

Preliminary Risk Assessment: Former Firestone Site, Wrexham Industrial Estate

Site address:	Former Firestone Site, Wrexham Industrial Estate, Wrexham
Report prepared for:	Assets and Economic Development Department Wrexham County Borough Council Crown Building Chester Street Wrexham LL13 8BG
Report reference:	60895R1
Report status:	Final
Date issued:	December 2012
Report author:	Robert Gordon Tel: 01743 276166

Confidential
Prepared by
ESI Ltd

Preliminary Risk Assessment: Former Firestone Site, Wrexham Industrial Estate

This report has been prepared by ESI Ltd. (ESI) in its professional capacity as soil and groundwater specialists, with reasonable skill, care and diligence within the agreed scope and terms of contract and taking account of the manpower and resources devoted to it by agreement with its client, and is provided by ESI solely for the internal use of its client.

The advice and opinions in this report should be read and relied on only in the context of the report as a whole, taking account of the terms of reference agreed with the client. The findings are based on the information made available to ESI at the date of the report (and will have been assumed to be correct) and on current UK standards, codes, technology and practices as at that time. They do not purport to include any manner of legal advice or opinion. New information or changes in conditions and regulatory requirements may occur in future, which will change the conclusions presented here.

This report is confidential to the client. The client may submit the report to regulatory bodies, where appropriate. Should the client wish to release this report to any other third party for that party's reliance, ESI may, by prior written agreement, agree to such release, provided that it is acknowledged that ESI accepts no responsibility of any nature to any third party to whom this report or any part thereof is made known. ESI accepts no responsibility for any loss or damage incurred as a result, and the third party does not acquire any rights whatsoever, contractual or otherwise, against ESI except as expressly agreed with ESI in writing.

Principal Author(s)
Robert Gordon

Checked by: Andy Singleton



Reviewed by: Joe Gomme



Confidential
Prepared by
ESI Ltd

New Zealand House, 160 Abbey Foregate, Shrewsbury, SY2 6FD, UK

Tel +44(0)1743 276100 **Fax** +44 (0)1743 248600 **email** esi@esinternational.com

Registered office: New Zealand House, 160 Abbey Foregate, Shrewsbury, SY2 6FD. Registered in England and Wales, number 3212832

REPORT SUMMARY

ENVIRONMENTAL RISK SUMMARY (LAND QUALITY RISKS)

The purpose of this report is to provide clear and pragmatic advice regarding the nature and potential significance of any land quality hazards which may be present at the study site.

As such, potential land quality risks have been assessed by considering two key items:

1. The likelihood that **sources of contamination** are present within the sub surface materials at the site (*this gives a measure of the potential for contamination to be occurring at the site*).
2. The presence and nature of any **potential receptors** (i.e., something that could be adversely affected by a contaminant, such as people, an ecological system, property or a water body) **and pathways** (i.e., a route or means by which a receptor can be exposed to or affected by a contaminant) relating to the site and surrounding area. (*this gives a measure of the environmental sensitivity of both the site and its local setting*).

The assessment findings are summarised as follows:

1. Potential for contamination to be occurring at the site	High	
	Medium	
	Low	
2. The environmental sensitivity of both the site and the local area	High	
	Medium	
	Low	
3. Overall risk posed by the site	High	
	Medium	
	Low	

Key:

High	
Medium	
Low	

It is acknowledged that the risk assessment findings are based on documentary sources of information alone. A proportionate programme of intrusive site investigations would be required to fully verify these findings.

RECOMMENDATIONS (FOR NEXT STEPS)

The Site historically **occupied part of a Royal Ordnance Factory** involved in the **manufacture of explosives during World War II** and then part of the Site was subsequent developed for a **tyre manufacturing facility** that operated between the 1960s and the early 1990s. Following the closure of the tyre factory a **programme of remediation was undertaken** to address observed **ground contamination associated with both the former ROF and the tyre factory**. There is however **uncertainty over the sufficiency of the remediation undertaken**. Whilst it is **unlikely that any gross areas of contamination remains on Site** there is still the potential for **localised areas of residual contamination** within Made Ground which could pose a **risk to current or future site users; future buildings and underground services; and to local groundwater and surface waters**.

In the context of establishing a development framework and indicative masterplan for the Site, **it will be necessary to determine any potential constraints** associated with any **residual contamination** present **on any future development** (i.e. if there were any change in land use) and to assess whether any contamination presents **any potential liabilities under Part IIA of the Environmental Protection Act 1990**.

It is therefore recommended that a **proportionate programme of intrusive site investigation** and monitoring works is undertaken in order to **confirm the nature of the Made Ground materials** that are still present, characterise their composition (including the potential for ground gas generation) and assess their significance as a potential contamination source.

The site investigation should focus on **assessing the composition of the Made Ground** present at the Site (including **verifying the remediation that was undertaken** previously) in the context of establishing potential risks to current or future Site users. The investigation should also assess the **potential presence or migration of any bulk gasses** (ground gas) from the Made Ground and to determine **the likelihood of an**

off Site pathway via shallow groundwater to the nearby alluvium aquifer and to surface waters. A suitable **risk assessment** would then be required, based on the conceptual site understanding and targeting risks to current and potential future Site users from direct contact exposure, vapour inhalation and exposure to ground gas and risks to controlled water receptors.

1. INTRODUCTION

1.1 BACKGROUND

Wrexham County Borough Council (the Council), in partnership with the Welsh Government, require a development framework and indicative masterplan for the land holding, known as the former Firestone site (the Site), situated to the south-east of Wrexham Industrial Estate.

The Site is owned by the Welsh Government and was formerly occupied by the Firestone tyre manufacturing factory. The potential issue of contamination associated with the Firestone factory, plus other former uses, has been identified as a key consideration for the development framework and indicative masterplan. The Council and the Welsh Government therefore require the contamination status of the Site to be established both to determine any potential constraints on its future development and to assess the liabilities that exist under Part IIA of the Environmental Protection Act 1990.

In August 2012, ESI Ltd. (ESI) was commissioned by Broadway Malyan on behalf of the Council and Welsh Government to undertake a Phase I Preliminary Risk Assessment as the first stage of establishing the contamination status of the Site. This is to enable a preliminary assessment of the potential contaminant risks which may be posed to relevant environmental receptors as defined in the Part IIA Statutory Guidance (Welsh Government, 2012). Recommendations are then required describing the requirement for any further investigations which may be needed to clarify the contamination status of the Site.

The assessment has been undertaken by reviewing various environmental data associated with both the Site itself and the surrounding land area; undertaking a site visit (on 06/08/12); consulting with relevant Council and Government officers with prior knowledge of the Site and surrounding area; developing a 'conceptual understanding' of the likely sub surface conditions beneath the Site; and performing a preliminary assessment of any risks posed to people, buildings or the natural environment from the anticipated land quality at the Site.

1.2 SITE SETTING

The Site, as shown on Figure 1, covers a total area of ~45 ha and currently comprises vacant land on the southern edge of Wrexham Industrial Estate. It is bounded to the north, north-east and south-west by various industrial and commercial units and premises. An area of residential housing is located approximately 100 m to the east of the Site. The flood plain of the River Clywedog / Afon Clywedog is located along the south-eastern edge of the Site.

The Site was originally developed in the late 1930s or early 1940s as part of a Royal Ordnance Factory (ROF) which operated during World War II and originally occupied a much larger area (essentially the entire Industrial Estate). Between approximately 40 and 50 ROF buildings were originally present on the Site, the majority of these were relatively small structures which were isolated from one another. The ROF closed at the end of the war and the land was sold for development as an industrial estate.

In the late 1960s the north-western part of the Site was developed by Firestone as a factory for tyre manufacture. This involved the demolition of the majority of the former ROF buildings from this part of the Site. It is unclear when the Firestone factory closed but it is understood that part of it was subsequently used by a timber panel manufacturer and that in the early 1990s the Firestone factory buildings were demolished.

In 1994 the Site was cleared on behalf of the Welsh Development Agency; this included work to break out most of the foundations of the former buildings (from the Firestone factory and the ROF), undertaking soil remediation of several areas that were identified as being contaminated and the general re-grading of the surface of the Site. Since this time the Site has been left vacant which has allowed shrubs, trees and other vegetation to become well established across the Site.

1.3 PURPOSE OF THIS REPORT

The purpose of this report is to provide clear and pragmatic advice regarding the nature and potential significance of any land quality hazards which may be present at the Site in the context of the potential future development of the Site and under the current (or future) owners responsibilities under Part IIA of the Environmental Protection Act 1990.

1.4 REPORT CONTENTS

This report is divided into two sections, as described below:

Section	Content	Purpose
Section 2: LAND QUALITY ASSESSMENT	A summary of the site history and environmental setting, the findings of the preliminary risk assessment and associated recommendations	To present a clear and concise overview of the land quality issues facing the Site, with a focus on the potential regulatory and financial implications of any land contamination which may be present
Section 3: SUPPORTING INFORMATION	A collection of published data records, mapping and photographs, on which the land quality assessment is based	To provide detailed information in support of the risk assessment; this section also represents a source of reference data for use in any subsequent site works/assessments

This report has been produced in accordance with industry best practice and relevant technical standards (including, BS 10175 (BSI, 2011), Environment Agency (2004; 2010)). Specific reference has also been made to the Environment Agency's technical guidance on land contamination associated with former explosives manufacturing and processing sites (Environment Agency, 2001).

1.5 REPORT LIMITATIONS

It is noted that the findings presented in this report are largely based on information supplied by third parties. Whilst we assume that all information is representative of past and present conditions we can offer no guarantee as to its validity.

This report excludes consideration of potential hazards arising from any activities at the Site other than normal use and occupancy for the current land uses. Hazards associated with any other activities have not been assessed and must be subject to a specific risk assessment by the parties responsible for those activities.

2. LAND QUALITY ASSESSMENT

2.1 SITE DETAILS				
Site name:	Former Firestone site	Site area:	44.6 ha	
Current use:	Vacant land. Appears to be informally used by members of the public (e.g. for dog walking / motor cycling).	Land cover:	The Site is vegetated with a mixture of well-developed trees and shrubs. Surficial soils are frequently exposed along paths and tracks.	
Surface topography:	The Site is generally level; although the south-eastern edge of the Site slopes down towards the flood plain of the River Clywedog / Afon Clywedog.	Additional information:	Risks must also be considered in the context of the potential future development of the Site under a commercial / industrial land use.	

2.2 CONCEPTUAL UNDERSTANDING (POTENTIAL SOURCE OF CONTAMINATION)					
Site history	Historical mapping shows that the Site and surrounding land was agricultural until the late 1930s/early 1940s when a Royal Ordnance Factory (ROF) was constructed for the manufacture of explosives following the outbreak of World War II. Prior to this time a small group of buildings (possibly a farm) and a chapel were present in the north-east of the Site. The meandering channel of the River Clywedog / Afon Clywedog was present immediately to the south-east of the Site in a similar position to the current day. A desk study that includes a reasonably detailed description of the ROF, including its purpose, development history and layout has previously been prepared for the Council (BAE Systems, 2001). The salient information from this desk study relevant to the Site is as follows: - The ROF was used for the manufacture of cordite until August 1945. - Potential contaminants identified are cordite, nitroglycerine, nitrocellulose, nitroguanidine (picrate), explosive devices and asbestos. - Plans (see Figure 2) show that between 40 and 50 buildings were present on the Site.	POTENTIAL SOURCES OF CONTAMINATION	The Site appears to have been agricultural land until the late 1930s when an ROF for the manufacture of cordite was built and operated until 1945. The specific activities and detailed use of the ROF buildings located on the Site is unknown, however, some evidence suggests that the majority of the buildings were used for the storage of materials or finished products rather than for manufacturing processes. As such, any associated contamination at the Site itself may be less likely than other areas of the ROF. The ROF was sold for development as an industrial estate. Records referred to by BAE Systems (2001) indicated that some areas of the ROF were potentially contaminated by explosive residues in drainage systems and on the floors of buildings. The records report that remediation work was carried out of these areas but no further details including when this happened (including if this related to the Site) are provided. By 1966 the Firestone tyre manufacturing factory had been built on the north-western part of the Site. It had been necessary to demolish a number of the former ROF buildings in this area to construct the factory. It appears that the ROF buildings on the remainder of the Site were present after the Firestone factory had been built. It is unclear who demolished these other buildings or when although records indicate that the floor slabs remained until the site preparation work that was undertaken in the early 1990s (Symonds Travers Morgan, 1995).	MEDIUM / HIGH	POTENTIAL SIGNIFICANCE

2.2 CONCEPTUAL UNDERSTANDING (POTENTIAL SOURCE OF CONTAMINATION)					
Site history	- The majority of the buildings were relatively small and were isolated from one another. No records of the use of the ROF buildings present on the Site are available. However, the fact they are relatively small, isolated from one another and the remainder of the ROF site, and their orientation suggests that they may have been used for storage of raw / finished products rather than for manufacturing. At the end of the war, the ROF was sold for re-development as an industrial estate. The industrial estate has continued to expand since this time and commercial units and industrial premises are located immediately to the north-east, north-west and south-west of the Site. An area of residential housing, which was built by the 1960s, is present approximately 100 m to the west of the Site. It is unclear when the Site itself was re-developed following the war but it appears that by 1966 (at the latest according to discharge consent records) Firestone had constructed a factory for the manufacture of tyres on the north-western part of the Site (covering an area of ~14 ha; see Figure 3). Development of the factory involved demolishing the former ROF buildings from this area and constructing a single large building. According to an undated map the factory may have incorporated at least two of the former ROF buildings. Later maps show that these buildings were demolished and replaced with a separate building to the south-east of the main building. Historical mapping from the 1960 shows that the ROF buildings were still present at this time (a pond, various drains and hydrants are also marked amongst the buildings). It is unclear when the ROF buildings on the remainder of the Site were demolished. However, according to Symonds Travers Morgan (1995) the ROF buildings were initially demolished to ground level and then buried.	POTENTIAL SOURCES OF CONTAMINATION	The site preparation work undertaken in the early 1990s included a series of site investigations that identified a number of areas of ground contamination across the Site relating to historical activities associated with both the Firestone factory and the ROF. Selected areas of ground contamination underwent remediation as part of the site preparation activities. However, the evidence suggests that other areas of contamination were not remediated. The former uses of the Site as a ROF, for the manufacture of tyres and of timber panels involved the use of potential contaminants. Ground contamination has previously been identified in parts of the Site. Some remediation of these areas was undertaken in the early 1990s. However, some uncertainties remain over whether the remediation was entirely comprehensive. Whilst it is considered relatively unlikely that gross sources of contamination remain undetected on the Site this cannot be ruled out entirely. Moreover, the available data suggests that localised contamination may not have been dealt with; as such the possibility that localised residual contamination may remain present also cannot be ruled out. The uncertainties over the site investigations and the effectiveness of the remediation activities that were undertaken in the early 1990s are described in more detail in Section 2.4.	MEDIUM / HIGH	POTENTIAL SIGNIFICANCE

2.2 CONCEPTUAL UNDERSTANDING (POTENTIAL SOURCE OF CONTAMINATION)				
Site history	It is also unclear precisely when the Firestone factory closed but according to Travis Morgan (1994a) the factory buildings were in the process of being demolished in March 1994. Also according to Travis Morgan (1994a) after the factory had closed part of it was used by a timber panel manufacturer. Symonds Travers Morgan (1995) describe the work that was undertaken across the Site following the closure of the Firestone factory to prepare it in advance of any eventual redevelopment. The work involved the following: - Removal (as far as practicable) of underground obstructions to a depth of 3 metres. This included the ground slabs and pad foundations from the Firestone factory and from the former ROF buildings that were still present. - Two basements were found within the main Firestone building; their end walls basements were completely removed to prevent the local build-up of shallow groundwater. - Three deep concrete slabs relating to the former ROF buildings were left in situ along the south-western boundary of the Site due to their proximity to a high pressure gas line. - A number of underground tanks and associated pipework were removed from the Firestone factory. - Underground pipework from the former ROF was traced and broken out (including a number of unmarked pipes). - Hard standing and roadways on both the Firestone factory and that associated with the former ROF were broken up (bituminous materials were disposed of off-Site and concrete arisings were crushed and used as back-fill).	POTENTIAL SOURCES OF CONTAMINATION		MEDIUM / HIGH POTENTIAL SIGNIFICANCE

2.2 CONCEPTUAL UNDERSTANDING (POTENTIAL SOURCE OF CONTAMINATION)					
Site history	- Excavation and removal of four areas of contamination following a series of site investigations (Travis Morgan, 1994a). - Re-grading of the Site.	POTENTIAL SOURCES OF CONTAMINATION		MEDIUM / HIGH	POTENTIAL SIGNIFICANCE
Current land use	The Site was cleared in the early 1990s and since this time has been left vacant. From observations made during the site visit (06/08/12) it is evident that the Site is routinely used by members of the public. There was evidence of dog-walking and that motorised vehicles (both motorcycles and four-wheel vehicles) had recently accessed the Site. The Site was essentially litter free and no evidence of fly-tipping was observed.		No obvious sources of gross contamination have been identified in relation to the existing land use. Potential minor or localised contamination may however relate to the unauthorised use of the Site by the public (e.g. minor fuel spills; disposal of waste, etc.).	LOW	
List 2 National Incident Recording System; Potential Contamination Incidents	Two pollution incidents in 2002 and 2003 are recorded within 50 m of the Site (both associated with businesses operating to the north-east of the Site). The incidents involved diesel and ammonia solution and reportedly caused minor impacts to land or water. Various other pollution incidents have also been recorded in the wider area (the majority associated with businesses on the Industrial Estate). They include further diesel spills, contaminated fire fighting water run-off and the release of sewage to both River Clywedog / Afon Clywedog and Redwither Brook.		Despite a number of pollution incidents having occurred in reasonably close proximity to the Site, the incidents themselves were minor and are unlikely to represent a source of contamination on the Site.	LOW	
Neighbouring land uses	The Site is currently bounded to the north-east, north and south-west by commercial units that have been built within the last ~20 years. An older industrial complex dating from the 1960s is located to the north-west of the Site. Residential housing also dating from the 1960s is present c. 100 m to the west of the Site. There are numerous industrial land uses within 250 m of the Site including various depots and engineering companies. A metal manufacturing / fabricator company is located immediately to the north-east of the Site and a road haulage company		The landfills and several of the industrial land uses located in the vicinity of the Site (which involve the use of potential contaminants) are potential sources of contamination. However, the industrial operations tend to be relatively small scale and as such any contamination is likely to be restricted to their immediate vicinity. Unless there is a contaminant pathway (e.g. via shallow groundwater - which is considered relatively unlikely) the existing neighbouring land uses are not considered to pose a significant source of contamination for the Site.	LOW	

2.2 CONCEPTUAL UNDERSTANDING (POTENTIAL SOURCE OF CONTAMINATION)				
Neighbouring land uses	is located immediately to the south-east of the Site. There are three landfills within 1.5 km of the Site on the industrial estate: - A closed landfill ~350 m to the north of the Site operated by British Celanese in the 1970s for industrial sludge. - A closed landfill ~700 m to the north-east of the Site operated by the Welsh Government for special waste (originally from Eire Electronics). - A closed landfill ~1.1 km to the north-east of the Site operated by BICC Cables Ltd in the 1960/70s for inert and liquid sludge.	POTENTIAL SOURCES OF CONTAMINATION		LOW
				POTENTIAL SIGNIFICANCE

2.3 CONCEPTUAL UNDERSTANDING (ENVIRONMENTAL SENSITIVITY)					
Geology and groundwater	As described above, the Site and the wider Industrial Estate has been the subject of previous development which is known to have involved extensive landscaping; published geological mapping indicates that formerly landscaped ground covers the entire Site. A reasonable thickness of Made Ground is therefore anticipated at the Site. Published mapping (BGS, 2012) indicates beneath the landscaped ground there is a superficial cover of glacial till (clay with a mixture of gravel, cobbles and boulders) overlying the Salop Formation (a sequence of mudstones, sandstones and conglomerates) and the Kinnerton Sandstone Formation (which comprises fine to medium grained sandstone). The Salop Formation is present beneath the majority of the Site; the Kinnerton Formation is only present along a ~100 m wide strip along the south-east edge of the Site. Alluvium (sediments of clay, silts, and sand and gravel) is present immediately to the south-east of the Site associated with the River Clywedog / Afon Clywedog. The Salop Formation and alluvium are Secondary A Aquifers; the Kinnerton Sandstone is a Principal Aquifer. Glacial till is classified as Unproductive Strata. Detailed geological logs are available for two boreholes within 100 m of the Site (see Section 3.4). The borehole (SE34NE42) located immediately to the north-east of the Site describes 'boulder clay' to a depth of 37 m bgl; which overlies a ~20 m inter-bedded sequence sands, gravels and cobbles and further 'boulder clay' layers. The sandstone bedrock was encountered ~60 m bgl. The second borehole (SJ34NE45/2) located just over 130 m to the north-west of the Site encountered a 'very stiff clay' with occasional gravel to a depth of 17.6 m. A layer of sand containing groundwater was encountered immediately below	POTENTIAL RECEPTORS	Principal Aquifer (Kinnerton Sandstone Formation) - rock that has high inter-granular and/or fracture permeability; usually meaning that it provides a high level of water storage. It may also support water supply and/or river base flow on a strategic scale. Secondary A Aquifer (Salop Formation and alluvium) - sediments with permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. Shallow groundwater above the glacial till has previously been observed at the Site (see Section 2.4) and could be in hydraulic connection with groundwater likely to be present within the alluvium and also with local surface water features such as River Clywedog / Afon Clywedog and Redwither Brook. However, the presence of the glacial till will offer protection to the underlying aquifers from the vertical migration of any contamination.	MEDIUM	POTENTIAL SENSITIVITY

2.3 CONCEPTUAL UNDERSTANDING (ENVIRONMENTAL SENSITIVITY)				
Geology and groundwater	this depth. The BGS technical report for the Wrexham area (BGS, 1991), contains detailed geological maps which cover the location of the Site. The maps indicate that the surface of bedrock is between -20 and -30 m AOD and that the thickness of the superficial deposits is in the order of 50 m beneath the Site.	POTENTIAL RECEPTORS	There are three licenced groundwater abstractions located immediately to the east of the Site. All three abstractions are for process water drawn from the Kinnerton Sandstone aquifer. The Site is located on a Source Protection Zone (which appears to be associated with one of these abstractions) and is also located within a Groundwater Drinking Water Protection Zone classified as 'Probably at Risk'.	HIGH
Surface water	The Site is located close to the River Clywedog / Afon Clywedog. The river flows from south-west to north-east, along the south-eastern edge of the Site, and at its closest is within 15 m of the Site. Redwither Brook flows through the Industrial Estate to the north and north-east of the Site at a distance of between ~150 and 250 m. It is channelised / partially culverted and flows towards the south-west where it joins the River Clywedog / Afon Clywedog about 600 m to the east of the Site. An Environment Agency defined Zone 3 flood plain (1 in 100) associated with the river covers the area immediately to the south-east of the Site. Available records suggest that historically there have been a number of consented discharges to both the River Clywedog / Afon Clywedog and Redwither Brook associated with operations undertaken on the Industrial Estate in the vicinity of the Site. Only two consents are currently effective one from a recycling centre ~300 m to the north-east of the Site and one believed to be from the closed landfill ~700 m to the north-east. Both consent discharge to Redwither Brook. The records detail two former consents to discharge to the River Clywedog / Afon Clywedog when the Site was operated by Firestone. The consents were originally granted in 1966 and revoked in 1994. No details of the type of effluent are given. An updated plan provided by the Council shows that the 'Firestone Trade Effluent' was 3,600 gallons per day (~16,400 litres per day).		Potential contaminant migration pathways exist to the River Clywedog / Afon Clywedog and Redwither Brook via shallow groundwater or via preferential flow pathways (e.g. along backfilled former drains or outfalls). The required travel distance to the River Clywedog from the Site is very short and is the more likely receptor. However, significant dilution will occur within river (and to a lesser degree the brook). Water quality data from the river do not suggest any significant issues with water quality. Nevertheless, the River Clywedog / Afon Clywedog, and to a lesser degree Redwither Brook, may be receptors of concern.	HIGH

2.3 CONCEPTUAL UNDERSTANDING (ENVIRONMENTAL SENSITIVITY)

Surface water	The Environment Agency monitor water quality within the River Clywedog / Afon Clywedog up and down-stream of the Site. Up-stream data collected ~1.2 km to the west between 2005 and 2008 suggest that the biological and chemical water quality is good; data collected from the monitoring point downstream of the Site (at the confluence with Redwither Brook about 600 m to the east) suggests that the biological quality was good to very good during the same period but the chemical quality decline from good in 2005 to fair from 2006 onwards. The closest surface water abstraction licence is from a tributary to Redwither Brook over 1 km to the north (up-stream) of the Site. Various shallow drainage ditches are present in the south-east of the Site; some were observed to contain water during the site visit but flows appeared to be minimal. Two ponds are located on the south of the Site. It is understood that these may be balancing ponds.	POTENTIAL RECEPTORS		HIGH	POTENTIAL SENSITIVITY
Environmental designations	No designated environmentally sensitive areas have been identified within 2 km of the Site.		There are no designated environmentally sensitive areas which have been identified as receptors of concern.	LOW	

2.4 PREVIOUS SITE INVESTIGATIONS

It is understood that three site investigations have been carried out on the Site. They were all completed in the early 1990s and relate to the closure of the Firestone factory and the site preparation works that were undertaken at the time in advance of any eventual redevelopment. Records of the site investigation undertaken held by the Welsh Government are incomplete; the only information available are a partial copy of the report describing the third site investigation (Travis Morgan, 1994a); a works order describing the remediation to be undertaken (Travis Morgan, 1994b); and a summary report describing the site preparation works (Symonds Travers Morgan, 1995). A summary of the investigations, the findings and the remediation works undertaken is as follows:

- 11 boreholes were drilled on behalf of JR Grimley in 1992. However, other than their locations no further information is available.

