

# SITE INVESTIGATION - DESK STUDY REPORT

On behalf of Alan's Skip Hire Limited

Site: Biomass Plant

VERSION:	1.0	DATE:	21/12/16		
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CLIENT NO:	426				



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## **Document History:**

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# **1      INTRODUCTION**

- 1.1      Oaktree Environmental Ltd (“Oaktree”) has been commissioned by Alan’s Skip Hire Ltd, to provide consultancy advice regarding the condition of industrial land at and adjacent to their permitted transfer station off Redwither Road on Wrexham Industrial Estate (LL13 9RD). The site location and layout are shown on Drawing No. 1369/202 in Appendix I to this report.
- 1.2      The site which is the subject of this report is a parcel of land at the Wrexham site, upon which the development of a biomass boiler is proposed. The same parcel of land was subject to a site investigation in 2005 to assess the condition of the land for commercial and industrial development, which provides information of use on the wider site.
- 1.3      The purpose of this report is to provide a Phase I desk study and preliminary investigation to determine whether there are any hazards present which represent a risk to the development and whether the development itself presents any risks to the surrounding land and any sensitive receptors. Should the report identify any risks that potentially require investigation a further intrusive site investigation may be necessary. This report also assesses the findings of the 2005 investigation and recent sampling undertaken on behalf of the developer.
- 1.4      This report is based upon searches from a reliable source which is believed to be reasonably accurate, i.e. the Groundsure Report. Oaktree Environmental Limited cannot guarantee the authenticity or accuracy of the information relied upon by third parties and users of this report are advised to obtain their own searches should they wish to obtain a second opinion on the environmental conditions on or around the property detailed in the report.

- 1.5 This report has been prepared to reflect the regulatory regimes in force at the time of publication and should not be relied upon for anything other than the planning process described above. Should additional legislation arise which affects the content of this report, or the activities on site change after the production of this report Oaktree reserves the right to amend the affected sections accordingly.
- 1.6 Ecological searches for the presence of amphibians, bats, owls etc. are outside the scope of this report, as are the presence of tree preservation orders, hedgerow protection etc. The Groundsure report does include sensitive sites within the search buffer and none are recorded within 500 metres of the site. Flood risk has also been addressed separately. The removal of any trees from the site is not covered by this report.
- 1.7 Oaktree has obtained a full Groundsure report consisting of large and small scale historical maps, an environmental data report (EnviroInsight) and geology report (GeoInsight). A less comprehensive report could have been used given the scale of the development, however, a report of this nature cost-effectively provides far more detailed information than could be obtained from other sources and gives greater confidence in the preparation of desk-top study reports, in conjunction with site walkover visits and communication with regulatory bodies. Oaktree are also familiar with the study site, having visited the transfer station on many occasions.

## **2 PRELIMINARY RISK ASSESSMENT**

- 2.1 Risk assessment is the standard tool by which environmental hazards (source) are assessed for their potential impacts upon receptors through defined pathways. Risk assessment assists in providing a better understanding of the potential impacts which may arise from the study site and permits facilitation of remedial action if required through further investigation and action. This section assesses the environmental factors and the potential liabilities presented by the risks evaluated.
- 2.2 Whilst the site may not have a statutory designation as contaminated land the terminology is used widely elsewhere i.e. Source – Pathway –Receptor risk assessment, which is explained further below.
- 2.3 Source is a substance or condition that has the potential to cause harm e.g. leaking fuel tank, slurry lagoon or asbestos sheeting, for example.
- 2.4 Pathway is one or more routes by which a receptor is being or could be exposed to or brought into contact with a source of contamination, for example via land, surface water, groundwater or air.
- 2.5 Receptor is defined as a living organism or group of living organisms, an ecological system or property that could be detrimentally affected by the source via the pathway and can include, for example, groundwater, surface water, humans, farm animals etc.
- 2.6 By way of an example, the following represents a conceptual model which shows how the aforementioned risk assessment process is undertaken to establish a link between pollutants (or hazards) and receptors i.e.

2.7      **Source:** Leaking drum containing hazardous chemicals

V

**Pathway:** Unsurfaced land – potential contamination of soil, surface water and groundwater

V

**Receptors:** groundwater, flora and fauna and humans. Ingestion of groundwater or surface water or consumption of flora or fauna which have become contaminated by contact or via the food chain.

2.8      The list of receptors is potentially vast for any given hazard. However, the presence of a hazard without a definable or potential pathway does not represent a clear risk. In this report we are interested in the potential for hazards present on site to affect the workers and occupiers in relation to the proposed development and any other nearby receptors of any sort.

2.9      The preliminary risk assessment was carried out following examination of the Groundsure report, which is detailed in Appendix 3 and aerial photographs as well as knowledge of the site gained from site visits and liaison regarding the planning application. The initial walkover visit was carried out by Marco Muia in 2005 on 11<sup>th</sup> April 2005, who has also attended subsequent site meetings on the study site and transfer station.

2.10     The outcome of the risk assessment is that the site presents a low risk to the development based on the outcome of the sampling exercises and the lack of sensitivity of the development to the conditions in and around the site.

### **3 DESK TOP STUDY/ PREVIOUS INVESTIGATION**

3.1 The Groundsure report consists of five separate documents, as follows:

- a) Groundsure EnviroInsight Report
- b) Groundsure GeoInsight Report
- c) Groundsure FloodInsight Report
- d) Large-scale historical mapping
- e) Small-scale historical mapping

3.2 Examination of the historical mapping shows the site to be undeveloped as late as 1938 with industrial development shown on the 1949 small scale map with hydrants noted on the 1960 large scale map (both of which are shown in Appendix I) falling into disuse until the site was redeveloped as part of the transfer station business. The 1991 large scale map and 2002 small scale map shows the area to be revegetated and presumably not in use.

3.3 Examination of the GeoInsight Report in Appendix III reveals the following:

- a) Geology: Basic radon protection measures are required for construction, which would be achieved by the construction of a floor slab containing a barrier membrane.
- b) The site has not been subject to adverse impact from any form of mining or ground workings.
- c) Natural ground subsidence is moderate to negligible risk.
- d) The nearest BGS borehole is >50 metres from the site search boundary.
- e) No significant issues arise from background chemistry as the site has also been subject to investigation in 2005 and 2016.
- f) There are no railways and tunnels within 250 meters of the site search boundary.

3.4 Examination of a Groundsure Report was carried out in 2005 with the updated Groundsure report sourced on 21/12/16 to provide up to date information.

- 3.5 The historical use of the site for wartime manufacturing was the prime reason for excavation of trial pits and sampling in 2005. A total of 6 trial pits were excavated and sampled, the results of which are attached as Appendix II. A summary advice letter dated 3/06/05 was provided to Alan's Skip Hire which is also attached in Appendix II. The conclusion of the sampling exercise was that the site was not in a condition that would impact commercial or industrial development. Since that investigation the site has been partially developed as a transfer station with the current planning application for a biomass plant occupying an undeveloped area of the site, neither of which are sensitive to or at risk from the ground conditions identified in 2005.
- 3.6 The EnviroInsight Report summary and extracts are attached in Appendix IV and identify the site searches, historical uses and incidents. No tanks are identified on site and the nearest infilled areas to the site search boundary are 37 metres distant (infilled ponds from 1898). There are no landfill sites near the site (current or former) and no significant pollution incidents have been identified apart from one on 25/05/07 relating to fire fighting runoff. The remaining environmental searches do not reveal anything of significance.
- 3.7 The GeoInsight Report and EnviroInsight Report both provide some commentary on the site's geology. The superficial site geology consists of clay, silt, sand and gravel which is consistent with the proximity to a longstanding watercourse. The bedrock consists of mudstone, sandstone and conglomerate.
- 3.8 The FloodInsight report identifies the area adjacent to the site which may be at risk from flooding of Redwither Brook. However, the transfer station land is significantly higher than the Brook and will not be impacted by flooding.

## **4      2016 INVESTIGATION**

- 4.1      In 2016 trial pits were excavated on site to investigate ground conditions for the proposed biomass development and associated works. Drawing No. 3181/426/00 entitled Indicative Boundary Plan shows the location of the historical trial pit locations as TP1 to TP6. The 2016 trial pit locations are shown as A to F and were sampled on the following dates:
- a)    A: Sampled 28/04/16, Analysis reference: 164030-37
  - b)    B & C: Sampled 25/05/16, Analysis reference: 164030-37
  - c)    D, E & F: Sampled 17/08/16, Analysis reference: 160817-117
- 4.2      The analysis results for the above samples are attached in Appendix III, a summary of which is presented below. The samples were also subjected to landfill WAC analysis to determine the disposal route should any soils need to be removed to a disposal or recovery site. None of the results represent a risk to the development or users of the site. It should be noted that any exceedances in the WAC analyses are in relation to the WAC criteria for inert landfill. The results are consistent with those obtained in 2005.
- 4.3      Sample A: No adverse results in the solids analysis. The WAC analysis is acceptable for inert landfill with the exception of the TOC result which is 3.59 %, which is not significant in itself if the material were to remain on site.
- 4.4      Sample B: No adverse results in the solids analysis. The WAC analysis is acceptable for inert landfill with the exception of the Antimony and Sulphate results which exceed the inert WAC threshold, but which are not significant for disposal to non-hazardous landfill or for retention on site.
- 4.5      Sample C: No adverse results in the solids analysis. The WAC analysis is acceptable for inert landfill with the exception of the Antimony, Sulphate and Total Dissolved Solids results which exceed the inert WAC threshold, but which are not significant for disposal to non-hazardous landfill or for retention on site.

- 4.6 Sample D: No adverse results in the solids or WAC analysis. The material presents no risk if retained on site.
- 4.7 Sample E: No adverse results in the solids or WAC analysis. The material presents no risk if retained on site.
- 4.8 Sample F: No adverse results in the solids or WAC analysis. The material presents no risk if retained on site.

## **5 CONCLUSIONS**

- 5.1 The development site is suitable for the erection of the biomass building and retention of the areas which are not part of the biomass development i.e. the transfer station areas.
- 5.2 The risk presented by the proposed development to the surrounding environment is negligible i.e. during the construction phase and siting of the building and other infrastructure. The use to which the land is being put is not as sensitive as housing, for example.
- 5.3 Any environmental impacts arising from the operation of the biomass plant would be covered by the Part B environmental permit to be issued by Wrexham Council.
- 5.4 The likelihood that any minor contaminants (if any) that may be present in the ground being mobilised is low as the subsurface geology below the site is predominantly clay.
- 5.5 There is no evidence to suggest that the site has been subject to highly contaminative uses which would put the biomass development or its users and visitors at risk. Furthermore no reports were received from the developer, their planning agent or contractors regarding adverse findings whilst excavating the foundations for the other buildings on site. The ground floor of the biomass building will be protected with a plastic (polyethylene) membrane as standard.
- 5.6 The background levels of contamination that are acceptable for commercial development are significantly higher than for residential development but it would appear that the soil analysis results are significantly lower than the upper limits for commercial development.

- 5.7 Given the results of the two site investigations and desk studies the conclusion is that the development is an appropriate end use for the site given the conditions encountered during the investigations. The 2016 investigation was not wholly necessary but provides additional information to support the use of the site for the biomass plant.

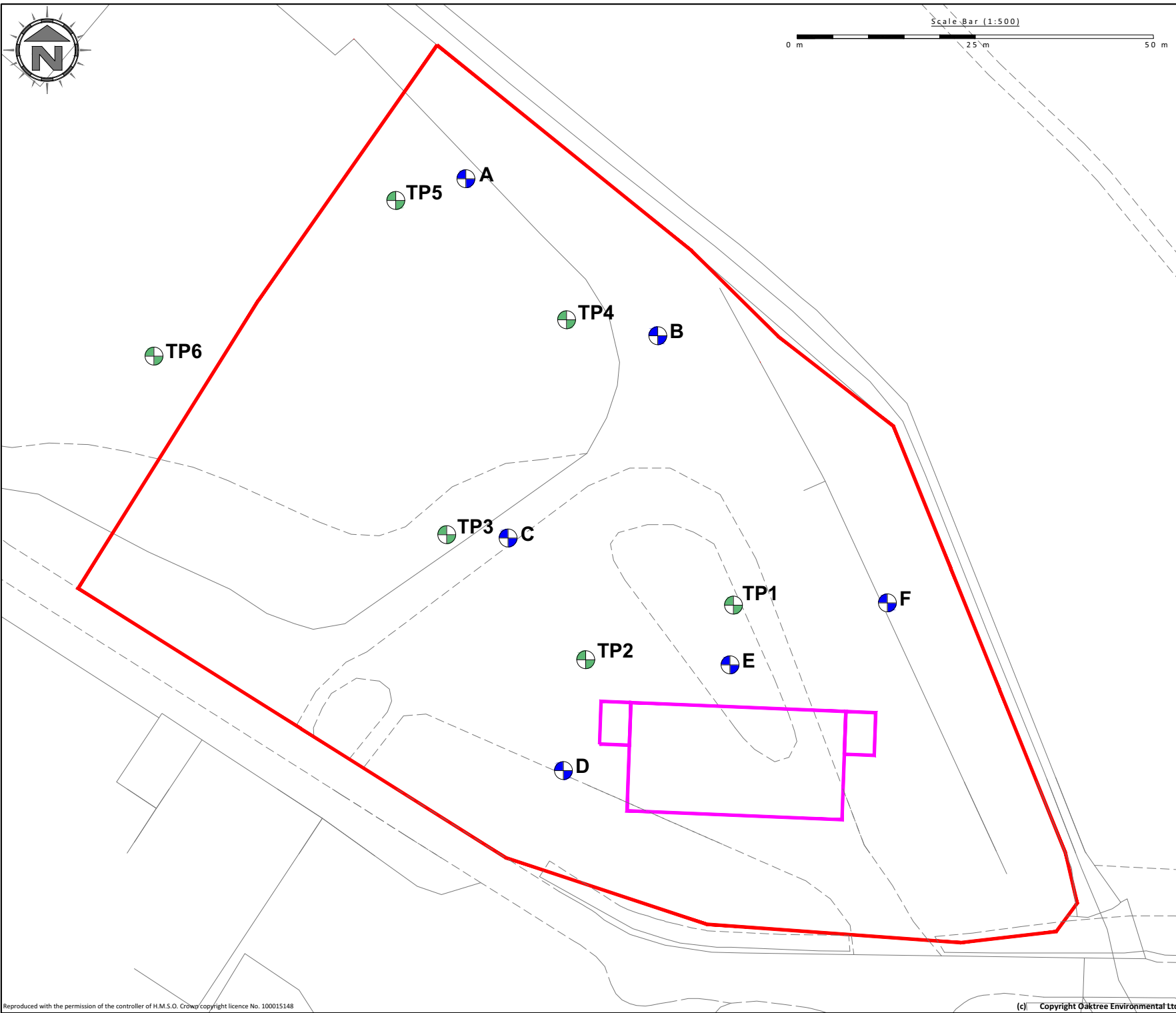
**FOR AND ON BEHALF OF OAKTREE ENVIRONMENTAL LTD – 21<sup>ST</sup> DECEMBER 2016**



Marco Muia BSc (Hons) MSc MCIWM  
Managing Director

# Appendix I

## Drawings





**Oaktree Environmental Ltd**



**Planning, Waste Management and Environmental Consultants**

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Tel: 01606 558833 Fax: 01606 861182  
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Drawing No:	3181/426/00	Revision:	-
Title:	INDICATIVE BOUNDARY PLAN		
Site:	Redwither Road, Wrexham Ind. Estate, Wrexham LL13 9RD		
Client:	Alan's Skip Hire (Wales) Ltd		
Date:	8 December 2016	Job No:	3181
Drawn By:	CP	Checked:	MM
		Client No:	426
Scale:	1:500	Printed At:	A3

**Key:**

- Site boundary
-  Client trial pits
-  Oaktree trial pits
- Outline of proposed building

**Notes:**

- (1) Drawing for indication only.
- (2) Do not scale from this drawing.
- (3) All measurements must be verified on site.

