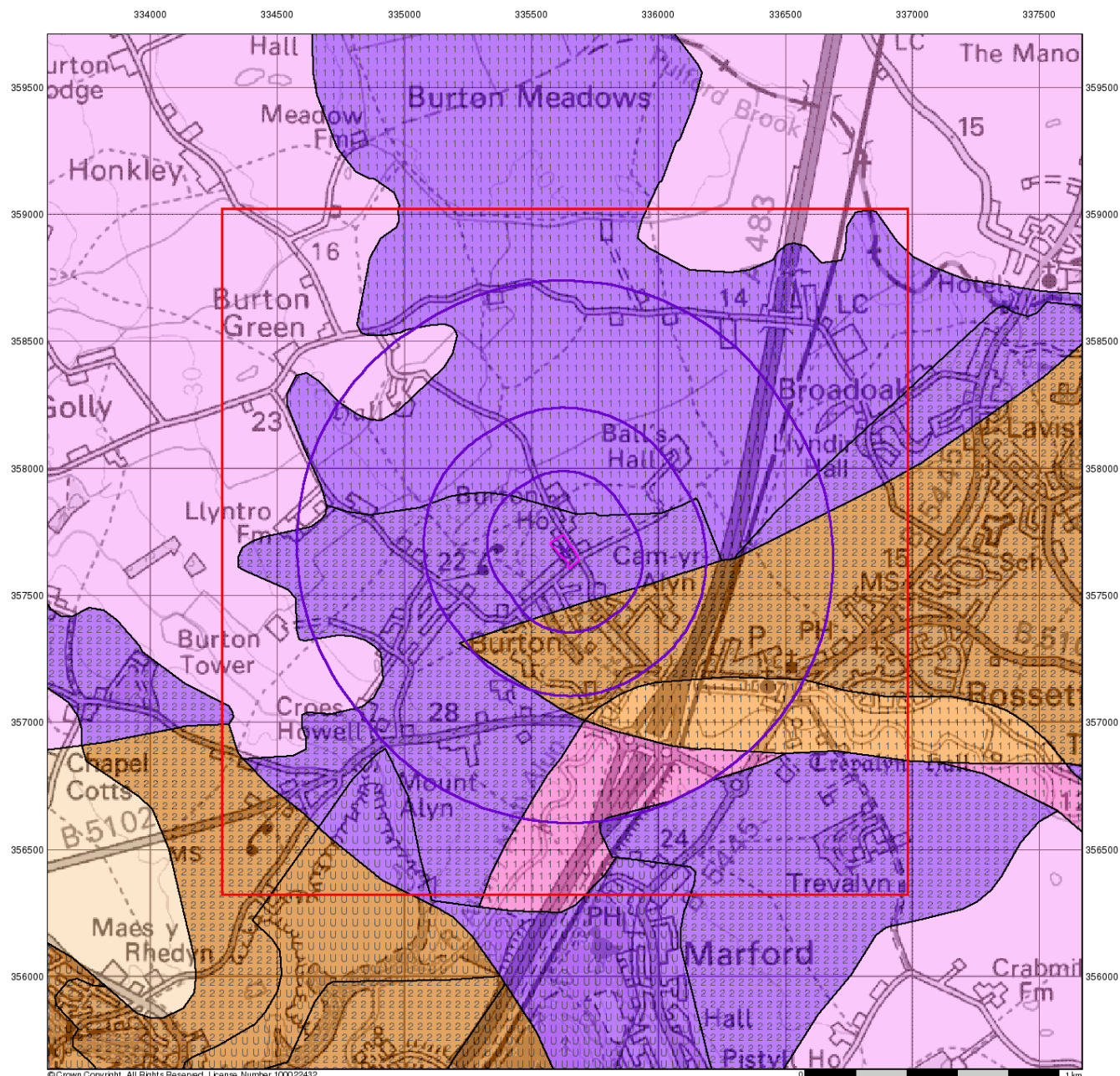
Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries Thomson Directories	May 2014	Quarterly
Fuel Station Entries Catalist Ltd - Experian	March 2014	Quarterly
Sensitive Land Use	Version	Update Cycle
Areas of Adopted Green Belt Chester City Council (now part of Cheshire West and Chester Council)	May 2014	As notified
Areas of Unadopted Green Belt Chester City Council (now part of Cheshire West and Chester Council)	May 2014	As notified
Areas of Outstanding Natural Beauty Natural England Natural Resources Wales (NRW) - formerly CCW	January 2014 March 2014	Bi-Annually Bi-Annually
Environmentally Sensitive Areas The National Assembly for Wales - GI Services (Department of Planning & Countryside) Natural England	August 2008 July 2013	Annually Annually
Forest Parks Forestry Commission	April 1997	Not Applicable
Local Nature Reserves Natural England Flintshire Council Wrexham County Borough Council	July 2013 March 2014 March 2014	Bi-Annually Bi-Annually Bi-Annually
Marine Nature Reserves Natural Resources Wales (NRW) - formerly CCW	March 2014	Bi-Annually
National Nature Reserves Natural Resources Wales (NRW) - formerly CCW	January 2014	Bi-Annually
National Parks Natural England	January 2014	Bi-Annually
Nitrate Sensitive Areas Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	February 2012	Not Applicable
Nitrate Vulnerable Zones Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA) The National Assembly for Wales - GI Services (Department of Planning & Countryside)	February 2013 October 2005	Annually Annually
Ramsar Sites Natural Resources Wales (NRW) - formerly CCW	March 2014	Bi-Annually
Sites of Special Scientific Interest Natural Resources Wales (NRW) - formerly CCW	May 2013	Bi-Annually
Special Areas of Conservation Natural Resources Wales (NRW) - formerly CCW	March 2014	Bi-Annually
Special Protection Areas Natural Resources Wales (NRW) - formerly CCW	March 2014	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
Countryside Council for Wales	 CYNGOR CEFN GWLAD CYMRU COUNTRYSIDE COUNCIL FOR WALES
Scottish Natural Heritage	
Natural England	
Public Health England	
Ove Arup	
Peter Brett Associates	

Contact	Name and Address	Contact Details
1	Environment Agency - National Customer Contact Centre (NCCC) PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 08708 506 506 Email: enquiries@environment-agency.gov.uk
2	British Geological Survey - Enquiry Service British Geological Survey, Kingsley Dunham Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
3	Landmark Information Group Limited Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmark.co.uk Website: www.landmarkinfo.co.uk
4	The Coal Authority - Mining Report Service 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG	Telephone: 0845 7626848 Email: thecoalauthority@coal.gov.uk
5	Chester City Council (now part of Cheshire West and Chester Council) Town Hall, Chester, Cheshire, CH1 2HS	Telephone: 01244 324324 Fax: 01244 324338 Website: www.chester.gov.uk
6	The National Assembly for Wales - GI Services (Department of Planning & Countryside) Yr Hen Ysgol Gymraeg, Alexandria Road, Aberystwyth, Ceredigion, SY23 1LD	Telephone: 02920 825111 Website: www.wales.gov.uk
7	Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA) Government Buildings, Otley Road, Lawnswood, Leeds, West Yorkshire, LS16 5QT	Telephone: 0113 2613333 Fax: 0113 230 0879
8	Natural Resources Wales (NRW) - formerly CCW Plas Penrhose, Fford Penrhos, Bangor, Gwynedd, LL57 2LQ	Telephone: 01248 385500 Fax: 01248 355782
9	Wrexham County Borough Council Lampet Street, Guildhall, Wrexham, Clwyd, LL11 1WL	Telephone: 01978 292000 Fax: 01978 292502 Website: www.wrexham.gov.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 / SEPA have a charging policy in place for enquiries.



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Groundwater Vulnerability

General

- ◇ Specified Site
- Specified Buffer(s)
- X Bearing Reference Point
- Slice
- B Map ID

Agency and Hydrological

Geological Classes

Major Aquifer (Highly Permeable)

Minor Aquifer (Variably Permeable)

Non Aquifer (Negligibly Permeable)

Water or Sea

Drift Deposit

Soil Classes

High (H) 1, 2, 3, U

Intermediate (I) 1, 2

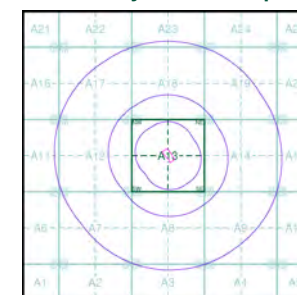
Low

High (H) 1, 2, 3, U

Intermediate (I) 1, 2

Low

Site Sensitivity Context Map - Slice A



Order Details

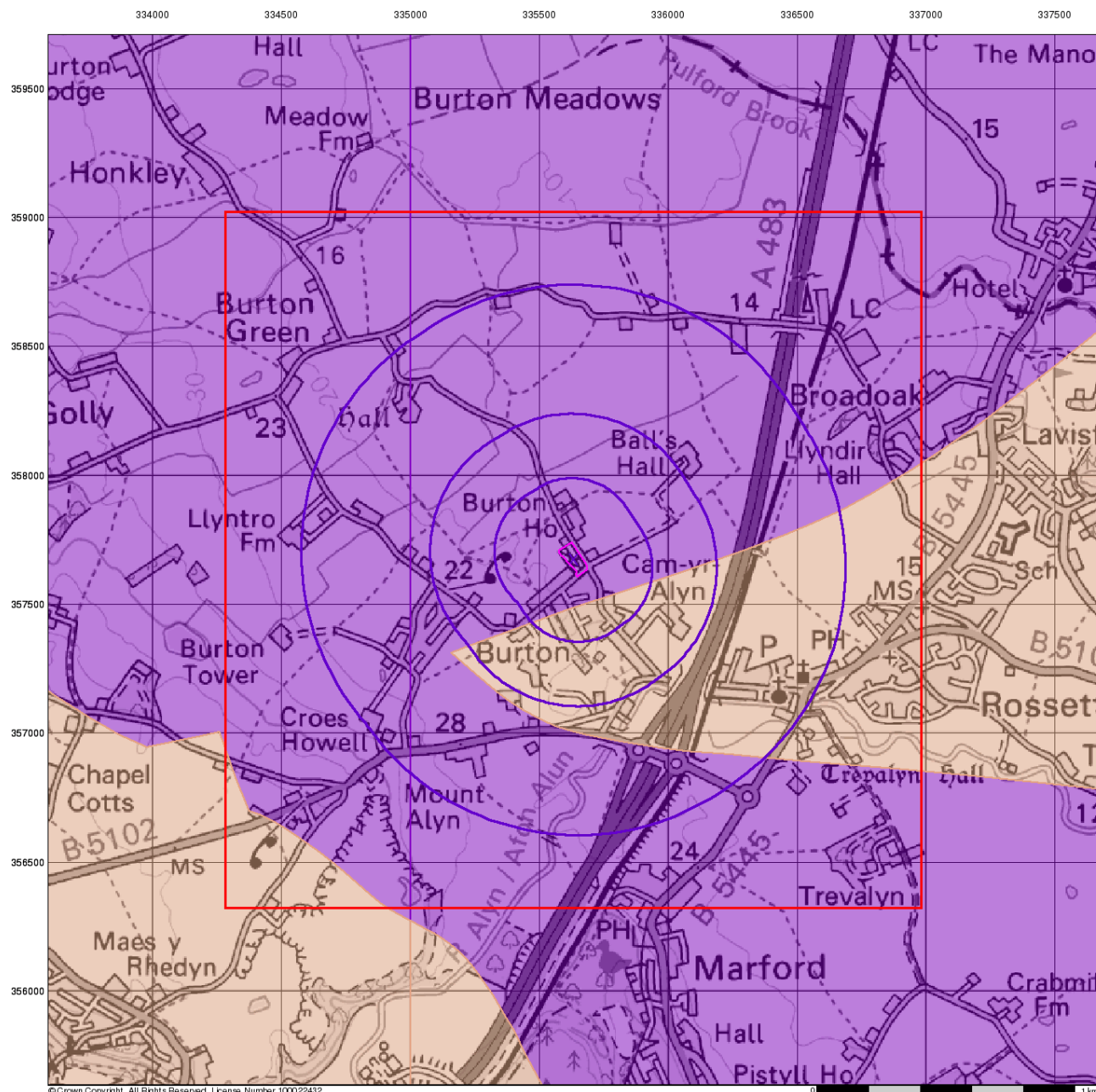
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 Customer Ref: 1583
 National Grid Reference: 335630, 357670
 Slice: A
 Site Area (Ha): 0.69
 Search Buffer (m): 1000

Site Details

Site at, Rossett, Wrexham



Tel: 0844 844 9952
 Fax: 0844 844 9951
 Web: www.envirocheck.co.uk



Bedrock Aquifer Designation

General

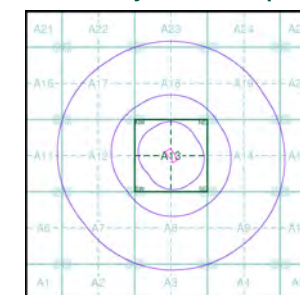
- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point
- Slice
- B Map ID