2.4 PREVIOUS SITE INVESTIGATIONS

- 12 boreholes, 81 trial pits and 20 trial trenches were drilled / excavated in 1993 across the Site. Whilst the reports that document this investigation are not available the information that was gathered is summarised and referred to by both Travis Morgan (1994a) and Symonds Travers Morgan (1995). These documents state that the purpose of this investigation was to determine the presence of contamination; to this end, 'localised suspect material' was taken for laboratory analysis. In total 166 soil samples, 11 groundwater samples, two surface water samples and three samples from sumps were taken and analysed for a limited range of inorganic and organic compounds. In total 33 soil samples and 7 water samples were classified as 'contaminated' with either hydrocarbons, various metals or alkaline pH's (in soils) and metals (lead and selenium), phenol, ammoniacal nitrogen and sulphate (in waters). This was based on the prevailing ICRL guidance for 'landscaped areas and hardcover'. The elevated hydrocarbon concentrations in soils were mainly restricted to the area of the Firestone site to the east of the main building (see Figure 4). The overall conclusion was however that the observed 'contamination' was associated with 'occasional and isolated suspect material' and it was inferred that the results 'were not representative of the site materials as a whole'.
 - 35 trial pits further were also excavated in 1994 (Travis Morgan, 1994a). The locations of these trial pits was restricted to the east of the main Firestone building and the across the former ROF area. Whilst over 100 soil samples and 8 groundwater samples underwent laboratory analysis the results are missing from the copy of the report available. A summary of the investigation findings is however included in the report and includes details of visual evidence of contamination in various locations (including to the east of the main Firestone building where contamination was observed during the earlier investigation). Many of the trial pits recorded evidence of structures and materials (e.g. concrete floor slabs; pipework, etc.) believed to be associated with the former ROF buildings.

Four of the soil samples taken were considered to be 'heavily contaminated' (due to sulphate, toluene extractable material (up to 28,400 mg/kg) and several metals (including lead up to 3,400 mg/kg) and 12 samples were 'moderately contaminated' (due to elevated pH, sulphate, phenol, toluene extractable material and zinc) with reference to the prevailing ICRL guidance. The locations of these samples are shown on Figure 4 which illustrates that they were mainly taken from the area to the east of the main Firestone building and the adjoining former ROF area. All eight groundwater samples were classified as contaminated due to the presence of hydrocarbons.

Note that the ICRL guidance that defined levels of contamination was published in the early 1990s and has since been superseded (e.g. Environment Agency, 2009). It is recognised that what was considered 'contaminated' according to the ICRL guidance may now not be and vice versa.
 - The report describing the site preparation works undertaken (Symonds Travers Morgan, 1995) summarised the findings of the three investigations and confirmed that a variable thicknesses of Made Ground was present above a clay (the glacial till). Three areas (beneath the northern part of the former main Firestone building, and to the south and east of the Site) were identified as having thicknesses up to ~3 m. In several locations Made Ground was also observed to be absent. However, it is noted that the re-grading done as part of the site preparation works after these investigations is likely to have altered the previously observed Made Ground thicknesses. The report also describes how shallow groundwater was often encountered above the clay but that it was not consistently observed across the Site.
 - A works order (Travis Morgan, 1994b) describes the remediation that was to be included in the site preparation works. This identified four areas of contamination that were to be excavated and removed off Site for disposal. The locations of these areas are shown on Figure 4. It is noted that these locations do not correlate with the locations where samples were taken that were classified as contaminated in the earlier site investigation report (Travis Morgan, 1994a). It is not clear why this is the case.
 - The summary report describing the site preparation works undertaken (Symonds Travers Morgan, 1995) detailed how the works involved identifying and removing all below ground obstructions from the former Firestone factory and the former ROF (this included identifying and tracing the majority of floor slabs; areas of hardstanding and pipework). The report includes a plan showing the same four areas of contamination and confirms that they had been excavated and removed. The report also states that amount of contaminated ground that required excavated in 'Area 3' was larger than originally anticipated.
- It is acknowledged that the site preparation works are likely to have located and removed the majority of structures that contained contamination at the Site. As such it is unlikely that any structures containing gross sources of contamination that were not found remain undetected. However, a number of uncertainties and data gaps exist:
- Some of the areas that were identified as contaminated (including the location where the maximum concentration of toluene extractable material was observed) do not appear to have been specifically addressed during the remediation works (e.g. the area immediately to the east of the main former Firestone building).

-		
2.4 PREVIOUS SITE INVESTIGATIONS		
- Not all areas of Site have been investigated (e.g. beneath the Firestone buildings). - The site preparation works included the re-grading of the Site; this likely included moving and spreading out of potentially contaminated shallow soils to previously uncontaminated areas.		
2.5 REGULATOR PERSPECTIVE		
Angela Guy (Contaminated Land Officer) of Wrexham County Borough Council advised that they were not aware of any specific land quality issues associated with the Site or immediate surrounding area other than the historical ROF land use and the site investigation information on the Site held by the Welsh Government (as described in Section 2.4). A review of planning applications made in the vicinity of the Site identified that only one site investigation (RSK ENSR, 2005) was available for a planning application (P/2004/0522) made within 250 m of the Site. It had been undertaken in 2005 on the property immediately to the south of the Site (although the investigated area was some ~200 m from the Site boundary). This location had also formerly been part of the ROF and more recently part of a road haulage depot. The investigation involved seven trial pits and encountered up to 2.1 m of Made Ground overlying a stiff clay (glacial till) which is similar to the findings of the investigations undertaken on the Site. Modest concentrations of some metals and poly-aromatic hydrocarbons were identified in samples taken from Made Ground (which could be associated with either the former ROF or haulage depot land uses); no evidence of any explosive materials originating from the former ROF were observed.		
2.6 PRELIMINARY RISK ASSESSMENT		
The Site was originally developed as part of a ROF involved in the manufacture of explosives during World War II. Following the end of the war the ROF was sold for development as an industrial estate. A factory for the manufacture of tyres was built on part of the Site in the 1960s. The factory closed and had been demolished by the early 1990s. Site investigations undertaken at about this time identified several areas of contamination associated with the former land uses. Works were undertaken in the early 1990s to prepare the Site for eventual redevelopment. The works involved the tracing and removal of the majority of the underground obstructions (including foundations of former Firestone and ROF buildings) and also the excavation and disposal of four areas contaminated ground. There is however some uncertainty over the sufficiency of the remediation undertaken. Whilst it is considered somewhat unlikely that any gross areas of contamination remain on Site there is still the potential for localised areas of residual contamination associated with both the ROF and later land uses to be present. A preliminary assessment of contaminated land risks posed to identified environmental receptors is given below. Risks are considered in the context of both the current (public accessing vacant land) and potential future (commercial / industrial land use) Site uses. The current conceptual model is shown on Figure 5. The risk to current users of the Site of being exposed to contaminated materials through direct contact exposures (including soil ingestion, dermal contact and dust ingestion and inhalation) is considered to be low given the likely low frequency and duration of time that current users will be present on Site, and the low probability that they would encounter and become exposed to contaminated materials in the near surface soils. The risk to potential future (commercial / industrial) users of the Site of being exposed to contaminated materials through direct contact exposures (including soil ingestion, dermal contact and dust ingestion and inhalation) is also considered to be low. Hence, whilst future Site occupants will spend		LOW / MEDIUM OVERALL RISK RATING

larger periods of time on Site, the anticipated use of hard standing across much of the Site (in the context of future industrial land use) will severely limit any direct exposure mechanisms. The risk to current users of Site of being exposed to vapour phase contaminants through the inhalation of outdoor air is predominantly dependent on		
2.6 PRELIMINARY RISK ASSESSMENT		
the presence (extent, location and composition) of any relevant contaminant sources (i.e., within any materials present in the subsurface at the Site). On balance, risks to current users of the Site are however likely to be low due to the likely low frequency and duration of time that current users will be present on Site, the likely absence of gross volatile contamination, and the significant vapour 'dilution'/mixing which occurs in outdoor air. The risk to potential future (commercial / industrial) users of Site of being exposed to vapour phase contaminants through the inhalation of indoor or outdoor air is considered to be low to medium. This is based on the increased frequency and duration that future users might be present on Site and the potential presence of localised sources of residual volatile contamination. Note: further site investigation is required to clarify the scale of any future vapour risks. The risk to future on Site buildings and their occupants from ground gases within the sub surface (including methane and carbon dioxide associated with the breakdown of organic materials in soil) is considered to be low to medium due to the potential presence of materials with gassing potential being present at the Site (e.g. within Made Ground). The risk to off Site buildings and their occupants from ground gases is considered to be low. The risk to future on Site buildings or underground services from contamination (e.g. through sulphate damage to concrete or permeation of drinking water supply pipes) is considered to be low to medium due to the potential for localised areas of residual contamination across the Site. Transport of any dissolved or free phase contaminants to groundwater in the underlying bedrock (i.e. the Salop and Kinnerton Sandstone formations which are Secondary A and Principal aquifers respectively) is possible. However, the likely absence of any gross contamination sources and presence of a significant thickness (up to 50 m) of clayey glacial till deposits suggests that the risks to these groundwater receptors will be low. Risks to the groundwater within the Alluvium (a Secondary A Aquifer) and local surface water features (primarily the River Clywedog / Afon Clywedog) are considered to be medium, based on the probability that some residual contamination is present, observations from the previous site investigations that groundwater was contaminated at the Site and the likelihood of a pollution linkage via the migration of contaminated shallow groundwater to the alluvium and the river. The Site lies immediately adjacent to the flood plain of the River Clywedog / Afon Clywedog which has a 1 in 100 annual risk of flooding. The Site is not in an area of unstable geology but is in, or close to, an area of former coal mining. Available information suggests that the potential risks associated with subsidence from shallow mining on Site are negligible. Results from a screening assessment suggest that the Site is in an area susceptible to groundwater flooding; however separate studies by ESI have shown that this is unlikely given the prevailing hydrogeological setting.	LOW / MEDIUM	OVERALL RISK RATING

2.7 RECOMMENDATIONS (FOR NEXT STEPS)

The Site historically occupied part of a Royal Ordnance Factory involved in the manufacture of explosives during World War II and then part of the Site was subsequently developed for a tyre manufacturing facility that operated between the 1960s and the early 1990s. Following the closure of the tyre factory a programme of remediation was undertaken to address observed ground contamination associated with both the former ROF and the tyre factory. There is however uncertainty over the sufficiency of the remediation undertaken. Whilst it is unlikely that any gross areas of contamination remains on Site there is still the potential for localised areas of residual contamination within Made Ground which could pose a risk to current or future site users; future buildings and underground services; and to local groundwater and surface waters.

In the context of establishing a development framework and indicative masterplan for the Site, it will be necessary to determine any potential constraints associated with any residual contamination present on any future development (i.e. if there were any change in land use) and to assess whether any contamination presents any potential liabilities under Part IIA of the Environmental Protection Act 1990.

It is therefore recommended that a proportionate programme of intrusive site investigation and monitoring works is undertaken in order to confirm the nature of the Made Ground materials that are still present, characterise their composition (including the potential for ground gas generation) and assess their significance as a potential contamination source.

The site investigation should focus on assessing the composition of the Made Ground present at the Site (including verifying the remediation that was undertaken previously) in the context of establishing potential risks to current or future Site users. The investigation should also assess the potential presence or migration of any bulk gasses (ground gas) from the Made Ground and to determine the likelihood of an off Site pathway via shallow groundwater to the nearby alluvium aquifer and to surface waters. A suitable risk assessment would then be required, based on the conceptual site understanding and targeting risks to current and potential future Site users from direct contact exposure, vapour inhalation and exposure to ground gas and risks to controlled water receptors.

Figure 1 Site location

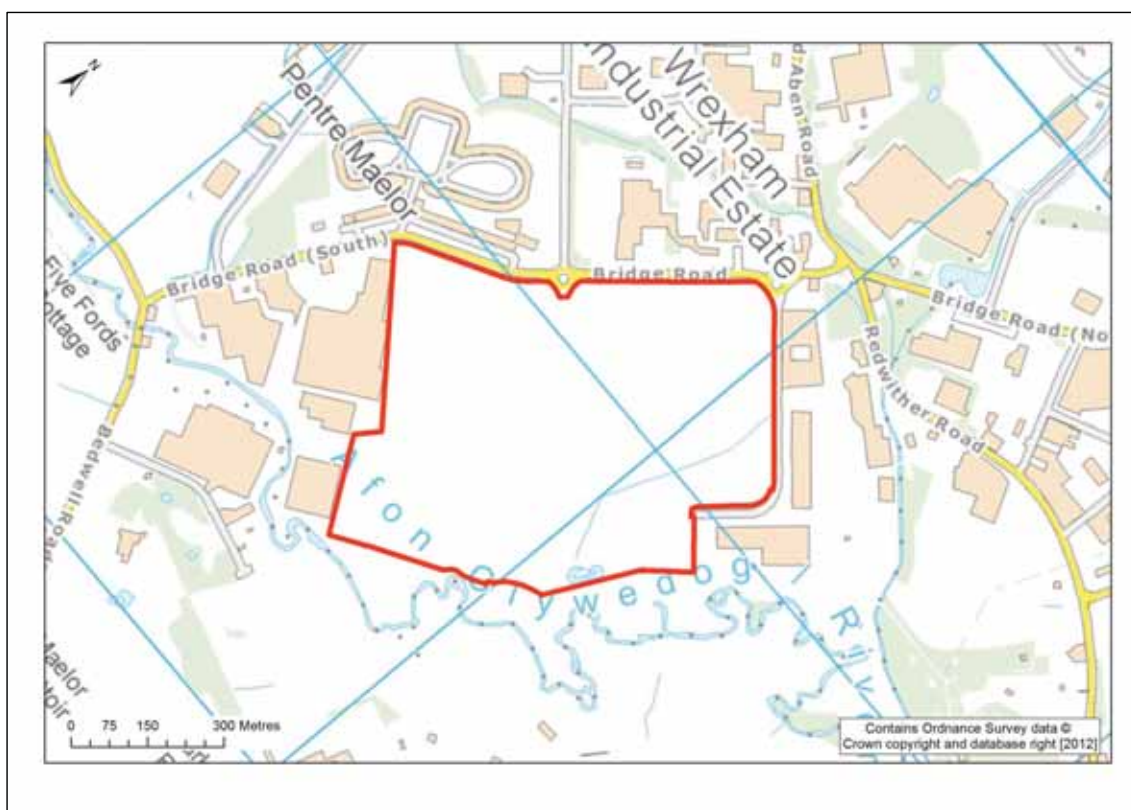


Figure 2 Layout of former Royal Ordnance Factory (c. 1939-1945)

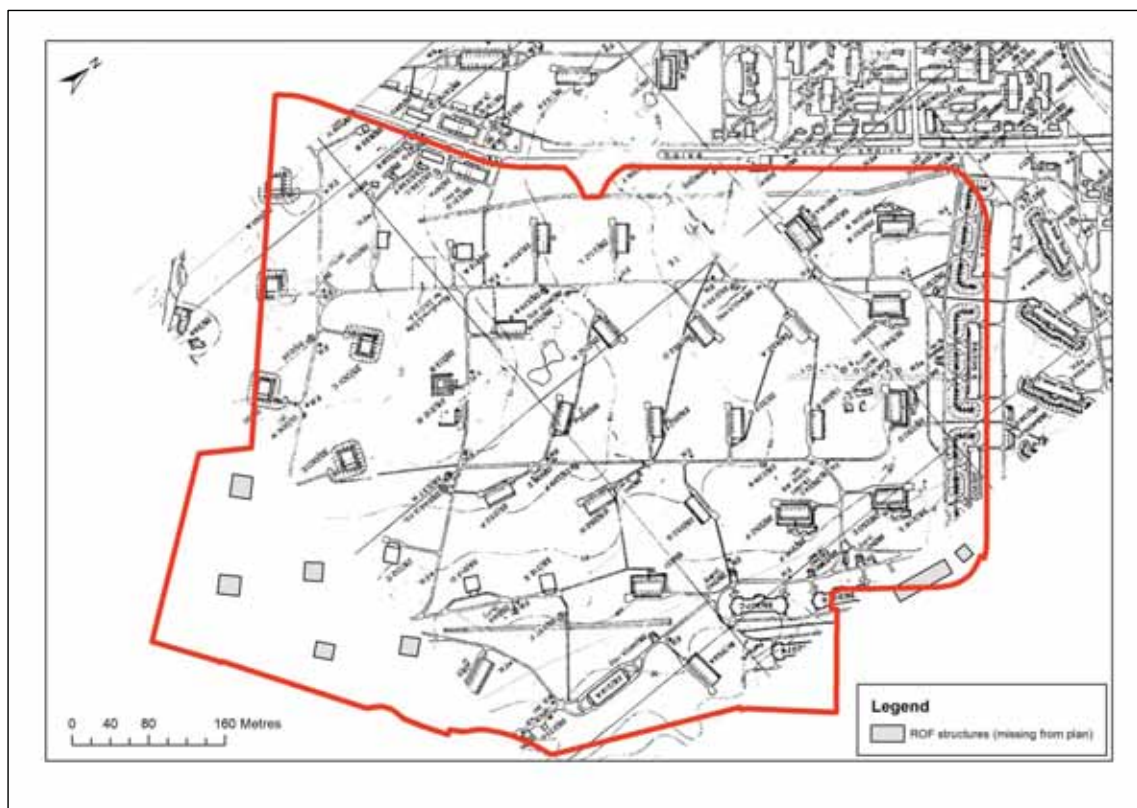


Figure 3 Layout of former Firestone site (c. mid 1960s)

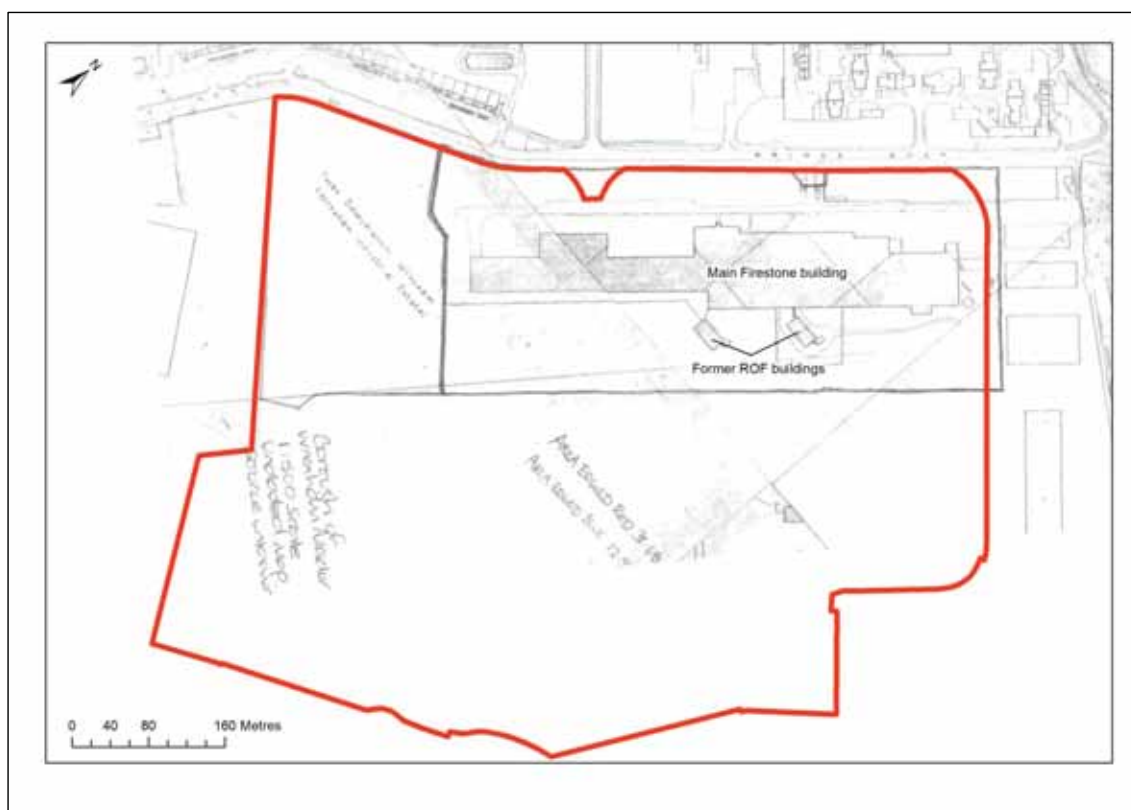


Figure 4 Previous site investigation locations

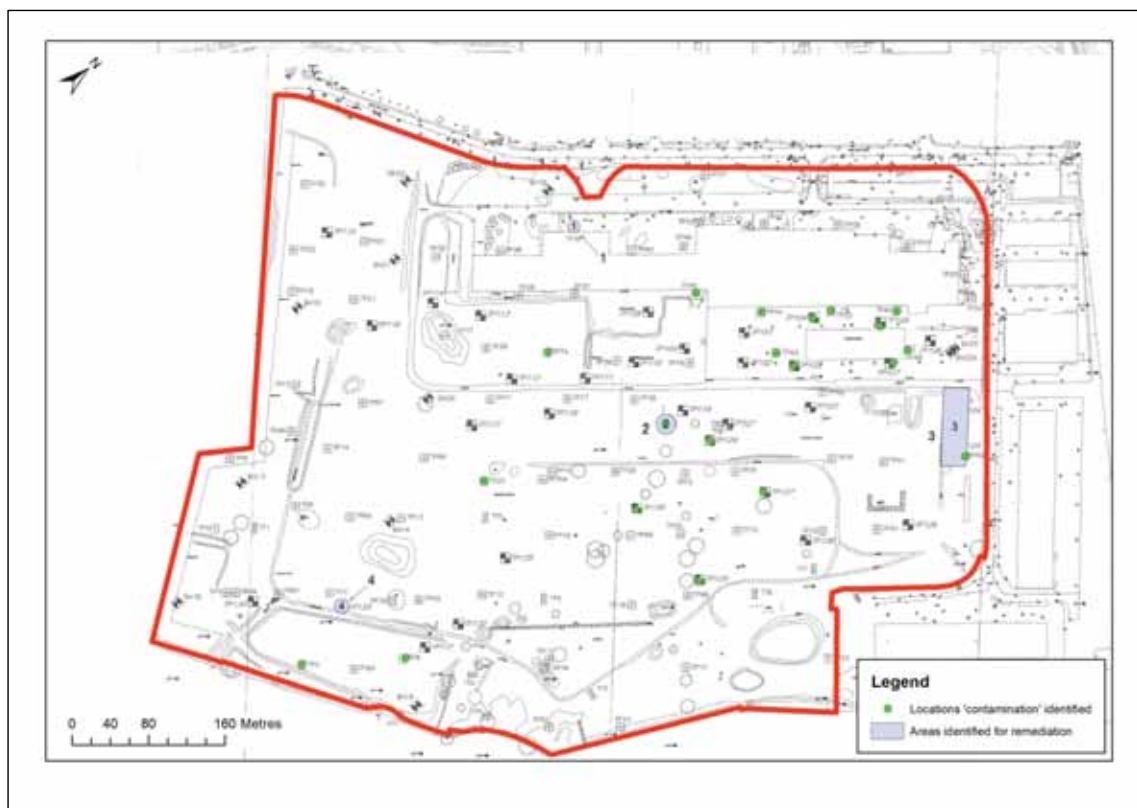
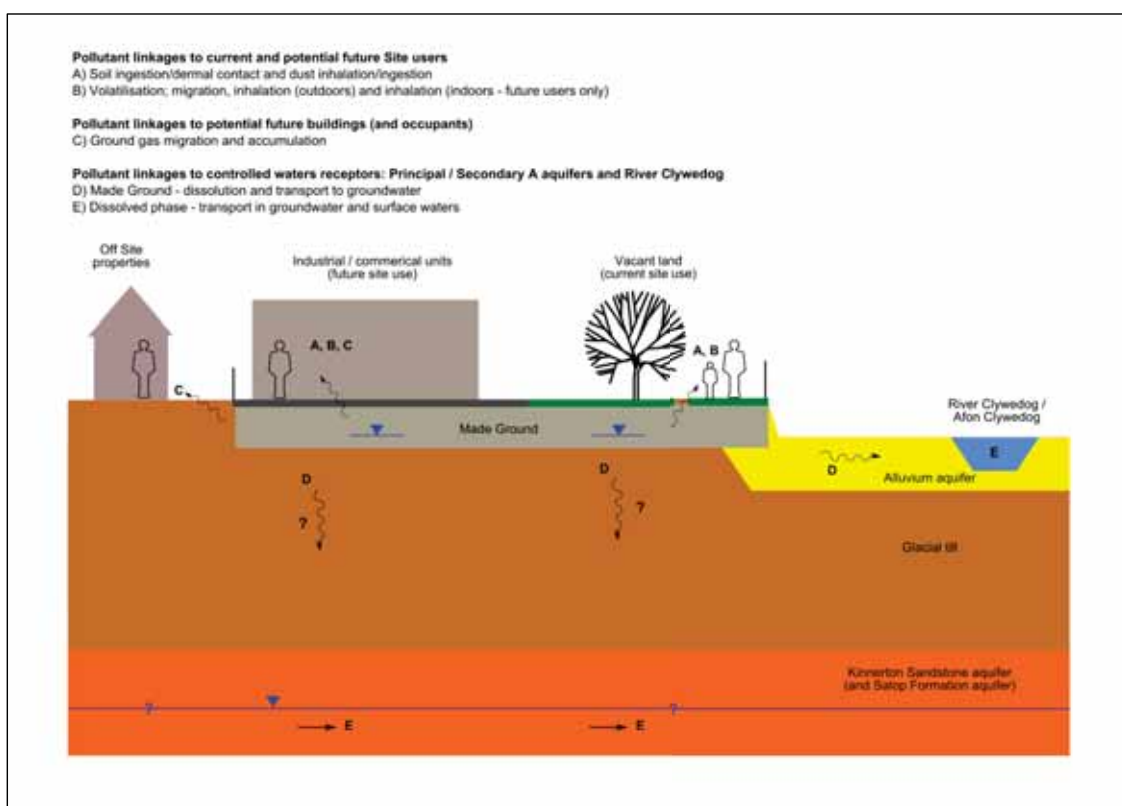


Figure 5 Conceptual Site model



3. SUPPORTING INFORMATION

The following supporting information is contained in this section:

Section	Content
3.1	Referenced materials used in the reporting
3.2	Published environmental data records (Groundsure EnviroInsight report. Ref: CMAPS-CM-168210-5023-060812), including: 1. Environmental permits, incidents and registers 2. Landfill and other waste sites 3. Current land uses 4. Geology 5. Hydrogeology and hydrology 6. Flooding 7. Designated environmentally sensitive sites 8. Natural hazards 9. Mining
3.3	Historical mapping provided by the Council
3.4	Borehole logs (based upon records provided by British Geological Survey (NERC))
3.5	Site photographs (taken during site visit on 06/08/12)

3.1 REFERENCES

The following references were used to inform the conceptual site model and preliminary risk assessment:

BAE Systems, 2001. Desk study for potential explosive contamination at Wrexham Industrial Estate. Report No: A120-00-R1-A-DRAFT.