REVISION HISTORY			
Rev:	Date:	Rev:	Description:
-	08/12/16	CP	Initial drawing

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**PLATT WHITE**  
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Tel: 01244 314111, Fax: 01244 314700  
e-mail: [info@plattwhite.co.uk](mailto:info@plattwhite.co.uk)  
Web: [www.plattwhite.co.uk](http://www.plattwhite.co.uk)

Client  
ASH WASTE SERVICES

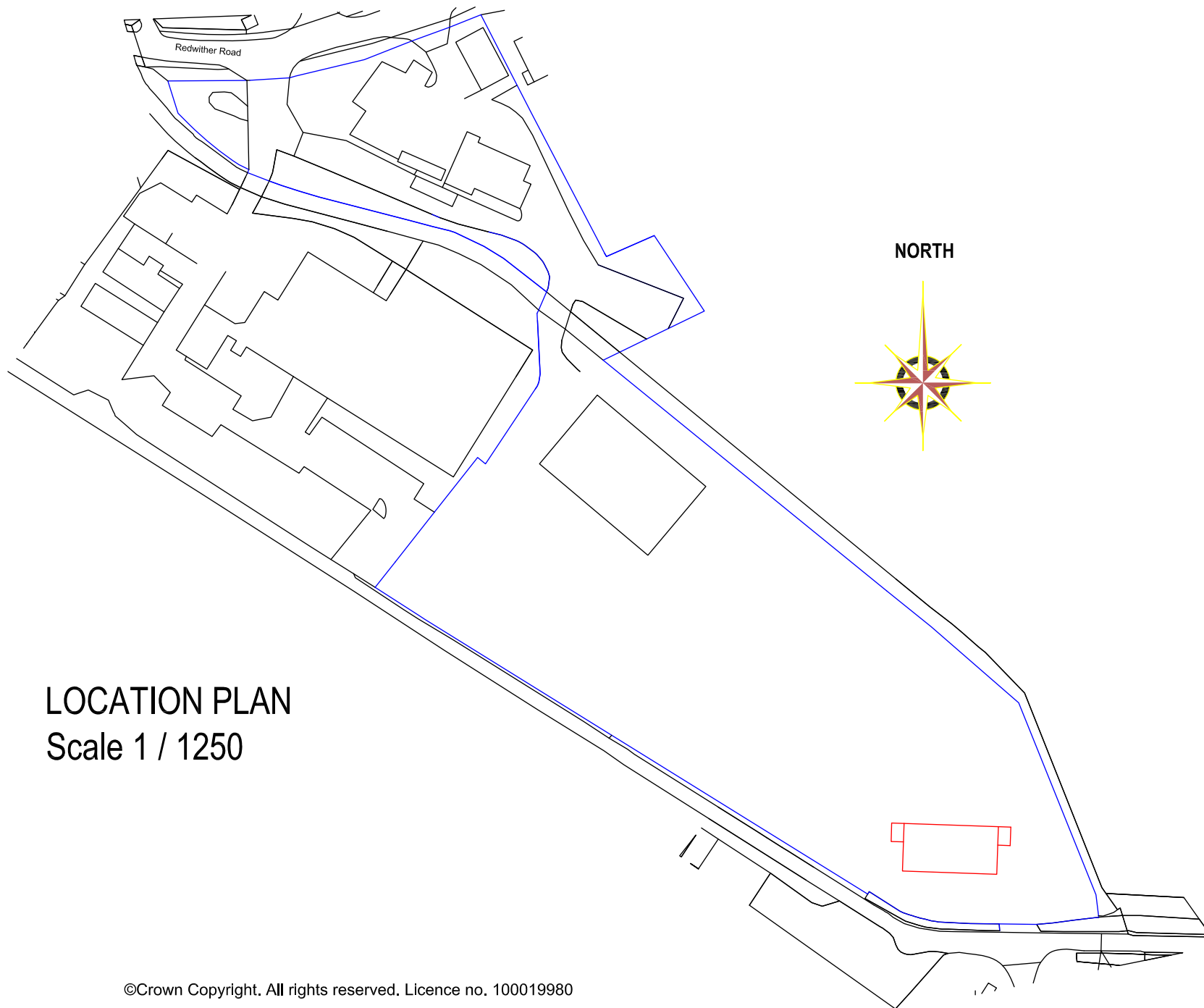
Project  
BIOMASS BUILDING AT ASH WASTE LTD  
REDWITHER ROAD  
WREXHAM IND ESTATE

Subject

LOCATION PLAN

Drwg. No.	Drawn by SC
1369 / 202	Checked by DL

Scale AS SHOWN @ A3 Date JULY 2016



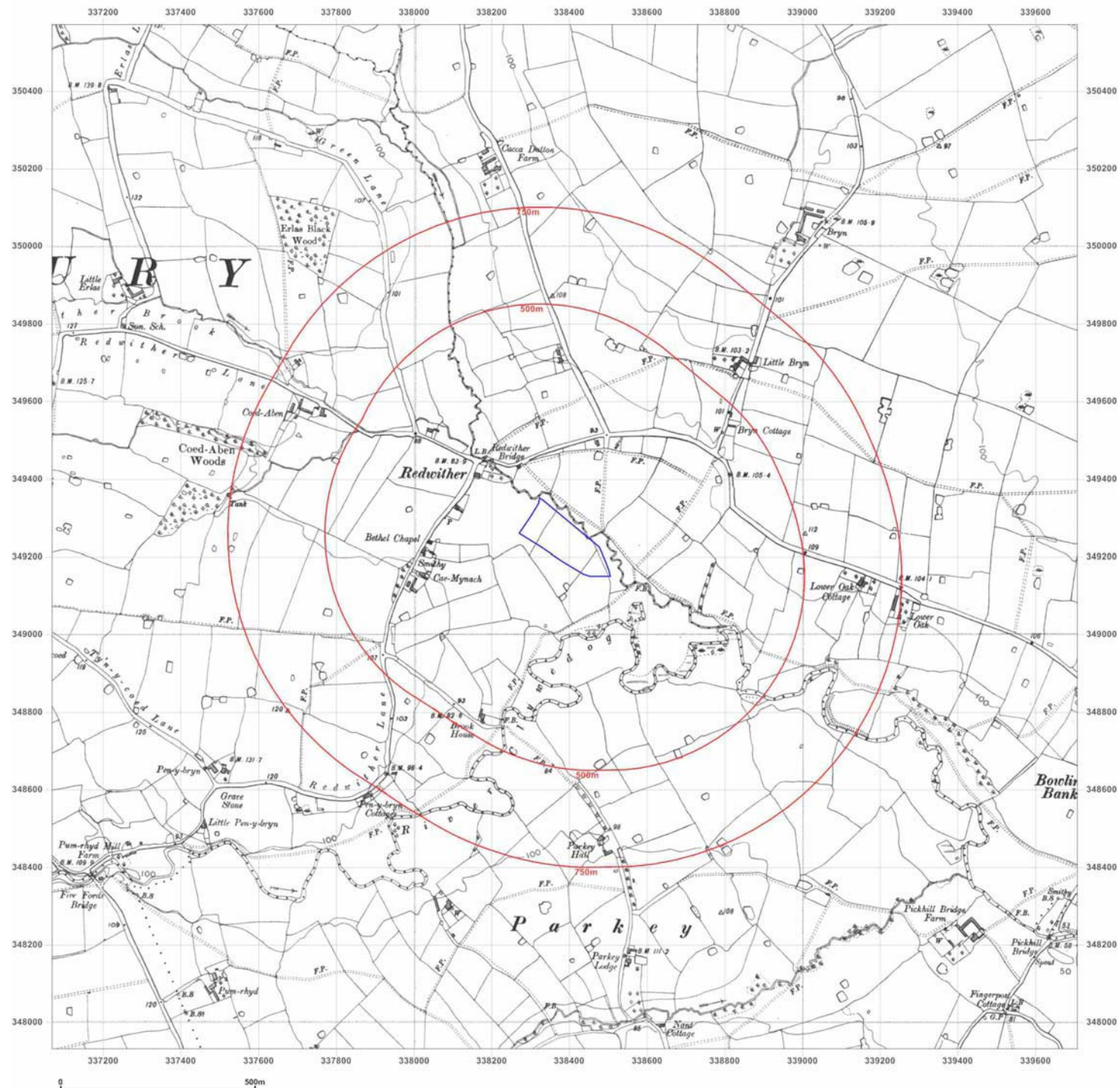
# LOCATION PLAN

## Scale 1 / 1250

DRAWING No.	ASH/SE/01
SCALE	1:1,250
TITLE	TRIAL PIT LOCATIONS
DATE	03/06/05
STUDY SITE	



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#### Site Details:

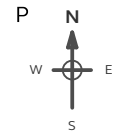
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 Report Ref: P PHMD-188-3539266  
 Grid Ref: P 33B387, 349251

Map Name: P County Series P

Map Date: P 1988

Scale: P P 1:10,560

Printed At: P 1:10,560



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 Revised 1938  
 Edition 1938  
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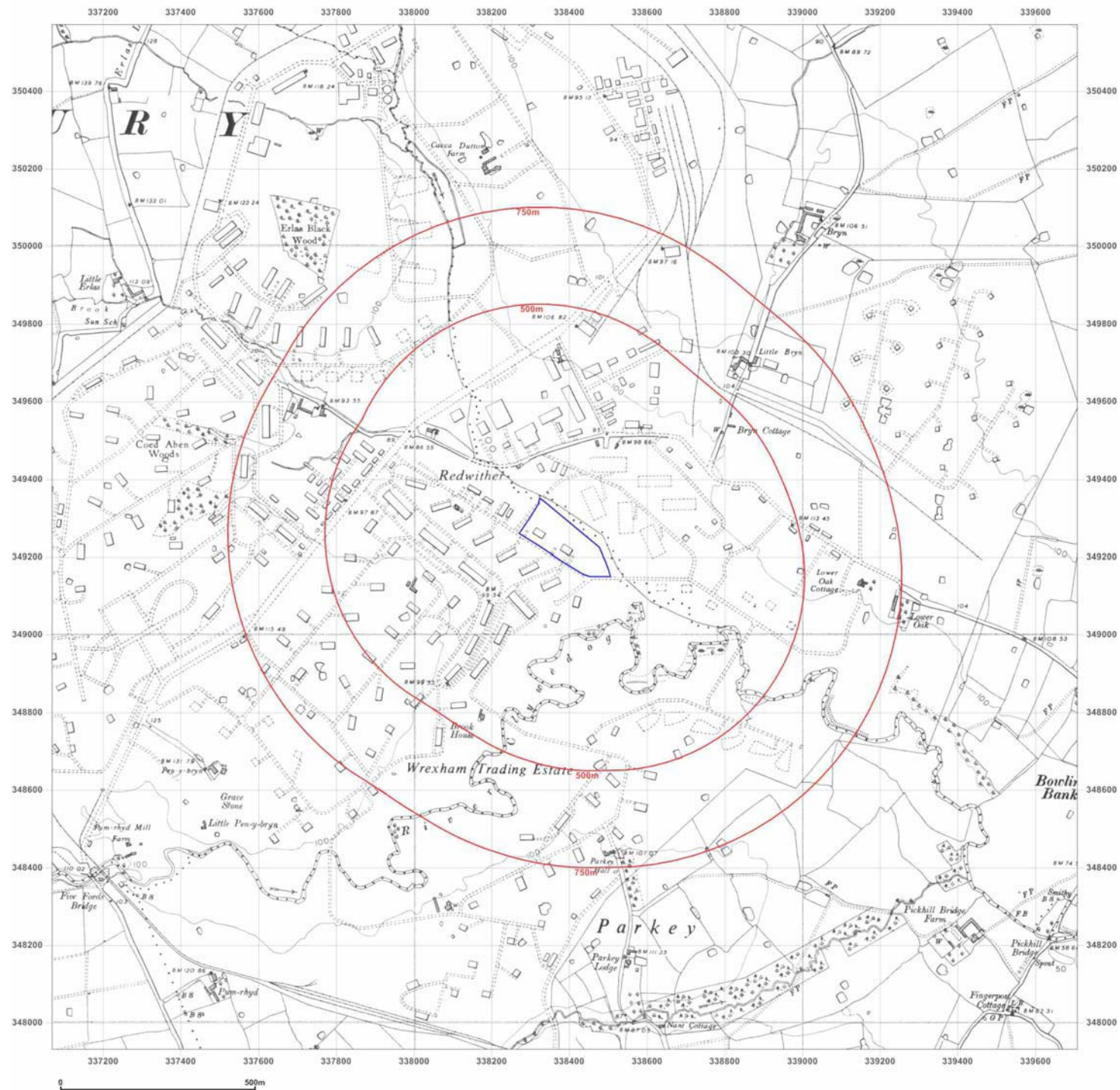
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Production Date: P 21 December 2016

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#### Site Details:

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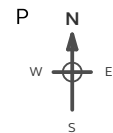
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 Report Ref: HMD-188-3539266  
 Grid Ref: 33B387, 349251

Map Name: County Series P

Map Date: 1989

Scale: 1:10,560

Printed At: 1:10,560



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Surveyed 1872  
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 Edition N/A  
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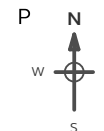
Production Date: 21 December 2016

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To View Map Legend Click Here [Legend](#)

This is a detailed topographic map of a rural area, likely in the UK, showing fields, roads, and a river. The map includes a grid with coordinates (Easting: 338100 to 338600; Northing: 349000 to 349500). Key features include:

- Redwither Bridge:** A bridge crossing a river, labeled "Redwither Bridge".
- Blue-outlined Polygon:** A large, irregular polygon outlined in blue, covering a significant portion of the central and right-hand side of the map.
- Fields and Elevation:** Numerous fields are shown, each with a number and an elevation. Examples include:
  - Field 2: 1.351
  - Field 3: 2.612
  - Field 4: 1.321
  - Field 5: 1.065
  - Field 6: 2.201
  - Field 7: 9.94
  - Field 8: 7.20
  - Field 9: 1.027
  - Field 10: 2.400
  - Field 11: 10.194
  - Field 12: 6.356
  - Field 13: 1.369
  - Field 14: 4.07
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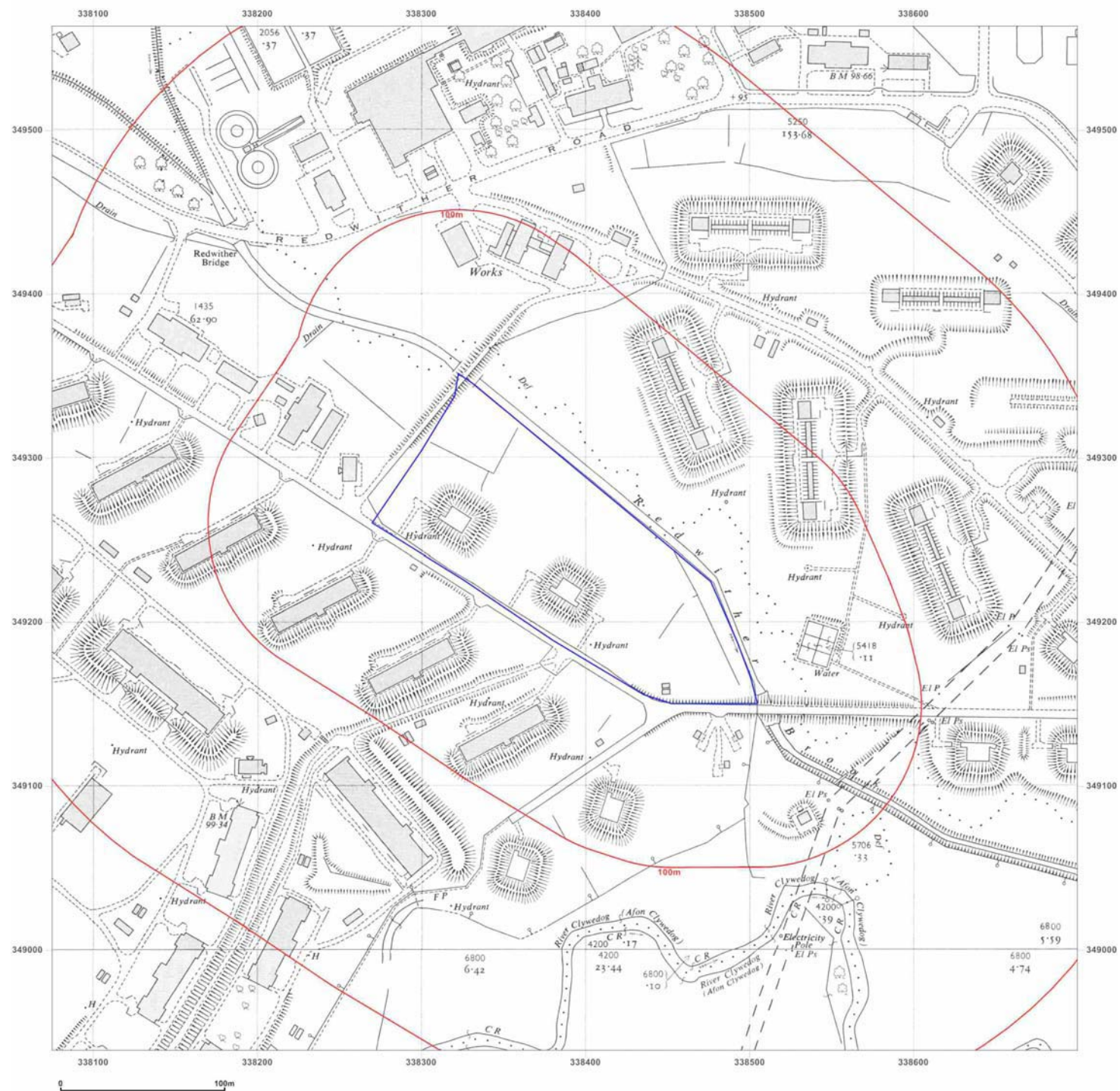



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#### Site Details:

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 P WREXHAM, LL13 9RD  
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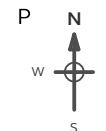
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 Report Ref: HMD-188-3539266  
 Grid Ref: 338387, 349251

Map Name: National Grid

Map Date: 1959-1960

Scale: 1:2,500

Printed at: 1:2,500



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 Revised 1959  
 Edition N/A  
 Copyright 1961  
 Levelled 1950

Surveyed 1960  
 Revised 1960  
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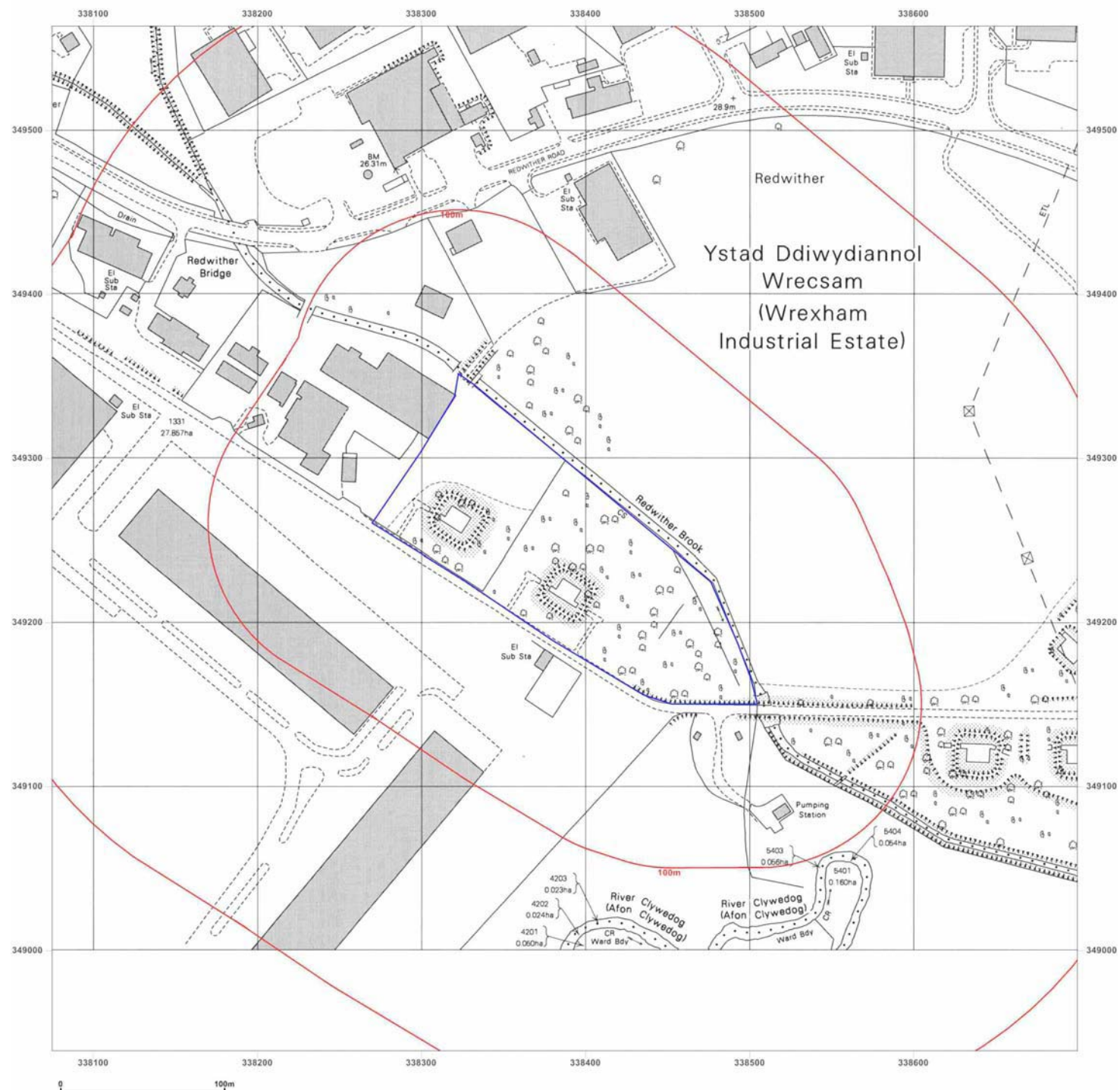
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Production Date: 21 December 2016

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#### Site Details:

P  
P ALANS SKIP HIRE (WALES) LTD,  
P REDWITHER ROAD,  
P WREXHAM, LL13 9RD

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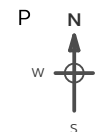
Client Ref: P 426\_Biomass\_SI  
Report Ref: P PHMD-188-3539266  
Grid Ref: P 338387, 349251

Map Name: P National Grid P

Map Date: P 1991

Scale: P P 1:2,500

Printed At: P 1:2,500



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Surveyed 1991  
Revised 1991  
Edition N/A  
Copyright 1992  
Levelled N/A



Produced By P  
Groundsure Insights P  
T: P 08444 P 59000 P  
E: P info@groundsure.com P  
W: P www.groundsure.com P

© Crown Copyright and Database Rights 2015 Ordnance Survey 100035207 P

Production Date: P 21 December 2016

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# **Appendix II**

## **2005 Investigation**

Our ref: 426-278-MM  
Your ref:

Date: 3 June 2005

Matthew Kirk  
Contracts Manager  
Alan's Skip Hire Ltd  
Broughton Mill Road  
Bretton  
Flintshire  
CH4 0BY

FILE

Dear Matt,

**TRIAL PIT INVESTIGATION ON LAND ADJACENT TO ALPHA ENVIRONMENTAL  
TRANSFER STATION, WREXHAM INDUSTRIAL ESTATE (11 April 2005)**

Further to our earlier telephone conversation and discussions on site on 11 April 2005 please find enclosed the plan showing the location of the trial pits and a contact sheet of the photographs taken during the survey. A summary of the work undertaken and an interpretation of the results is presented below:

1. Based on the size of the site it was determined that 6 trial pits would provide a reasonably representative sample of ground conditions on the site, the locations of which are shown on Drawing No. ASH/SI/01.
2. Sample process:
  - a. Each trial pit was excavated using an excavator equipped with a bucket and disturbed soil samples were taken from the bucket by hand.
  - b. Where possible samples were taken at different depths within each trial pit.
  - c. The samples taken were enclosed in opaque glass sample jars prior to analysis.
  - d. Gloves were discarded after each sample to avoid cross contamination.
  - e. Each trial pit was photographed.
3. The samples were sent to the laboratory (Alcontrol Geochem, Saltney, Chester) for a contaminated land suite and extractable petroleum hydrocarbon (EPH) analysis. A selection of samples were analysed, with the remainder placed on hold for later analysis if required. If the samples revealed heavy contamination the other samples could then be analysed and further trial pits drilled/ pits excavated if necessary to provide additional data. The samples were labelled according to the trial pit location number e.g. sample TP1 was taken from trial pit 1 etc. 6 samples were analysed.



4. Following the withdrawal by DEFRA of ICRCL Guidance Note 59/83 (2<sup>nd</sup> edition) the test results were compared against the DEFRA/Environment Agency Soil Guideline Values (SGV) where available. For results where no SGV is available comparison has been made (where relevant) with the Kelly Tables of soil contamination to assess the status of the soils if they were to be disposed of to landfill.
5. Of the samples analysed for which SGVs are available (Arsenic, Cadmium, Chromium, Inorganic Mercury, Lead, Nickel and Selenium) none of the results exceeded the levels proposed for industrial or commercial use and most were within the limits for residential use with plant uptake (i.e. suitable for growing vegetables). Substances were within the Kelly A range (uncontaminated soils) were acid soluble sulphide, hexavalent chromium, phenols, thiocyanate, total/free cyanide, copper and pH value. One boron result fell within Kelly Class B but is only relevant to plant growth and would not adversely affect industrial usage.
6. The only results showing slightly elevated concentrations were sulphate and zinc which were in the Kelly range A to C. Whilst these soils *in situ* may not represent a significant pollution linkage consideration should be given to further sampling and analysis (for sulphates) to establish whether sulphate resistant cement is required in any construction works. The zinc levels were all below the Dutch intervention level of 720 mg/kg. It is believed the levels on the site have been raised, predominantly in the form of soils, fines and rubble from the adjacent transfer station. These elevated concentrations have probably arisen from the inclusion of plasterboard and other composite materials within the waste stream, for example.
7. The results for PAHs showed 4 results within Kelly A and 2 within Kelly B and only represent minor contamination which should not affect industrial or commercial development on the site.
8. It should be noted that the assessment of the risk to potential occupiers (receptors) of the site using the SGV values is based on identified pathways, most of which would be removed if the site were hard surfaced. The land in its current state represents a low risk to continued commercial or industrial use, which would decrease even further if the site was hard surfaced.
10. For ease of reference the following photographs are relevant to the above comments:  
  

<b>TP1</b> - Nos 89 - 94	<b>TP2</b> - Nos 99 - 104	<b>TP3</b> - Nos 105-107 & 0 to 3
<b>TP4</b> - Nos 33 - 34	<b>TP5</b> - Nos 74 - 77	<b>TP6</b> - Nos 78 - 83

If you have any questions in respect of the above conclusions please contact me on 01606 558833.

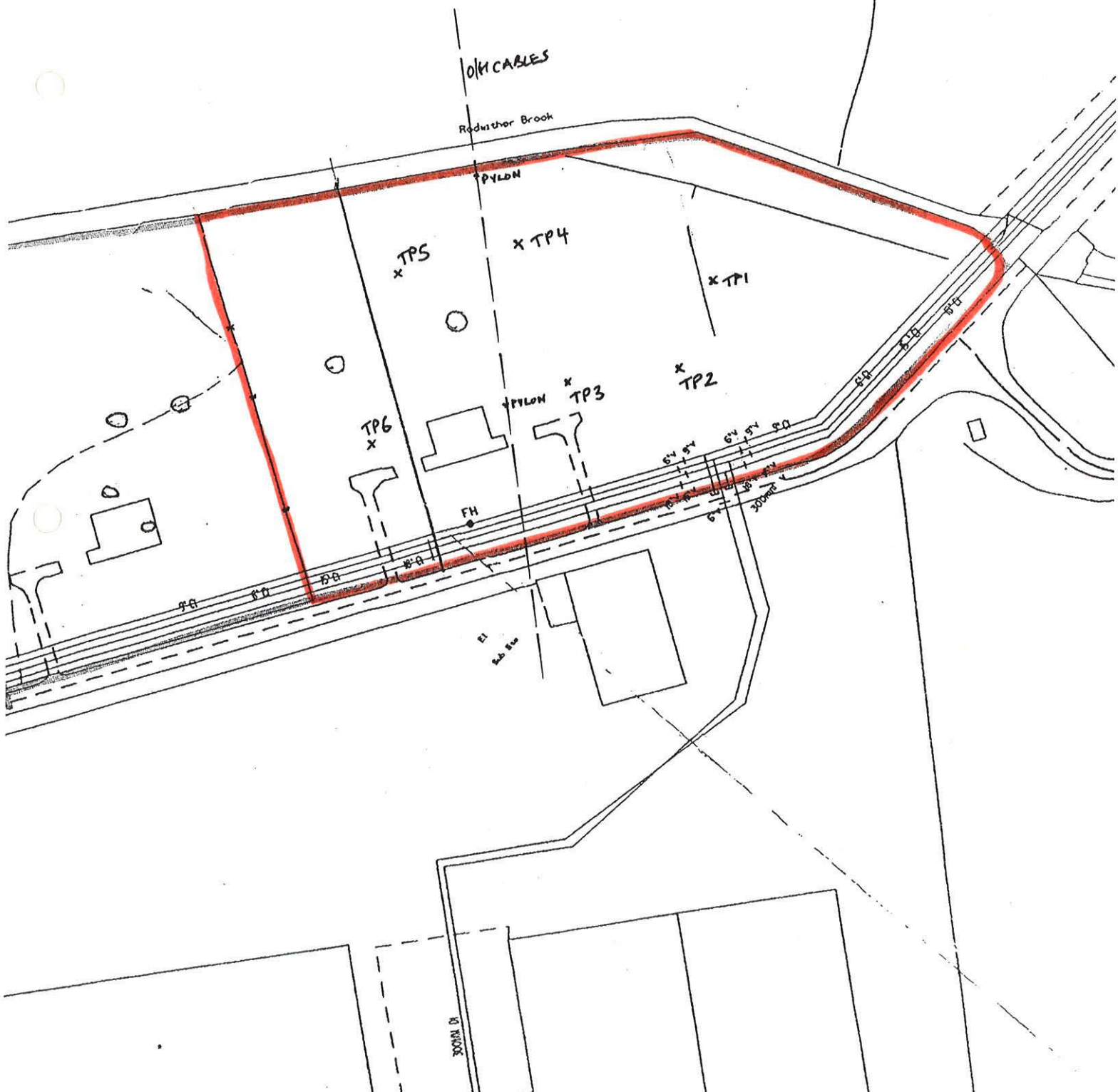
Yours sincerely

**Marco Muia**  
**Director**

**enc.**



DRAWING No.	ASH/SI/01
SCALE	1:1,250
TITLE	TRIAL PIT LOCATIONS
DATE	03/06/05
STUDY SITE	<u>                    </u>



TP3



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TP2

# ALcontrol Geochem Analytical Services

## Sample Descriptions

**Job Number:** 05/05238/02/01  
**Client:** Alan's Skip Hire Ltd  
**Client Ref :** TP1-TP6

Grain sizes	
<0.063mm	Very Fine
0.1mm - 0.063mm	Fine
0.1mm - 2mm	Medium
2mm - 10mm	Coarse
>10mm	Very Coarse

[illegible]

\* 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.