Agency and Hydrological

Geological Classes

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

Site Sensitivity Context Map - Slice A



Order Details

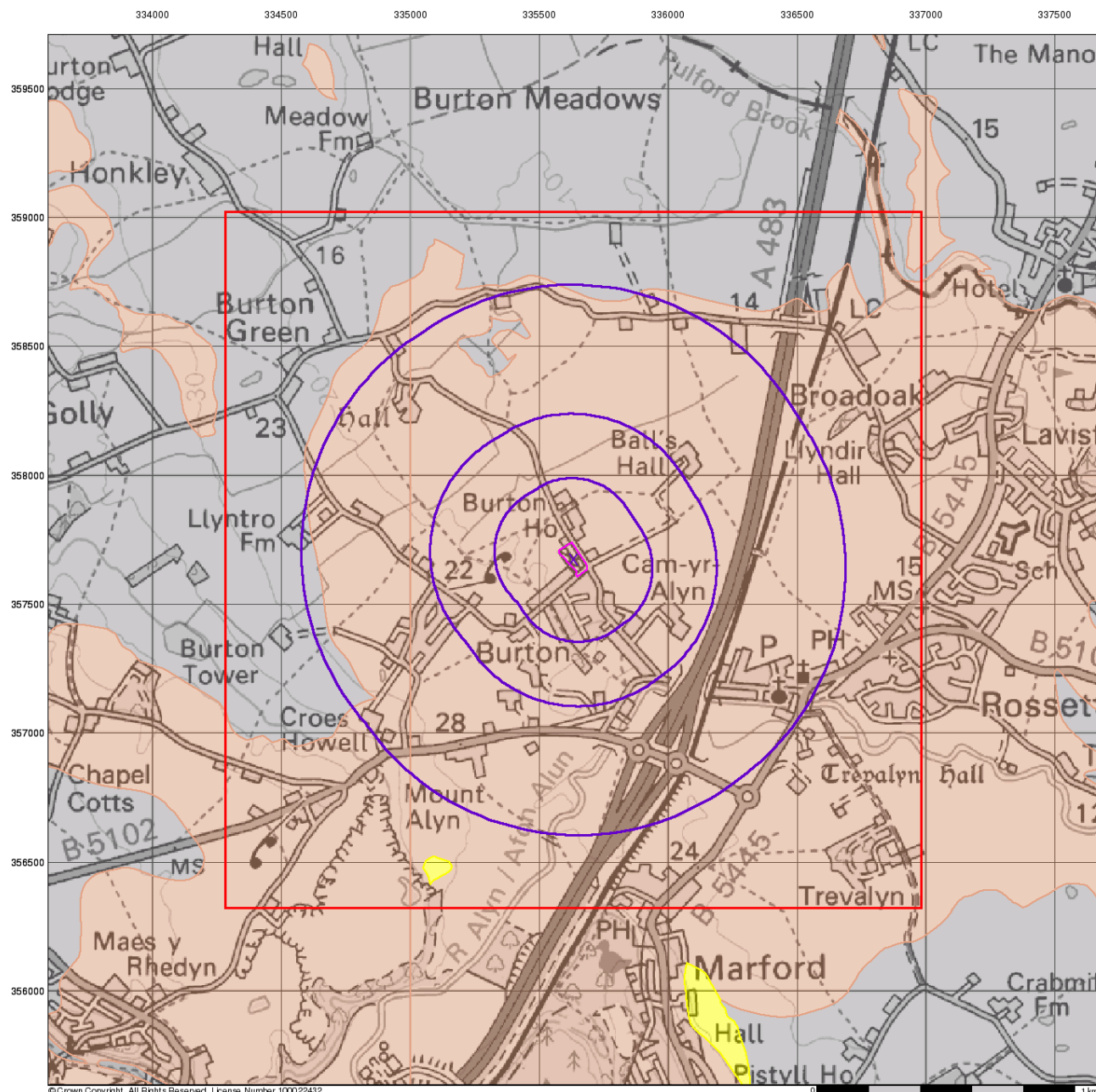
Order Number: 56795519_1_1
 Customer Ref: 1583
 National Grid Reference: 335630, 357670
 Slice: A
 Site Area (Ha): 0.69
 Search Buffer (m): 1000

Site Details

Site at, Rossett, Wrexham



Tel: 0844 844 9952
 Fax: 0844 844 9951
 Web: www.envirocheck.co.uk



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Superficial Aquifer Designation

General

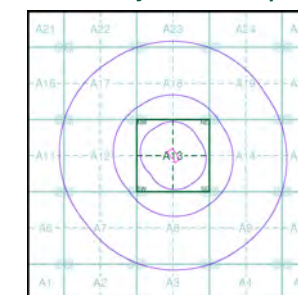
- ◊ Specified Site
- Specified Buffer(s)
- X Bearing Reference Point
- Slice
- B Map ID

Agency and Hydrological

Geological Classes

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

Site Sensitivity Context Map - Slice A



Order Details

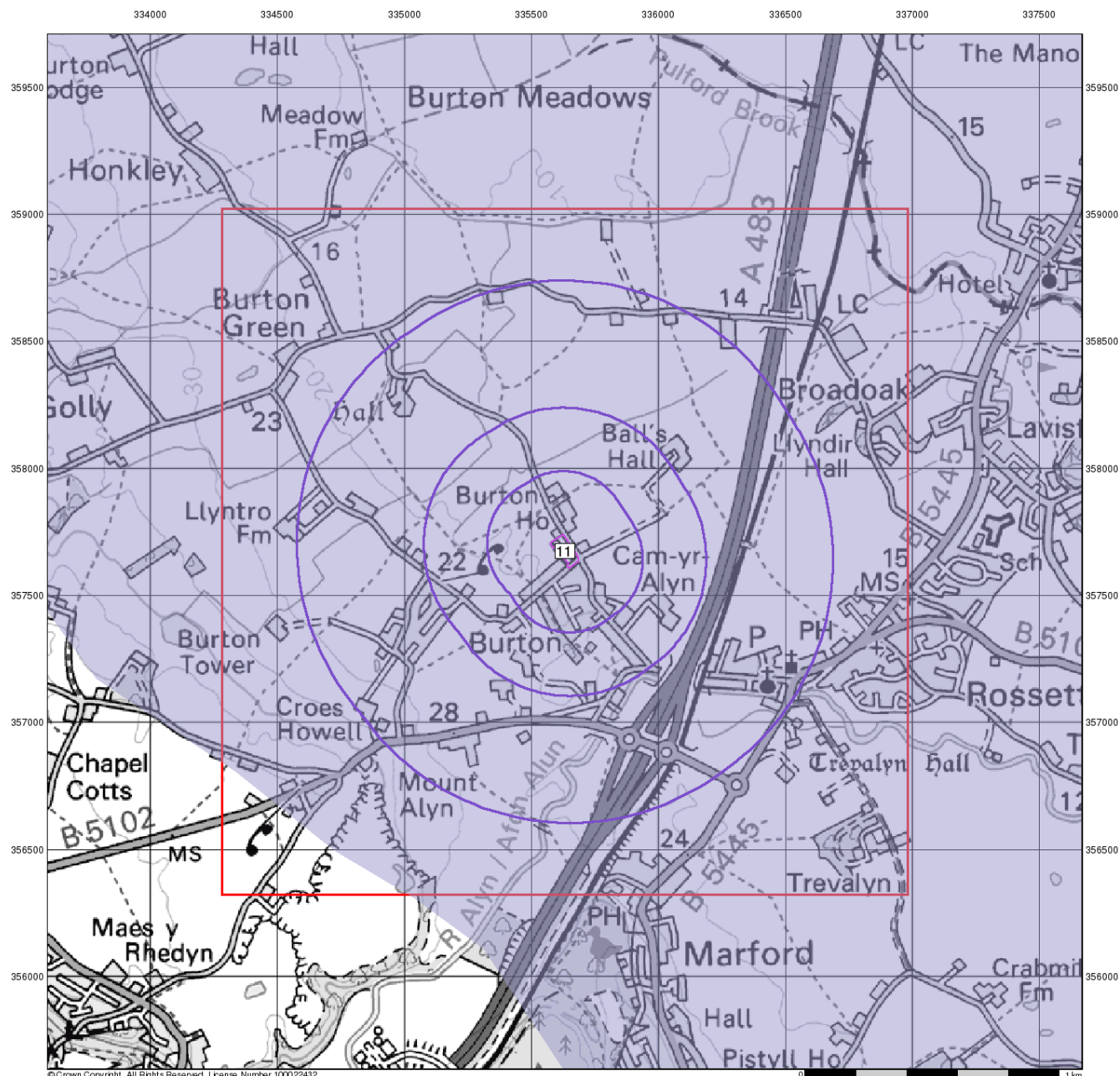
Order Number: 56795519_1_1
 Customer Ref: 1583
 National Grid Reference: 335630, 357670
 Slice: A
 Site Area (Ha): 0.69
 Search Buffer (m): 1000

Site Details

Site at, Rossett, Wrexham



Tel: 0844 844 9952
 Fax: 0844 844 9951
 Web: www.envirocheck.co.uk



Source Protection Zones

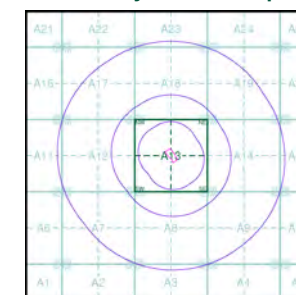
General

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

Agency and Hydrological

- Source Protection Zone I
- Source Protection Zone II
- Source Protection Zone III
- Zone of Special Interest
- Source Protection Zone Borehole

Site Sensitivity Context Map - Slice A



Order Details

Order Number: 56795519_1_1
 Customer Ref: 1583
 National Grid Reference: 335630, 357670
 Slice: A
 Site Area (Ha): 0.69
 Search Buffer (m): 1000

Site Details

Site at, Rossett, Wrexham



Tel: 0844 844 9952
 Fax: 0844 844 9951
 Web: www.envirocheck.co.uk

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

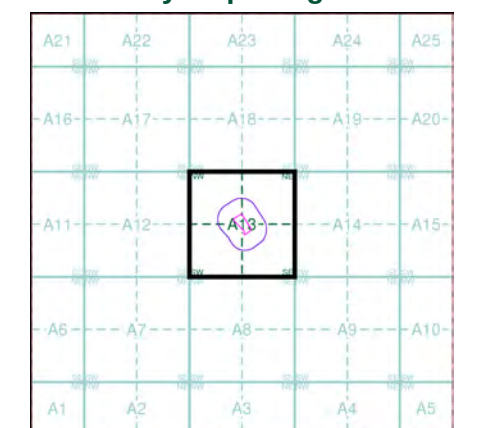
Geological

- BGS Recorded Mineral Site

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry
- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

Site Sensitivity Map - Segment A13

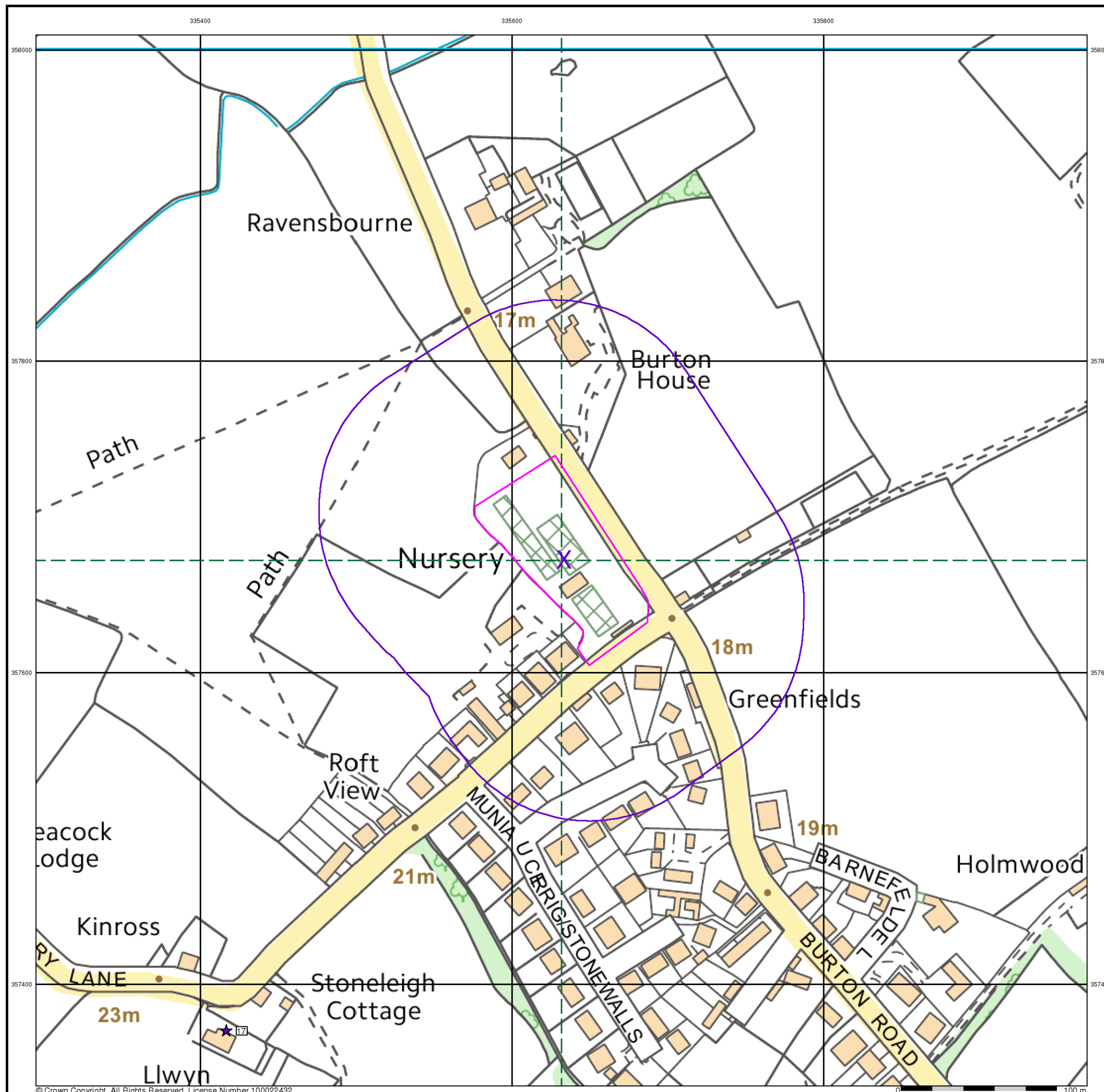


Order Details

Order Number: 56795519_1_1
 Customer Ref: 1583
 National Grid Reference: 335630, 357670
 Slice: A
 Site Area (Ha): 0.69