British Geological Survey (BGS), 2001. Applied geological mapping in the Wrexham area: geology and land-use planning. Technical Report WA/91/4.

British Geological Survey (BGS), 2012. Online scans of borehole logs. (<http://www.bgs.ac.uk/data/boreholescans/home.html>).

British Standards Institute, 2011. Investigation of potentially contaminated sites – code of practice. ISO 10175:2011.

Environment Agency, 2001. Land Contamination: Technical Guidance on Special Sites: Explosives and Manufacturing and Processing Sites. R&D Technical Report/ P5-042/TR/03.

Environment Agency, 2004. Publication CLR 11. Model Procedures for the Management of Land Contamination.

Environment Agency, 2010. GPLC1 – Guiding principles for land contamination.

Geology of Britain viewer
(http://maps.bgs.ac.uk/geologyviewer_google/googleviewer.html).

Geology of Britain lexicon (<http://www.bgs.ac.uk/lexicon/>).

Groundsure EnviroInsight, 2012. Report reference: CMAPS-CM-168210-5023-060812.

RSK ENSR, 2005. Desk study and site investigation. F Lloyd (Penley) Ltd. Wrexham Industrial Estate.

Symonds Travis Morgan, 1995. Summary report on site preparation works and site investigation summary.

Travis Morgan, 1994a. Firestone Development Site Wrexham. Report on Ground Contamination.

Travis Morgan, 1994b. Works order to Wimpey Construction: Firestone Redevelopment Site Preparation and Infrastructure Works. 8 July 1994.

Welsh Government, 2012. Contaminated Land Statutory Guidance – 2012. WG15450.

3.2 PUBLISHED DATA RECORDS

Publicly available environmental information relating to the Site and its surrounding area has been provided by GroundSure.

GroundSure EnviroInsight

Address: Former Firestone Site, Wrexham Industrial Estate

Date: Aug 6, 2012

GroundSure Reference: CMAPS-CM-168210-5023-060812

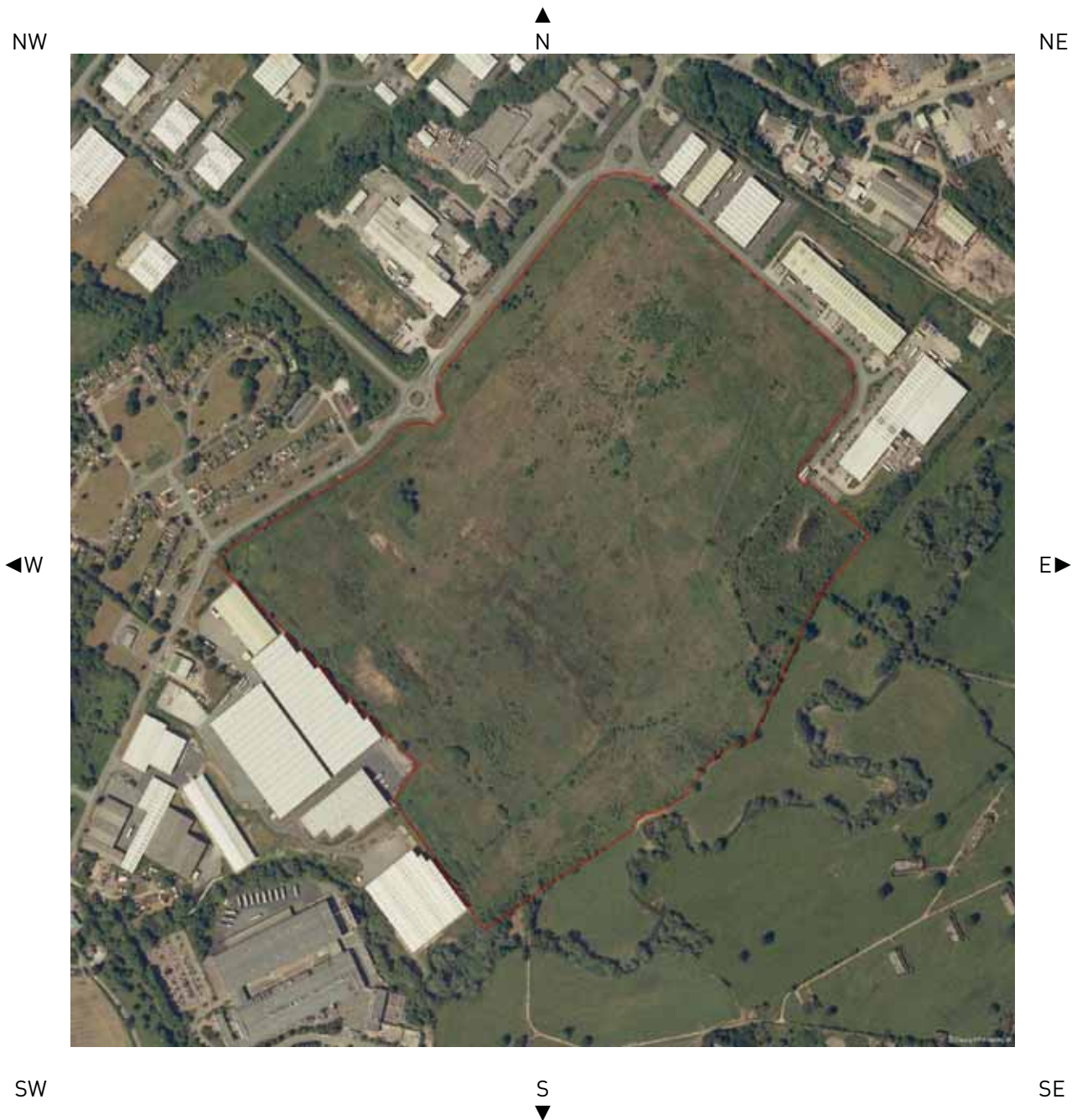
Your Reference: 5023

Client: CENTREMAPS



Brought to you by CENTREMAPS

Aerial Photograph of Study Site



Aerial photography supplied by Getmapping PLC.
© Copyright Getmapping PLC 2003. All Rights Reserved.

Site Name: Former Firestone Site, Wrexham Industrial Estate
Grid Reference: 337796,348885
Size of Site: 44.64 ha

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.

Report Section	Number of records found within (X) m of the study site boundary					
1. Environmental Permits, Incidents and Registers	on-site	0-50	51-250	251-500	501-1000	1000-1500
1.1 Industrial Sites Holding Environmental Permits and/or Authorisations						
Records of historic IPC Authorisations	0	0	3	1	-	-
Records of Part A(1) and IPPC Authorised Activities	0	0	6	0	-	-
Records of Water Industry Referrals (potentially harmful discharges to the public sewer)	0	0	0	0	-	-
Records of Red List Discharge Consents (potentially harmful discharges to controlled waters)	0	0	0	0	-	-
Records of List 1 Dangerous Substances Inventory sites	0	0	0	0	-	-
Records of List 2 Dangerous Substances Inventory sites	0	0	1	1	-	-
Records of Part A(2) and Part B Activities and Enforcements	0	0	2	6	-	-
Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	3	-	-
Records of Licensed Discharge Consents	0	2	7	11	-	-
Records of Planning Hazardous Substance Consents and Enforcements	0	0	0	1		
1.2 Records of COMAH and NIHHS sites	0	0	0	1	-	-
1.3 Environment Agency Recorded Pollution Incidents						
National Incidents Recording System, List 2	0	2	11	-	-	-
National Incidents Recording System, List 1	0	0	0	-	-	-
1.4 Sites Determined as Contaminated Land under Part IIA EPA 1990	0	0	0	0	-	-
2. Landfill and Other Waste Sites	on-site	0-50	51-250	251-500	501-1000	1000-1500
2.1 Landfill Sites						
Environment Agency Registered Landfill Sites	0	0	0	0	2	-
Landfill Data – Operational Landfill Sites	0	0	0	0	0	-
Environment Agency Historic Landfill Sites	0	0	0	1	0	2
Landfill Data – Non-Operational Landfill Sites	0	0	0	1	1	-
BGS/DoE Landfill Site Survey	0	0	0	0	0	0
GroundSure Local Authority Landfill Sites Data	0	0	0	0	0	0
2.2 Landfill and Other Waste Sites Findings						
Operational Waste Treatment, Transfer and Disposal Sites	0	0	1	0	-	-
Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	2	1	-	-
Environment Agency Licensed Waste Sites	0	0	6	3	18	3

3. Current Land Uses	on-site	0-50	51-250	251-500	501-1000	1000-1500
3.1 Current Industrial Sites Data	1	3	26	-	-	-
3.2 Records of Petrol and Fuel Sites	0	0	0	0	-	-
3.3 Underground High Pressure Oil and Gas Pipelines	0	0	0	0	-	-

4. Geology	Description
4.1 Are there any records of Artificial Ground and Made Ground present beneath the study site? *	Yes
4.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site? *	Yes
4.3 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
Source: Scale: 1:50,000 BGS Sheet 121	

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

5. Hydrogeology and Hydrology	on-site	0-50	51-250	251-500	501-1000	1001-2000
5.1 Are there any records of Productive Strata in the Superficial Geology within 500m of the study site?				Yes		
5.2 Are there any records of Productive Strata in the Bedrock Geology within 500m of the study site?				Yes		
5.3 Groundwater Abstraction Licences (within 2000m of the study site).	3	3	3	0	0	1
5.4 Surface Water Abstraction Licences (within 2000m of the study site).	0	0	0	0	0	1
5.5 Potable Water Abstraction Licences (within 2000m of the study site).	0	0	0	0	0	0
5.6 Are there any Source Protection Zones within 500m of the study site?					Yes	
5.7 River Quality						
Is there any Environment Agency information on river quality within 1500m of the study site?	No	No	No	No	Yes	Yes
5.8 Detailed River Network entries within 500m of the site	0	2	24	24	-	-
5.9 Surface water features within 250m of the study site	Yes	Yes	Yes	-	-	-

6. Flooding	
6.1 Are there any Environment Agency indicative Zone 2 floodplains within 250m of the study site?	Yes
6.2 Are there any Environment Agency indicative Zone 3 floodplains within 250m of the study site?	Yes
6.3 Are there any Flood Defences within 250m of the study site?	No
6.4 Are there any areas benefiting from Flood Defences within 250m of the study site?	No
6.5 Are there any areas used for Flood Storage within 250m of the study site?	No
6.6 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Very High
6.7 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	High

7. Designated Environmentally Sensitive Sites	on-site	0-50	51-250	251-500	501-1000	1001-2000
7.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0
7.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0

7.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0
7.3 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
7.4 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
7.5 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
7.6 Records of Ramsar sites	0	0	0	0	0	0
7.7 Records of World Heritage Sites	0	0	0	0	0	0
7.8 Records of Environmentally Sensitive Areas	0	0	0	0	0	0
7.9 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
7.10 Records of National Parks	0	0	0	0	0	0
7.11 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
7.12 Records of Nitrate Vulnerable Zones	0	0	0	0	0	0

8. Natural Hazards

8.1 What is the maximum risk of natural ground subsidence? Moderate

9. Mining

9.1 Are there any coal mining areas within 75m of the study site? Yes

9.2 What is the risk of subsidence relating to shallow mining within 150m of the study site? Negligible

9.3 Are there any brine affected areas within 75m of the study site? No

Using this Report

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

1. Environmental Permits, Incidents and Registers

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

2. Landfills and Other Waste Sites

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

3. Current Land Uses

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

4. Geology

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

5. Hydrogeology and Hydrology

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

6. Flooding

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

7. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites. These searches are conducted using radii of up to 500m.

8. Natural Hazards

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

9. Mining

Provides information on areas of coal and shallow mining.

10. Contacts

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

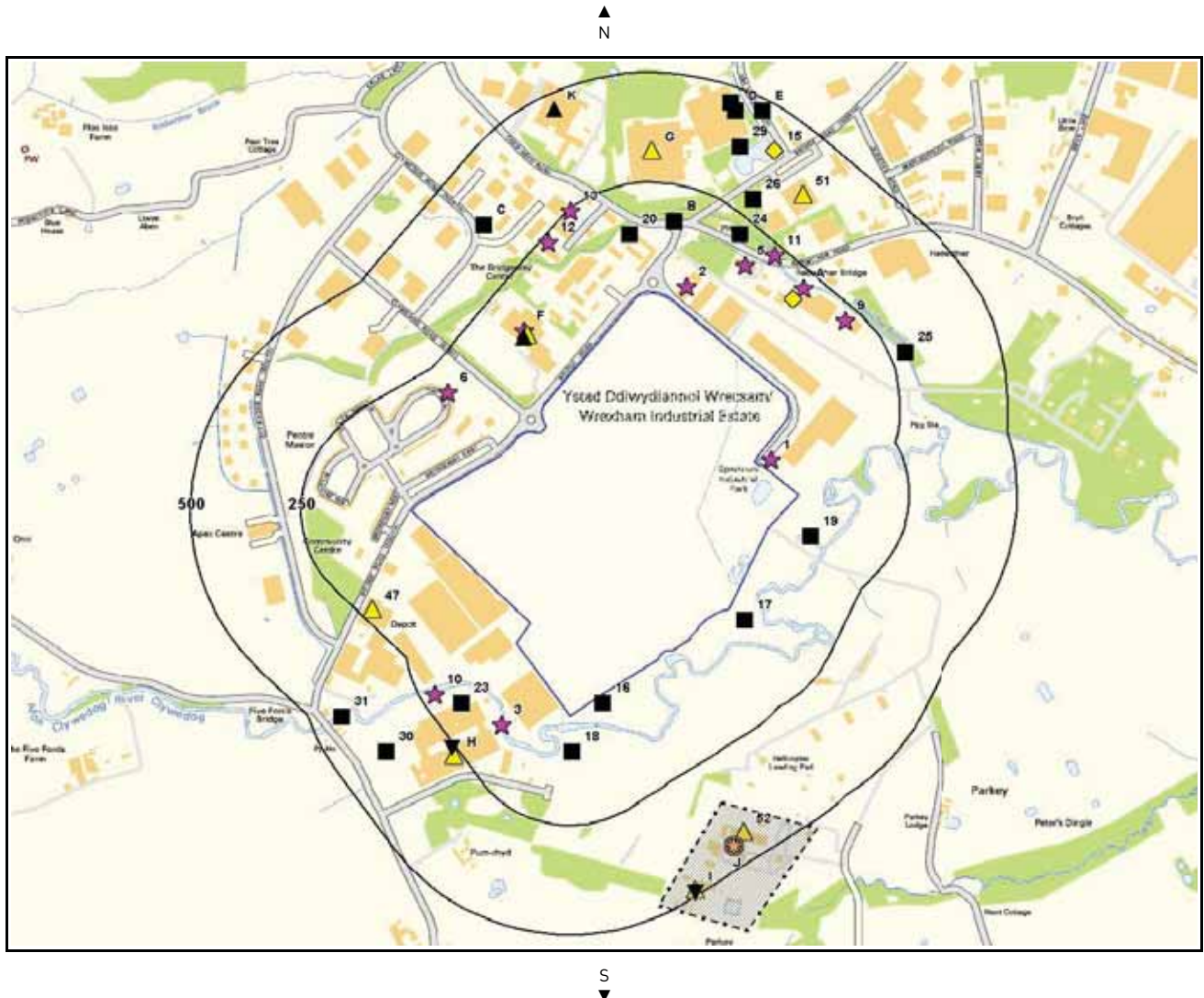
Note: Maps

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

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

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

1. Environmental Permits, Incidents and Registers Map



Authorisations, Incidents and Registers Legend



Crown Copyright. All Rights Reserved
Licence Number: 100035207

- | | | |
|--------------------|-------------------------------|--|
| Site Outline | Recorded Pollution Incident | RAS 3 & 4 Authorisations |
| Search Buffers (m) | Dangerous Substances (List 1) | Part A(1) Authorised Processes and Historic IPC Authorisations |
| | Dangerous Substances (List 2) | Part A(2) and Part B Authorised Processes |
| | Water Industry Referrals | COMAH / NIHHS Sites |
| | Licenced Discharge Consents | Sites Determined as Contaminated Land |
| | Red List Discharge Consents | Hazardous Substance Consents and Enforcements |

1.Environmental Permits, Incidents and Registers

1.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency and Local Authorities reveal the following information:

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

4

The following IPC Authorisations are represented as points on the Authorisations, Incidents and Registers map:

ID	Distance	Direction	NGR	Details
65F	135.0	NW	337610, 349260	Operator: Hydro Aluminium Deeside Ltd Address: Bridge Road, Wrexham Industrial Estate, Wrexham, LL13 9SQ Process: Non-ferrous Metals Permit Number: AS4117 Original Permit Number: IPCAIRAPP Date Approved: 4-12-1995 Effective Date: 8-12-1995 Status: Superseded By Variation
66F	135.0	NW	337610, 349260	Operator: Hydro Aluminium Deeside Ltd Address: Bridge Road, Wrexham Industrial Estate, Wrexham, LL13 9SQ Process: Non-ferrous Metals Permit Number: AX6443 Original Permit Number: IPCMAJVAR Date Approved: 1-5-1997 Effective Date: 1-5-1997 Status: Superseded By Variation
67F	135.0	NW	337610, 349260	Operator: Hydro Aluminium Deeside Ltd Address: Bridge Road, Wrexham Industrial Estate, Wrexham, LL13 9SQ Process: Non-ferrous Metals Permit Number: BD8312 Original Permit Number: IPCMINVAR Date Approved: 24-11-1998 Effective Date: 30-11-1998 Status: Revoked - Now Ippc
68K	460.0	NW	337680, 349780	Operator: Stadex Industries Ltd Address: Coed Aben Road, Wrexham Industrial Estate, Wrexham, Clwyd, LL13 9UL Process: Di-isocyanate Processes Permit Number: BF1220 Original Permit Number: IPCAPP Date Approved: 8-6-1999 Effective Date: 9-6-1999 Status: Revoked

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

6

The following Part A(1) and IPPC Authorised Activities are represented as points on the Authorisations, Incidents and Registers map:

ID	Distance	Direction	NGR	Details
59F	135.0	NW	337610, 349260	Operator: Hydro Aluminium Deeside Ltd Installation Name: Wrexham Aluminium Processing Process: NON-FERROUS METALS; MELTING WITH CAPACITY >4T/D LEAD/CADMIUM OR 20T/D OTHERS Permit Number: BK3638IF Original Permit Number: BK3638IF EPR Reference: EA/EPR/BK3638IF/V002 Issue Date: 15/3/2002 Effective Date: 15/3/2002 Last date noted as effective: 2012-05-14 Status: Superseded
60F	135.0	NW	337610, 349260	Operator: Hydro Aluminium Deeside Ltd Installation Name: - Process: NON-FERROUS METALS; MELTING WITH CAPACITY => 5T Permit Number: BK3638 Original Permit Number: BK3638 EPR Reference: - Issue Date: 15-3-2002 Effective Date: 15-3-2002 Last date noted as effective: 2004-10-01 Status: Superseded By Pas
61F	135.0	NW	337610, 349260	Operator: Hydro Aluminium Deeside Ltd Installation Name: - Process: NON-FERROUS METALS; MELTING WITH CAPACITY >4T/D LEAD/CADMIUM OR 20T/D OTHERS Permit Number: BK3638 Original Permit Number: BK3638 EPR Reference: - Issue Date: 15-3-2002 Effective Date: 15-3-2002 Last date noted as effective: 2004-10-01 Status: Superseded By Pas

62F	135.0	NW	337610, 349260	Operator: Hydro Aluminium Deeside Ltd Installation Name: Wrexham Aluminium Processing Process: NON-FERROUS METALS; MELTING WITH CAPACITY => 5T	Permit Number: BK3638IF Original Permit Number: BK3638IF EPR Reference: EA/EPR/BK3638IF/V002 Issue Date: 15/3/2002 Effective Date: 15/3/2002 Last date noted as effective: 2012- 05-14 Status: Superseded
63F	135.0	NW	337610, 349260	Operator: Hydro Aluminium Deeside Ltd Installation Name: Wrexham Aluminium Processing Process: NON-FERROUS METALS; MELTING WITH CAPACITY >4T/D LEAD/CADMIUM OR 20T/D OTHERS	Permit Number: BP3934LJ Original Permit Number: BK3638IF EPR Reference: EA/EPR/BK3638IF/V002 Issue Date: 14/7/2009 Effective Date: 14/7/2009 Last date noted as effective: 2012- 05-14 Status: Effective
64F	135.0	NW	337610, 349260	Operator: Hydro Aluminium Deeside Ltd Installation Name: Wrexham Aluminium Processing Process: NON-FERROUS METALS; MELTING WITH CAPACITY => 5T	Permit Number: BP3934LJ Original Permit Number: BK3638IF EPR Reference: EA/EPR/BK3638IF/V002 Issue Date: 14/7/2009 Effective Date: 14/7/2009 Last date noted as effective: 2012- 05-14 Status: Effective

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.

Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site: 0

Database searched and no data found.

Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site: 0

Database searched and no data found.

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

The following List 2 Dangerous Substance Inventory Site records are represented as points on the Authorisations, Incidents and Registers map:

ID	Distance	Direction	NGR	Details	
14A	177.0	NE	338220, 349350	Name: Bluestone Chemicals Ltd, Redwither Road, Wrexham Ind Est Status: Not Active Receiving Water: -	Authorised Substances: Chromium, Copper
15	409.0	NE	338178, 349688	Name: Welsh Development Agency Pcb Cell 283 Status: Active Receiving Water: -	Authorised Substances: Biphenyl

Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site: 8

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

Report Reference: CMAPS-CM-168210-5023-060812

ID	Distance	Direction	NGR	Details	
46F	132.0	NW	337619, 349267	Address: Hydro Aluminium Deeside Ltd, Bridge Road, Wrexham Industrial Estate, Wrexham, LL13 9SQ Process: Non Ferrous Metals Status: Historical Permit Permit Type: Part B	Enforcement: Enforcement Notified Date of Enforcement: 30/03/2006 Comment: Wood processing
47	227.0	SW	337268, 348641	Address: Lloyds Animal Feeds (Western) Ltd, Bridge Road North, Wrexham Industrial Estate, Wrexham, LL13 9PS Process: Animal Feed Compounding Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified. Date of Enforcement: No Enforcement Notified. Comment: No Enforcement Notified.
48H	266.0	SW	337454, 348308	Address: Tetra Pak Manufacturing UK Ltd, Bedwell Road, Cross Lanes, Wrexham, LL13 0UT Process: Coating Of Flexible Packaging Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified. Date of Enforcement: No Enforcement Notified. Comment: No Enforcement Notified.
49G	319.0	N	337901, 349687	Address: Ball Packaging Europe, Bridge Road, Wrexham Industrial Estate, Wrexham, LI 13 9PS Process: Coating Of Metal Packaging Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified. Date of Enforcement: No Enforcement Notified. Comment: No Enforcement Notified.
50G	319.0	N	337901, 349687	Address: Ball Packaging Europe, Bridge Road, Wrexham Industrial Estate, Wrexham, LL13 9PS Process: Coating of Metal Status: Current Permit Permit Type: Part A2	Enforcement: No Enforcement Notified. Date of Enforcement: No Enforcement Notified. Comment: No Enforcement Notified.
51	371.0	NE	338242, 349586	Address: Trittech Precision Products Ltd, Bridge Road North, Wrexham Industrial Estate, Wrexham, LL13 9PS Process: Metal Production And Processing Status: Current Permit Permit Type: Part B	Enforcement: Enforcement Notified Date of Enforcement: 12/03/2007 Comment: Not given
52	438.0	SE	338109, 348133	Address: Wales & West Utilities, Maelor Office, Marchwiell, Wrexham, LL13 0UW Process: Gas Odourisation Process Status: Current Permit Permit Type: Part B	Enforcement: Enforcement Notified Date of Enforcement: 12/03/2007 Comment: Not given
53I	491.0	SE	338000, 348000	Address: Transco Site, At Maelor, Near Crosslanes, Wrexham, LL13 0UW Process: Gas Odourisation Process Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified. Date of Enforcement: No Enforcement Notified. Comment: No Enforcement Notified.