☒

9

# ISO 17025 accredited  
M MCERTS accredited  
\* Subcontracted test  
» Shown on prev. report

**Matrix:** SOLID  
**Location:** Not Specified  
**Client Contact:** Matt Kirk

[illegible]

**Date** 28.04.2005

<b>Validated</b>	<input checked="" type="checkbox"/>
<b>Preliminary</b>	<input type="checkbox"/>

## ALcontrol Geochem Analytical Services Table Of Results

# ISO 17025 accredited  
M MCERTS accredited  
\* Subcontracted test  
» Shown on prev. report

**Job Number:** 05/05238/02/01  
**Client:** Alan's Skip Hire Ltd  
**Client Ref. No.:** TP1-TP6

**Matrix:** SOLID  
**Location:** Not Specified  
**Client Contact:** Matt Kirk

[illegible]

**All results expressed on a dry weight basis.**

**Date** 28.04.2005

# ALcontrol Geochem Analytical Services

## Table Of Results - Appendix

**Job Number:** 05/05238/02/01  
**Client:** Alan's Skip Hire Ltd  
**Client Ref. No.:** TP1-TP6

### Report Key :

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10<sup>-7</sup>

NDP	No Determination Possible	*	Subcontracted test
NFD	No Fibres Detected	»	Result previously reported (Incremental reports only)
#	ISO 17025 accredited	M	MCERTS Accredited
PFD	Possible Fibres Detected	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control.

### Summary of Method Codes contained within report :

Method No.	Reference	Description	Accredited	ISO 17025 Accredited	MCERTS Accredited	Wet/Dry Sample <sup>1</sup>	Surrogate Corrected
<b>TM062</b>	MEWAM BOOK 124 1988.HMSO/ Method 17.7, Second Site property, March 2003	Determination of Phenolic compounds by HPLC with electro-chemical detection	✓	✓		WET	
<b>TM068</b>	ASTM D-1552	Total sulphur determination by combustion method	✓			DRY	
<b>TM074</b>	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS	✓			DRY	
<b>TM105</b>	Method 4500D, AWWA/APHA, 20th Ed., 1999	Determination of Acid Soluble Sulphide in soil samples using the Kone Analyser	✓			WET	
<b>TM129</b>	Method 3120B, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 3050B	Determination of Metal Cations by IRIS Emission Spectrometer	✓			DRY	
<b>TM129</b>	Method 3120B, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 3050B	Determination of Metal Cations by IRIS Emission Spectrometer	✓	✓		DRY	
<b>TM133</b>	BS 1377: Part 3 1990	Determination of pH in Soil and Water using the GLpH pH Meter	✓			WET	
<b>TM148</b>	BS 1377: Part 3 1990 ( Extraction)	Analysis of Total Sulphate using Unicam 701 Spectrophotometer				DRY	
<b>TM151</b>	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser	✓			WET	
<b>TM153</b>	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	✓	✓		WET	

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

## **Appendix III**

### **2016 Analysis Results**



Alan's Skip Hire Ltd  
Broughton Mill Road  
Bretton  
Flintshire  
CH4 0BY

**Attention:** Neil Eccleston

## CERTIFICATE OF ANALYSIS

**Date:** 11 May 2016  
**Customer:** H\_ALSKIP\_BRE  
**Sample Delivery Group (SDG):** 160430-37  
**Your Reference:** Not Specified  
**Location:** Not Specified  
**Report No:** 360327

We received 1 sample on Friday April 29, 2016 and 1 of these samples were scheduled for analysis which was completed on Wednesday May 11, 2016. 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:** 160430-37  
**Job:** H\_ALSKIP\_BRE-18  
**Client Reference:** Not Specified

**Location:** Not Specified  
**Customer:** Alan's Skip Hire Ltd  
**Attention:** Neil Eccleston

Order Number:  
Report Number: 360327  
Superseded Report:

[illegible]

**SDG:** 160430-37  
**Job:** H\_ALSKIP\_BRE-18  
**Client Reference:** Not Specified

**Location:** Not Specified  
**Customer:** Alan's Skip Hire Ltd  
**Attention:** Neil Eccleston

Order Number:  
Report Number: 360327  
Superseded Report:

### GRO by GC-FID (S)

[illegible]



**SDG:** 160430-37  
**Job:** H\_ALSKIP\_BRE-18  
**Client Reference:** Not Specified

**Location:** Not Specified  
**Customer:** Alan's Skip Hire Ltd  
**Attention:** Neil Eccleston

**Order Number:**  
**Report Number:** 360327  
**Superseded Report:**

## CEN 10:1 SINGLE STAGE LEACHATE TEST

## CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

## Client Reference

Mass Sample taken (kg)	0.117
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

## Site Location

Not Specified

Natural Moisture Content (%)	29.9
Dry Matter Content (%)	77

## Case

SDG	160430-37
Lab Sample Number(s)	13349801
Sampled Date	28-Apr-2016
Customer Sample Ref.	ASH/CH/26471
Depth (m)	

Landfill Waste Acceptance  
Criteria Limits

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

## Solid Waste Analysis

## Result

Total Organic Carbon (%)	3.59
Loss on Ignition (%)	<0.7
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	0.0347
Mineral Oil (mg/kg)	21.4
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	7.98
ANC to pH 6 (mol/kg)	0.0995
ANC to pH 4 (mol/kg)	0.298

## Eluate Analysis

C<sub>2</sub>Conc<sup>n</sup> in 10:1 eluate (mg/l)A<sub>2</sub>10:1 conc<sup>n</sup> leached (mg/kg)Limit values for compliance leaching test  
using BS EN 12457-3 at L/S 10 l/kg

	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.0107	<0.00012	0.107	<0.0012	0.5	2	25
Barium	0.0109	<0.00003	0.109	<0.0003	20	100	300
Cadmium	<0.0001	<0.0001	<0.001	<0.001	0.04	1	5
Chromium	0.000954	<0.00022	0.00954	<0.0022	0.5	10	70
Copper	0.00656	<0.00085	0.0656	<0.0085	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.000358	<0.00024	0.00358	<0.0024	0.5	10	30
Nickel	0.00107	<0.00015	0.0107	<0.0015	0.4	10	40
Lead	0.0019	<0.00002	0.019	<0.0002	0.5	10	50
Antimony	0.000418	<0.00016	0.00418	<0.0016	0.06	0.7	5
Selenium	<0.00039	<0.00039	<0.0039	<0.0039	0.1	0.5	7
Zinc	0.00374	<0.00041	0.0374	<0.0041	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	71.5	<5	715	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.28	<3	42.8	<30	500	800	1000

## Leach Test Information

Date Prepared	06-May-2016
pH (pH Units)	8.31
Conductivity (µS/cm)	92.50
Temperature (°C)	19.50
Volume Leachant (Litres)	0.873

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

11/05/2016 13:03:43

13:03:36 11/05/2016



Alan's Skip Hire Ltd  
Broughton Mill Road  
Bretton  
Flintshire  
CH4 0BY

**Attention:** John Dennen

## CERTIFICATE OF ANALYSIS

**Date:** 03 June 2016  
**Customer:** H\_ALSKIP\_BRE  
**Sample Delivery Group (SDG):** 160525-157  
**Your Reference:**  
**Location:** Not specified  
**Report No:** 363541

We received 2 samples on Wednesday May 25, 2016 and 2 of these samples were scheduled for analysis which was completed on Friday June 03, 2016. 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



**Order Number:** 17456/WRE/JD  
**Report Number:** 363541  
**Superseded Report:**

Page 6 of 16

**SDG:** 160525-157  
**Job:** H\_ALSKIP\_BRE-19  
**Client Reference:**

**Location:** Not specified  
**Customer:** Alan's Skip Hire Ltd  
**Attention:** John Dennan

**Order Number:** 17456/WRE/JD  
**Report Number:** 363541  
**Superseded Report:**

### GRO by GC-FID (S)

[illegible]



SDG:	160525-157	Location:	Not specified	Order Number:	17456/WRE/JD
Job:	H_ALSKIP_BRE-19	Customer:	Alan's Skip Hire Ltd	Report Number:	363541
Client Reference:		Attention:	John Dennen	Superseded Report:	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Not specified
Mass Sample taken (kg)	0.098	Natural Moisture Content (%)	9.65
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	91.2
Particle Size <4mm	>95%		

Case		Landfill Waste Acceptance Criteria Limits
SDG	160525-157	
Lab Sample Number(s)	13492284	
Sampled Date		
Customer Sample Ref.	WREXHAM YARD 1	
Depth (m)		
Solid Waste Analysis	Result	
Total Organic Carbon (%)	1.98	
Loss on Ignition (%)	4.04	
Sum of BTEX (mg/kg)	<0.024	
Sum of 7 PCBs (mg/kg)	<0.021	
Mineral Oil (mg/kg)	200	
PAH Sum of 17 (mg/kg)	<10	
pH (pH Units)	8.91	
ANC to pH 6 (mol/kg)	0.539	
ANC to pH 4 (mol/kg)	3.37	

Eluate Analysis	C2 Conc <sup>n</sup> in 10:1 eluate (mg/l)		A2 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00559	<0.00012	0.0559	<0.0012	0.5	2	25
Barium	0.0328	<0.00003	0.328	<0.0003	20	100	300
Cadmium	<0.0001	<0.0001	<0.001	<0.001	0.04	1	5
Chromium	0.00124	<0.00022	0.0124	<0.0022	0.5	10	70
Copper	0.00675	<0.00085	0.0675	<0.0085	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0427	<0.00024	0.427	<0.0024	0.5	10	30
Nickel	0.00267	<0.00015	0.0267	<0.0015	0.4	10	40
Lead	0.000473	<0.00002	0.00473	<0.0002	0.5	10	50
Antimony	0.00809	<0.00016	0.0809	<0.0016	0.06	0.7	5
Selenium	0.00223	<0.00039	0.0223	<0.0039	0.1	0.5	7
Zinc	0.00185	<0.00041	0.0185	<0.0041	4	50	200
Chloride	3.6	<2	36	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	217	<2	2170	<20	1000	20000	50000
Total Dissolved Solids	377	<5	3770	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.18	<3	51.8	<30	500	800	1000

Leach Test Information

Date Prepared	31-May-2016
pH (pH Units)	8.72
Conductivity (µS/cm)	505.00
Temperature (°C)	20.10
Volume Leachant (Litres)	0.891

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation  
Mcerts Certification does not apply to leachates  
03/06/2016 14:52:22  
14:52:11 03/06/2016



**SDG:** 160525-157  
**Job:** H\_ALSKIP\_BRE-19  
**Client Reference:**

**Location:** Not specified  
**Customer:** Alan's Skip Hire Ltd  
**Attention:** John Dennen

**Order Number:** 17456/WRE/JD  
**Report Number:** 363541  
**Superseded Report:**

## CEN 10:1 SINGLE STAGE LEACHATE TEST

## CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

## Client Reference

Mass Sample taken (kg) 0.099

Mass of dry sample (kg) 0.090

Particle Size &lt;4mm &gt;95%

## Site Location

Not specified

Natural Moisture Content (%) 9.77

Dry Matter Content (%) 91.1

## Case

SDG 160525-157

Lab Sample Number(s) 13492285

## Sampled Date

Customer Sample Ref. WREXHAM YARD 2

## Depth (m)

Landfill Waste Acceptance  
Criteria Limits

## Solid Waste Analysis

## Result

Total Organic Carbon (%) 1.87

Loss on Ignition (%) 3.87

Sum of BTEX (mg/kg) &lt;0.024

Sum of 7 PCBs (mg/kg) &lt;0.021

Mineral Oil (mg/kg) 280

PAH Sum of 17 (mg/kg) 12.1

pH (pH Units) 8.02

ANC to pH 6 (mol/kg) 0.347

ANC to pH 4 (mol/kg) 1.89

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

## Eluate Analysis

C<sub>2</sub>Conc<sup>n</sup> in 10:1 eluate (mg/l)A<sub>2</sub>10:1 conc<sup>n</sup> leached (mg/kg)Limit values for compliance leaching test  
using BS EN 12457-3 at L/S 10 l/kg

	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00424	<0.00012	0.0424	<0.0012	0.5	2	25
Barium	0.0346	<0.00003	0.346	<0.0003	20	100	300
Cadmium	<0.0001	<0.0001	<0.001	<0.001	0.04	1	5
Chromium	0.000993	<0.00022	0.00993	<0.0022	0.5	10	70
Copper	0.0064	<0.00085	0.064	<0.0085	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0275	<0.00024	0.275	<0.0024	0.5	10	30
Nickel	0.00301	<0.00015	0.0301	<0.0015	0.4	10	40
Lead	0.000161	<0.00002	0.00161	<0.0002	0.5	10	50
Antimony	0.00779	<0.00016	0.0779	<0.0016	0.06	0.7	5
Selenium	0.00296	<0.00039	0.0296	<0.0039	0.1	0.5	7
Zinc	0.00161	<0.00041	0.0161	<0.0041	4	50	200
Chloride	3.7	<2	37	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	245	<2	2450	<20	1000	20000	50000
Total Dissolved Solids	420	<5	4200	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.23	<3	52.3	<30	500	800	1000

## Leach Test Information

Date Prepared 31-May-2016  
pH (pH Units) 8.36  
Conductivity (µS/cm) 561.00  
Temperature (°C) 20.10  
Volume Leachant (Litres) 0.891

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

03/06/2016 14:52:22

14:52:11 03/06/2016



Alan's Skip Hire Ltd  
Broughton Mill Road  
Bretton  
Flintshire  
CH4 0BY

**Attention:** John Dennen

## CERTIFICATE OF ANALYSIS

**Date:** 31 August 2016  
**Customer:** H\_ALSKIP\_BRE  
**Sample Delivery Group (SDG):** 160817-117  
**Your Reference:**  
**Location:** WREXHAM YARD  
**Report No:** 375807

We received 3 samples on Wednesday August 17, 2016 and 3 of these samples were scheduled for analysis which was completed on Wednesday August 31, 2016. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

Chemical testing (unless subcontracted) performed at ALcontrol Laboratories Hawarden (Method codes TM) or ALcontrol Laboratories Aberdeen (Method codes S).