Site Details

Site at, Rossett, Wrexham



General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

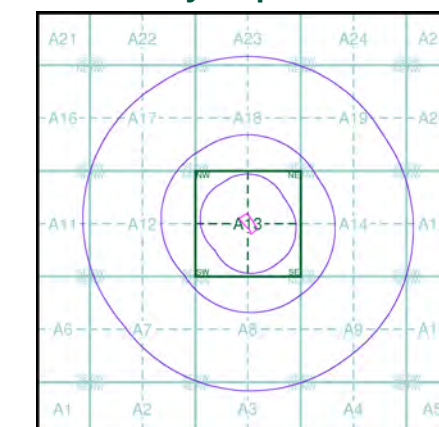
Geological

- BGS Recorded Mineral Site

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry

Site Sensitivity Map - Slice A

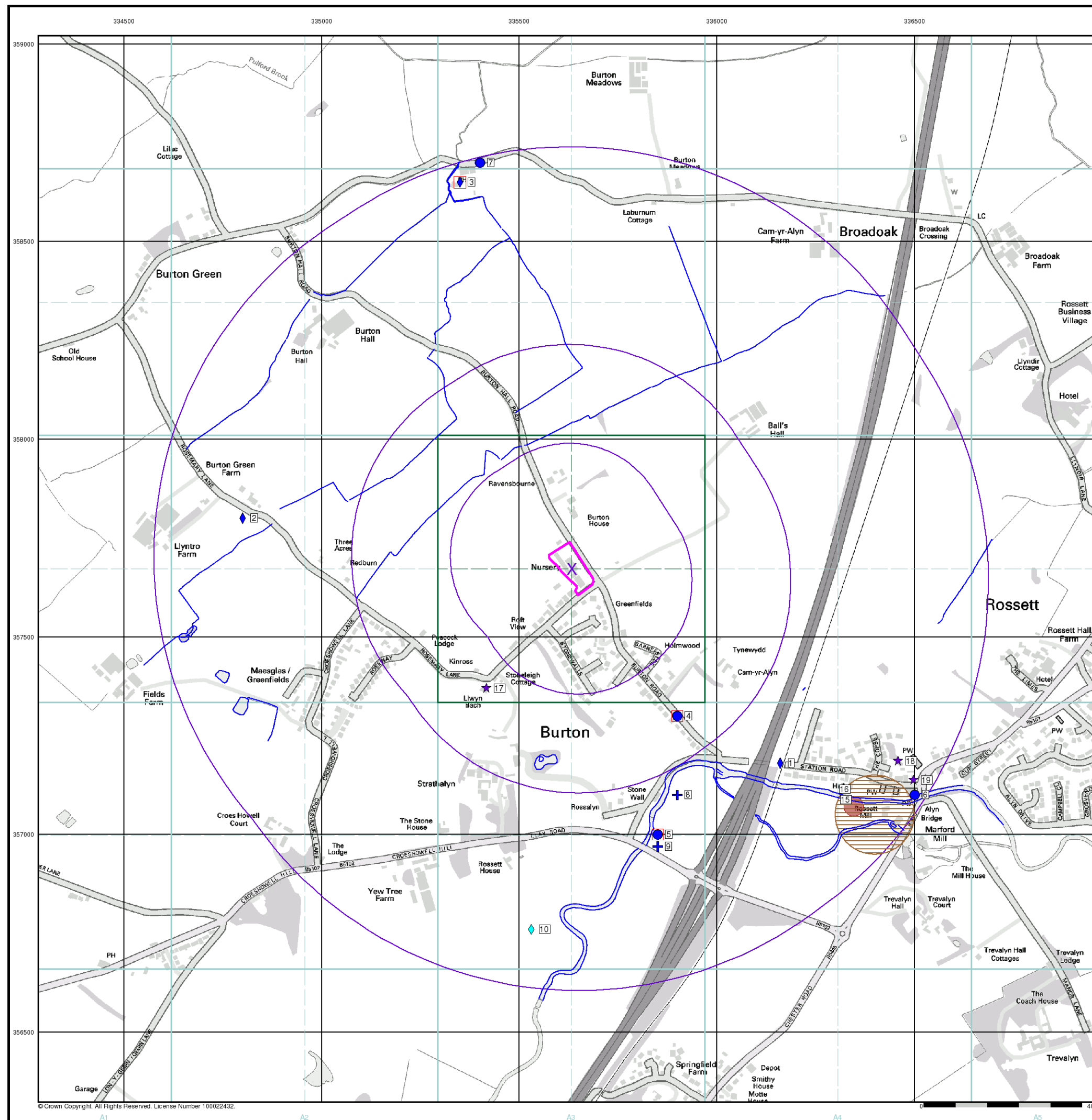


Order Details

Order Number: 56795519_1_1
 Customer Ref: 1583
 National Grid Reference: 335630, 357670
 Slice: A
 Site Area (Ha): 0.69
 Search Buffer (m): 1000

Site Details

Site at, Rossett, Wrexham



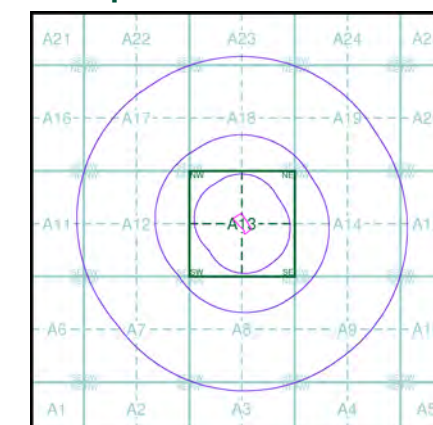
General

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

Agency and Hydrological (Flood)

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

Flood Map - Slice A

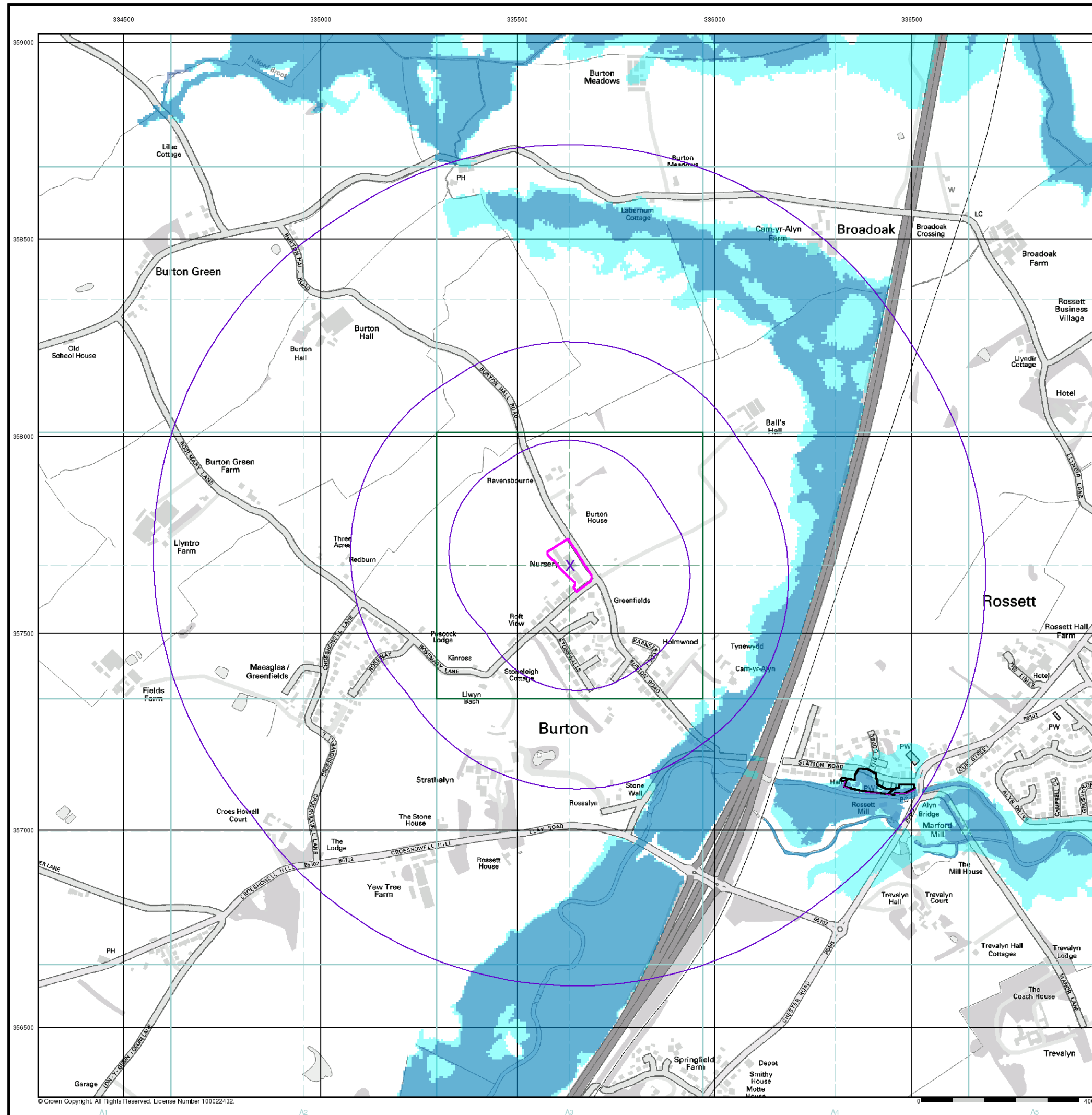


Order Details

Order Number: 56795519_1_1
 Customer Ref: 1583
 National Grid Reference: 335630, 357670
 Slice: A
 Site Area (Ha): 0.69
 Search Buffer (m): 1000

Site Details

Site at, Rossett, Wrexham



General

-  Specified Site
-  Specified Buffer(s)
-  Bearing Reference Point
-  Map ID
-  Several of Type at Location

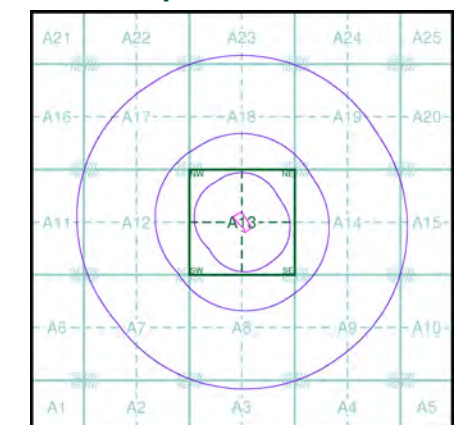
Agency and Hydrological (Boreholes)

-  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 BGS Borehole Ordering Form is available to download from the Support section of www.envirocheck.co.uk.

Borehole Map - Slice A

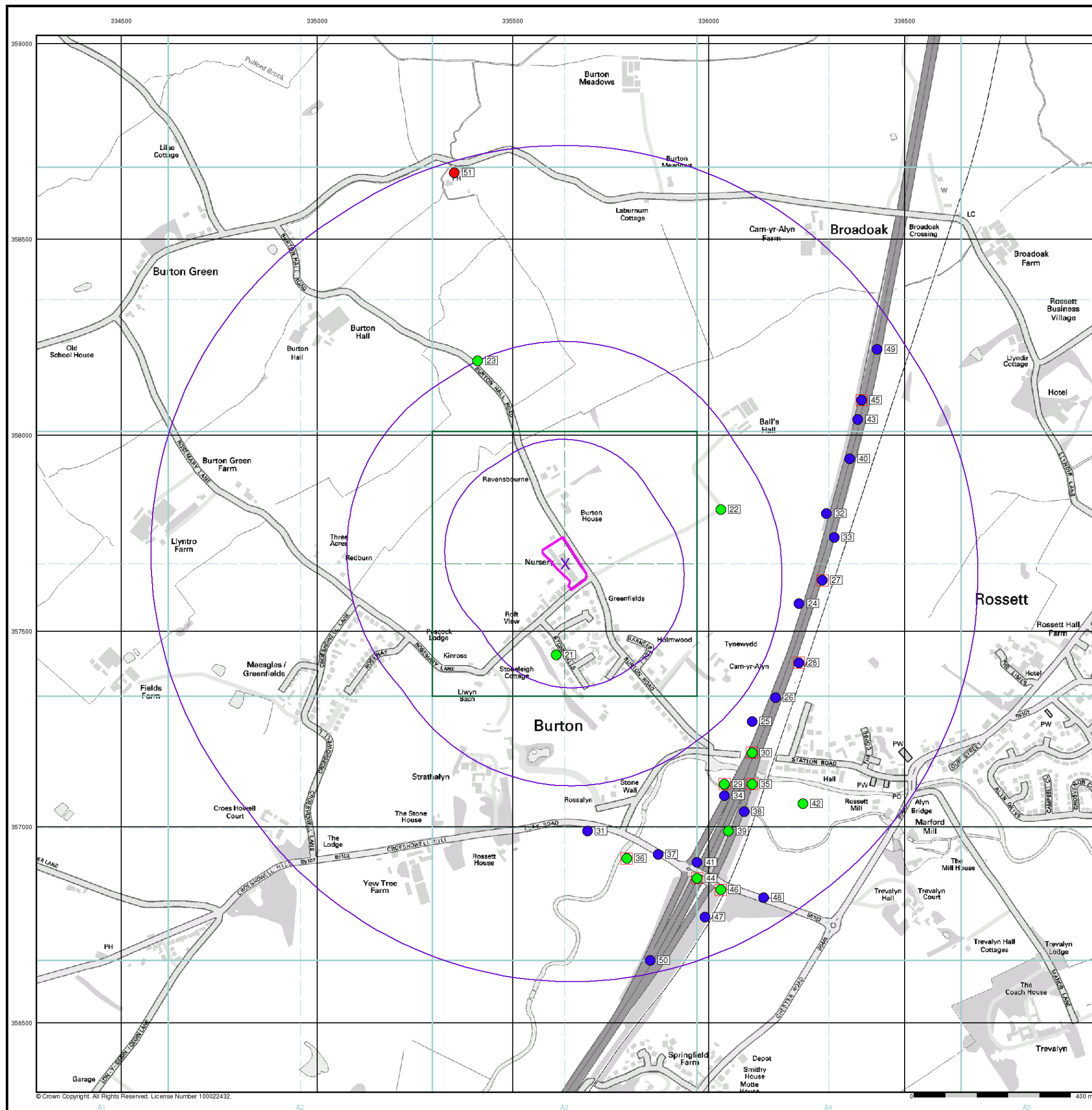


Order Details

Order Number: 56795519_1_1
 Customer Ref: 1583
 National Grid Reference: 335630, 357670
 Slice: A
 Site Area (Ha): 0.69
 Search Buffer (m): 1000