Records of Category 3 or 4 Radioactive Substance Licences within 500m of the study site:

3

The following RAS Licence (3 or 4) records are represented as points on the Authorisations, Incidents and Registers map:

ID	Distance [m]	Direction	Address	Operator	Type	Permission Number	Dates	Status
69H	256.0	SW	Tetra Pak Uk, Bedwell Road, cross Lanes, Wrexham, Clwyd, LL13 0UT	Tetra Pak Uk	Keeping And Use Of Radioactive Materials (was Rsa60 Section 1).	AZ7157	Date of Approval:- Effective from:- Last date of update: 20 01-06-01	-
70I	491.0	SE	National Grid Transco Ltd, North East Wales District Office, Marchwiell, Wrexham, Clwyd, LL13 0UW	National Grid Transco Ltd	Disposal Of Radioactive Waste (was Rsa60 Section 6).	AW9498	Date of Approval: 1 3/3/1997 Effective from: 11/4 /1997 Last date of update: 20 12-05-16	Superseded By Variation

711	491.0	SE	National Grid Transco Ltd, North East Wales District Office, Marchwiel, Wrexham, Clwyd, LL13 0UW	National Grid Transco Ltd	Disposal Of Radioactive Waste (was Rsa60 Section 6).	AW9498	Date of Approval: 15/7/1997 Effective from: 13/8/1997 Last date of update: 2012-05-16	Revoked/ cancelled
-----	-------	----	--	---------------------------	--	--------	---	--------------------

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

20

The following Licensed Discharge Consents records are represented as points on the Authorisations, Incidents and Registers map:

ID	Distance	Direction	NGR	Details	
16	16.0	SE	337790, 348430	Address: Firestone Site Wrexham Ind Estate, Firestone Site Wrexham Ind Estat, Wrexham Ind Estate Wrexham, Wrexham, WREXHAM Effluent Type: Unspecified Permit Number: CM0034001 Permit Version: 1	Receiving Water: Clywedog Status: Consent Expired - Time Limit Issue date: 20/5/1966 Effective Date: 20/5/1966 Revocation Date: 2/2/1994
17	42.0	SE	338110, 348620	Address: Firestone Site Wrexham Industrial E, Firestone Site Wrexham Industria, Wrexham Industrial Estate Effluent Type: Unspecified Permit Number: CM0033901 Permit Version: 1	Receiving Water: Clywedog Status: Consent Expired - Time Limit Issue date: 20/5/1966 Effective Date: 20/5/1966 Revocation Date: 2/2/1994
18	81.0	S	337720, 348320	Address: Maelor Ind Estate Wrexham ,, Maelor Ind Estate Wrexham ,, Wrexham ,, Wrexham ,, Effluent Type: Unspecified Permit Number: CM0077201 Permit Version: 1	Receiving Water: Clywedog Status: Consent Expired - Time Limit Issue date: - Effective Date: - Revocation Date: 23/2/1995
19	83.0	SE	338260, 348810	Address: Firestone Site Wrexham Ind Estate, Firestone Site Wrexham Ind Estat, Wrexham Ind Estate Effluent Type: Unspecified Permit Number: CM0033801 Permit Version: 1	Receiving Water: Clywedog Status: New Consent, By Application (wra 91, Section 88) Issue date: 20/5/1966 Effective Date: 20/5/1966 Revocation Date: 2/2/1994
20	139.0	N	337850, 349500	Address: Wrexham Ind Estate Factory/coedaben, Wrexham Ind Estate Factory/coeda, Factory/coedaben Road Effluent Type: Unspecified Permit Number: CM0064501 Permit Version: 1	Receiving Water: Redwither Brook Status: Consent Expired - Time Limit Issue date: 27/4/1971 Effective Date: 27/4/1971 Revocation Date: 28/4/1993
21B	168.0	N	337950, 349530	Address: Continental Can Co Ltd, Continental Can Co Ltd Effluent Type: Trade Discharges - Unspecified Permit Number: CM0085401 Permit Version: 2	Receiving Water: Redwither Brook Status: Revoked (wra 91, S88 & Sched 10 As Amended By Env Act 1995) Issue date: 9/3/1994 Effective Date: 9/3/1994 Revocation Date: 21/1/2004
22B	168.0	N	337950, 349530	Address: Continental Can Co Ltd, Continental Can Co Ltd Effluent Type: Trade Discharges - Unspecified Permit Number: CM0085401 Permit Version: 1	Receiving Water: Redwither Brook Status: Revoked - Unspecified Issue date: 30/4/1979 Effective Date: 30/4/1979 Revocation Date: 8/3/1994
23	181.0	SW	337470, 348430	Address: Wrexham Ind Estate Bedwell Road Mae, Wrexham Ind Estate Bedwell Road, Bedwell Road Maelor Estate, Maelor Estate Effluent Type: Unspecified Permit Number: CM0083701 Permit Version: 1	Receiving Water: Clywedog Status: Consent Expired - Time Limit Issue date: 1/6/1978 Effective Date: 1/6/1978 Revocation Date: 21/8/1995
24	213.0	NE	338100, 349500	Address: Wrexham Ind Estate Conren Ltd, Wrexham Ind Estate Conren Ltd, Conren Ltd Effluent Type: Unspecified Permit Number: CM0086201 Permit Version: 1	Receiving Water: Trib. Of Rewither Brook Status: Consent Expired - Time Limit Issue date: 4/10/1979 Effective Date: 4/10/1979 Revocation Date: 26/4/1995

25	284.0	E	338474, 349230	Address: Wrexham Recycling Centere Rewither, Wrexham Recycling Centre, Redwither Road, Wrexham Industrail 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: - Effective Date: - Revocation Date: -
26	294.0	NE	338130, 349580	Address: Wrexham Ind Estate British Celanese, Wrexham Ind Estate British Celan, British Celanese Site Effluent Type: Unspecified Permit Number: CM0001801 Permit Version: 1	Receiving Water: Trib.of Redwither Brook Status: Consent Expired - Time Limit Issue date: 31/1/1966 Effective Date: 31/1/1966 Revocation Date: 26/2/1993
27C	371.0	NW	337520, 349520	Address: Plot 6 Wrexham Ind Est, Clywedog Road Effluent Type: Unspecified Permit Number: CM0207401 Permit Version: 1	Receiving Water: Stream Nr Redwither Brook Status: Revoked - Unspecified Issue date: 1/1/1901 Effective Date: 1/1/1901 Revocation Date: 28/1/1990
28C	371.0	NW	337520, 349520	Address: Plot 6 Wrexham Ind Est, Clywedog Road Effluent Type: Unspecified Permit Number: CM0207401 Permit Version: 2	Receiving Water: Stream Nr Redwither Brook Status: Consent Expired - Time Limit Issue date: 29/1/1990 Effective Date: 29/1/1990 Revocation Date: 6/5/1993
29	379.0	NE	338100, 349700	Address: Pcb Containment Cell Marlborough Ro, Marlborough Road, Wrexham Industrial Estate, Wrexham, Wrexham Effluent Type: Trade Discharges - Unspecified Permit Number: CM0149901 Permit Version: 1	Receiving Water: Redwither Brook Status: Revoked - Unspecified Issue date: 13/1/1987 Effective Date: 13/1/1987 Revocation Date: 27/3/1995
30	383.0	SW	337300, 348320	Address: Wrexham Tetra Pak Wrexham Ltd. Bedw, Wrexham Tetra Pak Wrexham Ltd. B, Tetra Pak Wrexham Ltd. Bedwell R, Bedwell Road Effluent Type: Unspecified Permit Number: CM0146401 Permit Version: 1	Receiving Water: Clywedog Status: Consent Expired - Time Limit Issue date: - Effective Date: - Revocation Date: 21/8/1995
31	428.0	SW	337200, 348400	Address: Wrexham Ind. Estate, Wrexham Ind. Estate Effluent Type: Unspecified Permit Number: CM0093101 Permit Version: 1	Receiving Water: Clywedog Status: Consent Expired - Time Limit Issue date: 19/5/1982 Effective Date: 19/5/1982 Revocation Date: 21/6/1996
32D	448.0	N	338090, 349780	Address: Wrexham Ind. Estate - Discharg, Wrexham Ind. Estate - Discharg Effluent Type: Unspecified Permit Number: CM0093601 Permit Version: 1	Receiving Water: Redwither Brook Status: Consent Expired - Time Limit Issue date: 25/8/1982 Effective Date: 25/8/1982 Revocation Date: 28/4/1993
33D	464.0	N	338080, 349800	Address: Wrexham Ind.est.dis.2, Wrexham Ind.est.dis.2 Effluent Type: Unspecified Permit Number: CM0093602 Permit Version: 1	Receiving Water: Redwither Brook Status: Consent Expired - Time Limit Issue date: 25/8/1982 Effective Date: 25/8/1982 Revocation Date: 28/4/1993
34E	473.0	NE	338150, 349780	Address: Pcb Containment Cell Marlborough Ro, Marlborough Road, Wrexham Industrial Estate, Wrexham, Wrexham Effluent Type: Trade Discharges - Unspecified Permit Number: CM0149901 Permit Version: 3	Receiving Water: Redwither Brook Status: New Consent, By Application (wra 91, Section 88) Issue date: 23/8/2005 Effective Date: 24/8/2005 Revocation Date: -
35E	473.0	NE	338150, 349780	Address: Pcb Containment Cell Marlborough Ro, Marlborough Road, Wrexham Industrial Estate, Wrexham, Wrexham Effluent Type: Trade Discharges - Unspecified Permit Number: CM0149901 Permit Version: 2	Receiving Water: Redwither Brook Status: New Consent, By Application (wra 91, Section 88) Issue date: 28/3/1995 Effective Date: 28/3/1995 Revocation Date: 23/8/2005

Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site: 1

The following records are represented as polygons on the Industrial Sites and Processes map.

ID	Distance [m]	Direction	Application Reference Number	Application Status	Application Date	Address	Details	Details of Enforcement Action
----	--------------	-----------	------------------------------------	-----------------------	---------------------	---------	---------	-------------------------------------

72 J	451.0	SE	6/0002/09 34	No Details	30/11/199 2	Maelor Gas Works, Marchwiel	Deemed Hazardous Substance Consent 20934	Enforcement: Enforcement Notified Date of Enforcement: Data requested, not received. Comment: Data requested, not received.
---------	-------	----	-----------------	------------	----------------	--------------------------------	--	--

1.2 Dangerous or Hazardous Sites

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

1

The following COMAH & NIHHS Authorisation records provided by the Health and Safety Executive are represented as polygons or buffered points on the Authorisations, Incidents and Registers map:

ID	Distance	Direction	NGR	Address	Type	Update
57J	352.0	SE	338200, 348200	british gas(walesgas), maelor gasworks,wrexham industrial estate,wrexham,LL13 0UW	COMAH	2001

1.3 Environment Agency Recorded Pollution Incidents

Records of National Incidents Recording System, List 2 within 250m of the study site:

13

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

ID	Distance	Direction	NGR	Details
1	22.0	NE	338170, 348986	Incident Date: 23/9/2003 Incident Identification: 191906 Pollutant: Oils and Fuel Pollutant Description: Diesel Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)
2	43.0	NE	337979, 349379	Incident Date: 21/3/2002 Incident Identification: 65555 Pollutant: Inorganic Chemicals/Products Pollutant Description: Ammonia Solutions Water Impact: Category 3 (Minor) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)
3	138.0	SW	337560, 348380	Incident Date: 28/7/2004 Incident Identification: 254208 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
4F	147.0	NW	337610, 349280	Incident Date: 8/5/2002 Incident Identification: 77311 Pollutant: Other Pollutant Pollutant Description: Noise Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
5	166.0	NE	338110, 349429	Incident Date: 17/7/2003 Incident Identification: 174571 Pollutant: Sewage Materials Pollutant Description: Crude Sewage Water Impact: Category 3 (Minor) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)
6	184.0	NW	337439, 349138	Incident Date: 17/8/2001 Incident Identification: 25045 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
7A	211.0	NE	338242, 349376	Incident Date: 19/7/2006 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)
8A	211.0	NE	338242, 349376	Incident Date: 19/7/2006 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)

9	217.0	NE	338338, 349303	Incident Date: 25/5/2007 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)
10	218.0	SW	337410, 348450	Incident Date: 20/5/2004 Incident Identification: 238220 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
11	226.0	NE	338177, 349451	Incident Date: 20/4/2002 Incident Identification: 73352 Pollutant: Oils and Fuel Pollutant Description: Diesel	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
12	235.0	NW	337665, 349480	Incident Date: 1/6/2001 Incident Identification: 7295 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
13	247.0	NW	337715, 349552	Incident Date: 8/8/2002 Incident Identification: 98530 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Category 2 (Significant) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

Records of National Incidents Recording System, List 1 within 250m of the study site:

0

Database searched and no data found.

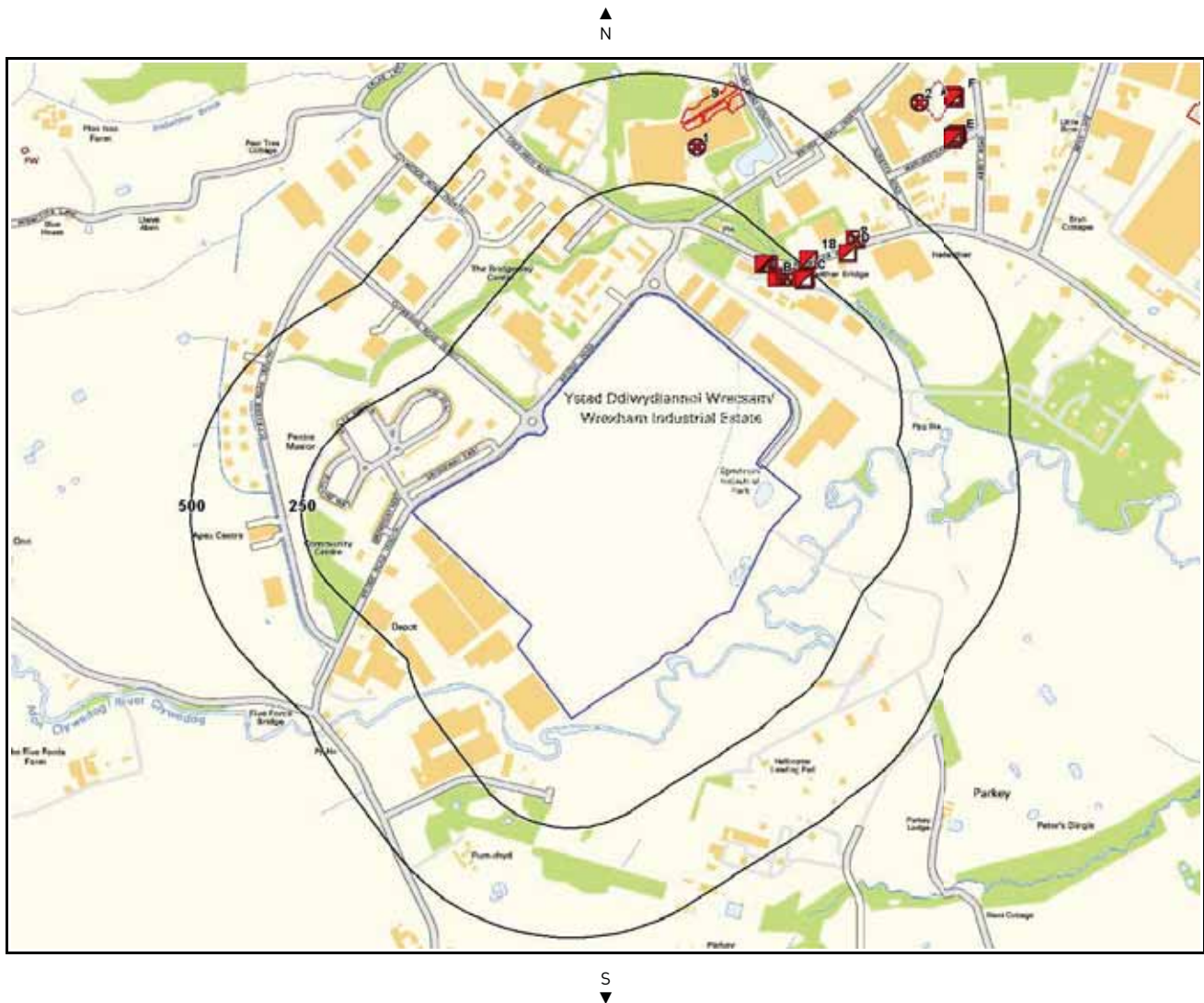
1.4 Sites Determined as Contaminated Land under Part IIA EPA 1990

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

0

Database searched and no data found.

2. Landfill and Other Waste Sites Map



Landfill & Other Waste Sites Legend



Crown Copyright. All Rights Reserved
Licence Number: 100035207

	Site Outline		E.A. Active Landfill		Operational Waste Treatment Licence
	250		E.A. Historic Landfill (Area Data)		Closed Waste Treatment Licence
	500		E.A. Historic Landfill (Point Data)		REGIS Waste Licence
	Search Buffers (m)		BGS / DoE Survey Landfill		Operational Landfill
			Local Authority Landfill (Area Data)		Closed Landfill
			Local Authority Landfill (Point Data)		

2. Landfill and Other Waste Sites

2.1 Landfill Sites

Records from Environment Agency landfill data within 1000m of the study site:

2

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

ID	Distance	Direction	NGR	Details
3A	697.0	NE	338587, 349814	Address: Marlborough Road, Wrexham Ind Est, Wrexham, Clwyd, LL13 9RJ Landfill Reference: 37009.0 Regis Reference: WDA001 Landfill Type: A2 : Other Landfill Site taking Special Waste Operator: Welsh Assembly Government Status: Closure IPPC Reference: EPR Reference:
4A	697.0	NE	338587, 349814	Address: Marlborough Road, Wrexham Ind Est, Wrexham, Clwyd, LL13 9RJ Landfill Reference: 37011.0 Regis Reference: WDA002 Landfill Type: A2 : Other Landfill Site taking Special Waste Operator: Welsh Assembly Government Status: Closure IPPC Reference: EPR Reference:

Records of operational landfill sites sourced from Landmark within 1000m of the study site:

0

Database searched and no data found.

Records of Environment Agency historic landfill sites within 1500m of the study site:

3

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

ID	Distance	Direction	NGR	Details
9	378.0	N	338000, 349700	Site Address: British Celanese, Wrexham Waste Licence: Yes Site Reference: LB/2.3 Waste Type: Industrial, Liquid sludge Regis Reference: - Licence Issue: Licence Surrendered: Licence Hold Address: - Operator: -
10	1110.0	NE	339200, 349700	Site Address: B.I.C.C Cables Limited, Bowling Bank, Wrexham, Clwyd Waste Licence: - Site Reference: - Waste Type: Inert, Liquid sludge Regis Reference: - Licence Issue: Licence Surrendered: Licence Hold Address: - Operator: -
Not shown	1211.0	S	338000, 347000	Site Address: Cross Lanes Landfill, School Farm, Wrexham, Cross Lanes Waste Licence: Yes Site Reference: WMBC L/31 Waste Type: Inert Regis Reference: - Licence Issue: 08-Dec-1980 Licence Surrendered: 01-Oct-1981 Licence Hold Address: - Operator: -

Records of non-operational landfill sites sourced from Landmark within 1000m of the study site:

2

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

ID	Distance	Direction	NGR	Details
----	----------	-----------	-----	---------

1	345.0	N	338000, 349700	Site Address: British Celanese, Industrial Estate, WREXHAM, Clwyd, Landfill Licence: W1FALMAL Agency Reference: Waste Type: Difficult Waste Description: Difficult Landfill Known Restrictions: No known restriction on source of waste	Record Date: 01-Jun-1977 Transfer Date: Modification Date: Status: Licence lapsed/cancelled/defunct/not applicable/surrendered Category: LANDFILL Regulator: EA - Welsh Region - Northern Area (Buckley) Size: Undefined
2	701.0	NE	338500, 349800	Site Address: Erie Electronics Site, Wrexham Industrial Estate, WREXHAM, Clwyd, Landfill Licence: W1FAFSAL Agency Reference: EAWML37009 Waste Type: Difficult Waste Description: Difficult Landfill Known Restrictions: No known restriction on source of waste	Record Date: 01-Mar-1987 Transfer Date: Modification Date: 01-Sep-1987 Status: Site closed Category: LANDFILL Regulator: EA - Welsh Region - Northern Area (Buckley) Size: Small (<25,000 tonnes/year)

Records of BGS/DoE non-operational landfill sites within 1500m of the study site: 0

Database searched and no data found.

Records of Local Authority landfill sites within 1500m of the study site: 0

Database searched and no data found.

2.2 Other Waste Sites

Records of operational waste treatment, transfer or disposal sites within 500m of the study site: 1

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

ID	Distance	Direction	NGR	Details
5B	193.0	NE	338180, 349405	Site Address: Site 1 Redwither Road, Wrexham Industrial Estate, WREXHAM, Clwyd, LL13 9RD Landfill Licence: WN2AAXAL EA Reference: EAWML37211 Waste Type: Putrescible Rating: Putrescible Transfer Known Restrictions: No known restriction on source of waste Record Date: 01-Mar-2000 Transfer Date: 01-Feb-2001 Modification Date: Status: Operational as far as is known Category: TRANSFER Regulator: EA - Welsh Region - Northern Area (Buckley) Size: Small (<25,000 tonnes/year)

Records of non-operational waste treatment, transfer or disposal sites within 500m of the study site: 3

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

ID	Distance	Direction	NGR	Details
6B	199.0	NE	338160, 349430	Site Address: Redwither Road Transfer Station, Wrexham Industrial Estate, WREXHAM, Clwyd, LL13 9RD Landfill Licence: WN2ABKAL EA Reference: EAWML37221 Waste Type: Difficult Waste Description: Difficult Known Restrictions: No known restriction on source of waste Record Date: 01-Feb-2001 Transfer Date: Modification Date: Status: Site not yet started Category: TRANSFER Regulator: EA - Welsh Region - Northern Area (Buckley) Size: Very Small (<10,000 tonnes/year)

7B	202.0	NE	338200, 349400	Site Address: Wrexham Industrial Estate, WREXHAM, Clwyd, Landfill Licence: W1FAMRAL EA Reference: - Waste Type: Difficult Waste Description: Difficult Known Restrictions: No known restriction on source of waste	Record Date:01-Apr-1994 Transfer Date: Modification Date: Status: Licence lapsed/cancelled/defunct/not applicable/surrendered Category: STORAGE Regulator: EA - Welsh Region - Northern Area (Buckley) Size: Undefined
8	371.0	NE	338357, 349488	Site Address: Redwither Road, Wrexham Industrial Estate, WREXHAM, Clwyd, Landfill Licence: W1FAMWAL EA Reference: EAWML37094 Waste Type: Difficult Waste Description: Difficult Known Restrictions: Waste produced/controlled by licence holder	Record Date:01-Jan-1994 Transfer Date: Modification Date: 01-Mar-1999 Status: Licence lapsed/cancelled/defunct/not applicable/surrendered Category: TRANSFER - with treatment Regulator: EA - Welsh Region - Northern Area (Buckley) Size: Very Small (<10,000 tonnes/year)

Records of Environment Agency licensed waste sites within 1500m of the study site:

30

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

ID	Distance	Direction	NGR	Details	
12B	196.0	NE	338150, 349434	Site Address: Unit 1, Redwither Road, Wrexham Industrial Estate, Wrexham, Clwyd, LL13 9RD Type: Special Waste Transfer Station Size: < 25000 tonnes Regis Licence Number: REY001 EPR reference: EA/EPR/AP3394FT/V003 Operator: North Western Insulation Ltd Waste Management licence No: 37221 Annual Tonnage: 4999.0	Issue Date: 19/02/2001 Effective Date: - Modified: 17/03/2006 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Redwither Road Transfer Station Correspondence Address: -, -
13B	196.0	NE	338150, 349434	Site Address: Unit 1, Redwither Road, Wrexham Industrial Estate, Wrexham, Clwyd, LL13 9RD Type: Special Waste Transfer Station Size: < 25000 tonnes Regis Licence Number: REY001 EPR reference: AP3394FT/V003 Operator: Reynolds Services North Western Insulation Ltd Waste Management licence No: 37221 Annual Tonnage: 4999.0	Issue Date: 19/02/2001 Effective Date: - Modified: 17/03/2006 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Redwither Road Transfer Station Correspondence Address: -, -
14C	228.0	NE	338241, 349399	Site Address: Site 1, Redwither Road, Wrexham Industrial Estate, Wrexham, LL13 9RD Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Regis Licence Number: AMR001 EPR reference: - Operator: Alfa Environmental Management Ltd Waste Management licence No: 37211 Annual Tonnage: 0.0	Issue Date: 09/03/2000 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Wrexham Recycling Centre Correspondence Address: -, Site 1, Redwither Road, Wrexham Industrial Estate, Wrexham, LL13 9RD
15C	228.0	NE	338241, 349399	Site Address: Site 1, Redwither Road, Wrexham Industrial Estate, Wrexham, LL13 9RD Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Regis Licence Number: AMR001 EPR reference: - Operator: Alpha Environmental Management Ltd Waste Management licence No: 37211 Annual Tonnage: 0.0	Issue Date: 09/03/2000 Effective Date: - Modified: 10/12/2003 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Wrexham Recycling Centre Correspondence Address: -, Site 1, Redwither Road, Wrexham Industrial Estate, Wrexham, LL13 9RD