Approved By:

**Sonia McWhan**

Operations Manager



## CERTIFICATE OF ANALYSIS

**SDG:** 160817-117  
**Job:** H\_ALSKIP\_BRE-25  
**Client Reference:**

**Location:** WREXHAM YARD  
**Customer:** Alan's Skip Hire Ltd  
**Attention:** John Dennan

**Order Number:** WRE/17/4/56  
**Report Number:** 375807  
**Superseded Report:**

[illegible]

**SDG:** 160817-117  
**Job:** H\_ALSKIP\_BRE-25  
**Client Reference:**

**Location:** WREXHAM YARD  
**Customer:** Alan's Skip Hire Ltd  
**Attention:** John Dennen

**Order Number:** WRE/17/4/56  
**Report Number:** 375807  
**Superseded Report:**

### GRO by GC-FID (S)

[illegible]



SDG: 160817-117  
Job: H\_ALSKIP\_BRE-25  
Client Reference:

Location: WREXHAM YARD  
Customer: Alan's Skip Hire Ltd  
Attention: John Dennen

Order Number: WRE/17/4/56  
Report Number: 375807  
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.093
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	WREXHAM YARD
Natural Moisture Content (%)	3.63
Dry Matter Content (%)	96.5

Case	
SDG	160817-117
Lab Sample Number(s)	13988432
Sampled Date	
Customer Sample Ref.	ALANS SKIPS 1
Depth (m)	

Landfill Waste Acceptance  
Criteria Limits

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

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.295
Loss on Ignition (%)	3.59
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	15.4
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.79
ANC to pH 6 (mol/kg)	0.549
ANC to pH 4 (mol/kg)	1.34

Eluate Analysis	C2 Conc <sup>n</sup> in 10:1 eluate (mg/l)		A2 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.000874	<0.00051	0.00874	<0.0051	0.5	2	25
Barium	0.0175	<0.0002	0.175	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.0012	<0.0012	<0.012	<0.012	0.5	10	70
Copper	<0.00085	<0.00085	<0.0085	<0.0085	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0121	<0.00062	0.121	<0.0062	0.5	10	30
Nickel	<0.00044	<0.00044	<0.0044	<0.0044	0.4	10	40
Lead	<0.0001	<0.0001	<0.001	<0.001	0.5	10	50
Antimony	<0.00016	<0.00016	<0.0016	<0.0016	0.06	0.7	5
Selenium	0.00105	<0.00081	0.0105	<0.0081	0.1	0.5	7
Zinc	<0.0013	<0.0013	<0.013	<0.013	4	50	200
Chloride	2.8	<2	28	<20	800	15000	25000
Fluoride	0.626	<0.5	6.26	<5	10	150	500
Sulphate (soluble)	14.3	<2	143	<20	1000	20000	50000
Total Dissolved Solids	95.9	<5	959	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.21	<3	42.1	<30	500	800	1000

Leach Test Information

Date Prepared	24-Aug-2016
pH (pH Units)	8.76
Conductivity (µS/cm)	124.00
Temperature (°C)	21.50
Volume Leachant (Litres)	0.897

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

31/08/2016 18:06:41

18:06:33 31/08/2016



SDG:	160817-117	Location:	WREXHAM YARD	Order Number:	WRE/17/4/56
Job:	H_ALSKIP_BRE-25	Customer:	Alan's Skip Hire Ltd	Report Number:	375807
Client Reference:		Attention:	John Dennen	Superseded Report:	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	WREXHAM YARD
Mass Sample taken (kg)	0.104	Natural Moisture Content (%)	16.3
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	86
Particle Size <4mm	>95%		

Case

SDG	160817-117
Lab Sample Number(s)	13994569
Sampled Date	
Customer Sample Ref.	ALANS SKIPS 2
Depth (m)	

Landfill Waste Acceptance  
Criteria Limits

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

Solid Waste Analysis

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.424
Loss on Ignition (%)	3.79
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	46.1
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.03
ANC to pH 6 (mol/kg)	0.434
ANC to pH 4 (mol/kg)	1.18

Eluate Analysis

	C2 Conc <sup>n</sup> in 10:1 eluate (mg/l)		A2 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00195	<0.00051	0.0195	<0.0051	0.5	2	25
Barium	0.0905	<0.0002	0.905	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.0012	<0.0012	<0.012	<0.012	0.5	10	70
Copper	0.00216	<0.00085	0.0216	<0.0085	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0033	<0.00062	0.033	<0.0062	0.5	10	30
Nickel	0.00171	<0.00044	0.0171	<0.0044	0.4	10	40
Lead	<0.0001	<0.0001	<0.001	<0.001	0.5	10	50
Antimony	0.000225	<0.00016	0.00225	<0.0016	0.06	0.7	5
Selenium	0.000864	<0.00081	0.00864	<0.0081	0.1	0.5	7
Zinc	<0.0013	<0.0013	<0.013	<0.013	4	50	200
Chloride	7	<2	70	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	17.5	<2	175	<20	1000	20000	50000
Total Dissolved Solids	274	<5	2740	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	23.6	<3	236	<30	500	800	1000

Leach Test Information

Date Prepared	24-Aug-2016
pH (pH Units)	8.18
Conductivity (µS/cm)	377.00
Temperature (°C)	21.60
Volume Leachant (Litres)	0.885

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

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18:06:33 31/08/2016



SDG: 160817-117  
Job: H\_ALSKIP\_BRE-25  
Client Reference:

Location: WREXHAM YARD  
Customer: Alan's Skip Hire Ltd  
Attention: John Dennen

Order Number: WRE/17/4/56  
Report Number: 375807  
Superseded Report:

## CEN 10:1 SINGLE STAGE LEACHATE TEST

## CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

## Client Reference

Mass Sample taken (kg) 0.093

Mass of dry sample (kg) 0.090

Particle Size &lt;4mm &gt;95%

## Site Location

WREXHAM YARD

Natural Moisture Content (%) 3.52

Dry Matter Content (%) 96.6

## Case

SDG 160817-117

Lab Sample Number(s) 13994570

## Sampled Date

Customer Sample Ref. ALANS SKIPS 3

## Depth (m)

Landfill Waste Acceptance  
Criteria Limits

## Solid Waste Analysis

## Result

Total Organic Carbon (%) 0.29

Loss on Ignition (%) 3.65

Sum of BTEX (mg/kg) &lt;0.024

Sum of 7 PCBs (mg/kg) &lt;0.021

Mineral Oil (mg/kg) 21.5

PAH Sum of 17 (mg/kg) &lt;10

pH (pH Units) 8.79

ANC to pH 6 (mol/kg) 0.518

ANC to pH 4 (mol/kg) 1.31

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

## Eluate Analysis

C<sub>2</sub>Conc<sup>n</sup> in 10:1 eluate (mg/l)A<sub>2</sub>10:1 conc<sup>n</sup> leached (mg/kg)Limit values for compliance leaching test  
using BS EN 12457-3 at L/S 10 l/kg

	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.000864	<0.00051	0.00864	<0.0051	0.5	2	25
Barium	0.0323	<0.0002	0.323	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.0012	<0.0012	<0.012	<0.012	0.5	10	70
Copper	<0.00085	<0.00085	<0.0085	<0.0085	2	50	100
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00973	<0.00062	0.0973	<0.0062	0.5	10	30
Nickel	<0.00044	<0.00044	<0.0044	<0.0044	0.4	10	40
Lead	<0.0001	<0.0001	<0.001	<0.001	0.5	10	50
Antimony	0.000161	<0.00016	0.00161	<0.0016	0.06	0.7	5
Selenium	0.000869	<0.00081	0.00869	<0.0081	0.1	0.5	7
Zinc	<0.0013	<0.0013	<0.013	<0.013	4	50	200
Chloride	4.6	<2	46	<20	800	15000	25000
Fluoride	0.64	<0.5	6.4	<5	10	150	500
Sulphate (soluble)	21.2	<2	212	<20	1000	20000	50000
Total Dissolved Solids	112	<5	1120	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

## Leach Test Information

Date Prepared 24-Aug-2016  
pH (pH Units) 8.71  
Conductivity (µS/cm) 145.00  
Temperature (°C) 21.80  
Volume Leachant (Litres) 0.897

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

31/08/2016 18:06:41

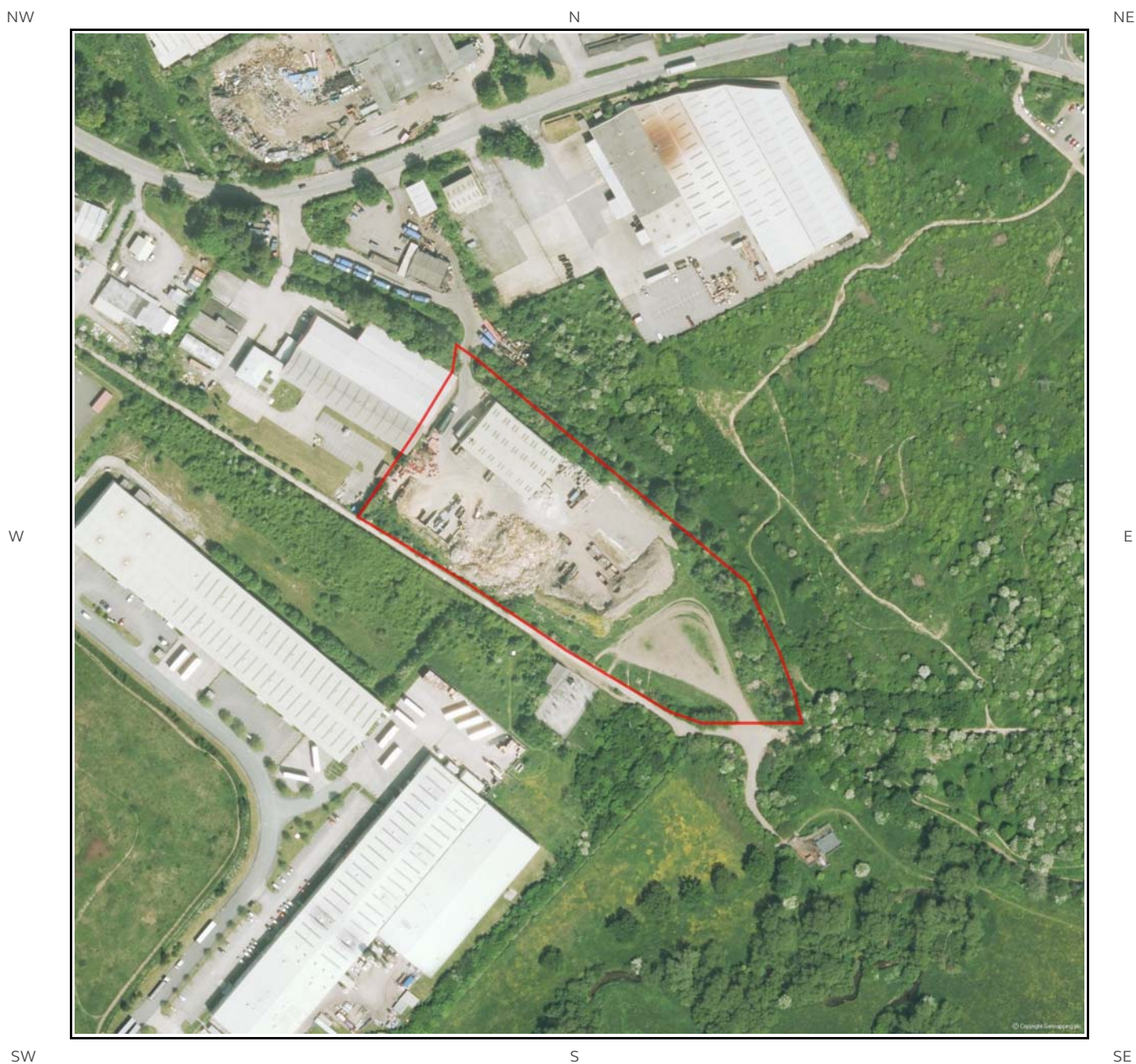
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## **Appendix IV**

### **Groundsure Report Extracts**

# Groundsure Enviro Insight

Address: ALANS SKIP HIRE WALES LTD, REDWITHER ROAD, WREXHAM, LL13 9RD  
Date: 21 Dec 2016  
Reference: HMD-188-3539263  
Client: Oaktree Environmental Ltd



Aerial Photograph Capture date: 09-Jun-2013  
Grid Reference: 338385,349237  
Site Size: 2.08ha

Report Reference: HMD-188-3539263  
Client Reference: 426\_Biomass\_SI

# Overview of Findings

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

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	4	5	15	24
1.2 Additional Information – Historical Tank Database	0	0	11	32
1.3 Additional Information – Historical Energy Features Database	0	7	13	28
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	0	0
1.6 Potentially Infilled Land	0	3	6	24

Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	2
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	1	10
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	1	1
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	0	3
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	4
2.1.8 Records of Licensed Discharge Consents	0	1	0	11
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	1	0	6	3
2.3.2 National Incidents Recording System, List 1	1	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	2	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	0	1	4	0
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	1	3	1	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	1	15	18	17	7

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	0	2	20	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	0
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology						
5.1 Are there any records of Artificial Ground and Made Ground present beneath the study site?	Yes					
5.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site?	Yes					
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.						

Section 6: Hydrogeology and Hydrology	0-500m					
6.1 Are there any records of Strata Classification in the Superficial Geology within 500m of the study site?	Yes					
6.2 Are there any records of Strata Classification in the Bedrock Geology within 500m of the study site?	Yes					
	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	3	3	3	0	1
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	1
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.6 Source Protection Zones (within 500m of the study site)	2	0	1	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	2	0	0	0	Not searched	Not searched

Section 6: Hydrogeology and Hydrology	0-500m					
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site?	No	No	No	Yes	No	Yes
6.10 Detailed River Network entries within 500m of the site	0	1	10	15	Not searched	Not searched
6.11 Surface water features within 250m of the study site	Yes	Yes	Yes	Not searched	Not searched	Not searched

Section 7: Flooding						
7.1 Are there any Environment Agency Zone 2 floodplains within 250m of the study site?	Yes					
7.2 Are there any Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	Yes					
7.3 What is the Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site?	High					
7.4 Are there any Flood Defences within 250m of the study site?	No					
7.5 Are there any areas benefiting from Flood Defences within 250m of the study site?	No					
7.6 Are there any areas used for Flood Storage within 250m of the study site?	No					
7.7 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Potential at Surface					
7.8 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	Moderate					

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	6	19
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	0	0	0	0	0	0
8.14 Records of Green Belt land	0	0	0	0	0	0

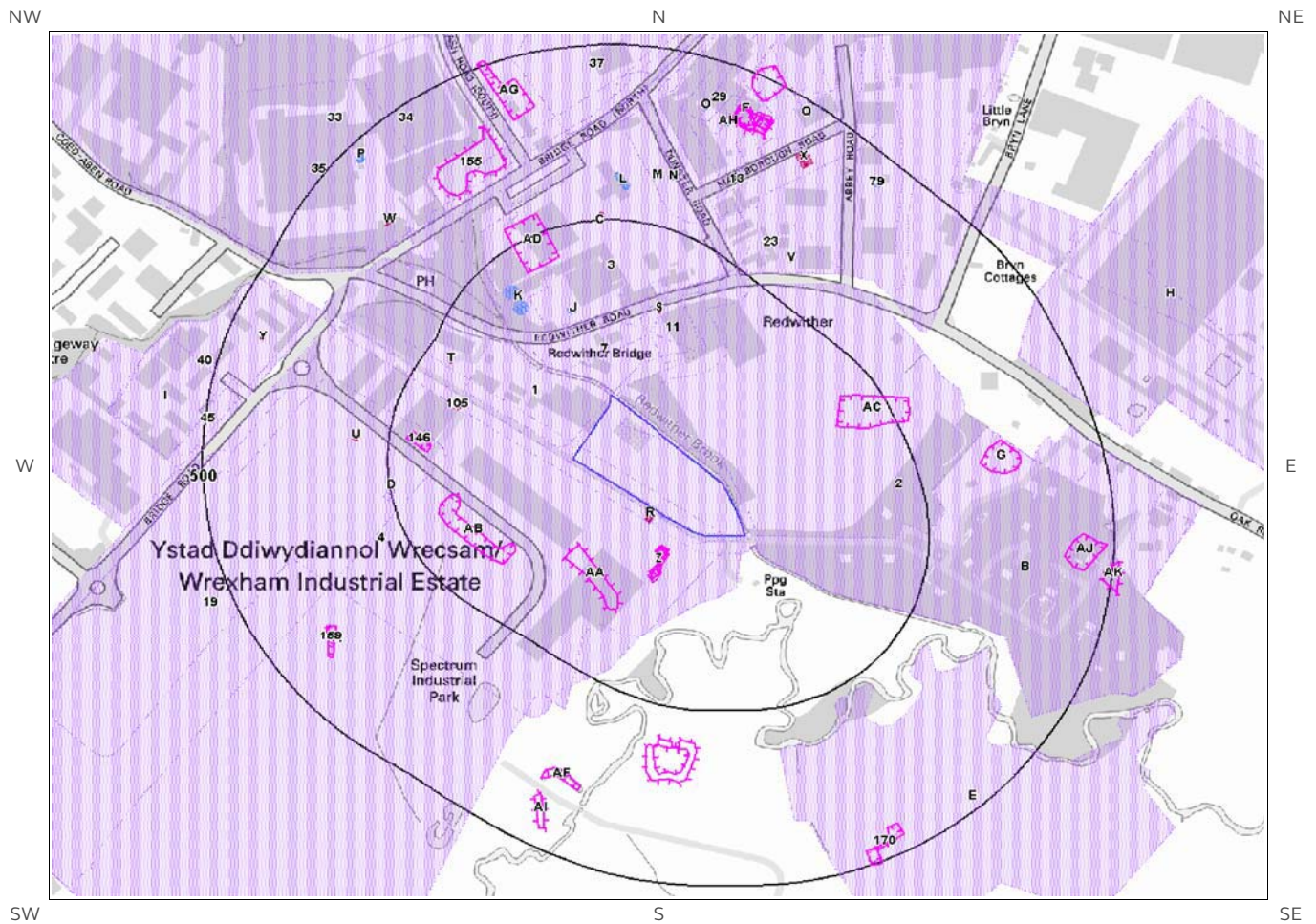
## Section 9: Natural Hazards

9.1 What is the maximum risk of natural ground subsidence?	Moderate
9.1.1 What is the maximum Shrink-Swell hazard rating identified on the study site?	Very Low
9.1.2 What is the maximum Landslides hazard rating identified on the study site?	Very Low
9.1.3 What is the maximum Soluble Rocks hazard rating identified on the study site?	Negligible
9.1.4 What is the maximum Compressible Ground hazard rating identified on the study site?	Moderate
9.1.5 What is the maximum Collapsible Rocks hazard rating identified on the study site?	Very Low
9.1.6 What is the maximum Running Sand hazard rating identified on the study site?	Low
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is in a Radon Affected Area, as between 5 and 10% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	Basic radon protective measures are necessary.