Site Details

Site at, Rossett, Wrexham



General

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

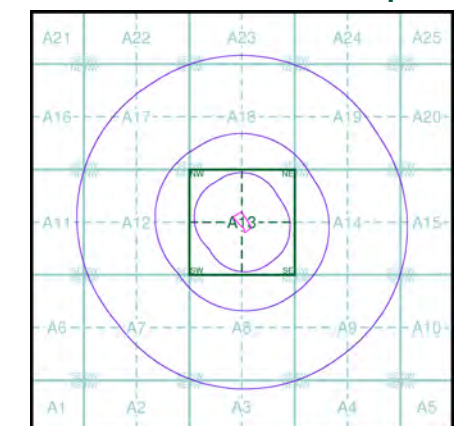
EA Detailed River Network Data

- | | |
|--|---|
|  Primary River |  Extended Culvert (greater than 50m) |
|  Secondary River |  Underground River (inferred) |
|  Tertiary River |  Underground River (local knowledge) |
|  Canal |  Downstream of High Water Mark |
|  Canal Tunnel |  Downstream of Seaward Extension |
|  Undefined River |  Not assigned River feature |
|  Lake/Reservoir | |
|  Offline Drainage Feature | |

Contours (height in metres)

- Standard Contour  105  100  95
- Index Contour  167.3 Spot Height
-  45.8 Air Height

EA Detailed River Network Map - Slice A

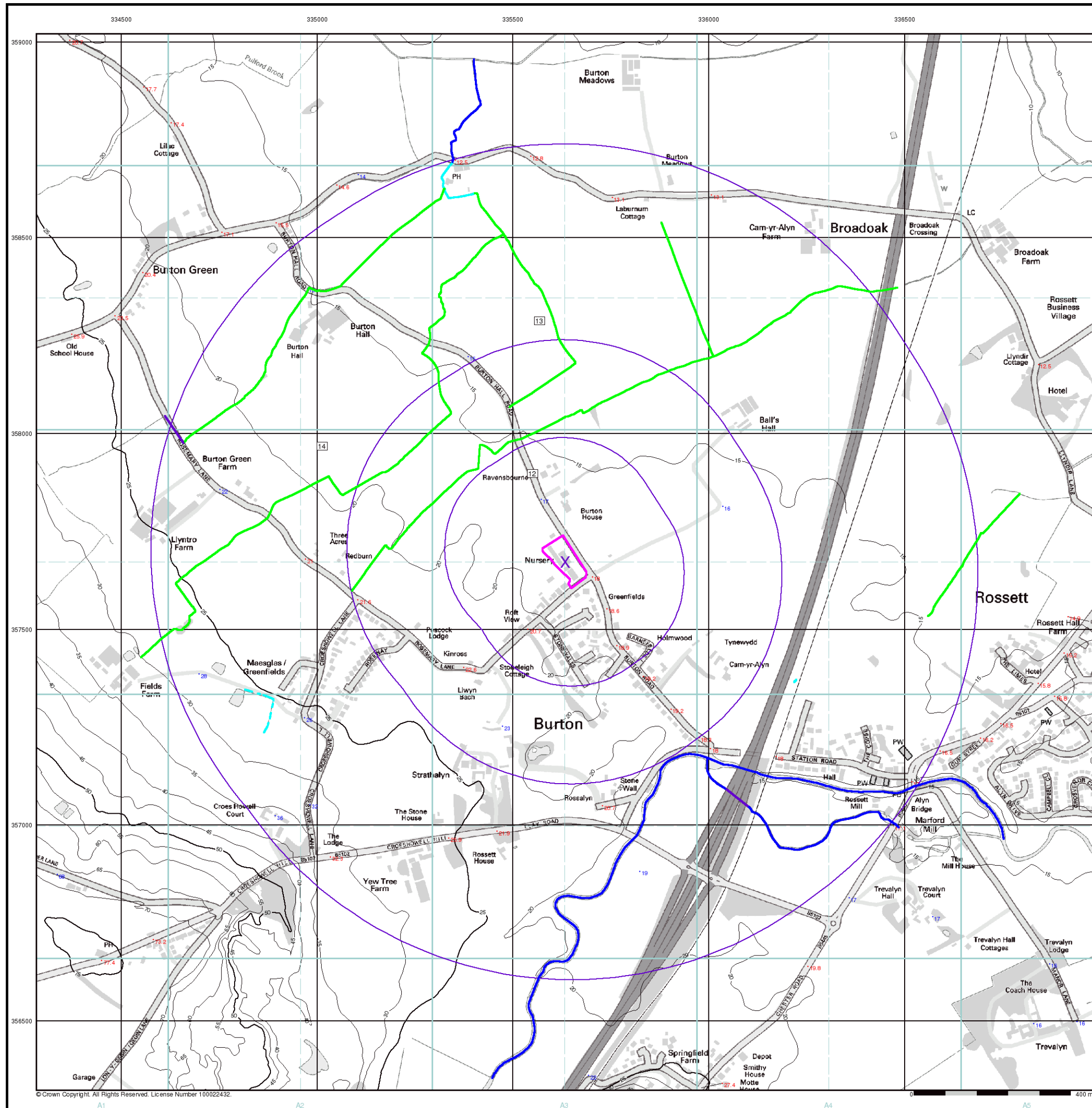


Order Details

Order Number: 56795519_1_1
 Customer Ref: 1583
 National Grid Reference: 335630, 357670
 Slice: A
 Site Area (Ha): 0.69
 Search Buffer (m): 1000

Site Details

Site at, Rossett, Wrexham

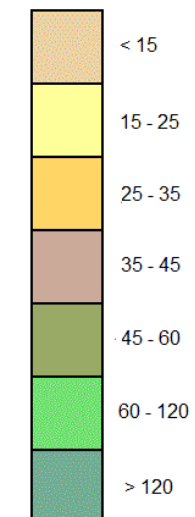


General

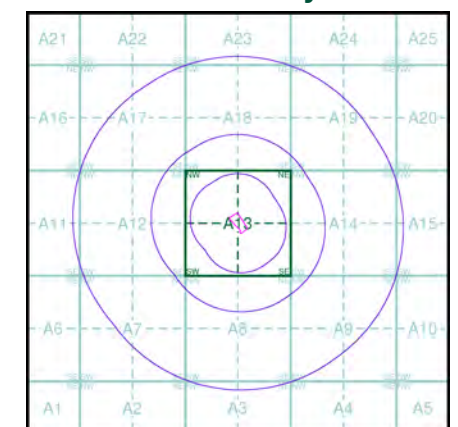
 Specified Site  Specified Buffer(s)  Bearing Reference Point

Estimated Soil Chemistry Arsenic

Arsenic Concentrations mg/kg



Estimated Soil Chemistry Arsenic - Slice A



Order Details

Order Details: 56795519_1_1
Customer Ref: 1583
National Grid Reference: 335630, 357670
Slice: A
Site Area (Ha): 0.69
Search Buffer (m): 1000

Site Details

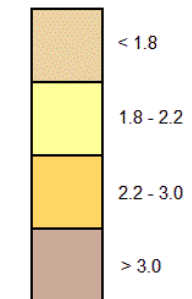
Site at, Rossett, Wrexham

General

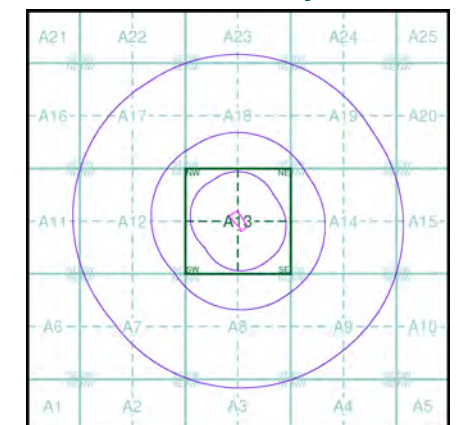
 Specified Site  Specified Buffer(s)  Bearing Reference Point

Estimated Soil Chemistry Cadmium

Cadmium Concentrations mg/kg



Estimated Soil Chemistry Cadmium - Slice A

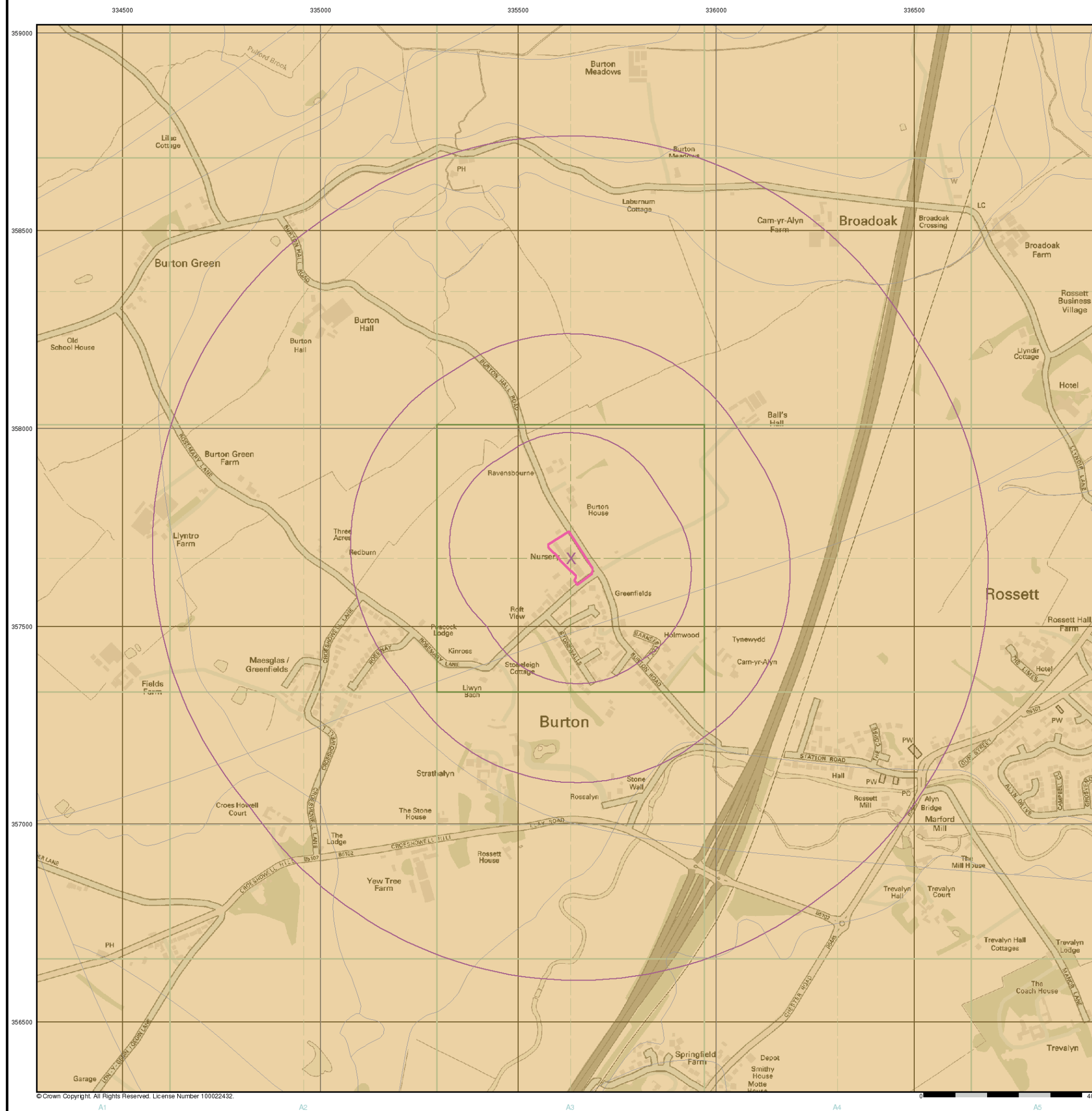


Order Details

Order Details: 56795519_1_1
Customer Ref: 1583
National Grid Reference: 335630, 357670
Slice: A
Site Area (Ha): 0.69
Search Buffer (m): 1000

Site Details

Site at, Rossett, Wrexham





A20

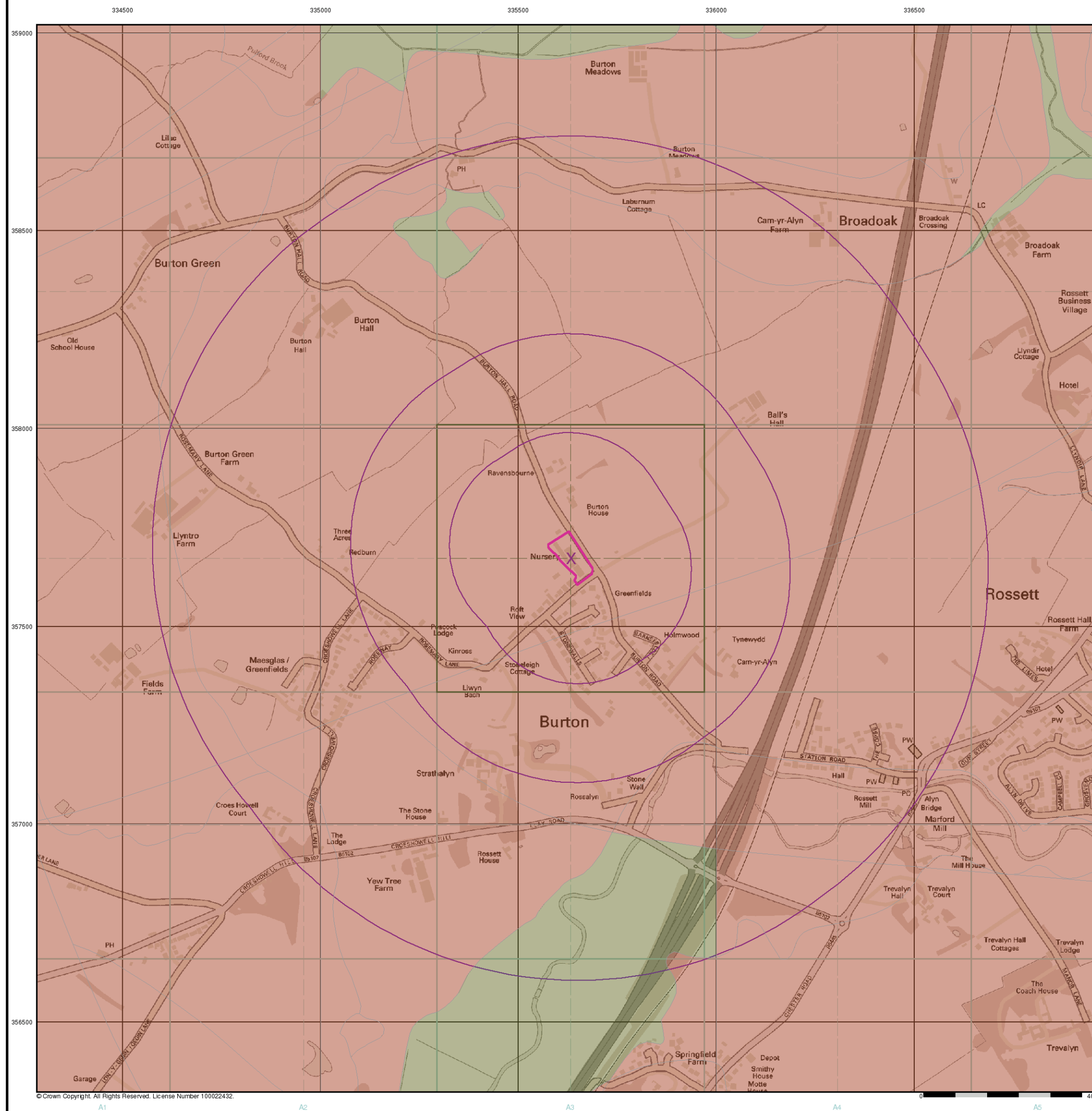
X Bearing Reference Point

[illegible]