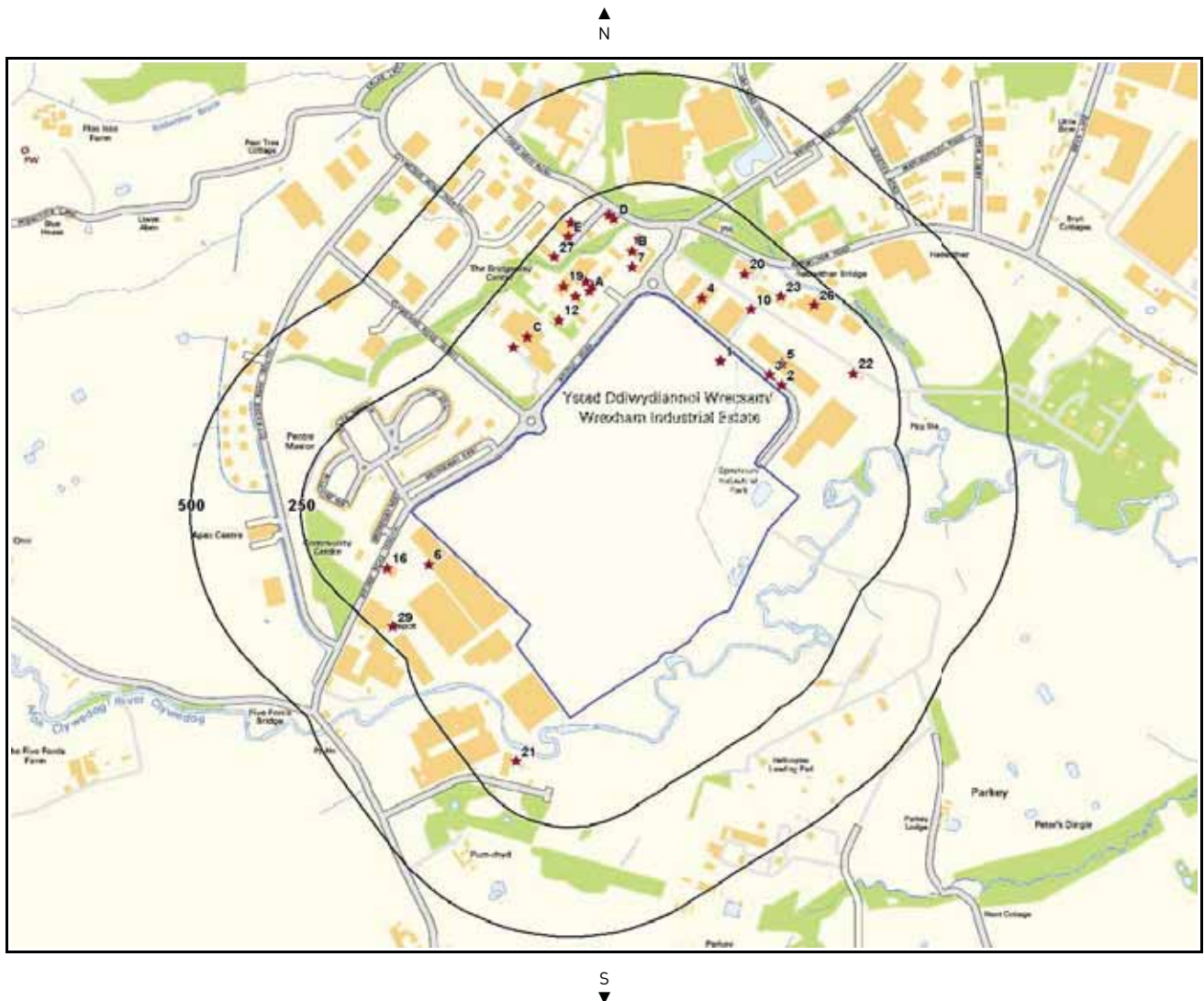
16C	234.0	NE	338244, 349404	Site Address: Site 1, Redwither Road, Wrexham Industrial Estate, Wrexham, Clwyd, LL13 9RD Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Regis Licence Number: ALA002 EPR reference: EA/EPR/WP3094FB/T003 Operator: Alan's Skip Hire (Wales) Ltd Waste Management licence No: 37211 Annual Tonnage: 24999.0	Issue Date: 09/03/2000 Effective Date: 01/06/2005 Modified: 10/12/2003 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Wrexham Recycling Centre Correspondence Address: -, -
17C	234.0	NE	338244, 349404	Site Address: Site 1, Redwither Road, Wrexham Industrial Estate, Wrexham, Clwyd, LL13 9RD Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Regis Licence Number: ALA002 EPR reference: WP3094FB/T003 Operator: Alan's Skip Hire (Wales) Ltd. Waste Management licence No: 37211 Annual Tonnage: 54196.0	Issue Date: 09/03/2000 Effective Date: 01/06/2005 Modified: 10/12/2003 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Wrexham Recycling Centre Correspondence Address: -, -
18	270.0	NE	338251, 349446	Site Address: Land / Premises At, Redwither Road, Wrexham Industrial Estate, Wrexham, Clwyd, LL13 9RD Type: Material Recycling Treatment Facility Size: >= 25000 tonnes < 75000 tonnes Regis Licence Number: ENT002 EPR reference: EA/EPR/YP3994FY/A001 Operator: Entrec Ltd Waste Management licence No: 37267 Annual Tonnage: 25000.0	Issue Date: 08/09/2004 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Entrec Redwither Road Correspondence Address: -, -
19D	338.0	NE	338340, 349460	Site Address: Bluestone Chemicals, Redwither Rd, Wrexham Industrial Estate, Wrexham, LL13 9RD Type: Chemical Treatment Facility Size: Unknown Regis Licence Number: BLU003 EPR reference: - Operator: Bluestone Chemicals Ltd Waste Management licence No: 37094 Annual Tonnage: 0.0	Issue Date: 17/01/1994 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Expired Site Name: Bluestone Chemicals Ltd Correspondence Address: -, Bluestone Chemicals, Redwither Rd, Wrexham Industrial Estate, Wrexham, LL13 9RD
20D	338.0	NE	338340, 349460	Site Address: Bluestone Chemicals, Redwither Rd, Wrexham Industrial Estate, Wrexham, Clwyd, LL13 9RD Type: Chemical Treatment Facility Size: < 25000 tonnes Regis Licence Number: BLU003 EPR reference: EA/EPR/TP3594FK/A001 Operator: Bluestone Chemicals Ltd Waste Management licence No: 37094 Annual Tonnage: 931.0	Issue Date: 17/01/1994 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Expired Site Name: Bluestone Chemicals Ltd Correspondence Address: -, -
21E	692.0	NE	338582, 349719	Site Address: Marlborough Road, Wrexham Industrial Estate, Wrexham, Clwyd, LL13 9RJ Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Regis Licence Number: TRI002 EPR reference: EA/EPR/MP3894FG/A001 Operator: Sterile Technologies (Newcastle) Ltd Waste Management licence No: 37043 Annual Tonnage: 7739.0	Issue Date: 12/10/1992 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: IPPC Site Name: Marlborough Road Clinical Waste Correspondence Address: -, -
22E	692.0	NE	338582, 349719	Site Address: Trinco Ltd, Marlborough Road, Wrexham Industrial Estate, Wrexham, LL13 9RJ Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Regis Licence Number: TRI002 EPR reference: - Operator: Sterile Technology(newcastle) Limited Waste Management licence No: 37043 Annual Tonnage: 0.0	Issue Date: 12/10/1992 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: IPPC Site Name: Marlborough Road Clinical Waste Correspondence Address: -, Marlborough Road, Wrexham Industrial Estate, Wrexham, LL13 9RJ

23E	692.0	NE	338582, 349719	Site Address: Malborough Road, Wrexham Industrial Estate, Wrexham, LL13 9RJ Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Regis Licence Number: TRI002 EPR reference: - Operator: Sterile Technology (Newcastle) Ltd Waste Management licence No: 37043 Annual Tonnage: 7739.0	Issue Date: 12/10/1992 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: IPPC Site Name: Marlborough Road Clinical Waste Correspondence Address: -, Marlborough Road, Wrexham Industrial Estate, Wrexham, LL13 9RJ
24E	695.0	NE	338582, 349722	Site Address: Marlborough Road, Wrexham Industrial Estate, Wrexham, Clwyd, LL13 9RJ Type: Physical Treatment Facility Size: < 25000 tonnes Regis Licence Number: STE004 EPR reference: EA/EPR/PP3892FX/A001 Operator: Sterile Technologies (Newcastle) Ltd Waste Management licence No: 37305 Annual Tonnage: 0.0	Issue Date: 23/06/2006 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: IPPC Site Name: Wrexham Clinical Waste Treatment Plant & Transfer Station Correspondence Address: -, -
25E	695.0	NE	338582, 349722	Site Address: Land / Premises At, Marlborough Road, Wrexham Industrial Estate, Wrexham, Clwyd, LL13 9RJ Type: Physical Treatment Facility Size: < 25000 tonnes Regis Licence Number: STE003 EPR reference: EA/EPR/AB3033RL/V005 Operator: Sita Uk Ltd Waste Management licence No: 37223 Annual Tonnage: 16999.0	Issue Date: 06/03/2001 Effective Date: 10/02/2004 Modified: 27/10/2011 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Wrexham Clinical Waste Treatment And Transfer Station Correspondence Address: -, -
26E	695.0	NE	338582, 349722	Site Address: Land / Premises At, Marlborough Road, Wrexham Industrial Estate, Wrexham, Clwyd, LL13 9RJ Type: Physical Treatment Facility Size: < 25000 tonnes Regis Licence Number: STE003 EPR reference: EA/EPR/AP3094FL/T004 Operator: Polkacrest Wales Ltd Waste Management licence No: 37223 Annual Tonnage: 16999.0	Issue Date: 06/03/2001 Effective Date: 10/02/2004 Modified: 10/12/2003 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Clinical Waste Transfer Site Correspondence Address: -, -
27E	695.0	NE	338582, 349722	Site Address: Marlborough Road, Wrexham Industrial Estate, Wrexham, LL13 9RJ Type: Physical Treatment Facility Size: < 25000 tonnes Regis Licence Number: STE003 EPR reference: - Operator: Sterile Technologies (Newcastle) Ltd Waste Management licence No: 37223 Annual Tonnage: 16999.0	Issue Date: 06/03/2001 Effective Date: 10/02/2004 Modified: 10/12/2003 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Clinical Waste Treatment (H D S) & Transfer Site Correspondence Address: -, Marlborough Road, Wrexham Ind Est, Wrexham, LL13 9RJ
28E	695.0	NE	338582, 349722	Site Address: Wrexham Clinical Waste Treatment Plant And Transfer Station, Marlborough Road, Wrexham Industrial Estate, Wrexham, LL13 9RJ Type: Physical Treatment Facility Size: < 25000 tonnes Regis Licence Number: STE004 EPR reference: - Operator: Sterile Technologies (newcastle) Limited Waste Management licence No: 37305 Annual Tonnage: 0.0	Issue Date: 23/06/2006 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Wrexham Clinical Waste Treatment Plant And Transfer Station Correspondence Address: -, Wrexham Clinical Waste Treatment Plant And Transfer Station, Marlborough Road, Wrexham Industrial Estate, Wrexham, LL13 9RJ
29E	701.0	NE	338587, 349726	Site Address: Malborough Road, Wrexham Industrial Estate, Wrexham, LL13 7YP Type: Household, Commercial & Industrial Waste T Stn Size: Unknown Regis Licence Number: TRI002 EPR reference: - Operator: Trinco Ltd Waste Management licence No: 37043 Annual Tonnage: 0.0	Issue Date: 12/10/1992 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: IPPC Site Name: Marlborough Road Clinical Waste Correspondence Address: -, Ambassador Place, 3, Stockport Road, Altrincham, Cheshire, WA15 8DB

30E	701.0	NE	338587, 349726	Site Address: Marlborough Road, Wrexham Industrial Estate, Wrexham, LL13 7YP Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Regis Licence Number: TRI002 EPR reference: - Operator: Trinco Ltd Waste Management licence No: 37043 Annual Tonnage: 0.0	Issue Date: 12/10/1992 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: IPPC Site Name: Marlborough Road Clinical Waste Correspondence Address: -, Ambassador Place, 3, Stockport Road, Altrincham, Cheshire, WA15 8DB
31E	709.0	NE	338593, 349731	Site Address: Eurocare Environmental Services Ltd, Marlborough Road, Wrexham Industrial Estate, Wrexham, LL13 9RJ Type: Physical Treatment Facility Size: < 25000 tonnes Regis Licence Number: EUR001 EPR reference: - Operator: Eurocare Environmental Services Ltd Waste Management licence No: 37223 Annual Tonnage: 16999.0	Issue Date: 06/03/2001 Effective Date: - Modified: 10/06/2002 Surrendered Date: - Expiry Date: 12/12/2001 Cancelled Date: - Status: Modified Site Name: Clinical Waste Treatment (hds) And Transfer Site Correspondence Address: -, Mailing Suite 1, St Peters Wharf, Newcastle-upon-tyne, NE6 1TZ
32E	709.0	NE	338593, 349731	Site Address: Eurocare Environmental Services Ltd, Marlborough Road, Wrexham Industrial Estate, Wrexham, LL13 9RJ Type: Physical Treatment Facility Size: < 25000 tonnes Regis Licence Number: STE003 EPR reference: - Operator: Sterile Technologies (newcastle) Limited Waste Management licence No: 37223 Annual Tonnage: 16999.0	Issue Date: 06/03/2001 Effective Date: 10/02/2004 Modified: 10/12/2003 Surrendered Date: - Expiry Date: 12/12/2001 Cancelled Date: - Status: Transferred Site Name: Clinical Waste Treatment (hds) And Transfer Site Correspondence Address: -, Lindfield House, 1st Floor, Stuart Road, Gravesend, Kent, DA11 0BZ
33F	766.0	NE	338588, 349811	Site Address: Marlborough Road, Wrexham Ind Est, Wrexham, LL13 9RJ Type: Other Landfill Site taking Special Waste Size: >= 75000 tonnes Regis Licence Number: WDA001 EPR reference: - Operator: W D A Waste Management licence No: 37009 Annual Tonnage: 0.0	Issue Date: 02/03/1997 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Closure Site Name: W D A - Formerly Erie Electronic 1 Correspondence Address: -, Unit 7, St Asaph Business Park, Fford Richard Davies, St Asaph, Denbighshire, LL17 0LJ
34F	767.0	NE	338580, 349819	Site Address: Marlborough Road, Wrexham Ind Est, Wrexham, LL13 9RJ Type: Other Landfill Site taking Special Waste Size: >= 75000 tonnes Regis Licence Number: WDA002 EPR reference: - Operator: W D A Waste Management licence No: 37011 Annual Tonnage: 0.0	Issue Date: 02/03/1987 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Closure Site Name: W D A - Formerly Erie Electronic 2 Correspondence Address: -, Unit 7, St Asaph Business Park, Fford Richard Davies, St Asaph, Denbighshire, LL17 0LJ
35F	768.0	NE	338587, 349814	Site Address: Marlborough Road, Wrexham Ind Est, Wrexham, Clwyd, LL13 9RJ Type: Other Landfill Site taking Special Waste Size: < 25000 tonnes Regis Licence Number: WDA001 EPR reference: EA/EPR/BP3394FH/A001 Operator: Welsh Assembly Government Waste Management licence No: 37009 Annual Tonnage: 300000.0	Issue Date: 02/03/1997 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Closure Site Name: W D A - Formerly Erie Electronic 1 Correspondence Address: -, -

36F	768.0	NE	338587, 349814	Site Address: Marlborough Road, Wrexham Ind Est, Wrexham, Clwyd, LL13 9RJ Type: Other Landfill Site taking Special Waste Size: < 25000 tonnes Regis Licence Number: WDA002 EPR reference: EA/EPR/BP3994FJ/A001 Operator: Welsh Assembly Government Waste Management licence No: 37011 Annual Tonnage: 300000.0	Issue Date: 02/03/1987 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Closure Site Name: W D A - Formerly Erie Electronic 2 Correspondence Address: -, -
37F	768.0	NE	338587, 349814	Site Address: Marlborough Road, Wrexham Ind Est, Wrexham, LL13 9RJ Type: Other Landfill Site taking Special Waste Size: < 25000 tonnes Regis Licence Number: WDA001 EPR reference: - Operator: W D A Waste Management licence No: 37009 Annual Tonnage: 0.0	Issue Date: 02/03/1997 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Closure Site Name: W D A - Formerly Erie Electronic 1 Correspondence Address: -, Unit 7, St Asaph Business Park, Fford Richard Davies, St Asaph, Denbighshire, LL17 0LJ
38F	768.0	NE	338587, 349814	Site Address: Marlborough Road, Wrexham Ind Est, Wrexham, LL13 9RJ Type: Other Landfill Site taking Special Waste Size: < 25000 tonnes Regis Licence Number: WDA002 EPR reference: - Operator: W D A Waste Management licence No: 37011 Annual Tonnage: 0.0	Issue Date: 02/03/1987 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Closure Site Name: W D A - Formerly Erie Electronic 2 Correspondence Address: -, Unit 7, St Asaph Business Park, Fford Richard Davies, St Asaph, Denbighshire, LL17 0LJ
Not shown	1163.0	SW	336426, 348174	Site Address: Abenbury, Wrexham, Clwyd, LL13 0PA Type: Biological Treatment Facility Size: >= 25000 tonnes < 75000 tonnes Regis Licence Number: WEL001 EPR reference: EA/EPR/CP3194FG/S002 Operator: United Utilities Green Energy Limited Waste Management licence No: 37130 Annual Tonnage: 3528.0	Issue Date: 26/04/1995 Effective Date: - Modified: - Surrendered Date: 16/09/2003 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: Five Fords Sewage Treatment Works Correspondence Address: -, -
Not shown	1206.0	NE	338898, 350124	Site Address: Land / Premises At, Bryn Lane, Wrexham Industrial Estate, Wrexham, Clwyd, LL13 9UT Type: Special Waste Transfer Station Size: < 25000 tonnes Regis Licence Number: WRG002 EPR reference: EA/EPR/DP3294FH/V003 Operator: Waste Recycling Group Ltd Waste Management licence No: 37259 Annual Tonnage: 24999.0	Issue Date: 30/06/2004 Effective Date: - Modified: 08/03/2011 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Bryn Lane Civic Amenity Site Correspondence Address: -, -
Not shown	1419.0	NE	338955, 350355	Site Address: C A Site, Bryn Lane, Wrexham Industrial Estate, Wrexham Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Regis Licence Number: WRG002 EPR reference: - Operator: Waste Recycling Group Ltd Waste Management licence No: 37259 Annual Tonnage: 2450.0	Issue Date: 30/06/2004 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Bryn Lane Civic Amenity Site Correspondence Address: -, 3, Sidings Court, White Rose Way, Doncaster, DN4 5NU

3. Current Land Use Map



Current Land Use Legend



Crown Copyright. All Rights Reserved
Licence Number: 100035207

- | | | | |
|--|--------------------|--|--|
| | Site Outline | | Current Industrial Sites |
| | | | Petrol & Fuel Sites |
| | Search Buffers (m) | | Underground High Pressure Oil & Fuel Pipelines |

3. Current Land Uses

3.1 Current Industrial Data

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

30

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

ID	Distance	Direction	Company	Address	Activity	Category
1	0.0	On Site	Spectrum Industrial Estate	LL13	Business Parks and Industrial Estates	Industrial Features
2	14.0	NE	Electricity Sub Station	LL13	Electrical Features	Infrastructure and Facilities
3	14.0	NE	Electricity Sub Station	LL13	Electrical Features	Infrastructure and Facilities
4	49.0	NE	C P Pharmaceuticals Ltd	Unit B, Spectrum Business Park, Wrexham Industrial Estate, Wrexham, LL13 9QA	Medical Equipment, Supplies and Pharmaceuticals	Industrial Products
5	51.0	NE	Calypso Soft Drinks Ltd	Unit D-f, Spectrum Business Park, Wrexham Industrial Estate, Wrexham, LL13 9QA	Non Alcoholic Drinks	Foodstuffs
6	59.0	SW	F Lloyd Penley Ltd	Bridge Road, Wrexham Industrial Estate, Wrexham, LL13 9SQ	Container and Storage	Transport, Storage and Delivery
7	67.0	N	Electricity Sub Station	LL13	Electrical Features	Infrastructure and Facilities
8A	92.0	NW	Technical Engineering Polymers Ltd	Unit 15 The Bridgeway Centre, Bridge Road, Wrexham Industrial Estate, Wrexham, LL13 9QS	Rubber, Silicones and Plastics	Industrial Products
9A	95.0	NW	Associated Toolmakers Ltd	Unit 16 The Bridgeway Centre, Bridge Road, Wrexham Industrial Estate, Wrexham, LL13 9QS	Rubber, Silicones and Plastics	Industrial Products
10	101.0	NE	Electricity Sub Station	LL13	Electrical Features	Infrastructure and Facilities
11 B	102.0	N	Intawood Ltd	Unit 21 The Bridgeway Centre, Bridge Road, Wrexham Industrial Estate, Wrexham, LL13 9QS	General Construction Supplies	Industrial Products
12	103.0	NW	Kleba Insulation Services Ltd	Unit 4 The Bridgeway Centre, Bridge Road, Wrexham Industrial Estate, Wrexham, LL13 9QS	Construction Completion Services	Construction Services
13 A	109.0	NW	Colour Definitions	Unit 13 The Bridgeway Centre, Bridge Road, Wrexham Industrial Estate, Wrexham, LL13 9QS	Industrial Coatings and Finishings	Industrial Products
14 A	114.0	NW	Electricity Sub Station	LL13	Electrical Features	Infrastructure and Facilities
15 B	123.0	N	Encore Computers Ltd	Unit 25 The Bridgeway Centre, Bridge Road, Wrexham Industrial Estate, Wrexham, LL13 9QS	Electrical Equipment Repair and Servicing	Repair and Servicing
16	131.0	SW	Clwyd Precision Engineering	Bridge Road, Wrexham Industrial Estate, Wrexham, LL13 9PS	Precision Engineers	Engineering Services
17 C	133.0	NW	Hydro Aluminium Deeside Ltd	Bridge Road, Wrexham Industrial Estate, Wrexham, LL13 9PS	Metals Manufacturers, Fabricators and Stockholders	Industrial Products
18 C	142.0	NW	Electricity Sub Station	LL13	Electrical Features	Infrastructure and Facilities
19	146.0	NW	Williams Services	Unit 11 The Bridgeway Centre, Bridge Road, Wrexham Industrial Estate, Wrexham, LL13 9QS	Vehicle Repair, Testing and Servicing	Repair and Servicing
20	153.0	NE	Electricity Sub Station	LL13	Electrical Features	Infrastructure and Facilities
21	158.0	SW	Electricity Sub Station	LL13	Electrical Features	Infrastructure and Facilities
22	159.0	E	Electricity Sub Station	LL13	Electrical Features	Infrastructure and Facilities
23	167.0	NE	Bostock Air Conditioning Ltd	Redwither Road, Wrexham Industrial Estate, Wrexham, LL13 9RD	Cooling and Refrigeration	Industrial Products

24 D	183.0	N	Bearing Traders Ltd	Unit 101, Coed Aben Road, Wrexham Industrial Estate, Wrexham, LL13 9UH	Bearing, Gear and Drive Elements	Industrial Products
25 D	194.0	N	Lockwell Lectrics Ltd	Unit 100, Coed Aben Road, Wrexham Industrial Estate, Wrexham, LL13 9UH	Electronic Equipment	Industrial Products
26	200.0	NE	Chesapeake	Redwither Road, Wrexham Industrial Estate, Wrexham, LL13 9RD	Office and Shop Equipment	Industrial Products
27	204.0	NW	G Evans Holding Company Ltd	Unit 107, Coed Aben Road, Wrexham Industrial Estate, Wrexham, LL13 9UH	General Construction Supplies	Industrial Products
28E	211.0	NW	Barloworld Handling Ltd	Unit 104, Coed Aben Road, Wrexham Industrial Estate, Wrexham, LL13 9UH	Lifting and Handling Equipment	Industrial Products
29	219.0	SW	Depot	LL13	Container and Storage	Transport, Storage and Delivery
30E	226.0	NW	Electricity Sub Station	LL13	Electrical Features	Infrastructure and Facilities

3.2 Petrol and Fuel Sites

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

0

Database searched and no data found.

3.3 Underground High Pressure Oil and Gas Pipelines

Records of high pressure underground pipelines within 500m of the study site:

0

Database searched and no data found.

4. Geology

4.1 Artificial Ground and Made Ground

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

LEX Code	Description	Rock Type
LSGR-UNKN	LANDSCAPED GROUND (UNDIVIDED)	UNKNOWN/UNCLASSIFIED ENTRY
MGR-MGRD	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

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

4.2 Superficial Ground and Drift Geology

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

Lex Code	Description	Rock Type
TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
ALV-CSSG	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

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

4.3 Bedrock and Solid Geology

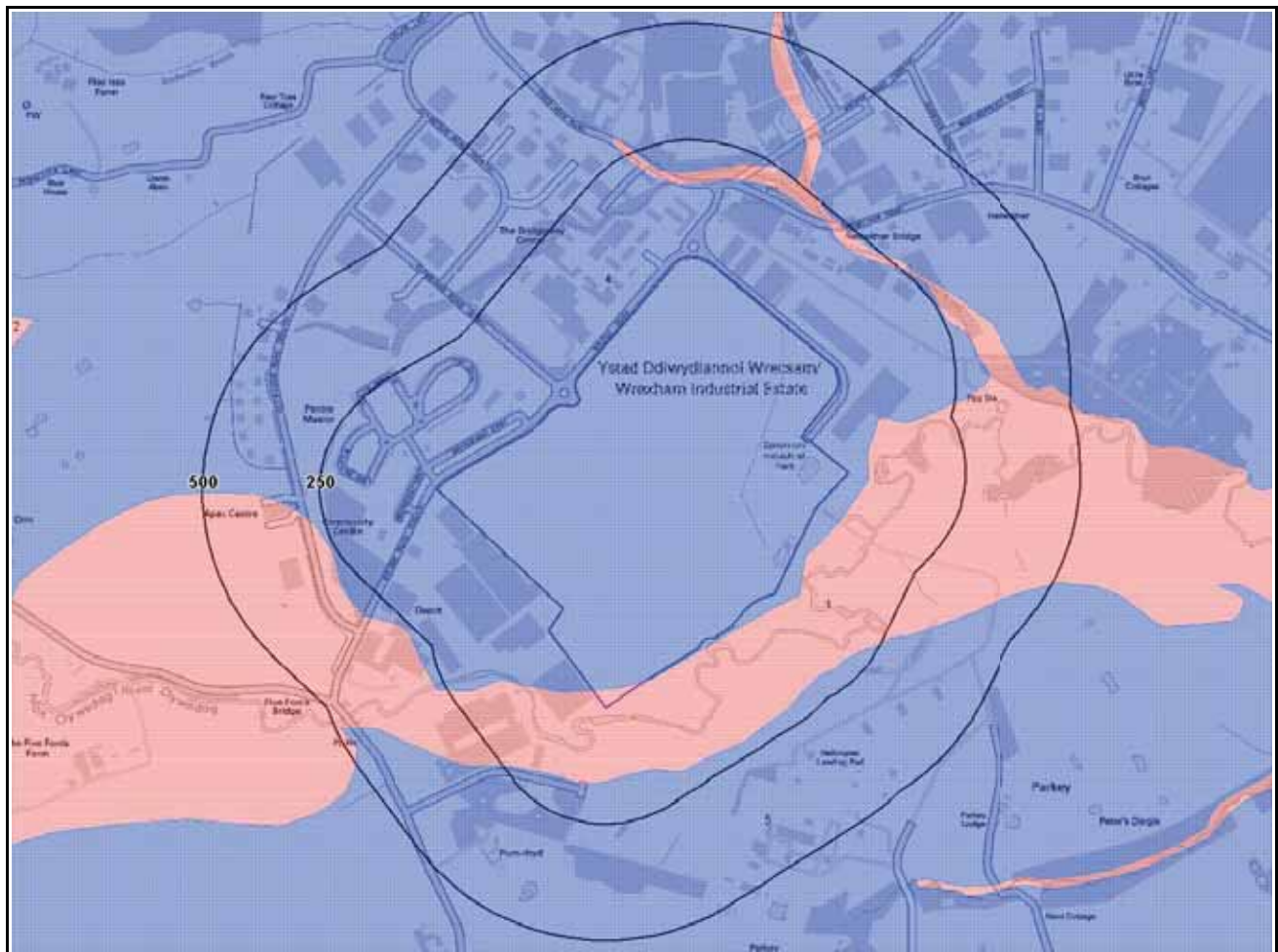
The database has been searched on site, including a 50m buffer.

LEX Code	Description	Rock Type
KNSF-SDST	KINNERTON SANDSTONE FORMATION	SANDSTONE
SAL-MDSC	SALOP FORMATION	MUDSTONE, SANDSTONE AND CONGLOMERATE

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

For more detailed geological and ground stability data please refer to the "GroundSure GeoInsight". Available from our website.