## Section 10: Mining

10.1 Are there any coal mining areas within 75m of the study site?	No
10.2 Are there any Non-Coal Mining areas within 50m of the study site boundary?	No
10.3 Are there any brine affected areas within 75m of the study site?	No

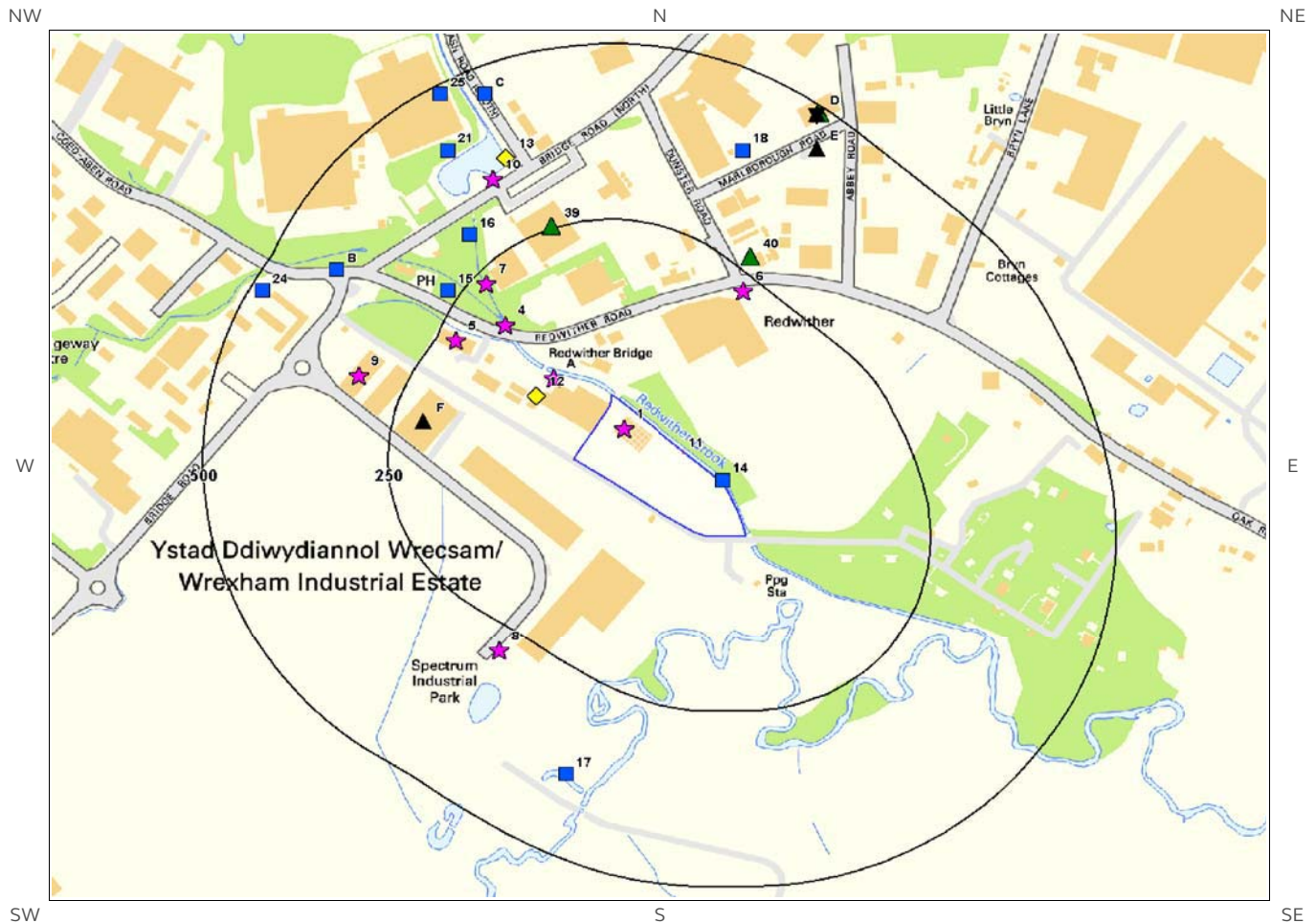
# 1. Historical Land Use



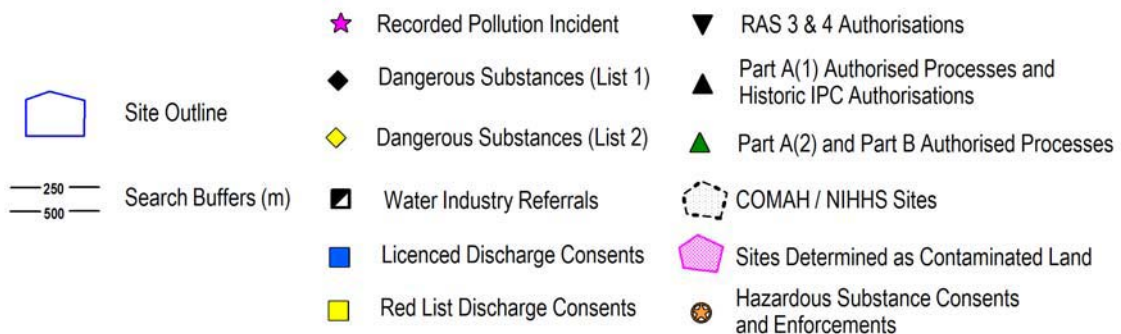
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## 2. Environmental Permits, Incidents and Registers Map



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ID	Distance (m)	Direction	NGR	Address	Operator	Type	Permission Number	Dates	Status
61D	485	NE	338600 349750	Onyx Clinical Ltd, Wrexham Plant, Marlborough Road, Wrexham Industrial Estate, Wrexham, Clwyd, LL13 9RJ	Onyx Clinical Ltd	Disposal Of Radioactive Waste (was Rsa60 Section 6).	BG6251	Date of Approval:15/12/19 99 Effective from:17/12/1999 Last date of update:2015-01- 01	Revoked/ca nulled
62D	485	NE	338600 349750	Trinco Ltd, Wrexham Plant, Marlborough Road, Wrexham Industrial Estate, Wrexham, Clwyd, LL13 9RJ	Trinco Ltd	Disposal Of Radioactive Waste (was Rsa60 Section 6).	AW7886	Date of Approval:24/6/199 7 Effective from:24/7/1997 Last date of update:2015-01- 01	Revoked/ca nulled

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

12

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

ID	Distance (m)	Direction	NGR	Details
14	3	NE	338474 349230	Address: WREXHAM RECYCLING CENTER REWITHER, WREXHAM RECYCLING CENTRE, REDWITHER ROAD, WREXHAM INDUSTRIAL ESTATE, WREXHAM, LL13 9RD Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: CG0402201 Permit Version: 1 Receiving Water: THE REDWITHER BROOK Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT (1995) Issue date: 31/10/2002 Effective Date: 31-Oct-2002 Revocation Date: -
15	267	NW	338100 349500	Address: WREXHAM IND ESTATE CONREN LTD, WREXHAM IND ESTATE CONREN LTD, CONREN LTD, UNKNOWN, UNKNOWN, UNKNOWN Effluent Type: UNSPECIFIED Permit Number: CM0086201 Permit Version: 1 Receiving Water: TRIB. OF REWITHER BROOK Status: CONSENT EXPIRED - TIME LIMIT Issue date: 04/10/1979 Effective Date: 04-Oct-1979 Revocation Date: 26/04/1995
16	298	NW	338130 349580	Address: WREXHAM IND ESTATE BRITISH CELANESE, WREXHAM IND ESTATE BRITISH CELAN, BRITISH CELANESE SITE, UNKNOWN, UNKNOWN, UNKNOWN Effluent Type: UNSPECIFIED Permit Number: CM0001801 Permit Version: 1 Receiving Water: TRIB.OF REDWITHER BROOK Status: CONSENT EXPIRED - TIME LIMIT Issue date: 31/01/1966 Effective Date: 31-Jan-1966 Revocation Date: 26/02/1993
17	388	SW	338260 348810	Address: FIRESTONE SITE WREXHAM IND ESTATE, FIRESTONE SITE WREXHAM IND ESTAT, WREXHAM IND ESTATE, UNKNOWN, UNKNOWN, UNKNOWN Effluent Type: UNSPECIFIED Permit Number: CM0033801 Permit Version: 1 Receiving Water: CLYWEDOG Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 20/05/1966 Effective Date: 20-May-1966 Revocation Date: 02/02/1994

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

0

Database searched and no data found.

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

0

Database searched and no data found.

## 2.2 Dangerous or Hazardous Sites

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

0

Database searched and no data found.

## 2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

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

10

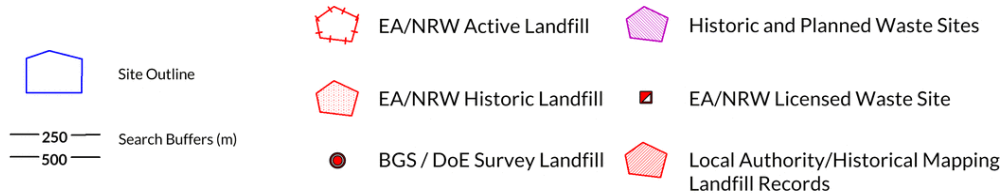
The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
1	0	On Site	338338 349303	Incident Date: 25-May-2007 Incident Identification: 497621 Pollutant: Contaminated Water Pollutant Description: Firefighting Run-Off Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
2A	84	W	338242 349376	Incident Date: 19-Jul-2006 Incident Identification: 418682 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke Water Impact: Category 1 (Major) Land Impact: Category 2 (Significant) Air Impact: Category 2 (Significant)
3A	84	W	338242 349376	Incident Date: 19-Jul-2006 Incident Identification: 418682 Pollutant: Contaminated Water Pollutant Description: Firefighting Run-Off Water Impact: Category 1 (Major) Land Impact: Category 2 (Significant) Air Impact: Category 2 (Significant)