A20

[illegible]

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Fax: 0844 844 9951
Web: www.envirocheck.co.uk

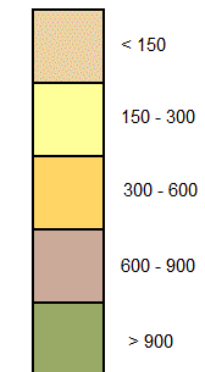


General

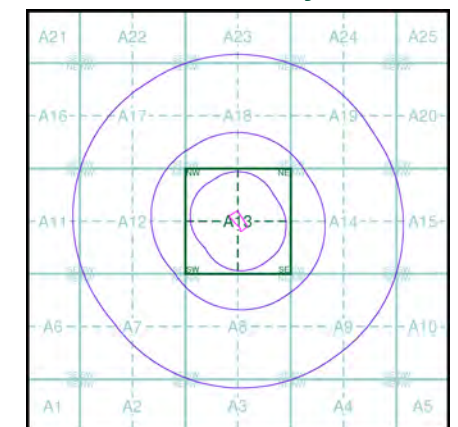
 Specified Site  Specified Buffer(s)  Bearing Reference Point

Estimated Soil Chemistry Lead

Lead Concentrations mg/kg



Estimated Soil Chemistry Lead - Slice A



Order Details

Order Details: 56795519_1_1
Customer Ref: 1583
National Grid Reference: 335630, 357670
Slice: A
Site Area (Ha): 0.69
Search Buffer (m): 1000

Site Details

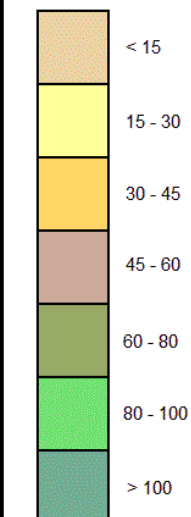
Site at, Rossett, Wrexham

General

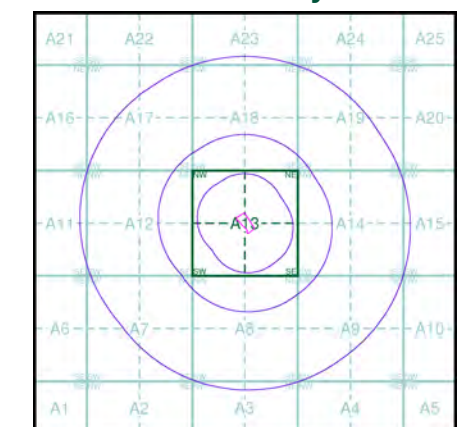
 Specified Site
  Specified Buffer(s)
  Bearing Reference Point

Estimated Soil Chemistry Nickel

Nickel Concentrations mg/kg



Estimated Soil Chemistry Nickel - Slice A

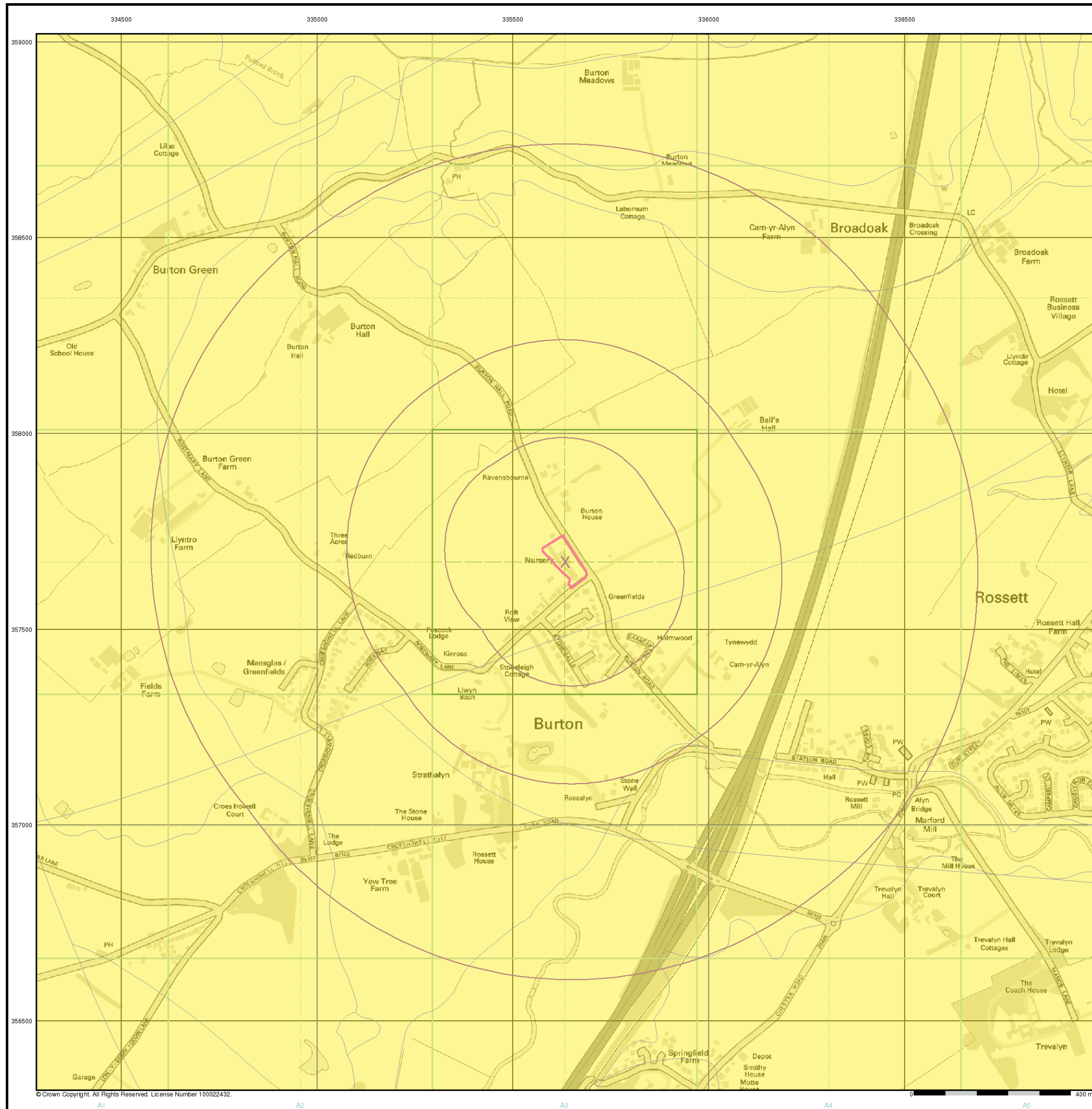


Order Details

Order Details: 56795519_1_1
 Customer Ref: 1583
 National Grid Reference: 335630, 357670
 Slice: A
 Site Area (Ha): 0.69
 Search Buffer (m): 1000

Site Details

Site at, Rossett, Wrexham



APPENDIX C

Trial Pit Logs and Soakaway Test Results

<i>GroundSolve Ltd</i>		Project: Burton Hall Rd, Rossett	Trial Pit: TP01
Excavation date: 27/05/14	Logged by: APJ	Client: Mytton Homes Ltd.	Project ID: 1583
Strata:			Sheet 1 of 1
Depth (m)		Description	Samples
From	To		
0	0.3	Loose dark brown organic TOPSOIL	
0.3	0.7	Loose and loose to medium dense reddish brown slightly silty slightly gravelly to gravelly SAND (RIVER TERRACE DEPOSITS)	
0.7	2.4	Medium dense reddish brown very gravelly SAND grading into sandy to very sandy GRAVEL, with occasional cobbles. Gravel and cobbles are fine to coarse and generally sub rounded (RIVER TERRACE DEPOSITS)	
Excavated by JCB excavator - Plan dimensions of pit – 1.0m x 1.4m Groundwater – Dry Stability – Generally stable, some localised overbreak Visual or olfactory evidence of contamination - No			

GroundSolve Ltd

Project:

Burton Hall Rd, Rossett

Trial Pit:

TP01

Trial Pit Photographs:



<i>GroundSolve Ltd</i>		Project: Burton Hall Rd, Rossett	Trial Pit: TP02
Excavation date: 27/05/14	Logged by: APJ	Client: Mytton Homes Ltd.	Project ID: 1583
Strata:			Sheet 1 of 1
Depth (m)		Description	Samples
From	To		
0	0.32	Loose dark brown organic TOPSOIL	
0.32	0.8	Loose to medium dense reddish brown slightly silty slightly gravelly to gravelly SAND (RIVER TERRACE DEPOSITS)	
0.8	2.4	Medium dense reddish brown very gravelly SAND grading into sandy to very sandy GRAVEL, with occasional cobbles. Gravel and cobbles are fine to coarse and generally sub rounded (RIVER TERRACE DEPOSITS)	
2.4	2.6	Stiff reddish brown slightly sandy CLAY with localised fine gravel fragments (GLACIAL TILL)	
Excavated by JCB excavator Plan dimensions of pit – 2.2m x 1.6m Groundwater – Dry Stability – continuous spalling of sidewalls after approximately 2.00m. Soakaway test cancelled due to collapsing sidewalls. Visual or olfactory evidence of contamination - No			

GroundSolve Ltd

Project:

Burton Hall Rd, Rossett

Trial Pit:

TP02

Trial Pit Photographs:





Clay below 2.4m



<i>GroundSolve Ltd</i>		Project: Burton Hall Rd, Rossett	Trial Pit: TP03
Excavation date: 27/05/14	Logged by: APJ	Client: Mytton Homes Ltd.	Project ID: 1583
Strata:			Sheet 1 of 1
Depth (m)		Description	Samples
From	To		
0	0.55	Loose dark brown organic TOPSOIL, possibly supplemented by compost	
0.55	1.15	Loose reddish brown slightly silty slightly gravelly SAND SAND (RIVER TERRACE DEPOSITS)	
1.15	1.95	Medium dense reddish brown very sandy GRAVEL, with occasional cobbles. Gravel and cobbles are fine to coarse and generally sub rounded (RIVER TERRACE DEPOSITS)	
		Trial pit terminated at 1.95m due to risk of undermining adjacent greenhouse foundations due to spalling sidewalls	
Excavated by JCB excavator - Plan dimensions of pit - Groundwater – Dry Stability – sidewalls spalling when pit at 1.6m Visual or olfactory evidence of contamination - No			

GroundSolve Ltd

Project:

Burton Hall Rd, Rossett

Trial Pit:

TP03

Trial Pit Photographs:



GroundSolve Ltd

Project:

Burton Hall Rd, Rossett

Trial Pit:

TP03



<i>GroundSolve Ltd</i>		Project: Burton Hall Rd, Rossett		Trial Pit: TP04
Excavation date: 27/05/14		Logged by: APJ		Client: Mytton Homes Ltd.
				Project ID: 1583
Strata:				Sheet 1 of 1
Depth (m)		Description		Samples
From	To			
0	2.0	Loose dark brown organic TOPSOIL / COMPOST with rare localised horizons of ash, localised plastic flower pot containers, and labels, localised fragments of earthenware pots, single fragment of corrugated steel sheet (250mm x 80mm) and rare pieces of polythene sheets. (NURSERY COMPOST HEAP)		
Excavated by JCB excavator - Plan dimensions of pit - Groundwater – Dry Stability – Visual or olfactory evidence of contamination – No; ash derived from burning of plants.				