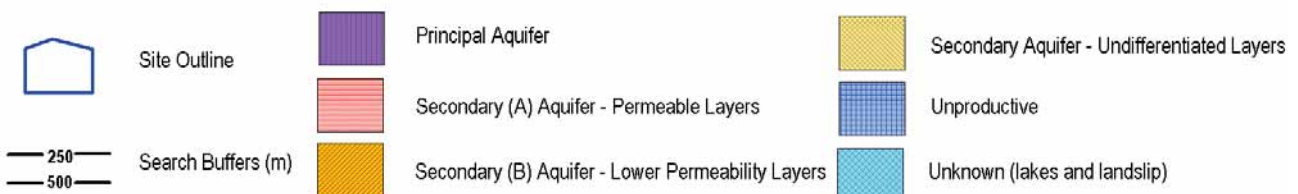
5a. Hydrogeology - Aquifer Within Superficial Geology



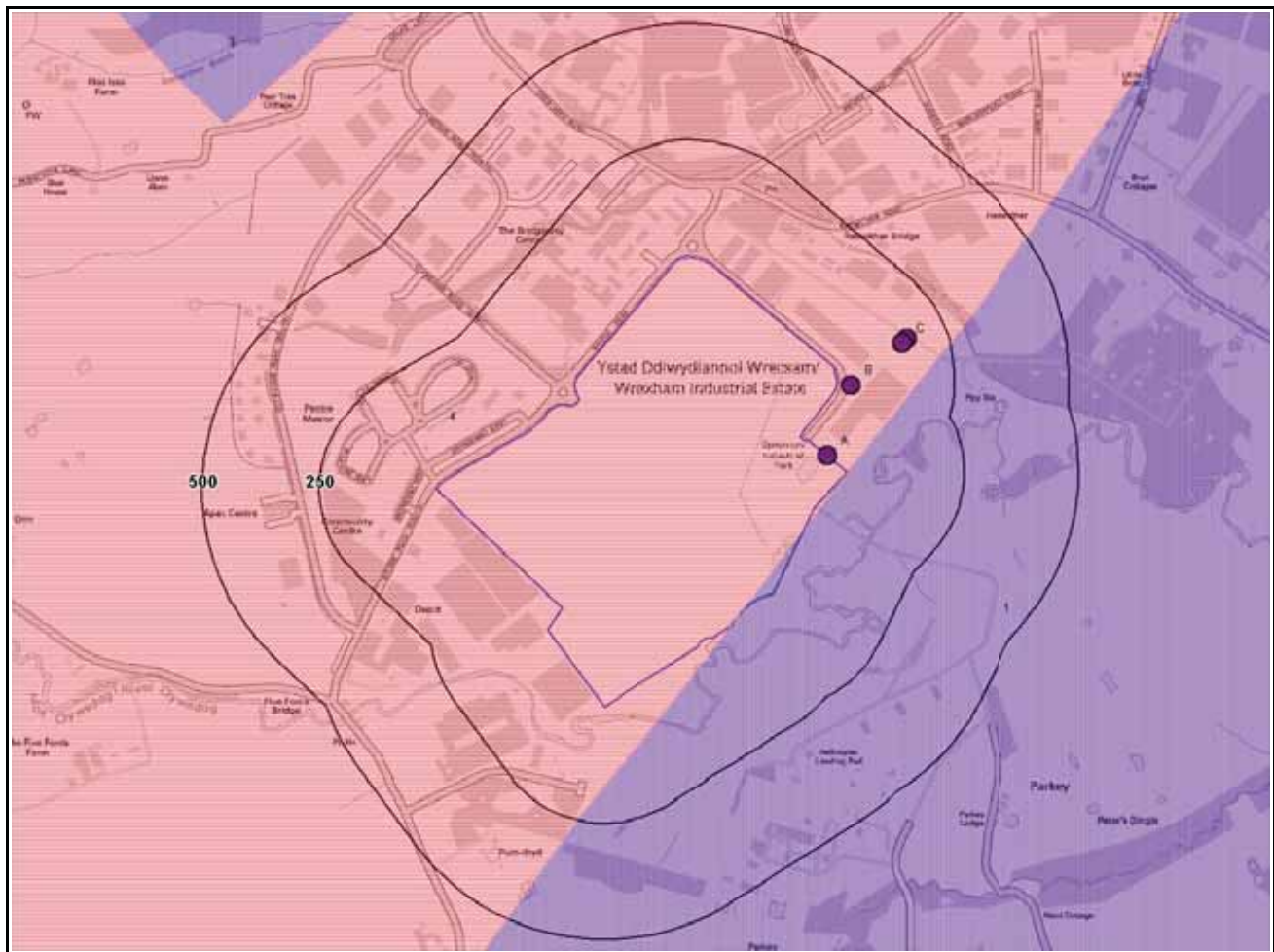
Aquifer Within Superficial Geology Legend



Crown Copyright. All Rights Reserved
Licence Number: 100035207



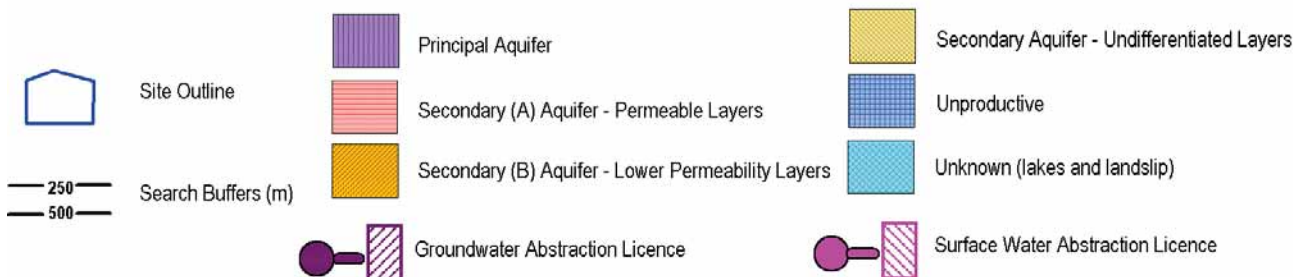
5b. Hydrogeology - Aquifer Within Bedrock Geology and Abstraction Licenses



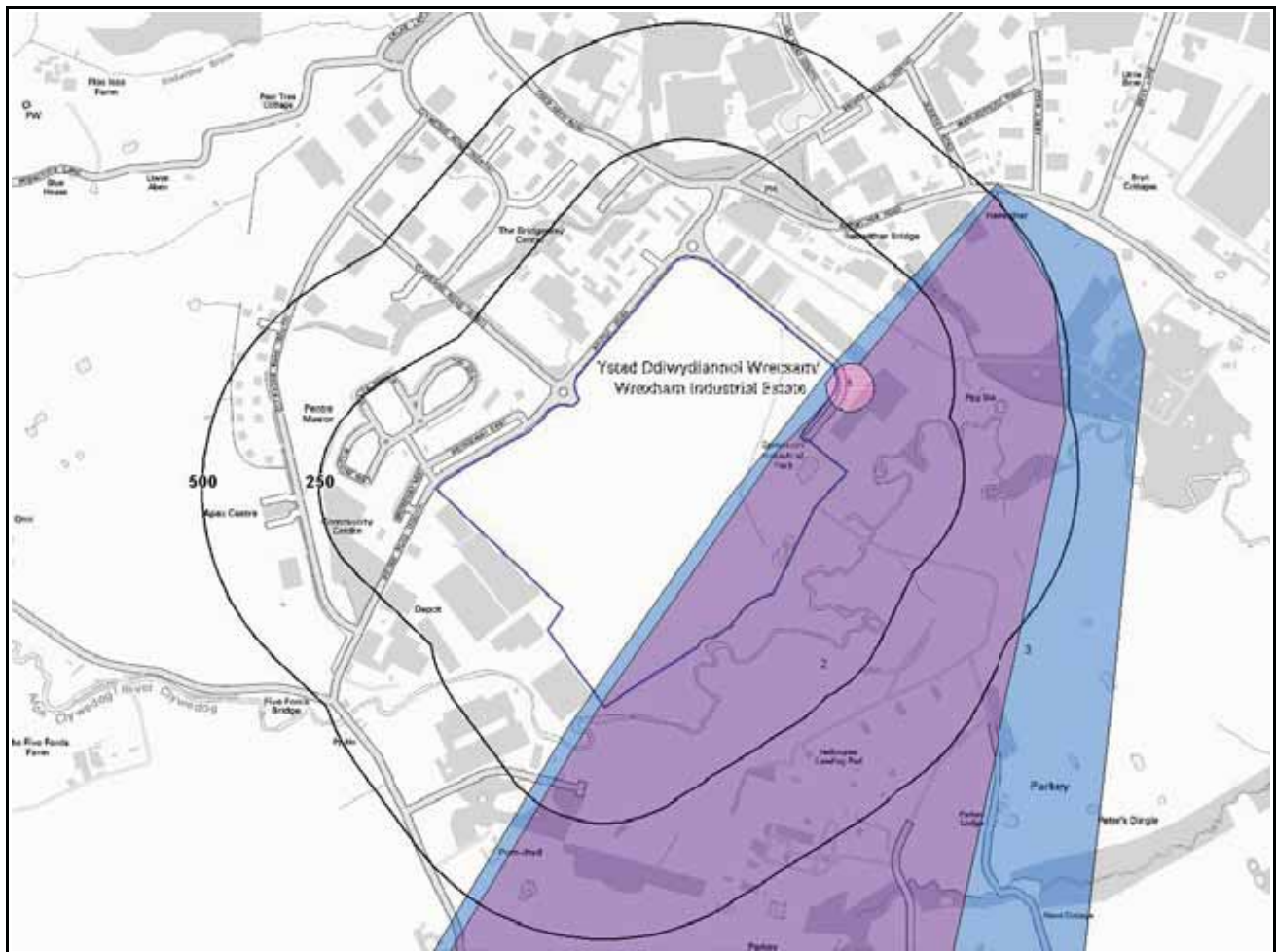
Aquifer Within Bedrock Geology Legend



Crown Copyright. All Rights Reserved
Licence Number: 100035207



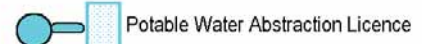
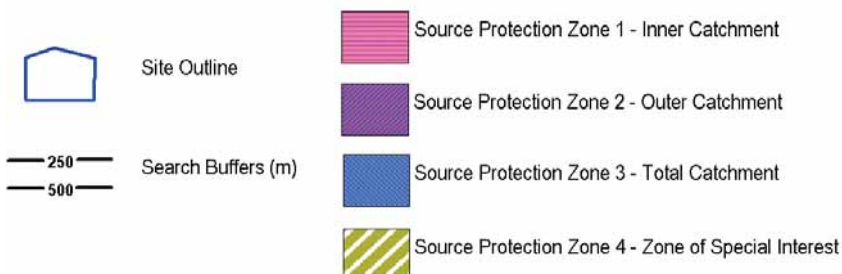
5c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



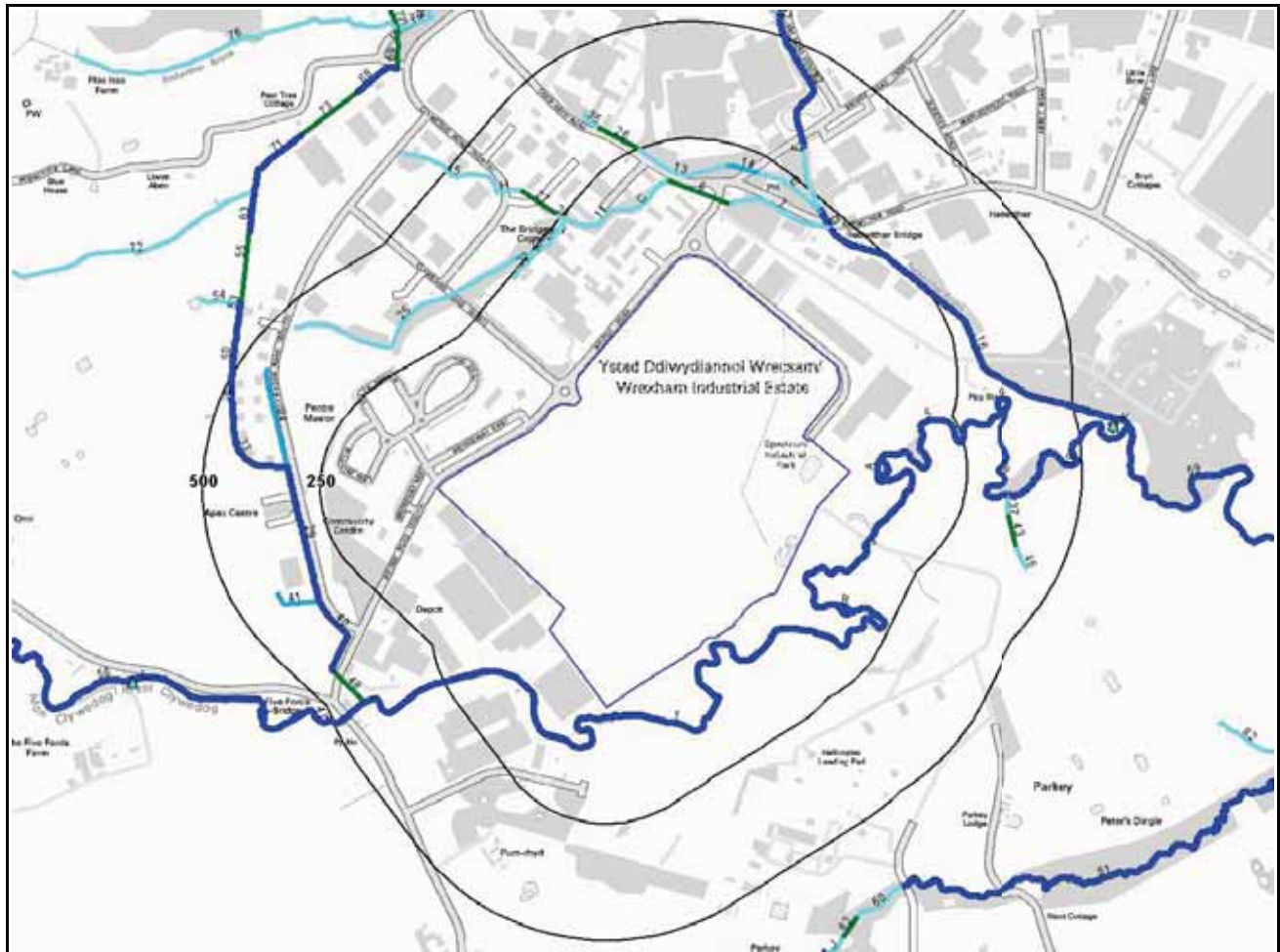
SPZ and Potable Water Abstraction Licenses
Legend



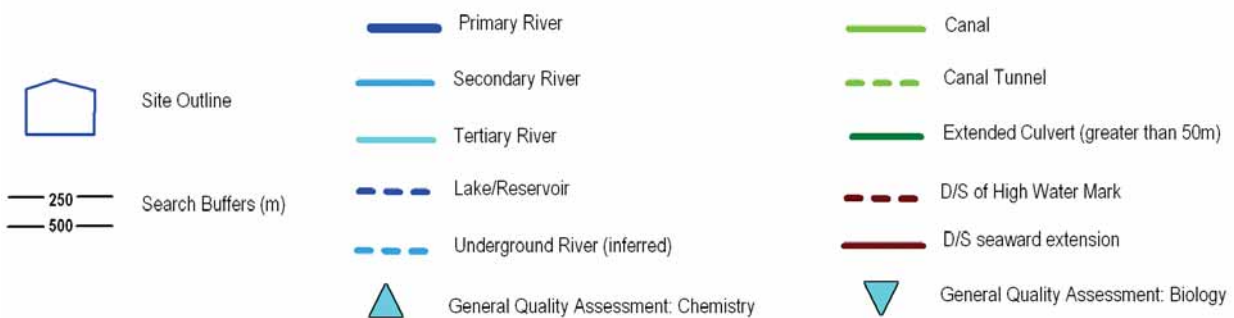
Crown Copyright. All Rights Reserved
Licence Number: 100035207



5d. Hydrology – Detailed River Network and River Quality



Hydrology Legend



Enabled by Ordnance Survey

Crown Copyright. All Rights Reserved
Licence Number: 100035207

5. Hydrogeology and Hydrology

5.1 Aquifer within Superficial Deposits

Are there records of productive strata within the superficial geology at or in proximity to the property?

Yes

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

The following aquifer records are shown on the Aquifer within Superficial Geology Map (5a):

ID	Distance [m]	Direction	Designation	Description
1	0.0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
4	0.0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
5	151.0	S	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

5.2 Aquifer within Bedrock Deposits

Are there records of productive strata within the bedrock geology at or in proximity to the property?

Yes

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

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (5b):

ID	Distance [m]	Direction	Designation	Description
1	0.0	On Site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
4	0.0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

5.3 Groundwater Abstraction Licences

Are there any Groundwater Abstraction Licences within 2000m of the study site?

Yes

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (5b):

ID	Distance	Direction	NGR	Details
----	----------	-----------	-----	---------

6A	0.0	On Site	338190, 348940	Licence No: 24/67/7/0222 Details: Process Water Direct Source: Eaw Groundwater Point: 144m Deep, 150mm Dia. Borehole Aw1 Data Type: Point	Annual Volume (m³): 131400 Max Daily Volume (m³): 600 Original Application No: C219/1880 Original Start Date: 10/9/2001 Expiry Date: 31/3/2012 Issue No: 1 Version Start Date: 10/9/2001 Version End Date:
7A	0.0	On Site	338190, 348940	Licence No: WA/067/0007/006 Details: Process Water Direct Source: Eaw Groundwater Point: 144m Deep, 150mm Dia. Borehole Aw1 Data Type: Point	Annual Volume (m³): 131400 Max Daily Volume (m³): 600 Original Application No: NPS/WR/007248 Original Start Date: 1/4/2012 Expiry Date: 31/3/2022 Issue No: 1 Version Start Date: 1/4/2012 Version End Date:
8A	0.0	On Site	338190, 348940	Licence No: 24/67/7/0213 Details: Process water Direct Source: Eaw Groundwater Point: 144m Deep, 150mm Dia. Borehole Aw1 Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 1825 Original Start Date: 10/9/1998 Expiry Date: 10/09/2001 Issue No: 100 Version Start Date: 10/9/1998 Version End Date:
9B	28.0	E	338240, 349090	Licence No: 24/67/7/0222 Details: Process Water Direct Source: Eaw Groundwater Point: 144m Deep, 150mm Dia., Ob1 Data Type: Point	Annual Volume (m³): 131400 Max Daily Volume (m³): 600 Original Application No: C219/1880 Original Start Date: 10/9/2001 Expiry Date: 31/3/2012 Issue No: 1 Version Start Date: 10/9/2001 Version End Date:
10B	28.0	E	338240, 349090	Licence No: WA/067/0007/006 Details: Process Water Direct Source: Eaw Groundwater Point: 144m Deep, 150mm Dia., Ob1 Data Type: Point	Annual Volume (m³): 131400 Max Daily Volume (m³): 600 Original Application No: NPS/WR/007248 Original Start Date: 1/4/2012 Expiry Date: 31/3/2022 Issue No: 1 Version Start Date: 1/4/2012 Version End Date:
11B	28.0	E	338240, 349090	Licence No: 24/67/7/0213 Details: Process water Direct Source: Eaw Groundwater Point: 144m Deep, 150mm Dia., Ob1 Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 1825 Original Start Date: 10/9/1998 Expiry Date: 10/09/2001 Issue No: 100 Version Start Date: 10/9/1998 Version End Date:
12C	151.0	E	338350, 349180	Licence No: WA/067/0007/006 Details: Process Water Direct Source: Eaw Groundwater Point: Spectrum Business Park Borehole Aw2 Data Type: Point	Annual Volume (m³): 131400 Max Daily Volume (m³): 600 Original Application No: NPS/WR/007248 Original Start Date: 1/4/2012 Expiry Date: 31/3/2022 Issue No: 1 Version Start Date: 1/4/2012 Version End Date:
13C	164.0	NE	338360, 349190	Licence No: 24/67/7/0222 Details: Process Water Direct Source: Eaw Groundwater Point: 144 M Deep, 200mm Dia Bh Aw2 Data Type: Point	Annual Volume (m³): 131400 Max Daily Volume (m³): 600 Original Application No: C219/1880 Original Start Date: 10/9/2001 Expiry Date: 31/3/2012 Issue No: 1 Version Start Date: 10/9/2001 Version End Date:
14C	164.0	NE	338360, 349190	Licence No: 24/67/7/0213 Details: Process water Direct Source: Eaw Groundwater Point: 144 M Deep, 200mm Dia Bh Aw2 Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 1825 Original Start Date: 10/9/1998 Expiry Date: 10/09/2001 Issue No: 100 Version Start Date: 10/9/1998 Version End Date:
Not shown	1864.0	N		Licence No: 24/67/9/0130 Details: General Farming & Domestic Direct Source: Eaw Groundwater Point: Well Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 433 Original Start Date: 14/6/1968 Expiry Date: - Issue No: 100 Version Start Date: 14/6/1968 Version End Date:

5.4 Surface Water Abstraction Licences

Are there any Surface Water Abstraction Licences within 2000m of the study site?

Yes

The following Surface Water Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (5b):

ID	Distance	Direction	NGR	Details	
Not shown	1135.0	N	337810, 350500	Licence No: 24/67/7/0178 Details: Non-Evaporative Cooling Direct Source: Eaw Surface Water Point: Tributary Of Redwither Brook Data Type: Point	Annual Volume (m ³): 9955.74 Max Daily Volume (m ³): 27.27 Application No: N94 Original Start Date: 12/5/1972 Expiry Date: - Issue No: 100 Version Start Date: 1/4/2007 Version End Date:

5.5 Potable Water Abstraction Licences

Are there any Potable Water Abstraction Licences within 2000m of the study site?

No

Database searched and no data found.

5.6 Source Protection Zones

Are there any Source Protection Zones within 500m of the study site?

Yes

The following Source Protection Zones records are represented on the SPZ and Potable Water Abstraction Map (5c):

ID	Distance	Direction	Type	Description
1	0.0	On Site	1	Inner Catchment
2	0.0	On Site	2	Outer Catchment
3	0.0	On Site	3	Total Catchment

5.7 River Quality

Is there any Environment Agency information on river quality within 1500m of the study site?

Yes

Biological Quality:

Biological Quality data describes water quality in terms of 83 groups of macroinvertebrates, some of which are pollution sensitive. The results are graded from A ('Very Good') to F ('Bad').

The following Biological Quality records are shown on the Hydrology Map (5d):

ID	Distance [m]	Direction	NGR	River Details	Biological Quality Grade				
					2005	2006	2007	2008	2009
88K	575.0	E	338800, 349000	River Name: Clywedog (dee) Reach: Conf.r.dee - Conf.red'r Bk. End/Start of Stretch: Start of Stretch NGR	A	A	A	B	B

Report Reference: CMAPS-CM-168210-5023-060812

89K	575.0	E	338800, 349000	River Name: Clywedog (dee) Reach: Conf.redwith Bk. - O/f Five Fords Stw End/Start of Stretch: End of Stretch NGR	B	B	B	B	B
Not shown	1249.0	W	336200, 348400	River Name: Clywedog (dee) Reach: Conf.redwith Bk. - O/f Five Fords Stw End/Start of Stretch: Start of Stretch NGR	B	B	B	B	B
Not shown	1249.0	W	336200, 348400	River Name: Clywedog (dee) Reach: O/f 5 Fords Stw-conf.gwenfro Kings Mill End/Start of Stretch: End of Stretch NGR	B	B	B	B	B

Chemical Quality:

Chemical quality data is based on the General Quality Assessment Headline Indicators scheme (GQAH). In England, each chemical sample is measured for ammonia and dissolved oxygen. In Wales, the samples are measured for biological oxygen demand (BOD), ammonia and dissolved oxygen. The results are graded from A ('Very Good') to F ('Bad').

The following Chemical Quality records are shown on the Hydrology Map (5d):

ID	Distance [m]	Direction	NGR	River Details	Chemical Quality Grade (Headline Indicator)				
					2005	2006	2007	2008	2009
92K	575.0	E	338800, 349000	River Name: Clywedog Reach: Conf.r.dee - Conf.red'r Bk. End/Start of Stretch: Start of Stretch NGR	B	C	C	C	-
93K	575.0	E	338800, 349000	River Name: Clywedog Reach: Conf.redwith Bk. - O/f Five Fords Stw End/Start of Stretch: End of Stretch NGR	B	B	B	B	-
94L	772.0	SW	336710, 348450	River Name: Clywedog Reach: Conf.redwith Bk. - O/f Five Fords Stw End/Start of Stretch: Sample Point NGR	B	B	B	B	-
95L	772.0	SW	336710, 348450	River Name: Clywedog Reach: O/f 5 Fords Stw-conf.gwenfro Kings Mill End/Start of Stretch: Sample Point NGR	B	B	B	B	-
Not shown	1249.0	W	336200, 348400	River Name: Clywedog Reach: Conf.redwith Bk. - O/f Five Fords Stw End/Start of Stretch: Start of Stretch NGR	B	B	B	B	-
Not shown	1249.0	W	336200, 348400	River Name: Clywedog Reach: O/f 5 Fords Stw-conf.gwenfro Kings Mill End/Start of Stretch: End of Stretch NGR	B	B	B	B	-

5.8 Detailed River Network

Are there any Detailed River Network entries within 500m of the study site?