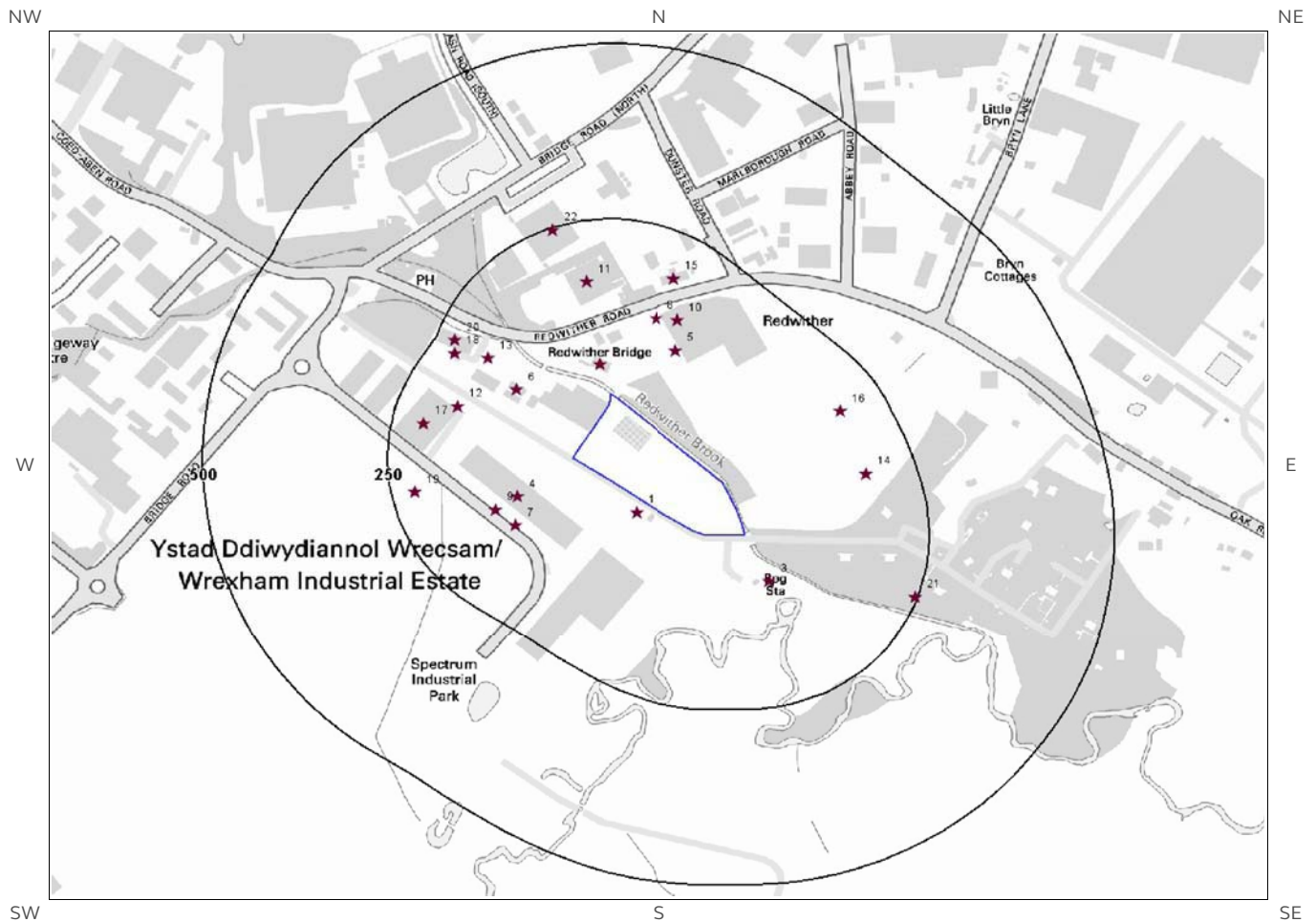
# 3. Landfill and Other Waste Sites Map



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## 4. Current Land Use Map

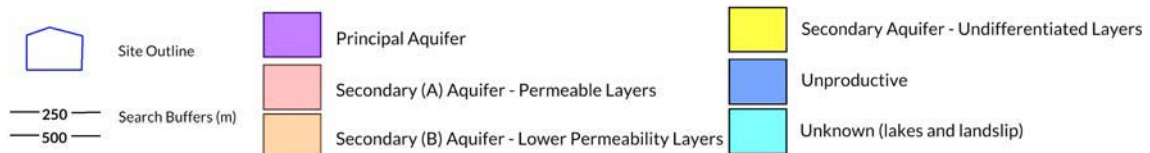


# 6 Hydrogeology and Hydrology

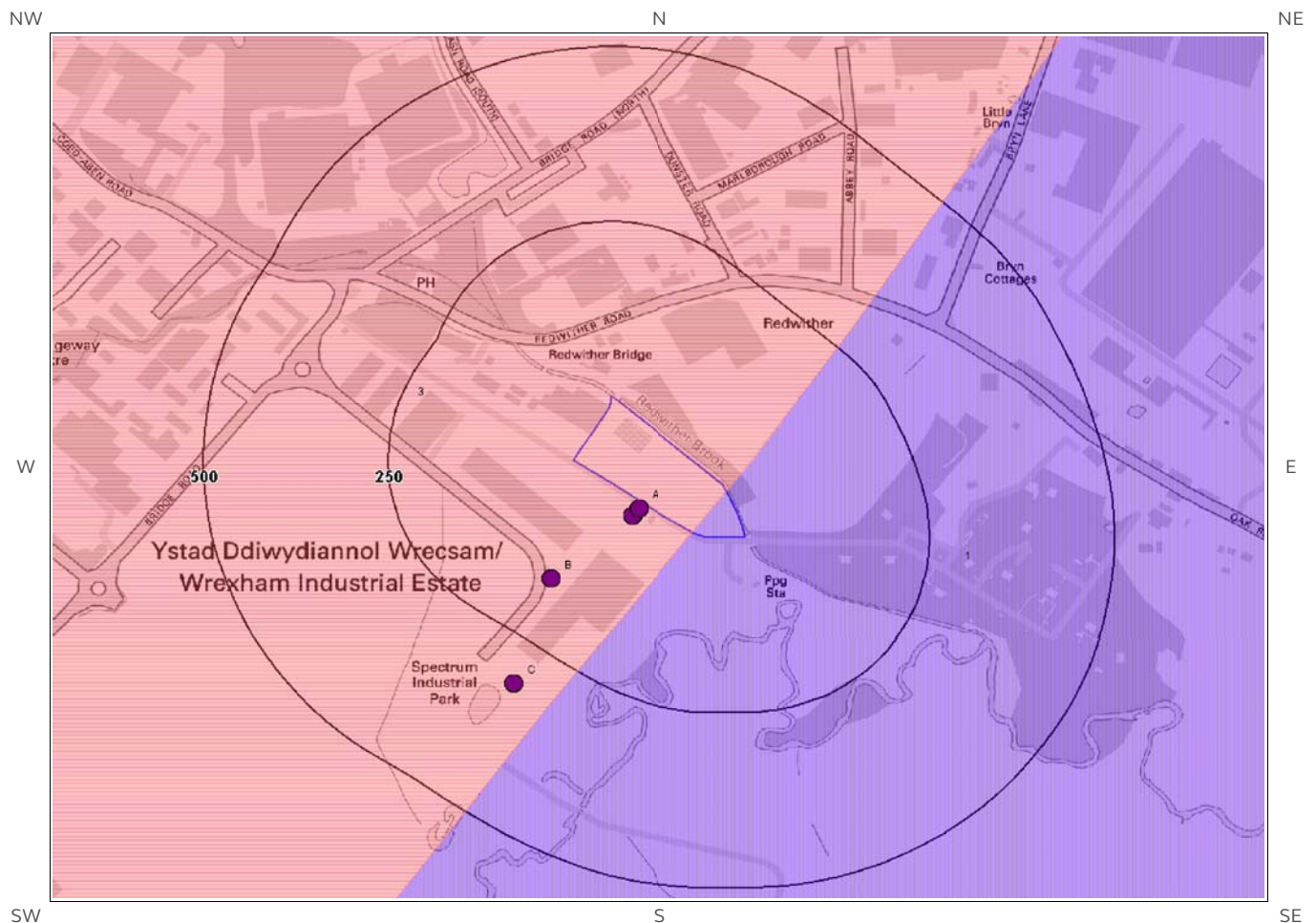
## 6a. Aquifer Within Superficial Geology



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# 6b. Aquifer Within Bedrock Geology and Abstraction Licenses



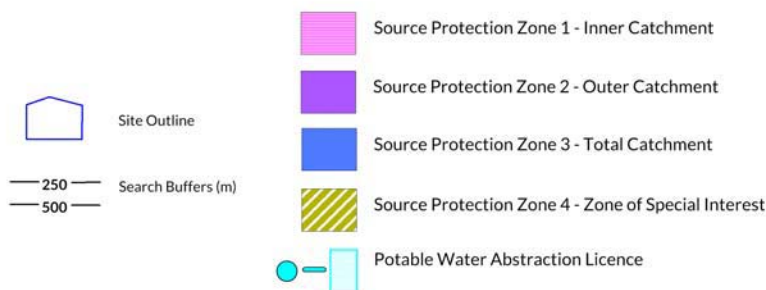
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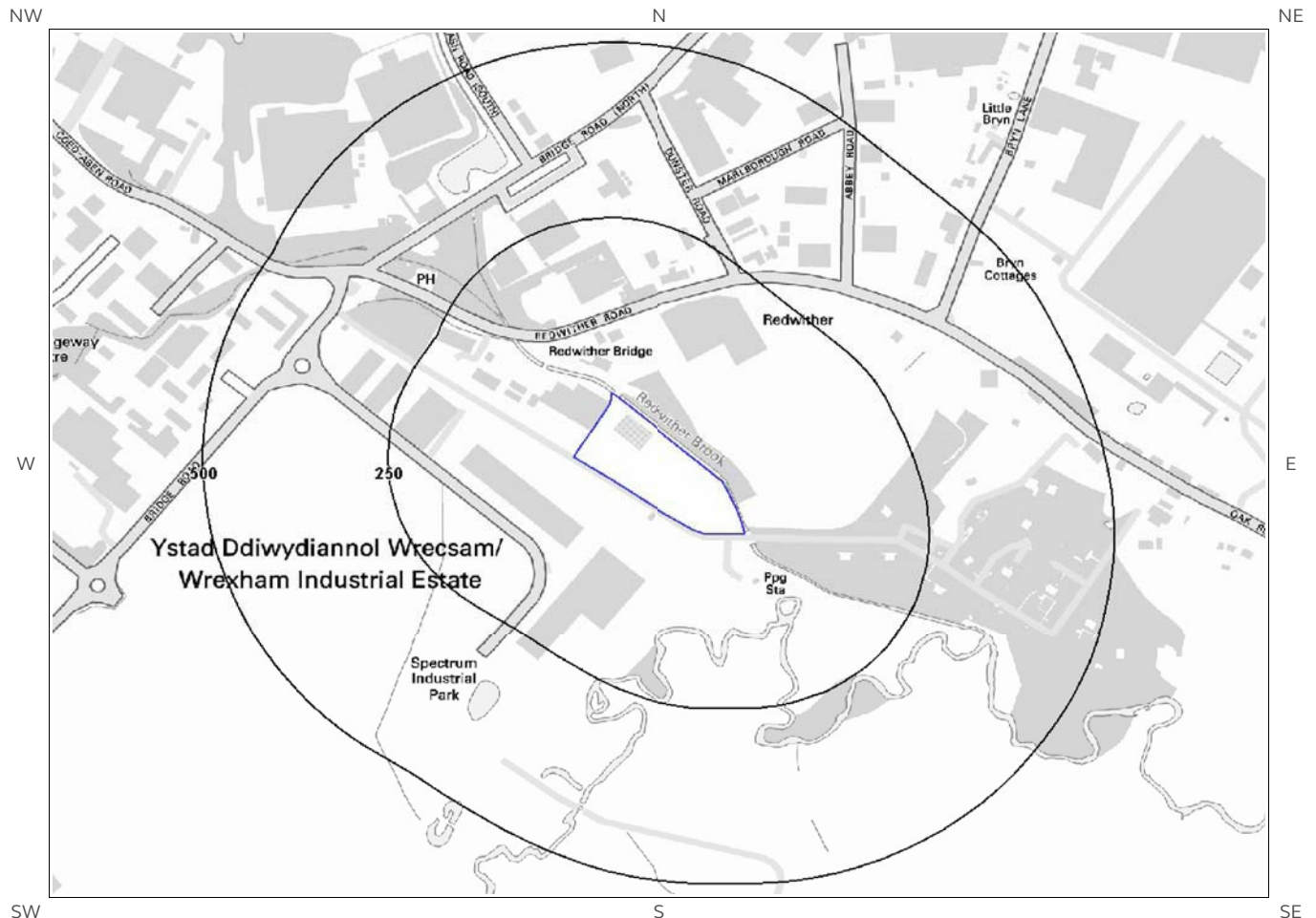
# 6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



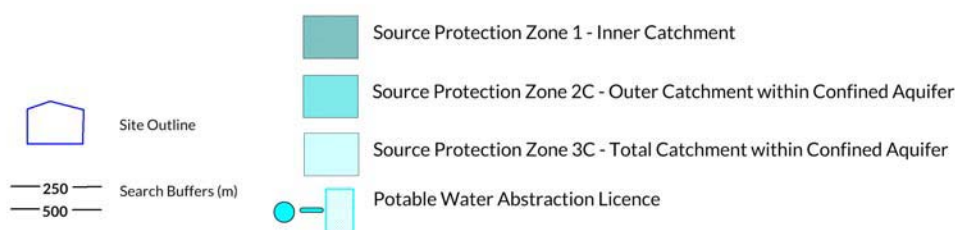
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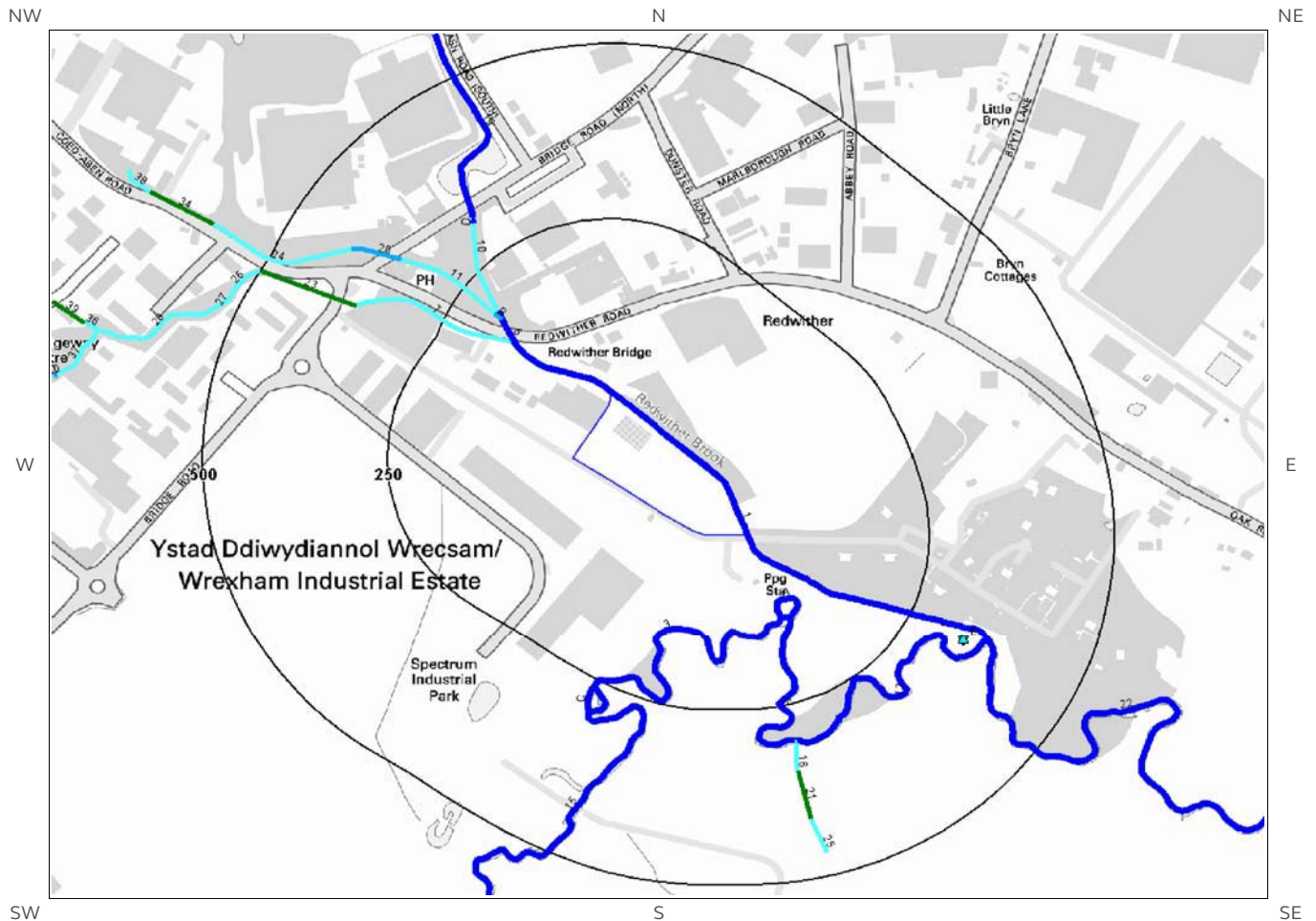
# 6d. Hydrogeology – Source Protection Zones within confined aquifer