GroundSolve Ltd

Project:

Burton Hall Rd, Rossett

Trial Pit:

TP04

Trial Pit Photographs:



<i>GroundSolve Ltd</i>		Project: Burton Hall Rd, Rossett	Trial Pit: TP05
Excavation date: 27/05/14	Logged by: APJ	Client: Mytton Homes Ltd.	Project ID: 1583
Strata:			Sheet 1 of 1
Depth (m)		Description	Samples
From	To		
0	0.02	Fine gravel aggregate (HARDSTANDING)	
0.02	0.5	Loose brown organic TOPSOIL with localised sand, ash and whole bricks (REWORKED TOPSOIL)	
0.5	1.3	Loose reddish brown slightly gravelly silty SAND. Strata is very wet (RIVER TERRACE DEPOSITS – POSSIBLY REWORKED)	
1.3	2.25	Medium dense to dense reddish brown sandy GRAVEL, with occasional cobbles. Gravel and cobbles are fine to coarse and generally sub rounded (RIVER TERRACE DEPOSITS)	
		Soakaway test carried out on completion of pit	
Excavated by JCB excavator - Plan dimensions of pit – 1.1m x 1.7m Groundwater – Dry Stability – localised spalling below 1.3m Visual or olfactory evidence of contamination - No			

GroundSolve Ltd

Project:

Burton Hall Rd, Rossett

Trial Pit:

TP05

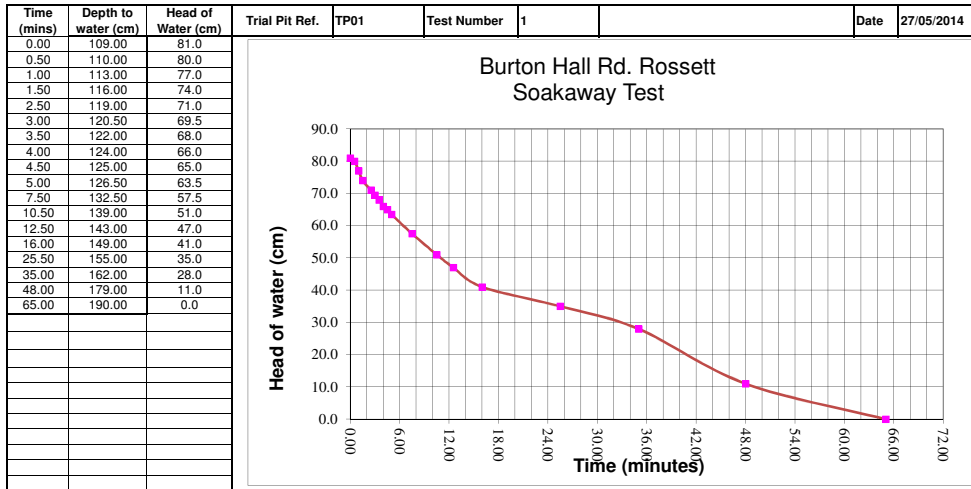
Trial Pit Photographs:



<i>GroundSolve Ltd</i>		Project: Burton Hall Rd, Rossett	Trial Pit: TP06
Excavation date: 27/05/14	Logged by: APJ	Client: Mytton Homes Ltd.	Project ID: 1583
Strata:			Sheet 1 of 1
Depth (m)		Description	Samples
From	To		
0	0.4	Loose grey slightly gravelly slightly silty SAND, with localised roots (RIVER TERRACE DEPOSITS – POSSIBLY REWORKED)	0.1 – 0.2m (Chem.)
0.4	0.7	Loose to medium dense reddish brown slightly gravelly slightly silty SAND (RIVER TERRACE DEPOSITS)	0.45 – 0.55m (Chem.)
		Pit terminated in natural strata below zone of contamination	
Excavated by JCB excavator - Plan dimensions of pit – 0.8m x 1.2m Groundwater – Dry Stability – stable Visual or olfactory evidence of contamination – strong hydrocarbon smell in upper 0.4m			

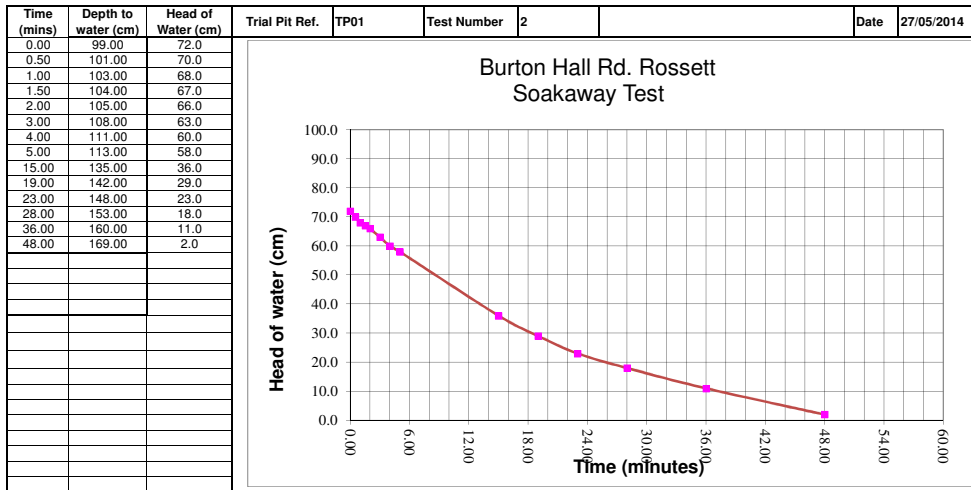
Trial Pit Photographs:





Depth (cm)	Length (cm)	Width (cm)	Head at 75% Vol (cm)	Head at 25% Vol (cm)	Water depth(l=0) (cm)	Effective Area Ap50 m2	Vp75-Vp25 Volume of water m3	Adjustment Factor *	t75 (mins)	t25 (mins)	Infiltration rate m/s
190.00	170.00	100.00	60.750	20.25	81.00	3.887	0.689	1.00	6	40	8.683E-05

* with gravel filter adjustment factor = 0.30, with no filter = 1.0, with pipe = 0.5



Depth (cm)	Length (cm)	Width (cm)	Head at 75% Vol (cm)	Head at 25% Vol (cm)	Water depth(l=0) (cm)	Effective Area Ap50 m2	Vp75-Vp25 Volume of water m3	Adjustment Factor *	t75 (mins)	t25 (mins)	Infiltration rate m/s
171.00	170.00	100.00	54.000	18.00	72.00	3.644	0.612	1.00	7	28	1.333E-04

* with gravel filter adjustment factor = 0.30, with no filter = 1.0, with pipe = 0.5

Summary of Results			Comment
TP	Test	Infiltration Rate (m/s)	
TP01	1	8.683E-05	
TP01	2	1.333E-04	

[illegible]

Depth	Length	Width	Head at 75% Vol	Head at 25% Vol	Water depth(l=0)	Effective Area	Vp75-Vp25	Adjustment Factor *	175	125	Infiltration
(cm)	(cm)	(cm)	(cm)	(cm)	(cm)	Ap50 m2	Volume of water m3		(mins)	(mins)	rate m/s
210.00	170.00	110.00	78.000	26.00	104.00	4.782	0.972	1.00	4.5	35	1.111E-04

* with gravel filter adjustment factor = 0.30, with no filter = 1.0, with pipe = 0.5

[illegible]

Depth	Length	Width	Head at 75% Vol	Head at 25% Vol	Water depth(t=0)	Effective Area	Vp75-Vp25	Adjustment Factor *	t75	t25	Infiltration
(cm)	(cm)	(cm)	(cm)	(cm)	(cm)	Ap50 m2	Volume of water m3		(mins)	(mins)	rate m/s
202.00	170.00	110.00	78.000	26.00	104.00	4.782	0.972	1.00	7	46	8.690E-05

* with gravel filter adjustment factor = 0.30, with no filter = 1.0, with pipe = 0.5

Summary of Results			Comment
TP	Test	Infiltration Rate (m/s)	
TP05	1	1.111E-04	
TP05	2	8.690E-05	

APPENDIX D

Physical Test Results

GroundSolve LTD
Unit 2, The Old School
Brynsiencyn
Llanfairpwll
Anglesey
LL61 6HZ
Contract: Rossett

Date: 16 June 2014
Test Report Ref: STR 370817

Page 1 of 1

LABORATORY TEST REPORT

TEST REQUIREMENTS:

To determine the Dry Density and Moisture Content Relationship of soil passing 20mm sieve 2.5kg Rammer Method in accordance with BS 1377: 4: 1990 Clause 3.4

SAMPLE DETAILS:

Certificate of sampling received: **No**
Laboratory Ref. No: **S47594**
Client Ref.: **TP05 @ 1.5 - 1.7m**
Date and Time of Sampling: **28/05/2014**
Date of Receipt at Lab: **28/05/2014**
Date of Start of Test: **03/06/2014**
Sampling Location: **TP05 @ 1.5 - 1.7m**
Soil Description: **Brown silty SAND & GRAVEL**

Name of Source: **Site Won**
Method of Sampling: **Disturbed Bulk Sample**
Sampled By: **Client**

RESULTS:

Were any unrepresentative lumps present?

No

Sample Preparation Procedure:

Zone X

Sample Preparation Method:

Single

Particle Density:

2.73Mg/m³ (Assumed)

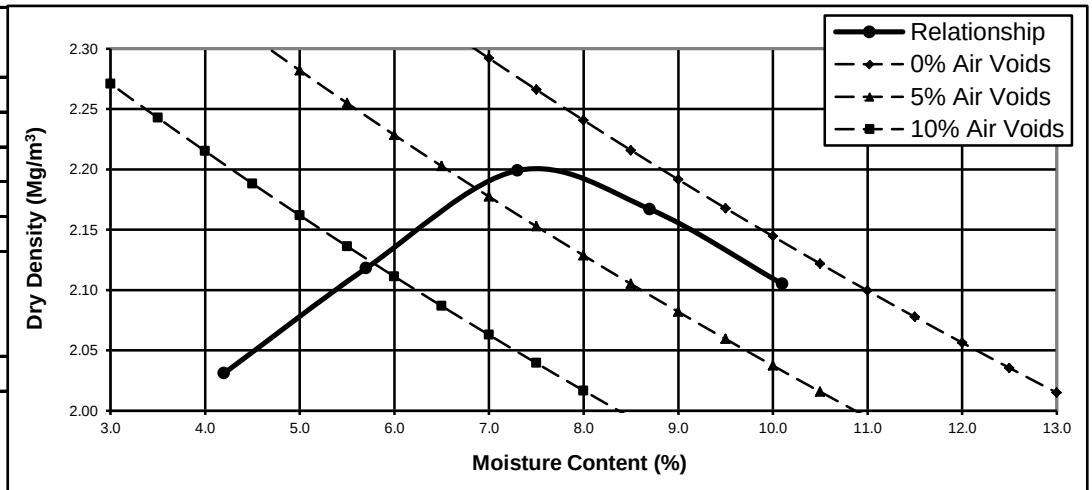
Amount of sample retained on 37.5mm test sieve:

47 %

Amount of sample retained on 20mm test sieve:

55 %

Moisture Content (%)	Dry Density Mg/m ³
4.2	2.03
5.7	2.12
7.3	2.20
8.7	2.17
10.1	2.11
Optimum Moisture Content (%)	Maximum Dry Density Mg/m ³
7.5	2.2



Comments

None

Certificate
Prepared by:-

Meical Owen
Meical Owen

Assistant Laboratory Manager

Approved by:

Eric Goulden

Eric Goulden

Technical Manager

Trefelin Bangor Gwynedd LL57 4LH T +44 (0)1248 355269 F +44 (0)1248 351563 E postmaster@celtest.com W www.celtest.com

GroundSolve LTD
Unit 2, The Old School
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LL61 6HZ

Contract: Rossett

Date: 16 June 2014
Test Report Ref: STR 370809

Page 1 of 1

LABORATORY TEST REPORT

TEST REQUIREMENTS:

To determine the Sulphate Content of Soil in accordance with
BS 1377: Part 3: 1990: Clause 5.5 (Gravimetric Method)

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	S47594
Client Ref. No:	TP01 @ 1.2m
Date and Time of Sampling:	28/05/2014
Date of Receipt at Lab:	28/05/2014
Date of Start of Test:	06/06/2014
Sampling Location:	TP01 @ 1.2m
Name of Source:	Site Won
Method of Sampling:	Disturbed Bulk Sample
Sampled By:	Client
Material Description:	Brown silty SAND & GRAVEL
Target Specification	N/A

RESULTS:

	Results	95% Confidence limit*
Mass of soil passing 2.0mm test sieve	68 %	
Water Soluble Sulphate as SO ₃	<0.01 %	0.01% - 0.01%
Water Soluble Sulphate as SO ₃	<0.1 g/L	0.01% - 0.01%

Comments

*95% Confidence limit is the expanded uncertainty which is the combined uncertainty standard multiplied by a factor (k) of 2

Certificate

Prepared by:-



Meical Owen
Assistant Soils Manager

Approved by: -



Eric Goulden
Technical Manager

GroundSolve LTD
Unit 2, The Old School
Brynsiencyn
Llanfairpwll
Anglesey
LL61 6HZ

Contract: Rossett

Date: 16 June 2014
Test Report Ref: STR 370808

Page 1 of 1

LABORATORY TEST REPORT

TEST REQUIREMENTS:

To determine the pH Value of Soils in accordance with
BS 1377:Part 3:1990 - Clause 9, Electrometric Method.

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	S47594
Client Ref. No:	TP01 @ 1.2m
Date and Time of Sampling:	28/05/2014
Date of Receipt at Lab:	28/05/2014
Date of Start of Test:	03/06/2014
Sampling Location:	TP01 @ 1.2m
Name of Source:	Site Won
Method of Sampling:	Disturbed Bulk Sample
Sampled By:	Client
Material Description:	Brown silty SAND & GRAVEL
Target Specification:	N/A

RESULTS:

pH Value =	7.0
<i>95% Confidence limit*</i>	<i>6.82% - 7.18%</i>

Comments

*95% Confidence limit is the expanded uncertainty which is the combined uncertainty standard multiplied by a factor (k) of 2

Certificate

Prepared by:-



Meical Owen
Assistant Laboratory Manager

Approved by: -



Eric Goulden
Technical Manager

GroundSolve LTD
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Brynsiencyn
Llanfairpwll
Anglesey
LL61 6HZ
Contract: Rossett

Date: 16 June 2014
Test Report Ref: STR 370807

Page 1 of 1

LABORATORY TEST REPORT

TEST REQUIREMENTS:

To determine the Moisture Content of a soil sample
(definitive oven-drying method) in accordance with
BS 1377 : Part 2 : 1990 : clause 3.2

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	S47594
Client Ref. No:	TP01 @ 1.2m
Date and Time of Sampling:	28/05/2014
Date of Receipt at Lab:	28/05/2014
Date of Start of Test:	03/06/2014
Sampling Location:	TP01 @ 1.2m
Name of Source:	Site Won
Method of Sampling:	Disturbed Bulk Sample
Sampled By:	Client
Material Description:	Brown silty SAND & GRAVEL
Target Specification:	N/A

RESULTS:

Moisture Content (%) = 6.4

Comments

None

Certificate
Prepared by:-



Meical Owen
Assistant Laboratory Manager

Approved by: -



Eric Goulden
Technical Manager

Rossett

SUMMARY OF TEST RESULTS

Contract:[illegible]

results to Mike Scott

mikescott@groundsolve.com

GroundSolve LTD
Unit 2, The Old School
Brynsiencyn
Llanfairpwll
Anglesey
LL61 6HZ
Contract: Rossett