Yes

The following Detailed River Network records are represented on the Hydrology Map (5d):

ID	Distance	Direction	Details
----	----------	-----------	---------

1	15.0	S	River Name: Clywedog Water Course Name: CLYWEDOG (LOWER DEE) Welsh River Name: - Alternative Name: -	River Type: Primary River Catchment: - Drain: NO Main River Status: Currently Undefined
2	42.0	SE	River Name: (Afon Clywedog) Water Course Name: CLYWEDOG (LOWER DEE) Welsh River Name: - Alternative Name: -	River Type: Primary River Catchment: - Drain: NO Main River Status: Currently Undefined
3A	58.0	E	River Name: - Water Course Name: CLYWEDOG (LOWER DEE) Welsh River Name: - Alternative Name: -	River Type: Primary River Catchment: - Drain: NO Main River Status: Currently Undefined
4A	60.0	E	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Primary River Catchment: - Drain: NO Main River Status: Currently Undefined
5	73.0	NE	River Name: Clywedog Water Course Name: CLYWEDOG (LOWER DEE) Welsh River Name: - Alternative Name: -	River Type: Primary River Catchment: - Drain: NO Main River Status: Currently Undefined
6	125.0	N	River Name: Drain Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Extended Culvert (greater than 50m) Catchment: - Drain: YES Main River Status: Currently Undefined
7	125.0	N	River Name: Drain Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: YES Main River Status: Currently Undefined
8B	126.0	SE	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Primary River Catchment: - Drain: NO Main River Status: Currently Undefined
9B	126.0	SE	River Name: - Water Course Name: CLYWEDOG (LOWER DEE) Welsh River Name: - Alternative Name: -	River Type: Primary River Catchment: - Drain: NO Main River Status: Currently Undefined
10C	139.0	NW	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
11	142.0	NW	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
12C	142.0	NW	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
13	171.0	N	River Name: Redwither Brook Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
14	202.0	N	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Catchment: - Drain: NO Main River Status: Currently Undefined
15E	211.0	NE	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
16	212.0	NE	River Name: Redwither Brook Water Course Name: REDWITHER BROOK Welsh River Name: - Alternative Name: -	River Type: Primary River Catchment: - Drain: NO Main River Status: Currently Undefined
17D	216.0	NE	River Name: - Water Course Name: REDWITHER BROOK Welsh River Name: - Alternative Name: -	River Type: Primary River Catchment: - Drain: NO Main River Status: Currently Undefined
18D	229.0	NE	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Catchment: - Drain: NO Main River Status: Currently Undefined
19D	230.0	NE	River Name: - Water Course Name: REDWITHER BROOK Welsh River Name: - Alternative Name: -	River Type: Primary River Catchment: - Drain: NO Main River Status: Currently Undefined

20	231.0	NW	River Name: Drain Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: YES Main River Status: Currently Undefined
21E	235.0	NE	River Name: - Water Course Name: REDWITHER BROOK Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
22	240.0	NW	River Name: Drain Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: YES Main River Status: Currently Undefined
23	240.0	NW	River Name: Drain Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Catchment: - Drain: YES Main River Status: Currently Undefined
24	240.0	NW	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
25	243.0	NW	River Name: Drain Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: YES Main River Status: Currently Undefined
26	248.0	N	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Extended Culvert (greater than 50m) Catchment: - Drain: NO Main River Status: Currently Undefined
27	259.0	NW	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Extended Culvert (greater than 50m) Catchment: - Drain: NO Main River Status: Currently Undefined
28	294.0	E	River Name: - Water Course Name: CLYWEDOG (LOWER DEE) Welsh River Name: - Alternative Name: -	River Type: Primary River Catchment: - Drain: NO Main River Status: Currently Undefined
29	301.0	W	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Primary River Catchment: - Drain: NO Main River Status: Currently Undefined
30F	309.0	NE	River Name: - Water Course Name: REDWITHER BROOK Welsh River Name: - Alternative Name: -	River Type: Primary River Catchment: - Drain: NO Main River Status: Currently Undefined
31F	312.0	NE	River Name: - Water Course Name: REDWITHER BROOK Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
32	315.0	NE	River Name: - Water Course Name: REDWITHER BROOK Welsh River Name: - Alternative Name: -	River Type: Primary River Catchment: - Drain: NO Main River Status: Currently Undefined
33	324.0	W	River Name: Drain Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Primary River Catchment: - Drain: YES Main River Status: Currently Undefined
34	324.0	W	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Catchment: - Drain: NO Main River Status: Currently Undefined
35	328.0	NW	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
36G	338.0	E	River Name: - Water Course Name: CLYWEDOG (LOWER DEE) Welsh River Name: - Alternative Name: -	River Type: Primary River Catchment: - Drain: NO Main River Status: Currently Undefined
37	345.0	E	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
38	345.0	E	River Name: (Afon) Water Course Name: CLYWEDOG (LOWER DEE) Welsh River Name: - Alternative Name: -	River Type: Primary River Catchment: - Drain: NO Main River Status: Currently Undefined

39G	346.0	E	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Primary River Catchment: - Drain: NO Main River Status: Currently Undefined
40	349.0	SW	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Primary River Catchment: - Drain: NO Main River Status: Currently Undefined
41	349.0	SW	River Name: Drain Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Catchment: - Drain: YES Main River Status: Currently Undefined
42H	352.0	NW	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
43	354.0	E	River Name: Drain Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Extended Culvert (greater than 50m) Catchment: - Drain: YES Main River Status: Currently Undefined
44H	388.0	NW	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
45	388.0	NW	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
46	394.0	SE	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
47	422.0	W	River Name: - Water Course Name: CLYWEDOG (LOWER DEE) Welsh River Name: - Alternative Name: -	River Type: Primary River Catchment: - Drain: NO Main River Status: Currently Undefined
48	422.0	W	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Extended Culvert (greater than 50m) Catchment: - Drain: NO Main River Status: Currently Undefined
49	480.0	NW	River Name: Drain Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: YES Main River Status: Currently Undefined
50	480.0	NW	River Name: Drain Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Primary River Catchment: - Drain: YES Main River Status: Currently Undefined

5.9 Surface Water Features

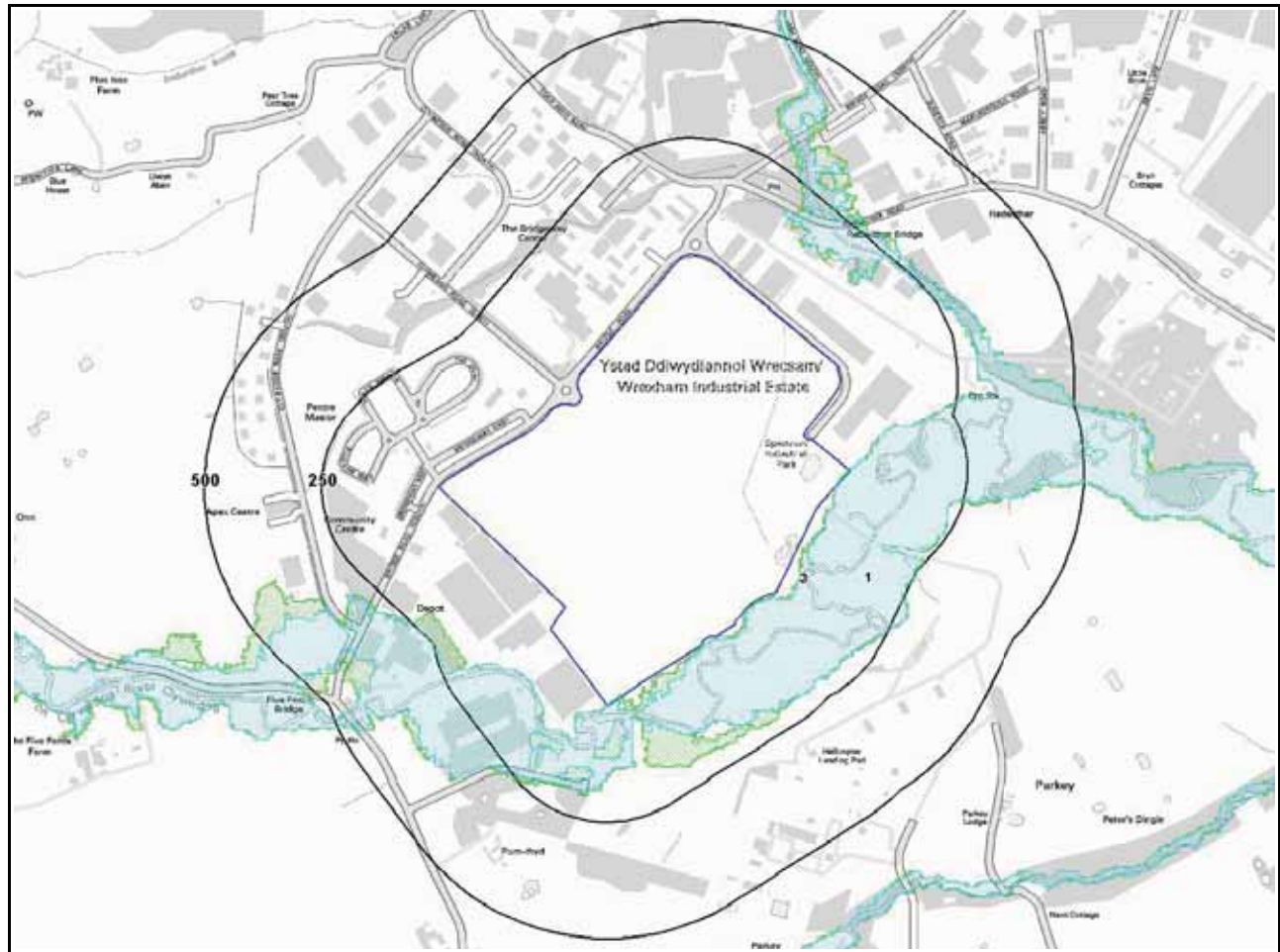
Are there any surface water features within 250m of the study site?

Yes

The following surface water records are not represented on mapping:

Distance to Surface Water (m)	on-site	0-50	51-250
Surface water features within 250m of the study site	Yes	Yes	Yes

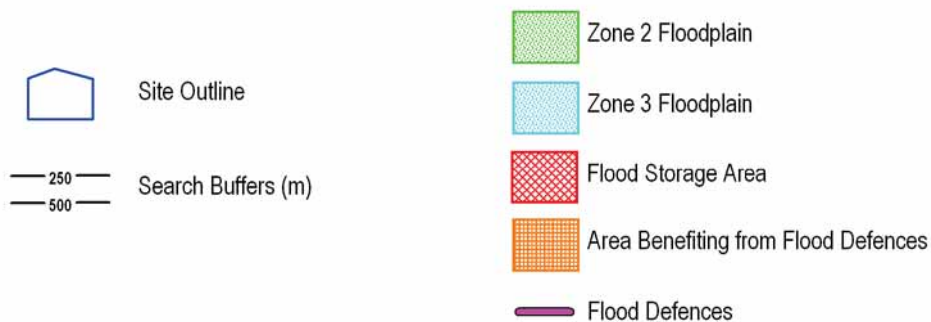
6. Environment Agency Flood Map



Environment Agency Flood Legend



Crown Copyright. All Rights Reserved
Licence Number: 100035207



6. Flooding

6.1 Zone 2 Flooding

Zone 2 floodplain estimates the annual probability of flooding as one in one thousand (0.1%) or greater from rivers and the sea but less than 1% from rivers or 0.5% from the sea. Alternatively, where information is available they may show the highest known flood level.

Is the site within 250m of an Environment Agency indicative Zone 2 floodplain? **Yes**

The following floodplain records are represented as green shading on the Flood Map:

ID	Distance	Direction	Update	Type
1	0.0	On Site	04-Jul-2012	Zone 2 - (Fluvial Models)

6.2 Zone 3 Flooding

Zone 3 estimates the annual probability of flooding as one in one hundred (1%) or greater from rivers and a one in two hundred (0.5%) or greater from the sea. Alternatively, where information is available they may show the highest known flood level.

Is the site within 250m of an Environment Agency indicative Zone 3 floodplain? **Yes**

The following floodplain records are represented as blue shading on the Flood Map:

ID	Distance	Direction	Update	Type
3	0.0	On Site	04-Jul-2012	Zone 3 - (Fluvial Models)

6.3 Flood Defences

Are there any Flood Defences within 250m of the study site? **No**

6.4 Areas benefiting from Flood Defences

Are there any areas benefiting from Flood Defences within 250m of the study site? **No**

6.5 Areas used for Flood Storage

Are there any areas used for Flood Storage within 250m of the study site? **No**

6.6 Groundwater Flooding Susceptibility Areas

Are there any British Geological Survey groundwater flooding susceptibility flood areas within 50m of the boundary of the study site? **Yes**

What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions?

Very High

6.7 Groundwater Flooding Confidence Areas

What is the British Geological Survey confidence rating in this result?

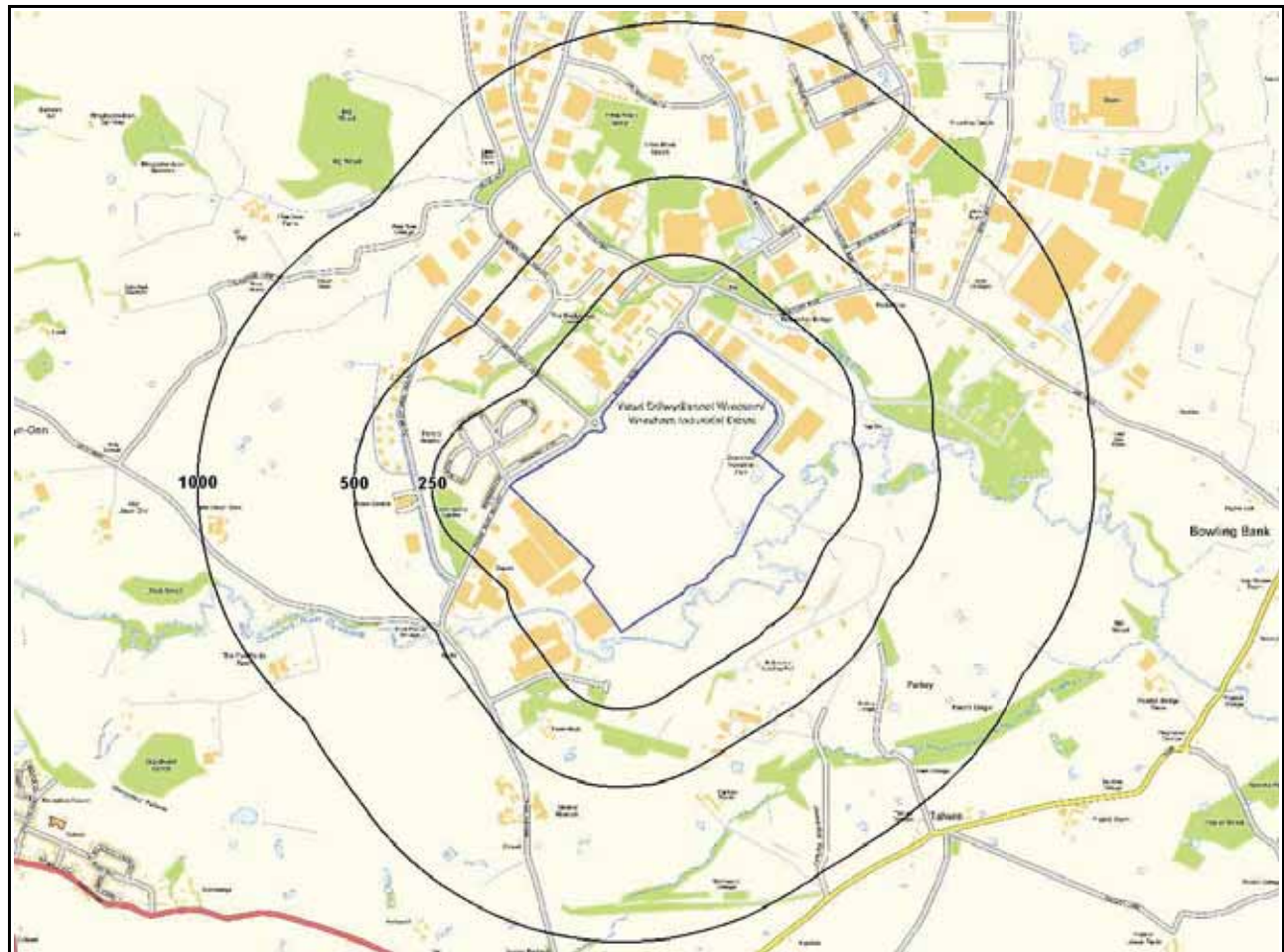
High

Notes:

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

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

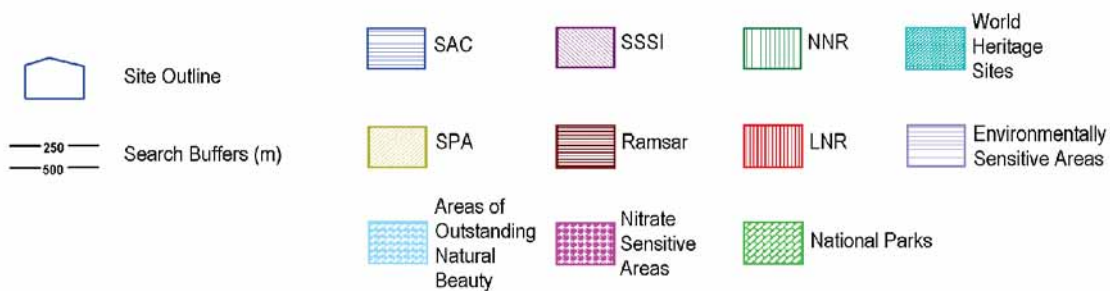
7.Designated Environmentally Sensitive Sites Map



Designated Environmentally Sensitive Sites Legend



Crown Copyright. All Rights Reserved
Licence Number: 100035207



7. Designated Environmentally Sensitive Sites

Presence of Designated Environmentally Sensitive Sites within 2000m of the study site? **No**

Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site: **0**

Database searched and no data found.

Records of National Nature Reserves (NNR) within 2000m of the study site: **0**

Database searched and no data found.

Records of Special Areas of Conservation (SAC) within 2000m of the study site: **0**

Database searched and no data found.

Records of Special Protection Areas (SPA) within 2000m of the study site: **0**

Database searched and no data found.

Records of Ramsar sites within 2000m of the study site: **0**

Database searched and no data found.

Records of Local Nature Reserves (LNR) within 2000m of the study site: **0**

Database searched and no data found.

Records of World Heritage Sites within 2000m of the study site: **0**

Database searched and no data found.

Records of Environmentally Sensitive Areas within 2000m of the study site: **0**

Database searched and no data found.

Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site: **0**

Database searched and no data found.

Records of National Parks (NP) within 2000m of the study site: **0**

Database searched and no data found.

Report Reference: CMAPS-CM-168210-5023-060812

Records of Nitrate Sensitive Areas within 2000m of the study site:	0
---	----------

Database searched and no data found.

Records of Nitrate Vulnerable Zones within 2000m of the study site:	0
--	----------

Database searched and no data found.

8. Natural Hazards Findings

8.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a GroundSure GeoInsight, available from our website. The following information has been found:

8.1.1 Shrink Swell

What is the maximum Shrink-Swell* hazard rating identified on the study site? **Very Low**

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

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

8.1.2 Landslides

What is the maximum Landslide* hazard rating identified on the study site? **Very Low**

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

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

8.1.3 Soluble Rocks

What is the maximum Soluble Rocks* hazard rating identified on the study site? **Null - Negligible**

Soluble rocks are not present in the search area. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

8.1.4 Compressible Ground

What is the maximum Compressible Ground* hazard rating identified on the study site? **Moderate**

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

Hazard
Significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.

8.1.5 Collapsible Rocks

What is the maximum Collapsible Rocks* hazard rating identified on the study site?

Very Low

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

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

8.1.6 Running Sand

What is the maximum Running Sand* hazard rating identified on the study site?

Low

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

Hazard
Possibility of running sand problems after major changes in ground conditions. Normal maintenance to avoid leakage of water-bearing services or water bodies (ponds, swimming pools) should reduce likelihood of problems due to running sand. For new build consider possibility of running sand into trenches or excavations if water table is high or sandy strata are exposed to water. Avoid concentrated water inputs to site. Unlikely to be an increase in construction costs due to potential for running sand. For existing property no significant increase in insurance risk due to running sand problems is likely.

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

9. Mining

9.1 Coal Mining

Are there any coal mining areas within 75m of the study site?

Yes

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

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

9.2 Shallow Mining

What is the subsidence hazard relating to shallow mining on-site*?

Negligible

*Please note this data is searched with a 150m buffer.

9.3 Brine Affected Areas

Are there any brine affected areas within 75m of the study site?

No

Database searched and no data found.

10. Contacts

CENTREMAPS

Telephone: 01886 832972
groundsure@centremaps.co.uk
CENTREMAPS, Brockamin House, Leigh, Worcester, London,
WR6 5JU

Directors: M C Walker, MInst C.E.S., C M Walker,
S J Hawkins BSc (Hons), S E Stewart BSc (Hons)
Registered No. 1890261 Registered in England and Wales
Registered Company: Laser Surveys Limited
Brockamin House, Leigh, Worcester, WR6 5JU.

British Geological Survey (England & Wales)

Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143. Fax: 0115 936 3276. Email:
enquiries@bgs.ac.uk
Web: www.bgs.ac.uk
BGS Geological Hazards Reports and general geological
enquiries

centremapslive.com
the mapping portal from Laser Surveys



Environment Agency

National Customer Contact Centre
PO Box 544
Rotherham
S60 1BY
Tel: 08708 506 506
Web: www.environment-agency.gov.uk
Email: enquiries@environment-agency.gov.uk



Health Protection Agency

Chilton, Didcot, Oxon, OX11 0RQ
Tel: 01235 822622 www.hpa.org.uk/radiation
Radon measures and general radon information and
guidance

The Coal Authority

200 Lichfield Lane, Mansfield, Notts NG18 4RG
Tel: 0845 762 6848
DX 716176 Mansfield 5
Web: www.groundstability.com



Ordnance Survey

Romsey Road
Southampton SO16 4GU
Tel: 08456 050505



Local Authority

Authority: Wrexham County Borough Council
Phone: 01978 292000
Web: www.wrexham.gov.uk
Address: The Guildhall, Wrexham, LL11 1AY

Get Mapping PLC

Virginia Villas, High Street, Hartley Witney, Hampshire RG27
8NW
Tel: 01252 845444



Acknowledgements

This product includes map data licensed from Landmark Information Group Limited®.
© Crown Copyright 2003 and Landmark Information Group Limited® 2003. All Rights Reserved.

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

PointX © Database Right/Copyright, Thomson Directories Limited © Copyright Link Interchange Network Limited © Database Right/Copyright and Ordnance Survey © Crown Copyright and/or Database Right. All Rights Reserved. Licence Number [03421028].
This report has been prepared in accordance with the GroundSure Ltd standard Terms and Conditions of business for work of this nature.

Standard Terms and Conditions

1 Definitions

In these conditions unless the context otherwise requires:

"**Beneficiary**" means the Client or the customer of the Client for whom the Client has procured the Services.

"**Commercial**" means any building which is not Residential.

"**Commission**" means an order for Consultancy Services submitted by a Client.

"**Consultancy Services**" mean consultancy services provided by GroundSure including, without limitation, carrying out interpretation of third party and in-house environmental data, provision of environmental consultancy advice, undertaking environmental audits and assessments, Site investigation, Site monitoring and related items.

"**Contract**" means the contract between GroundSure and the Client for the performance of the Services which arises upon GroundSure's acceptance of an Order or Commission and which shall incorporate these conditions, the relevant GroundSure User Guide, proposal by GroundSure and the content of any subsequent report, and any agreed amendments in accordance with clause 11.

"**Client**" means the party that submits an Order or Commission.

"**Data Provider**" means any third party providing Third Party Content to GroundSure.

"**Data Report**" means reports comprising factual data with no professional interpretation in respect of the level of likely risk and/or liability available from GroundSure.

"**GroundSure**" means GroundSure Limited, a company registered in England and Wales under number 03421028 and whose registered office is at Greater London House, Hampstead Road, London NW1 7EJ.

"**GroundSure Materials**" means all materials prepared by GroundSure as a result of the provision of the Services, including but not limited to Data Reports, Mapping and Risk Screening Reports.

"**Intellectual Property**" means any patent, copyright, design rights, service marks, moral rights, data protection rights, know-how, trade mark or any other intellectual property rights.

"**Mapping**" an historical map or a combination of historical maps of various ages, time periods and scales available from GroundSure.

"**Order**" means an order form submitted by the Client requiring Services from GroundSure in respect of a specified Site.

"**Order Website**" means online platform via which Orders may be placed.

"**Report**" means a Risk Screening Report or Data Report for commercial or residential property available from GroundSure relating to the Site prepared in accordance with the specifications set out in the relevant User Guide.

"**Residential**" means any building used as or suitable for use as an individual dwelling.

"**Risk Screening Report**" means one of GroundSure's risk screening reports, comprising factual data with interpretation in respect of the level of likely risk and/or liability, excluding

"**Consultancy Services**".

"**Services**" means the provision of any Report, Mapping or Consultancy Services which GroundSure has agreed to carry out for the Client/Beneficiary on these terms and conditions in respect of the Site.

"**Site**" means the landsite in respect of which GroundSure provides the Services.

"**Third Party Content**" means any data, database or other information contained in a Report or Mapping which is provided to GroundSure by a Data Provider.

"**User Guide**" means the relevant current version of the user guide, available upon request from GroundSure.

2 Scope of Services

2.1 GroundSure agrees to carry out the Services in accordance with the Contract and to the extent set out therein.

2.2 GroundSure shall exercise all the reasonable skill, care and diligence to be expected of experienced environmental consultants in the performance of the Services.

2.3 The Client acknowledges that it has not relied on any statement or representation made by or on behalf of GroundSure which is not set out and expressly agreed in the Contract.

2.4 Terms and conditions appearing on a Client's order form, printed stationery or other communication, including invoices, to GroundSure, its employees, servants, agents or other representatives or any terms implied by custom, practice or course of dealing shall be of no effect and these terms and conditions shall prevail over all others.

2.5 If a Client/Beneficiary requests insurance in conjunction with or as a result of the Services, GroundSure shall use reasonable endeavours to procure such insurance, but makes no warranty that such insurance shall be available from insurers or offered on reasonable terms. GroundSure does not endorse or recommend any particular insurance product, policy or insurer. Any insurance purchased shall be subject solely to the terms of the policy issued by insurers and GroundSure will have no liability therefor. The Client/Beneficiary should take independent advice to ensure that the insurance policy requested and/or offered is suitable for its requirements.

2.6 GroundSure's quotations/proposals are valid for a period of 30 days only. GroundSure reserves the right to withdraw any quotation at any time before GroundSure accepts an Order or Commission. GroundSure's acceptance of an Order or Commission shall be effective only where such acceptance is in writing and signed by GroundSure's authorised representative or where accepted via GroundSure's Order Website.

3 The Client's obligations

3.1 The Client shall ensure the Beneficiary complies with and is bound by the terms and conditions set out in the Contract and shall provide that GroundSure may in its own right enforce such terms and conditions against the Beneficiary pursuant to the Contracts (Rights of Third Parties) Act 1999. The Client shall be liable for all breaches of the Contract by the Beneficiary as if they were breaches by the Client. The Client shall be solely responsible for ensuring that the Report/Mapping ordered is appropriate and suitable for the Beneficiary's needs.

3.2 The Client shall (or shall procure that the Beneficiary shall) supply to GroundSure as soon as practicable and without charge all information necessary and accurate relevant data including any specific and/or unusual environmental information relating to the Site known to the Client/Beneficiary which may pertain to the Services and shall give such assistance as GroundSure shall reasonably require in the performance of the Services (including, without limitation, access to a Site, facilities and equipment as agreed in the Contract).