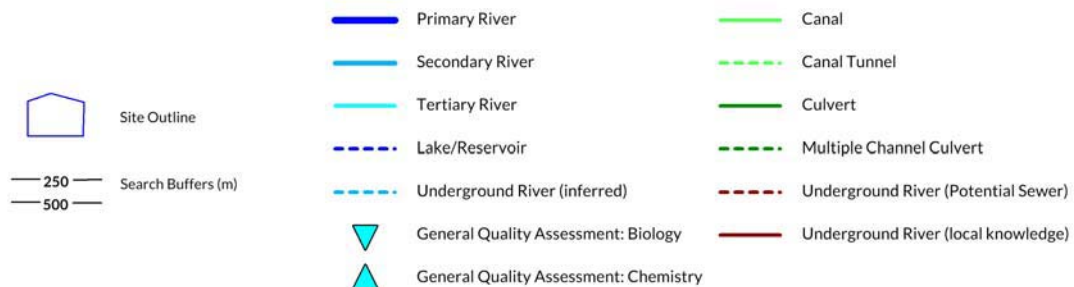
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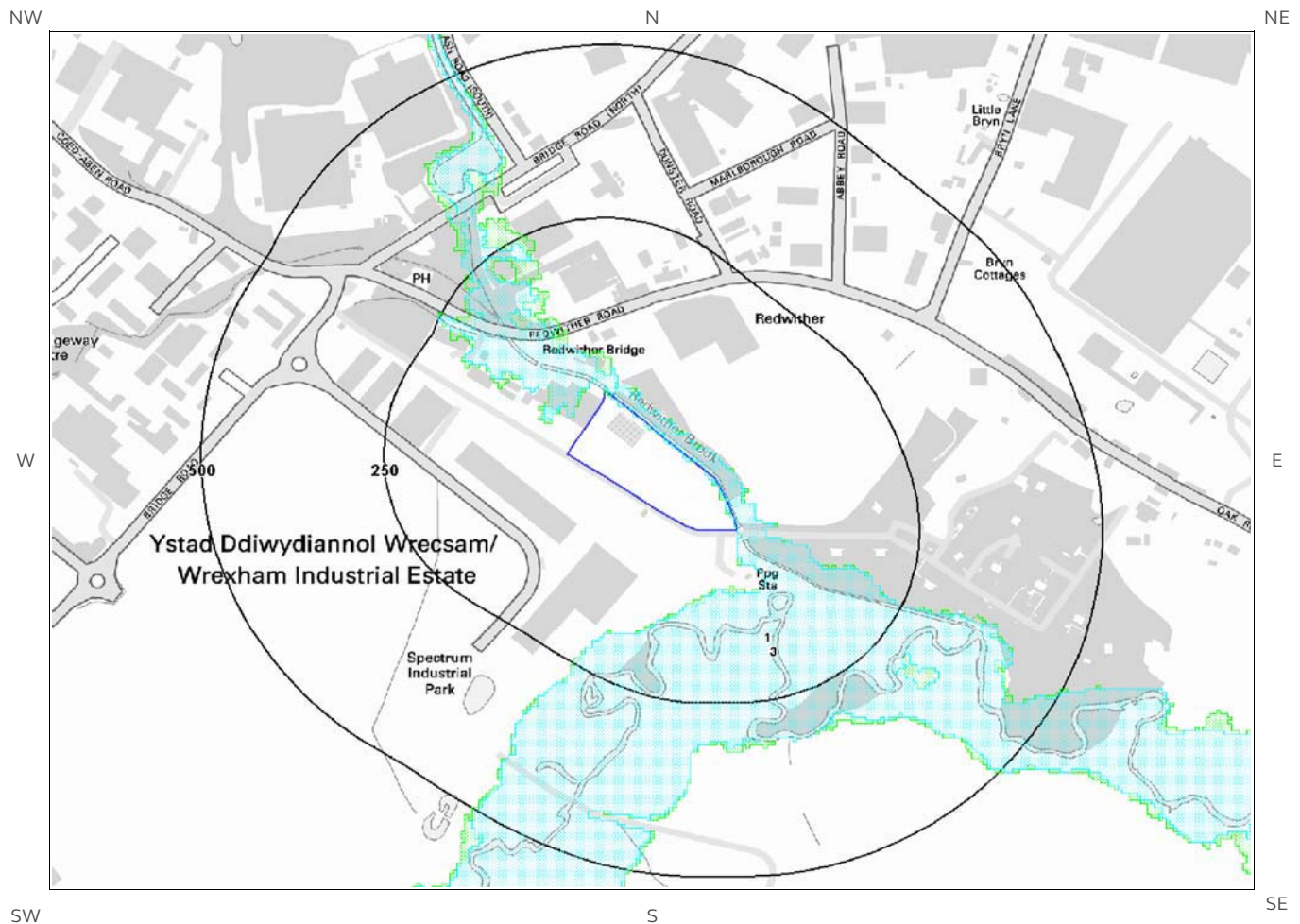
# 6e. Hydrology – Detailed River Network and River Quality



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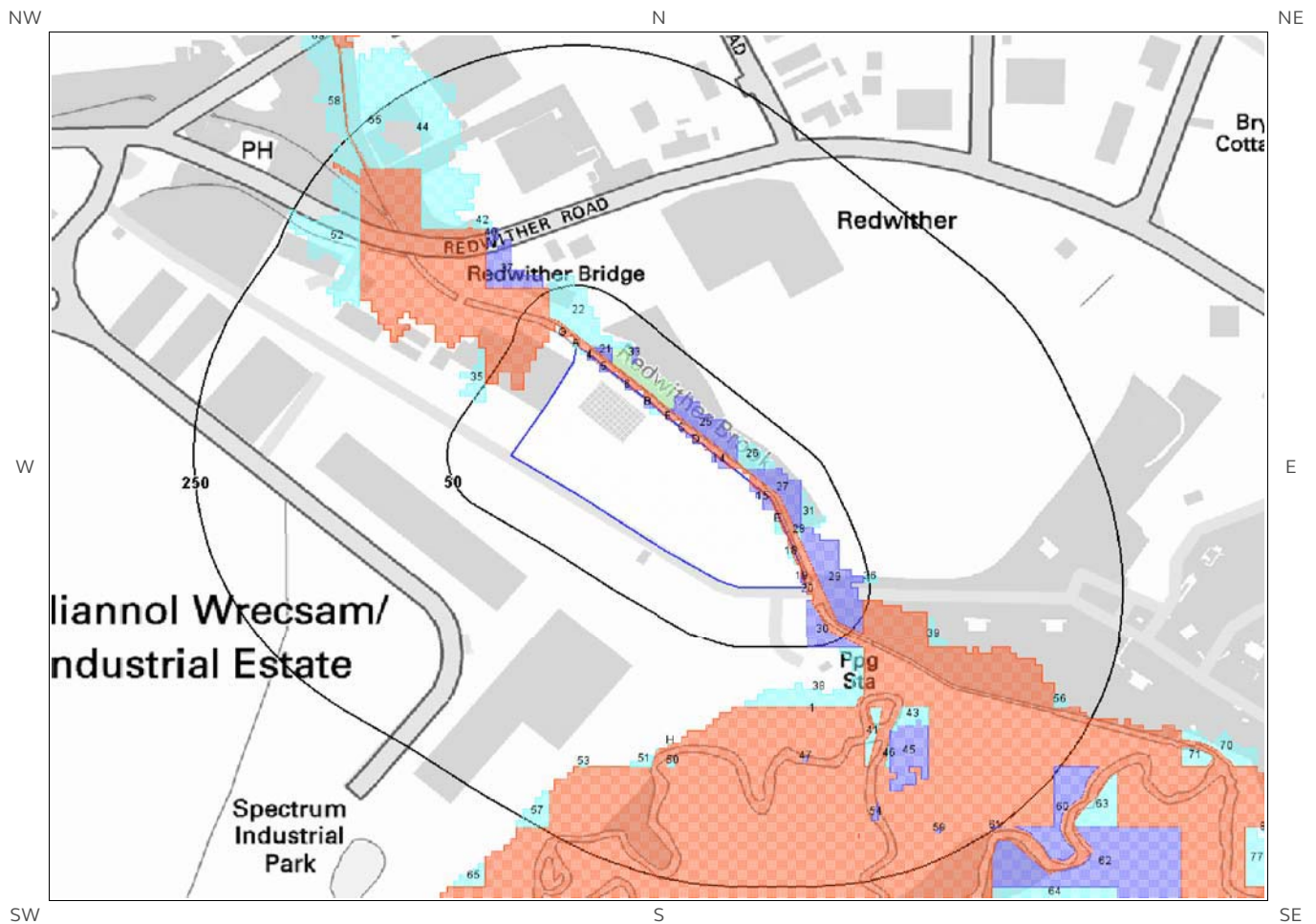
# 7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



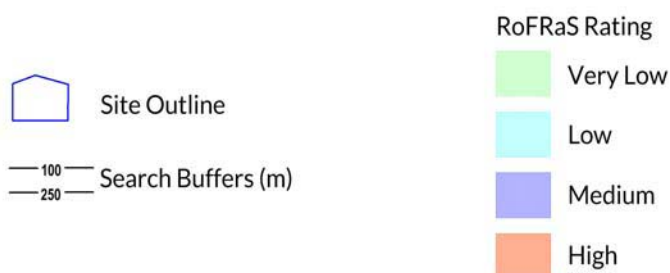
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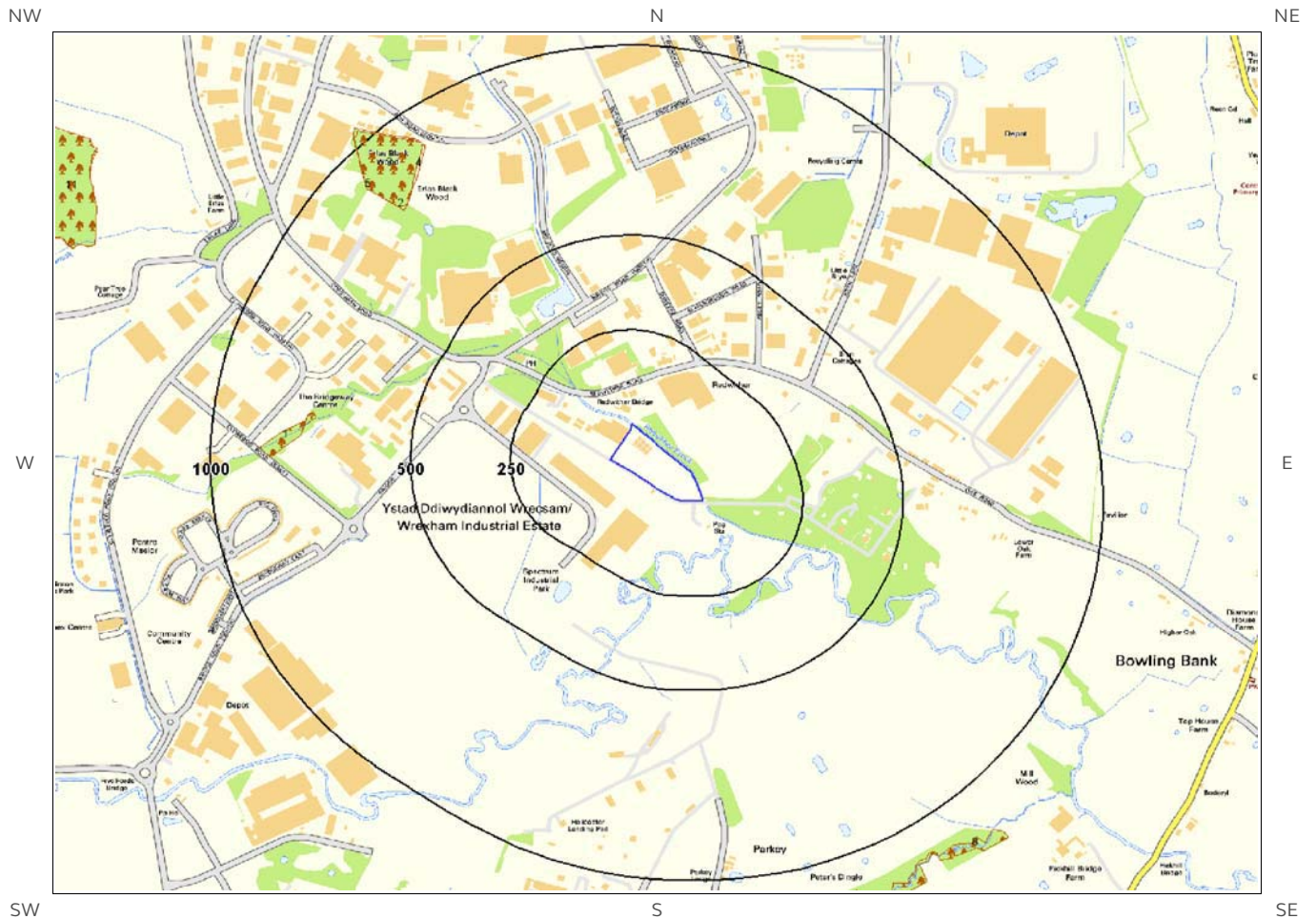
# 7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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# 8. Designated Environmentally Sensitive Sites Map



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Oaktree Environmental Ltd  
Unit 5, Oasis Park,  
Winsford Industrial Estate, Winsford,  
Winsford, CW7 3RY

Groundsure Reference: HMD-188-3539264

Client Reference: 426\_Biomass\_SI

Report Date 21 Dec 2016

Report Delivery Method: xml

Client Email: marco@oaktree-environmental.co.uk

## Groundsure Flood Insight

Address: ALANS SKIP HIRE WALES LTD, REDWITHER ROAD, WREXHAM, LL13 9RD

Dear Sir/ Madam,

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

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

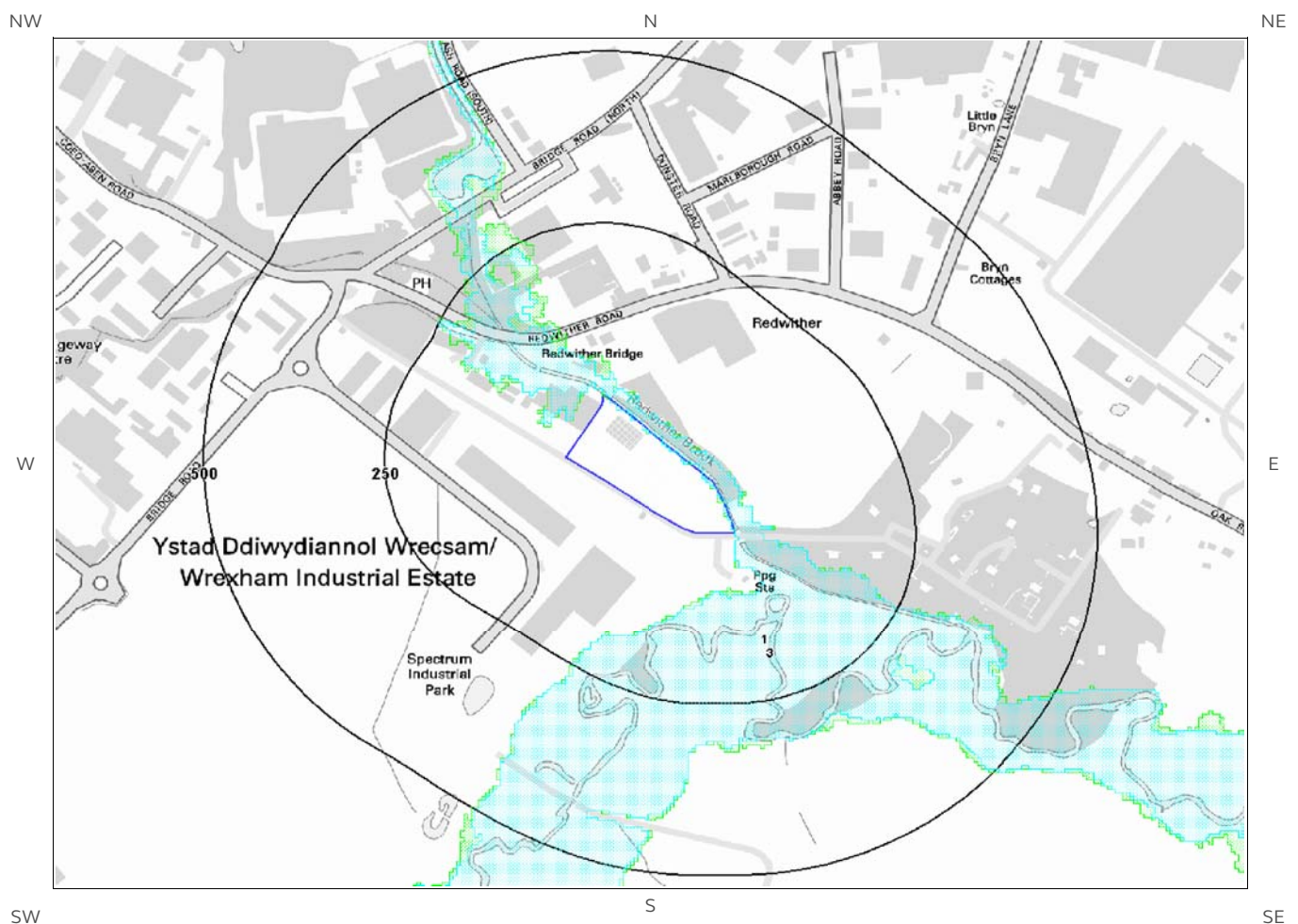
Yours faithfully,



Managing Director  
Groundsure Limited

Enc.  
Groundsure Floodinsight

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



Environment Agency/Natural  
Resources Wales Flood Map for  
Planning Legend

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