Date: 16 June 2014
Test Report Ref: STR 370815

Page 1 of 1

LABORATORY TEST REPORT

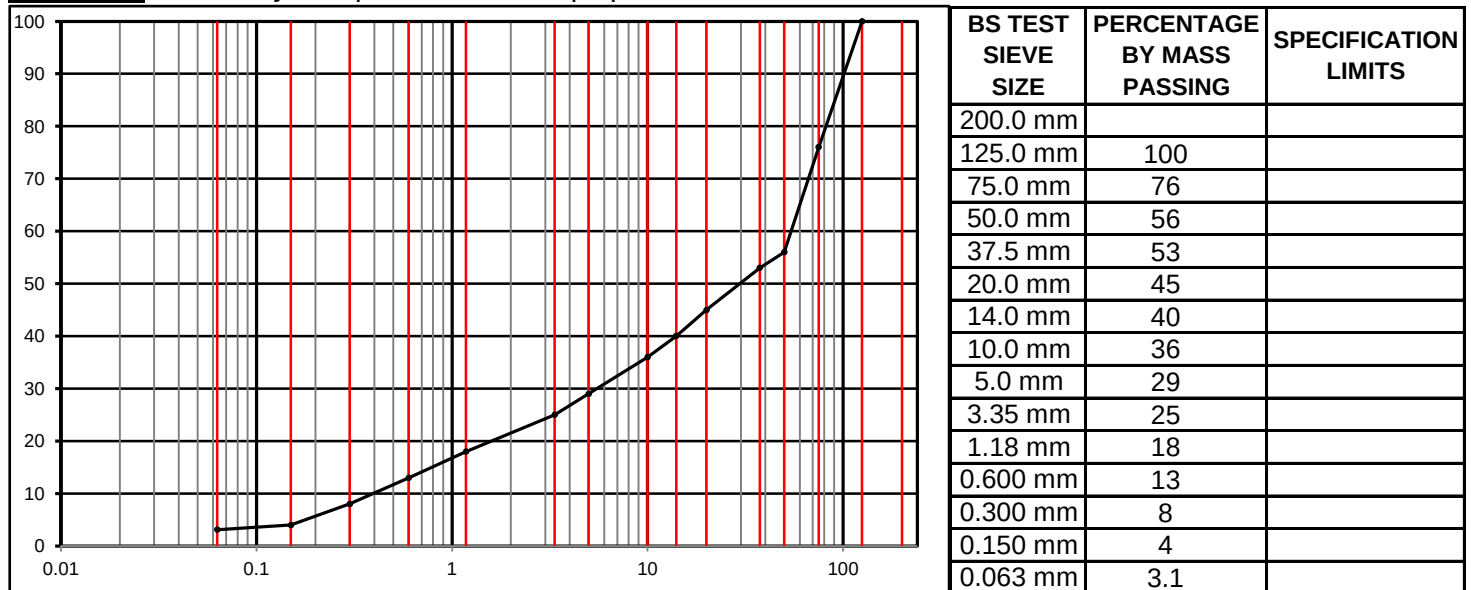
TEST REQUIREMENTS:

To determine the Particle Size Distribution (PSD) of a soil sample-washing and sieving method in accordance with **BS1377-Part2-1990**

SAMPLE DETAILS:

Certificate of sampling received	No	Name of Source:	Site Won
Laboratory Ref. No:	S47594	Method of Sampling:	Disturbed Bulk Sample
Client Ref. No:	TP05 @ 1.5 - 1.7m	Sampled By:	Client
Date and Time of Sampling:	28/05/2014		
Date of Receipt at Lab:	28/05/2014		
Date of Start of Test:	03/06/2014		
Sampling Location:	TP05 @ 1.5 - 1.7m		
Material Description:	Brown silty SAND & GRAVEL		
Target Specification:	N/A		

RESULTS: Were any unrepresentative lumps present? No



Comments

None

Certificate
Prepared by:- 
Meical Owen
Assistant Laboratory Manager

Approved by: - 
Eric Goulden
Technical Manager

GroundSolve LTD
Unit 2, The Old School
Brynsiencyn
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LL61 6HZ
Contract: Rossett

Date: 16 June 2014
Test Report Ref: STR 370810

Page 1 of 2

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Particle Size Distribution (PSD) of a soil sample-
washing and sieving method in accordance with **BS1377-Part2-1990 Clause 9.2**
Sedimentation by pipette method to **BS 1377: Part 2: 1990: clause 9.4.**

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	S47594
Client Ref. No:	TP03 @ 0.8 - 1.1m
Date and Time of Sampling:	28/05/2014
Date of Receipt at Lab:	28/05/2014
Date of Start of Test:	03/06/2014
Sampling Location:	TP03 @ 0.8 - 1.1m
Name of Source:	Site Won
Method of Sampling:	Disturbed Bulk Sample
Sampled By:	Client
Material Description:	Brown slightly clayey silty gravelly SAND
Target Specification:	N/A

RESULTS:

SEE ATTACHED

Comments

None

Certificate
Prepared by:- 
Meical Owen
Assistant Laboratory Manager

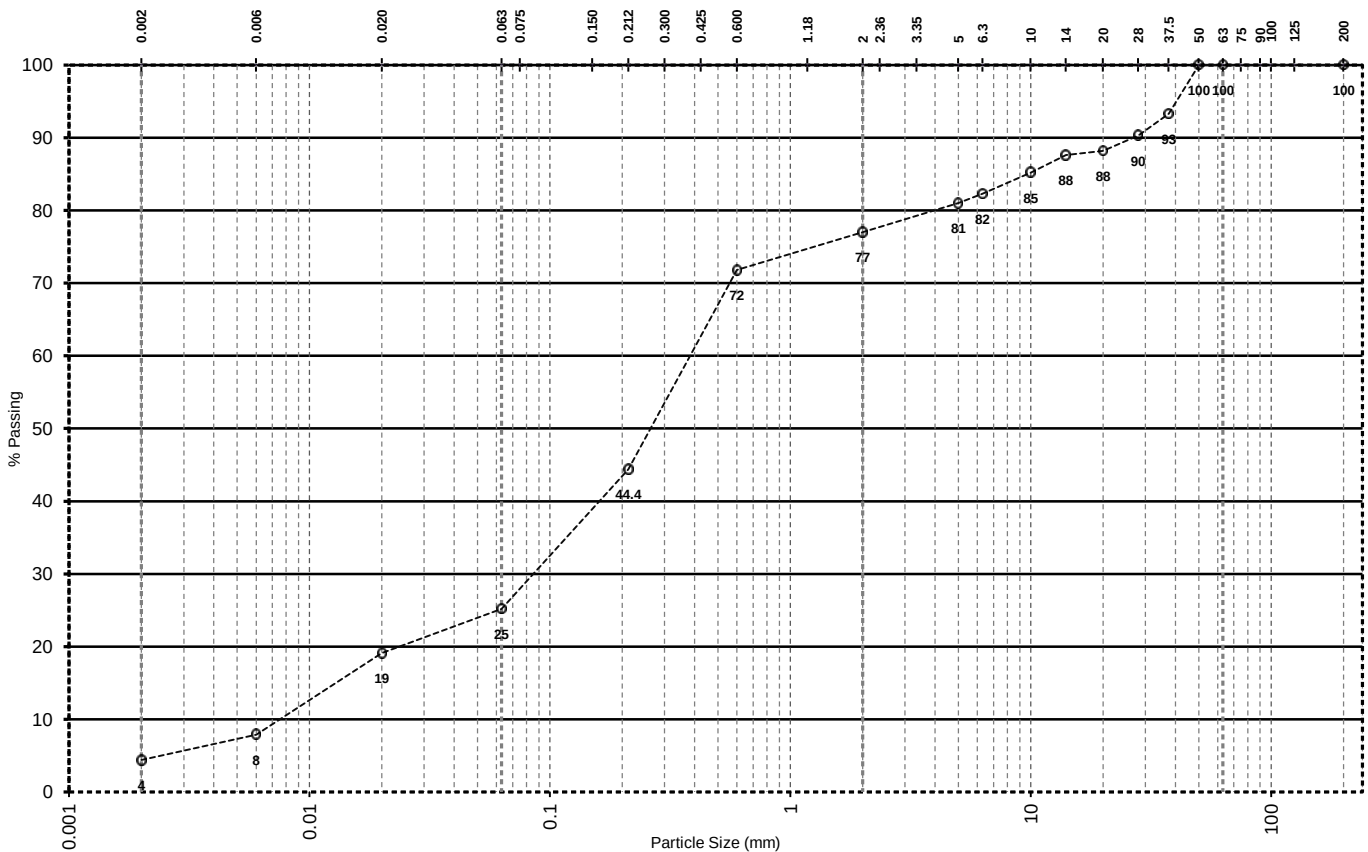
Approved by: - 
Eric Goulden
Technical Manager

Test Report Ref: STR 370810: Page 2 of 2

MATERIAL DESCRIPTION

Brown slightly clayey silty gravelly SAND

Method of pre-treatment:		N/A			
Sieve Size mm	% Passing	Sieve Size mm	% Passing	Cobbles	0.0
				Gravel	23.0
				Sand	51.8
				Silt	20.8
				Clay	4.4
200	100.0	3.35			
125		2.36			
100		2.0	77.0		
90		1.18			
75		0.600	71.8		
63	100.0	0.425			
50	100.0	0.300			
37.5	93.3	0.212	44.4		
28	90.3	0.150			
20	88.2	0.075			
14	87.6	0.063	25.2		
10	85.2	0.020	19.1		
6.3	82.3	0.006	7.9		
5.0	81.0	0.002	4.4		



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES
	0.002	0.006	0.02	0.063	0.2	0.63	2.0	6.3	20	
	SILT			SAND			GRAVEL			
										63 200

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LL61 6HZ
Contract: Rossett

Date: 16 June 2014
Test Report Ref: STR 370806

Page 1 of 1

LABORATORY TEST REPORT

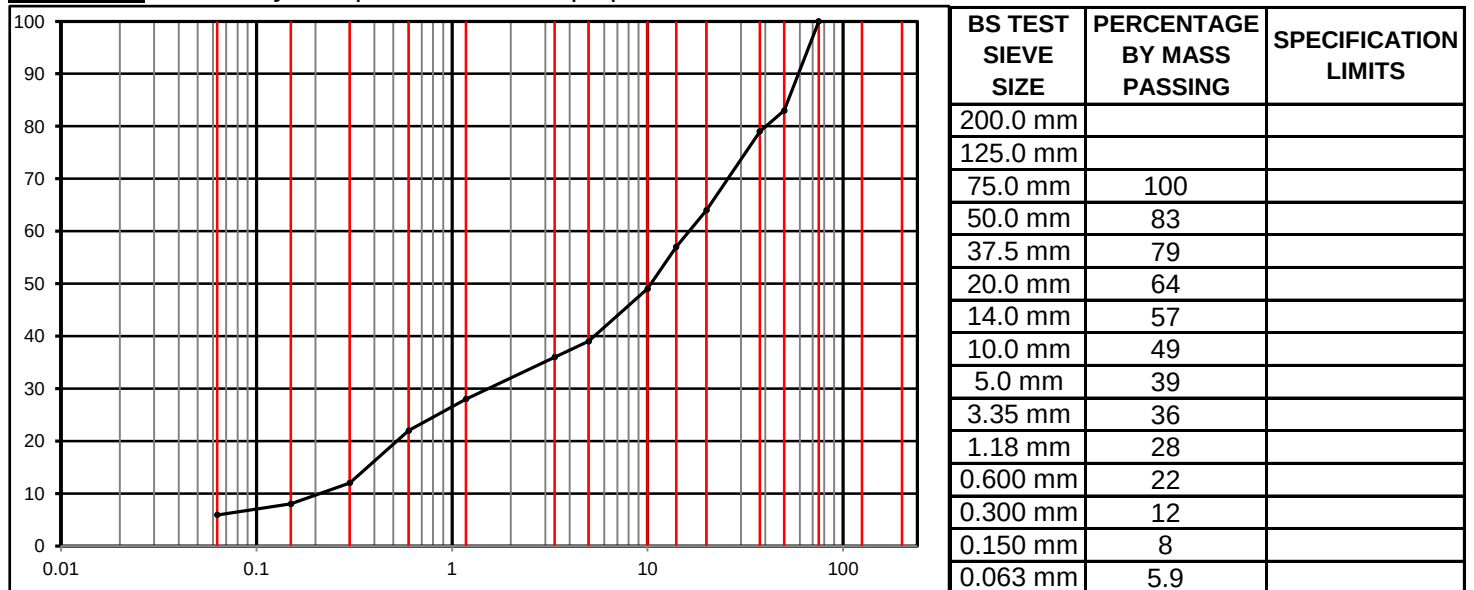
TEST REQUIREMENTS:

To determine the Particle Size Distribution (PSD) of a soil sample-washing and sieving method in accordance with **BS1377-Part2-1990**

SAMPLE DETAILS:

Certificate of sampling received	No	Name of Source:	Site Won
Laboratory Ref. No:	S47594	Method of Sampling:	Disturbed Bulk Sample
Client Ref. No:	TP01 @ 1.2m	Sampled By:	Client
Date and Time of Sampling:	28/05/2014		
Date of Receipt at Lab:	28/05/2014		
Date of Start of Test:	03/06/2014		
Sampling Location:	TP01 @ 1.2m		
Material Description:	Brown silty SAND & GRAVEL		
Target Specification:	N/A		

RESULTS: Were any unrepresentative lumps present? No



Comments

None

Certificate
Prepared by:- 
Meical Owen
Assistant Laboratory Manager

Approved by:- 
Eric Goulden
Technical Manager

GroundSolve LTD
Unit 2, The Old School
Brynsiencyn
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LL61 6HZ
Contract: Rossett

Date: 16 June 2014
Test Report Ref: STR 370816

Page 1 of 1

LABORATORY TEST REPORT

TEST REQUIREMENTS:

To determine the Moisture Content of a soil sample
(definitive oven-drying method) in accordance with
BS 1377 : Part 2 : 1990 : clause 3.2

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	S47594
Client Ref. No:	TP05 @ 1.5 - 1.7m
Date and Time of Sampling:	28/05/2014
Date of Receipt at Lab:	28/05/2014
Date of Start of Test:	03/06/2014
Sampling Location:	TP05 @ 1.5 - 1.7m
Name of Source:	Site Won
Method of Sampling:	Disturbed Bulk Sample
Sampled By:	Client
Material Description:	Brown silty SAND & GRAVEL
Target Specification:	N/A

RESULTS:

Moisture Content (%) = 4.5

Comments

None

Certificate
Prepared by:-



Meical Owen
Assistant Laboratory Manager

Approved by: -



Eric Goulden
Technical Manager

GroundSolve LTD
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Anglesey
LL61 6HZ

Contract: Rossett

Date: 16 June 2014
Test Report Ref: STR 370814

Page 1 of 1

LABORATORY TEST REPORT

TEST REQUIREMENTS:

To determine the Sulphate Content of Soil in accordance with
BS 1377: Part 3: 1990: Clause 5.5 (Gravimetric Method)

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	S47594
Client Ref. No:	TP03 @ 0.8 - 1.1m
Date and Time of Sampling:	28/05/2014
Date of Receipt at Lab:	28/05/2014
Date of Start of Test:	06/06/2014
Sampling Location:	TP03 @ 0.8 - 1.1m
Name of Source:	Site Won
Method of Sampling:	Disturbed Bulk Sample
Sampled By:	Client
Material Description:	Brown slightly clayey silty gravelly SAND
Target Specification	N/A

RESULTS:

	Results	95% Confidence limit*
Mass of soil passing 2.0mm test sieve	23 %	
Water Soluble Sulphate as SO ₃	<0.01 %	0.01% - 0.01%
Water Soluble Sulphate as SO ₃	<0.1 g/L	0.01% - 0.01%

Comments

*95% Confidence limit is the expanded uncertainty which is the combined uncertainty standard multiplied by a factor (k) of 2

Certificate
Prepared by:-

Approved by: - 

Eric Goulden
Technical Manager

GroundSolve LTD
Unit 2, The Old School
Brynsiencyn
Llanfairpwll
Anglesey
LL61 6HZ
Contract: Rossett

Date: 16 June 2014
Test Report Ref: STR 370813

Page 1 of 1

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the pH Value of Soils in accordance with
BS 1377:Part 3:1990 - Clause 9, Electrometric Method.

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	S47594
Client Ref. No:	TP03 @ 0.8 - 1.1m
Date and Time of Sampling:	28/05/2014
Date of Receipt at Lab:	28/05/2014
Date of Start of Test:	03/06/2014
Sampling Location:	TP03 @ 0.8 - 1.1m
Name of Source:	Site Won
Method of Sampling:	Disturbed Bulk Sample
Sampled By:	Client
Material Description:	Brown slightly clayey silty gravelly SAND
Target Specification:	N/A

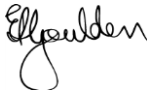
RESULTS:

pH Value =	6.7
95% Confidence limit*	6.53% - 6.87%

Comments

*95% Confidence limit is the expanded uncertainty which is the combined uncertainty standard multiplied by a factor (k) of 2

Certificate
Prepared by:- 
Meical Owen
Assistant Laboratory Manager

Approved by: - 
Eric Goulden
Technical Manager

GroundSolve LTD
Unit 2, The Old School
Brynsiencyn
Llanfairpwll
Anglesey
LL61 6HZ
Contract: Rossett

Date: 16 June 2014
Test Report Ref: STR 370812

Page 1 of 1

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Plastic Limit, Liquid Limit, and Plasticity Index of sample in accordance with
BS 1377:Part 2:1990 Clause 5.3, Clause 4.3, and Clause 5.4.

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	S47594
Client Ref. :	TP03 @ 0.8 - 1.1m
Date and Time of Sampling:	28/05/2014
Date of Receipt at Lab:	28/05/2014
Date of Start of Test:	03/06/2014
Sampling Location:	TP03 @ 0.8 - 1.1m
Name of Source:	Site Won
Method of Sampling:	Disturbed Bulk Sample
Sampled By:	Client
Soil Description:	Brown slightly clayey silty gravelly SAND
Target Specification:	N/A

RESULTS:

History of sample:	:	Natural state/After wet sieving
% Materials passing 425µm	=	56
Plastic Limit	=	Non-Plastic
Liquid Limit	=	N/A
Plasticity Index	=	N/A

Comments

None

Certificate
Prepared by:-



Meical Owen
Assistant Laboratory Manager

Approved by:



Eric Goulden
Technical Manager

GroundSolve LTD
Unit 2, The Old School
Brynsiencyn
Llanfairpwll
Anglesey
LL61 6HZ
Contract: Rossett

Date: 16 June 2014
Test Report Ref: STR 370811

Page 1 of 1

LABORATORY TEST REPORT

TEST REQUIREMENTS:

To determine the Moisture Content of a soil sample
(definitive oven-drying method) in accordance with
BS 1377 : Part 2 : 1990 : clause 3.2

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	S47594
Client Ref. No:	TP03 @ 0.8 - 1.1m
Date and Time of Sampling:	28/05/2014
Date of Receipt at Lab:	28/05/2014
Date of Start of Test:	03/06/2014
Sampling Location:	TP03 @ 0.8 - 1.1m
Name of Source:	Site Won
Method of Sampling:	Disturbed Bulk Sample
Sampled By:	Client
Material Description:	Brown slightly clayey silty gravelly SAND
Target Specification:	N/A

RESULTS:

Moisture Content (%) = 14.4

Comments

None

Certificate
Prepared by:-



Meical Owen
Assistant Laboratory Manager

Approved by: -



Eric Goulden
Technical Manager

APPENDIX E

Chemical Test Results



Ground Solve
Unit 7
Well House Barns
Chester Road
Bretton
Cheshire
CH4 0DH

Attention: Alan Jones

CERTIFICATE OF ANALYSIS

Date: 08 June 2014
Customer: H_GRSOLVE_BRE
Sample Delivery Group (SDG): 140528-14
Your Reference: 1583
Location: Rossett
Report No: 272703

We received 6 samples on Tuesday May 27, 2014 and 6 of these samples were scheduled for analysis which was completed on Sunday June 08, 2014. 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.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:

Sonia McWhan

Operations Manager





SDG:	140528-14	Location:	Rossett	Order Number:	1583/apj/alcontrol
Job:	H_GRSOLVE_BRE-102	Customer:	Ground Solve	Report Number:	272703
Client Reference:	1583	Attention:	Alan Jones	Superseded Report:	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
9350379	TP01		0.10 - 0.20	27/05/2014
9350381	TP03		0.20 - 0.30	27/05/2014
9350383	TP04		0.80 - 1.00	27/05/2014
9350384	TP05		0.20 - 0.30	27/05/2014
9350385	TP06		0.10 - 0.20	27/05/2014
9350386	TP06		0.45 - 0.55	27/05/2014

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



CERTIFICATE OF ANALYSIS

SDG: 140528-14
Job: H_GRSOLVE_BRE-102
Client Reference: 1583

Location: Rossett
Customer: Ground Solve
Attention: Alan Jones

Order Number: 1583/apj/alcontrol
Report Number: 272703
Superseded Report:

SOLID**Results Legend**

Test

No Determination
Possible**Lab Sample No(s)****Customer
Sample Reference****AGS Reference****Depth (m)****Container**

9350386	TP06		0.45 - 0.55	60g VOC (ALE215)
9350385	TP06		0.10 - 0.20	250g Amber Jar (AL)
9350384	TP05		0.20 - 0.30	250g VOC (ALE215)
9350383	TP04		0.80 - 1.00	250g Amber Jar (AL)
9350381	TP03		0.20 - 0.30	250g Amber Jar (AL)
9350379	TP01		0.10 - 0.20	250g Amber Jar (AL)

Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	
Easily Liberated Sulphide	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	
Elemental Sulphur	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 3				X	X	X	
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 3				X	X	X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3					X	X	X
Metals in solid samples by OES	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	
PAH by GCMS	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	
pH	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	
Sample description	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	
Total Organic Carbon	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	
Total Sulphate	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 3				X	X	X	



SDG:	140528-14	Location:	Rossett	Order Number:	1583/apj/alcontrol
Job:	H_GRSOLVE_BRE-102	Customer:	Ground Solve	Report Number:	272703
Client Reference:	1583	Attention:	Alan Jones	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	Grain size	Inclusions	Inclusions 2
9350379	TP01	0.10 - 0.20	Dark Brown	Sandy Silt Loam	0.1 - 2 mm	Vegetation	Stones
9350381	TP03	0.20 - 0.30	Dark Brown	Sandy Silt Loam	0.1 - 2 mm	Vegetation	Stones
9350383	TP04	0.80 - 1.00	Dark Brown	Loamy Sand	0.1 - 2 mm	Stones	None
9350384	TP05	0.20 - 0.30	Dark Brown	Sandy Silt Loam	0.1 - 2 mm	Vegetation	Stones
9350385	TP06	0.10 - 0.20	Dark Brown	Sandy Loam	0.1 - 2 mm	Glass & Stones	Vegetation
9350386	TP06	0.45 - 0.55	Dark Brown	Sandy Loam	0.1 - 2 mm	Vegetation	Stones

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

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

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

Order Number: 1583/apj/alcontrol
Report Number: 272703
Superseded Report:

Page 5 of 10

Order Number: 1583/apj/alcontrol
Report Number: 272703
Superseded Report:

Page 6 of 10



CERTIFICATE OF ANALYSIS

SDG: 140528-14
Job: H_GRSOLVE_BRE-102
Client Reference: 1583

Location: Rossett
Customer: Ground Solve
Attention: Alan Jones

Order Number: 1583/apj/alcontrol
Report Number: 272703
Superseded Report:

TPH CWG (S)

Results Legend		Customer Sample R	TP05	TP06	TP06			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	TP05	TP06	TP06			
M	mCERTS accredited.		0.20 - 0.30	0.10 - 0.20	0.45 - 0.55			
aq	Aqueous / settled sample.		Soil/Solid	Soil/Solid	Soil/Solid			
diss.filt	Dissolved / filtered sample.		27/05/2014	27/05/2014	27/05/2014			
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted test.		27/05/2014	27/05/2014	27/05/2014			
**	% 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		140528-14	140528-14	140528-14			
(F)	Trigger breach confirmed		9350384	9350385	9350386			
1-5&*\$@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
GRO Surrogate % recovery**	%	TM089	75	65	95			
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089	<44 M	21700 M	213 M			
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5 M	<5 M	<5 M			
Benzene	<10 µg/kg	TM089	<10 M	<10 M	<10 M			
Toluene	<2 µg/kg	TM089	<2 M	<2 M	<2 M			
Ethylbenzene	<3 µg/kg	TM089	<3 M	<3 M	<3 M			
m,p-Xylene	<6 µg/kg	TM089	<6 M	<6 M	<6 M			
o-Xylene	<3 µg/kg	TM089	<3 M	<3 M	<3 M			
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9	<9	<9			
sum of detected BTEX by GC	<24 µg/kg	TM089	<24	<24	<24			
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10	<10			
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	90.9	13.9			
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	4020	29			
Aliphatics >C10-C12	<10 µg/kg	TM089	<10	8950	84.7			
Aliphatics >C12-C16	<100 µg/kg	TM173	<100	288000	27100			
Aliphatics >C16-C21	<100 µg/kg	TM173	<100	475000	141000			
Aliphatics >C21-C35	<100 µg/kg	TM173	872	332000	71600			
Aliphatics >C35-C44	<100 µg/kg	TM173	<100	4610	<100			
Total Aliphatics >C12-C44	<100 µg/kg	TM173	872	1100000	240000			
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10			
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10			
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	2680	20.9			
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10	5970	56.8			
Aromatics >EC12-EC16	<100 µg/kg	TM173	1850	72800	4710			
Aromatics >EC16-EC21	<100 µg/kg	TM173	6970	216000	63000			
Aromatics >EC21-EC35	<100 µg/kg	TM173	22800	228000	67700			
Aromatics >EC35-EC44	<100 µg/kg	TM173	8220	12600	4320			
Aromatics >EC40-EC44	<100 µg/kg	TM173	2660	3780	1410			
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	39800	528000	140000			
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	40700	1650000	380000			



SDG: 140528-14
Job: H_GRSOLVE_BRE-102
Client Reference: 1583

Location: Rossett
Customer: Ground Solve
Attention: Alan Jones

Order Number: 1583/apj/alcontrol
Report Number: 272703
Superseded Report:

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing 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) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
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		
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	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
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		

¹ Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.



SDG: 140528-14
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Superseded Report:

Test Completion Dates

Lab Sample No(s)	9350379	9350381	9350383	9350384	9350385	9350386
Customer Sample Ref.	TP01	TP03	TP04	TP05	TP06	TP06
AGS Ref.						
Depth	0.10 - 0.20	0.20 - 0.30	0.80 - 1.00	0.20 - 0.30	0.10 - 0.20	0.45 - 0.55
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Cyanide Comp/Free/Total/Thiocyanate	30-May-2014	30-May-2014	30-May-2014	30-May-2014	30-May-2014	30-May-2014
Easily Liberated Sulphide	02-Jun-2014	02-Jun-2014	29-May-2014	29-May-2014	02-Jun-2014	02-Jun-2014
Elemental Sulphur	05-Jun-2014	05-Jun-2014	05-Jun-2014	05-Jun-2014	05-Jun-2014	05-Jun-2014
EPH CWG (Aliphatic) GC (S)				03-Jun-2014	03-Jun-2014	03-Jun-2014
EPH CWG (Aromatic) GC (S)				03-Jun-2014	03-Jun-2014	03-Jun-2014
GRO by GC-FID (S)				08-Jun-2014	08-Jun-2014	07-Jun-2014
Metals in solid samples by OES	05-Jun-2014	05-Jun-2014	05-Jun-2014	05-Jun-2014	05-Jun-2014	05-Jun-2014
PAH by GCMS	04-Jun-2014	04-Jun-2014	04-Jun-2014	04-Jun-2014	04-Jun-2014	04-Jun-2014
pH	02-Jun-2014	02-Jun-2014	03-Jun-2014	02-Jun-2014	03-Jun-2014	03-Jun-2014
Phenols by HPLC (S)	30-May-2014	30-May-2014	30-May-2014	30-May-2014	30-May-2014	30-May-2014
Sample description	28-May-2014	28-May-2014	28-May-2014	28-May-2014	28-May-2014	28-May-2014
Total Organic Carbon	04-Jun-2014	04-Jun-2014	04-Jun-2014	04-Jun-2014	04-Jun-2014	04-Jun-2014
Total Sulphate	05-Jun-2014	05-Jun-2014	05-Jun-2014	05-Jun-2014	05-Jun-2014	05-Jun-2014
TPH CWG GC (S)				08-Jun-2014	08-Jun-2014	07-Jun-2014



SDG: 140528-14
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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. 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. ALcontrol Laboratories 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 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. 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 for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

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 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.

21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

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.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before preservation was performed
\$	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

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 Alcontrol Laboratories (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 Alcontrol Laboratories (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 Anthrophyllite	-
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.