3.3 Where Client/Beneficiary approval or decision is required, such approval or decision shall be given or procured in reasonable time as not to delay or disrupt the performance of any other part of the Services.

3.4 The Client shall not and shall not knowingly permit the Beneficiary to, save as expressly permitted by these terms and conditions, re-sell, alter, add to, amend or use out of context the content of any Report, Mapping or, in respect of any Services, information given by GroundSure. For the avoidance of doubt, the Client and Beneficiary may make the Report, Mapping or GroundSure's findings available to a third party who is considering acquiring the whole or part of the Site, or providing funding in relation to the Site, but such third party cannot rely on the same unless expressly permitted under clause 4.

3.5 The Client is responsible for maintaining the confidentiality of its user name and password if using GroundSure's internet ordering service and accepts responsibility for all activity that occurs under such account and password.

4 Reliance

4.1 Upon full payment of all relevant fees and subject to the provisions of these terms and conditions, the Client and Beneficiary are granted an irrevocable royalty-free licence to access the information contained in a Report, Mapping or in a report prepared by GroundSure in respect of or arising out of Consultancy Services. The Services may only be used for the benefit of the Client and those persons listed in clauses 4.2 and 4.3.

4.2 In relation to Data Reports, Mapping and Risk Screening Reports, the Client shall be entitled to make Reports available to (i) the Beneficiary, (ii) the Beneficiary's professional advisers, (iii) any person providing funding to the Beneficiary in relation to the Site (whether directly or as part of a lending syndicate), (iv) the first purchaser or first tenant of the Site (v) the professional advisers and lenders of the first purchaser or tenant of the Site. Accordingly GroundSure shall have the same duties and obligations to those persons in respect of the Services as it has to the Client and those persons shall have the benefit of any of the Client's rights under the Contract as if those persons were parties to the Contract. For the avoidance of doubt, the limitations of GroundSure's liability as set out in clauses 7 and 11.6 shall apply.

4.3 In relation to Consultancy Services, reliance shall be limited to the Client, Beneficiary and named parties on the Report.

4.4 Save as set out in clauses 4.2 and 4.3 and unless otherwise agreed in writing with GroundSure, any other party considering the information supplied by GroundSure as part of the Services, including (but not limited to) insurance underwriters, does so at their own risk and GroundSure has no legal obligations to such party unless otherwise agreed in writing.

4.5 The Client shall not and shall not knowingly permit any person (including the Beneficiary) who is provided with a copy of any Report, (except as permitted herein or by separate agreement with GroundSure) to: (a) remove, suppress or modify any trade mark, copyright or other proprietary marking from the Report or Mapping; (b) create any product which is derived directly or indirectly from the data contained in the Report or Mapping; (c) combine the Report or Mapping with, or incorporate the Report or Mapping into any other information data or service; or (d) re-format or otherwise change (whether by modification, addition or enhancement) data or images contained in the Report or Mapping.

4.6 Notwithstanding clause 4.5, if the Client acts in a professional capacity, it may make reasonable use of a Report and/or findings made as a result of Consultancy Services to advise Beneficiaries. However, GroundSure shall have no liability in respect of any opinion or report given to such Beneficiaries by the Client or a third party.

5 Fees and Disbursements

5.1 GroundSure shall charge the Client fees at the rate and frequency specified in the Contract together, in the case of Consultancy Services, with all proper disbursements incurred by GroundSure in performing the Services. For the avoidance of doubt, the fees payable for the Services are as set out in GroundSure's written proposal, Order Website or Order acknowledgement form. The Client shall in addition pay all value added tax or other tax payable on such fees and disbursements in relation to the provision of the Services.

5.2 Unless GroundSure requires prepayment, the Client shall promptly pay all fees disbursements and other monies due to GroundSure in full without deduction, counterclaim or set off together with such value added tax or other tax as may be required within 30 days from the date of GroundSure's invoice or such other period as may be agreed in writing between GroundSure and the Client ("**Payment Date**"). GroundSure reserves the right to charge interest which shall accrue on a daily basis from 30 days after the date of Payment Date until the date of payment (whether before or after judgment) at the rate of five per cent per annum above the Bank of England base rate from time to time.

5.3 In the event that the Client disputes the amount payable in respect of GroundSure's invoice it shall notify GroundSure no later than 28 days after the date thereof that it is in dispute. In default of such notification the Client shall be deemed to have agreed the amount thereof. As soon as reasonably practicable following receipt of a notification in respect of any disputed invoice, a member of the management team at GroundSure shall contact the Client and the parties shall use all reasonable endeavours to resolve the dispute.

6 Intellectual Property and Confidentiality

6.1 Subject to the provisions of clause 4.1, the Client and the Beneficiary hereby acknowledge that all Intellectual Property in the Services and Content are and shall remain owned by either GroundSure or the Data Providers and nothing in these terms purports to transfer or assign any rights to the Client or the Beneficiary in respect of the Intellectual Property.

6.2 The Client shall acknowledge the ownership of the **Third Party Content** where such **Third Party Content** is incorporated or used in the Client's own documents, reports, systems or services whether or not these are supplied to a third party.

6.3 Data Providers may enforce any breach of clauses 6.1 and 6.2 against the Client or Beneficiary.

6.4 The Client acknowledges that the proprietary rights subsisting in copyright, database rights and any other intellectual property rights in respect of any data and information contained in any Report are and shall remain (subject to clause 11.1) the property of GroundSure and/or any third party that has supplied data or information used to create a Report, and that these conditions do not purport to grant, assign or transfer any such rights in respect thereof to a Client and/or a Beneficiary.

6.5 The Client shall (and shall procure that any recipients of the Report as permitted under clause 4.2 shall):

(i) not remove, suppress or modify any trademark, copyright or other proprietary marking belonging to GroundSure or any third party from the Services;

(ii) use the information obtained as part of the Services in respect of the subject Site only, and shall not store or reuse any information obtained as part of the Services provided in respect of adjacent or nearby sites;

- (iii) not create any product or report which is derived directly or indirectly from the data contained in the Services (save that those acting in a professional capacity to the Beneficiary may provide advice based upon the Services);
 - (iv) not combine the Services with or incorporate such Services into any other information data or service; and
 - (v) not reformat or otherwise change (whether by modification, addition or enhancement), data contained in the Services (save that those acting in a professional capacity to the Beneficiary shall not be in breach of this clause 6.5(v) where such reformatting is in the normal course of providing advice based upon the Services),
- in each case of parts (iii) to (v) inclusive, whether or not such product or report is produced for commercial profit or not.
- 6.6 The Client and/or Beneficiary shall and shall procure that any party to whom the Services are made available shall notify GroundSure of any request or requirement to disclose, publish or disseminate any information contained in the Services in accordance with the Freedom of Information Act 2000, the Environmental Information Regulations 2004 or any associated legislation or regulations in force from time to time.
- 6.8 Save as otherwise set out in these terms and conditions, any information provided by one party ("**Disclosing Party**") to the other party ("**Receiving Party**") shall be treated as confidential and only used for the purposes of these terms and conditions, except in so far as the Receiving Party is authorised by the Disclosing Party to provide such information in whole or in part to a third party.

7 Liability

THE CLIENT'S ATTENTION IS DRAWN TO THIS PROVISION

- 7.1 Subject to the provisions of this clause 7, GroundSure shall be liable to the Beneficiary only in relation to any direct losses or damages caused by any negligent act or omission of GroundSure in preparing the GroundSure Materials and provided that the Beneficiary has used all reasonable endeavours to mitigate any such losses.
- 7.2 GroundSure shall not be liable for any other losses or damages incurred by the Beneficiary, including but not limited to:
- (i) loss of profit, revenue, business or goodwill, losses relating to business interruption, loss of anticipated savings, loss of or corruption to data or for any special, indirect or consequential loss or damage which arise out of or in connection with the GroundSure Materials or otherwise in relation to a Contract;
 - (ii) any losses or damages that arise as a result of the use of all or part of the GroundSure Materials in breach of these terms and conditions or contrary to the terms of the relevant User Guide;
 - (iii) any losses or damages that arise as a result of any error, omission or inaccuracy in any part of the GroundSure Materials where such part is based on any Third Party Content or any reasonable interpretation of Third Party Content. The Client accepts, and shall procure that any other Beneficiary shall accept, that it has no claim or recourse to any Data Provider in relation to Third Party Content; and/or
 - (iv) any loss or damage to a Client's computer, software, modem, telephone or other property caused by a delay or loss of use of GroundSure's internet ordering service.
- 7.3 GroundSure's total liability in contract, tort (including negligence or breach of statutory duty), misrepresentation, restitution or otherwise, arising in connection with the GroundSure Materials or otherwise in relation to the Contract shall be limited to £10 million in total (i) for any one claim or (ii) for a series of connected claims brought by one or more parties.
- 7.4 For the duration of the liability periods set out in clauses 7.5 and 7.6 below, GroundSure shall maintain professional indemnity insurance in respect of its liability under these terms and conditions provided such insurance is readily available at commercially viable rates. GroundSure shall produce evidence of such insurance if reasonably requested by the Client. A level of cover greater than GroundSure's current level of cover may be available upon request and agreement with the Client.
- 7.5 Any claim under the Contract in relation to Data Reports, Mapping and Risk Screening Reports, must be brought within six years from the date when the Beneficiary became aware that it may have a claim and in no event may a claim be brought twelve years or more after completion of such a Contract. For the avoidance of doubt, any claim in respect of which proceedings are notified to GroundSure in writing prior to the expiry of the time periods referred to in this clause 7.5 shall survive the expiry of those time periods provided the claim is actually commenced within six months of notification.
- 7.6 Any claim under the Contract in relation to Consultancy Services, must be brought within six years from the date the Consultancy Services were completed.
- 7.7 The Client accepts and shall procure that any other Beneficiary shall accept that it has no claim or recourse to any Data Provider or to GroundSure in respect of the acts or omissions of any Data Provider and/or any Third Party Content provided by a Data Provider.
- 7.8 Nothing in these terms and conditions:
- (i) excludes or limits the liability of GroundSure for death or personal injury caused by GroundSure's negligence, or for fraudulent misrepresentation; or
 - (ii) shall affect the statutory rights of a consumer under the applicable legislation.

8 GroundSure right to suspend or terminate

- 8.1 In the event that GroundSure reasonably believes that the Client or Beneficiary as applicable has not provided the information or assistance required to enable the proper performance of the Services, GroundSure shall be entitled on fourteen days written notice to suspend all further performance of the Services until such time as any such deficiency has been made good.
- 8.2 GroundSure may additionally terminate the Contract immediately on written notice in the event that:
- (i) the Client shall fail to pay any sum due to GroundSure within 28 days of the Payment Date; or
 - (ii) the Client (being an individual) has a bankruptcy order made against him or (being a company) shall enter into liquidation whether compulsory or voluntary or have an Administration Order made against it or if a Receiver shall be appointed over the whole or any part of its property assets or undertaking or if the Client is struck off the Register of Companies or dissolved; or
 - (iii) the Client being a company is unable to pay its debts within the meaning of Section 123 of the Insolvency Act 1986 or being an individual appears unable to pay his debts within the meaning of Section 268 of the Insolvency Act 1986 or if the Client shall enter into a composition or arrangement with the Client's creditors or shall suffer distress or execution to be levied on his goods; or
 - (iv) the Client or the Beneficiary breaches any material term of the Contract (including, but not limited to, the obligations in clause 4) incapable of remedy or if remediable, is not remedied within 14 days of notice of the breach.

9 Client's Right to Terminate and Suspend

- 9.1 Subject to clause 10.2, the Client may at any time after commencement of the Services by notice in writing to GroundSure require GroundSure to terminate or suspend immediately performance of all or any of the Services.
- 9.2 The Client waives all and any right of cancellation it may have under the Consumer Protection (Distance Selling) Regulations 2000 (as amended) in respect of the Order of a Report/Mapping. This does not affect the Beneficiary's statutory rights.

10 Consequences of Withdrawal, Termination or Suspension

- 10.1 Upon termination or any suspension of the Services, GroundSure shall take steps to bring to an end the Services in an orderly manner, vacate any Site with all reasonable speed and shall deliver to the Client/Beneficiary any property of the Client/ Beneficiary in GroundSure's possession or control.
- 10.2 In the event of termination/suspension of the Contract under clauses 8 or 9, the Client shall pay to GroundSure all and any fees payable in respect of the performance of the Services up to the date of termination/suspension. In respect of any Consultancy Services provided, the Client shall also pay GroundSure any additional costs incurred in relation to the termination/suspension of the Contract.

11 General

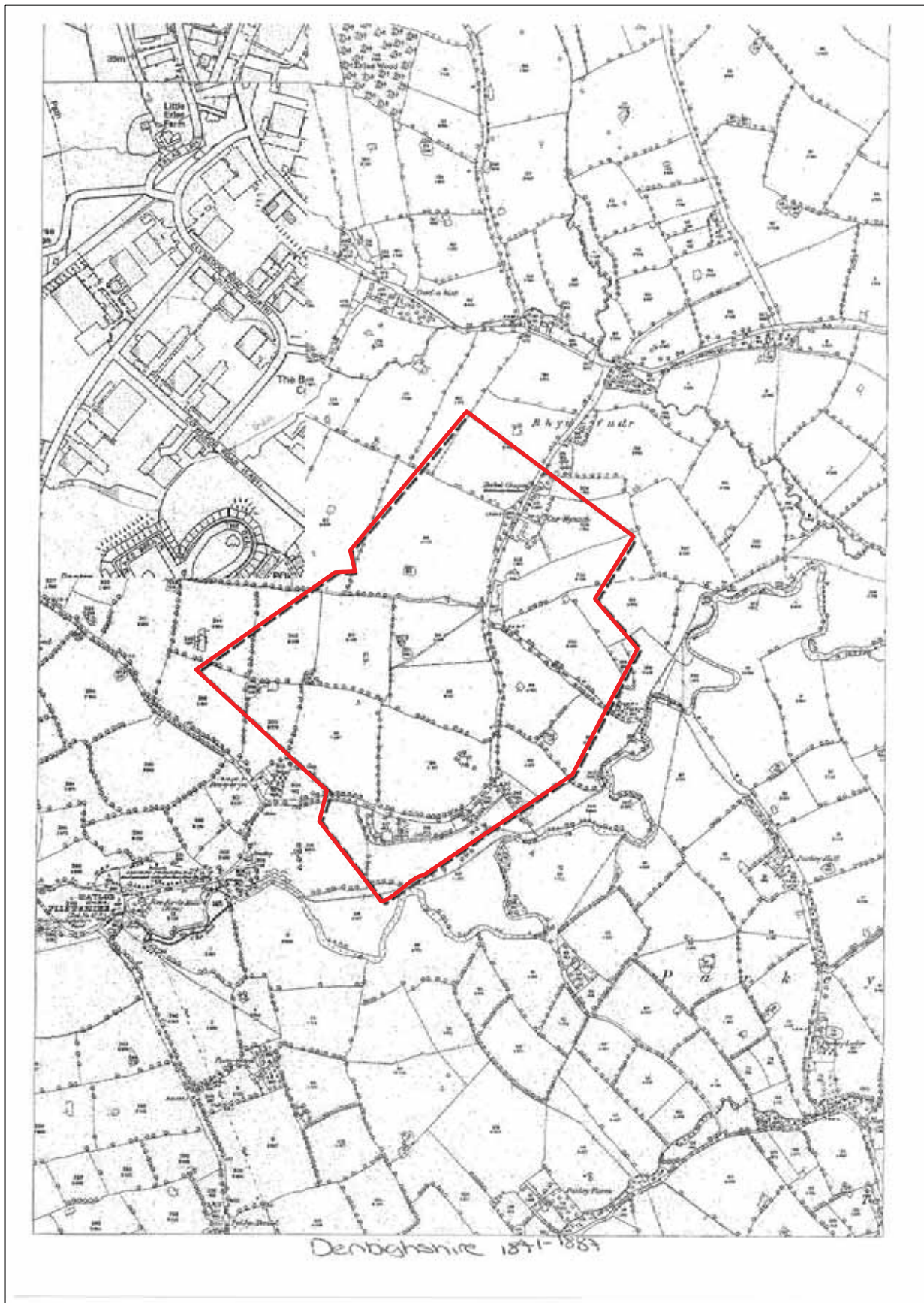
- 11.1 The mapping contained in the Services is protected by Crown copyright and must not be used for any purpose outside the context of the Services or as specifically provided in these terms.
- 11.2 GroundSure reserves the right to amend these terms and conditions. No variation to these terms shall be valid unless signed by an authorised representative of GroundSure.
- 11.3 No failure on the part of GroundSure to exercise and no delay in exercising, any right, power or provision under these terms and conditions shall operate as a waiver thereof.
- 11.4 Save as expressly provided in clauses 4.2, 4.3, 6.3 and 11.5, no person other than the persons set out therein shall have any right under the Contract (Rights of Third Parties) Act 1999 to enforce any terms of the Contract.
- 11.5 The Secretary of State for Communities and Local Government acting through Ordnance Survey may enforce breach of clause 6.1 of these terms and conditions against the Client in accordance with the provisions of the Contracts (Rights of Third Parties) Act 1999.
- 11.6 GroundSure shall not be liable to the Client if the provision of the Services is delayed or prevented by one or more of the following circumstances:
- (i) the Client or Beneficiary's failure to provide facilities, access or information;
 - (ii) fire, storm, flood, tempest or epidemic;
 - (iii) Acts of God or the public enemy;
 - (iv) riot, civil commotion or war;
 - (v) strikes, labour disputes or industrial action;
 - (vi) acts or regulations of any governmental or other agency;
 - (vii) suspension or delay of services at public registries by Data Providers; or
 - (viii) changes in law.
- 11.7 Any notice provided shall be in writing and shall be deemed to be properly given if delivered by hand or sent by first class post, facsimile or by email to the address, facsimile number or email address of the relevant party as may have been notified by each party to the other for such purpose or in the absence of such notification the last known address.
- 11.8 Such notice shall be deemed to have been received on the day of delivery if delivered by hand, facsimile or email and on the second working day after the day of posting if sent by first class post.
- 11.9 The Contract constitutes the entire contract between the parties and shall supersede all previous arrangements between the parties.
- 11.10 Each of the provisions of the Contract is severable and distinct from the others and if one or more provisions is or should become invalid, illegal or unenforceable, the validity and enforceability of the remaining provisions shall not in any way be tainted or impaired.
- 11.11 These terms and conditions shall be governed by and construed in accordance with English law and any proceedings arising out of or connected with these terms and conditions shall be subject to the exclusive jurisdiction of the English courts.
- 11.12 If the Client or Beneficiary has a complaint about the Services, notice can be given in any format eg writing, phone, email to the Compliance Officer at GroundSure who will respond in a timely manner.

© GroundSure Limited January 2012

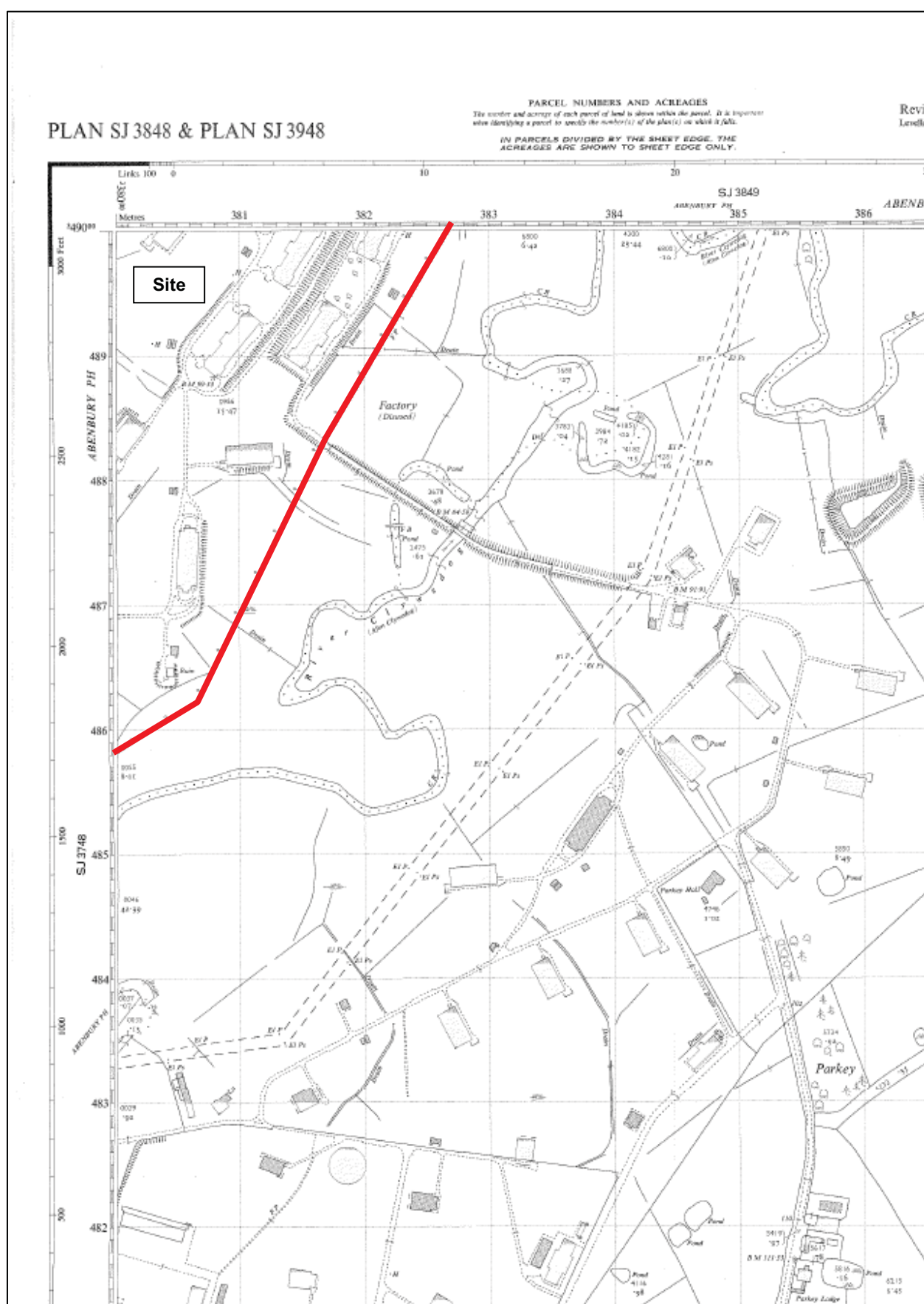
3.3 HISTORICAL MAPPING

Historical maps relating to the Site and its surrounding area have been provided by the Council.

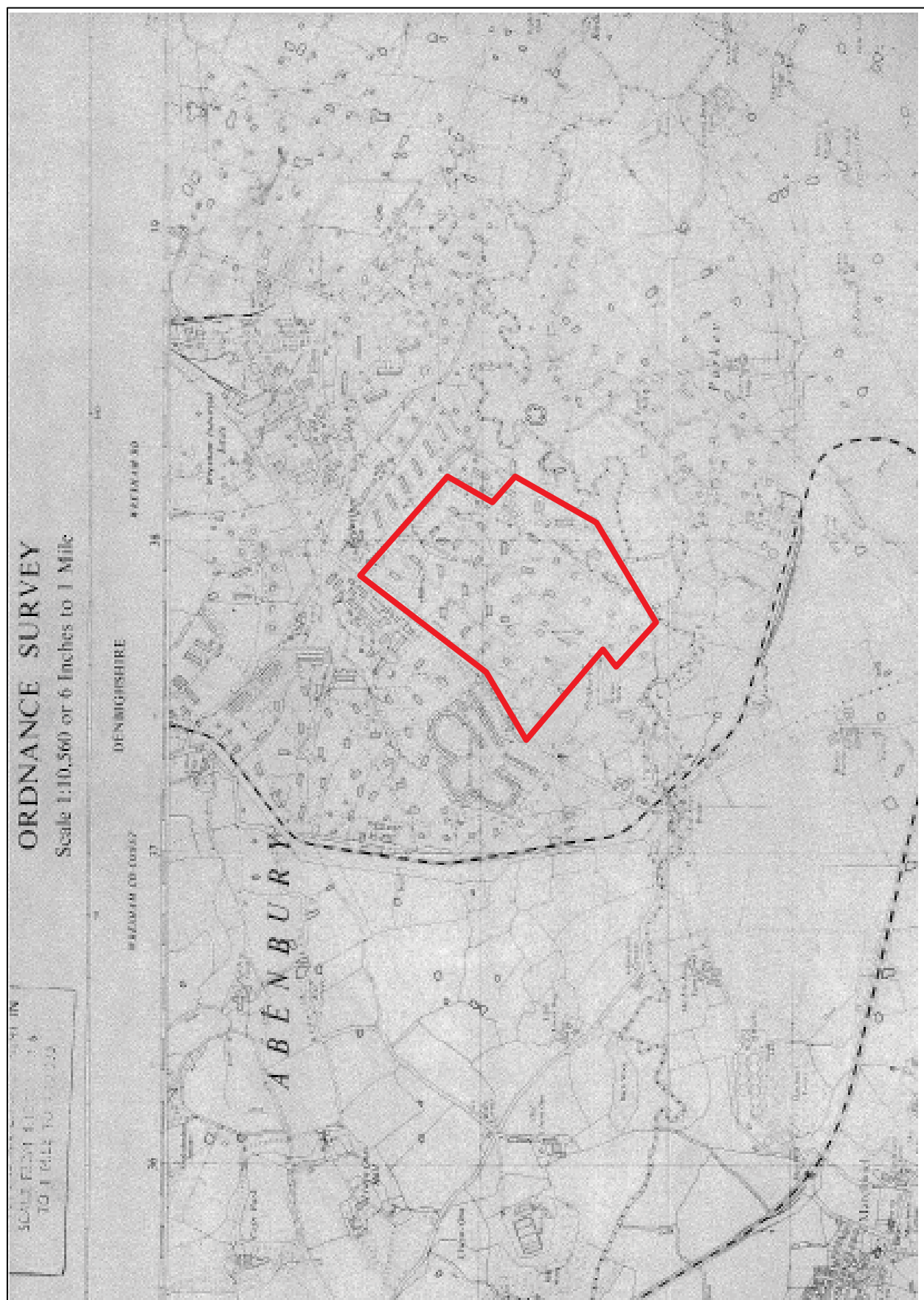
Denbighshire 1841-1887



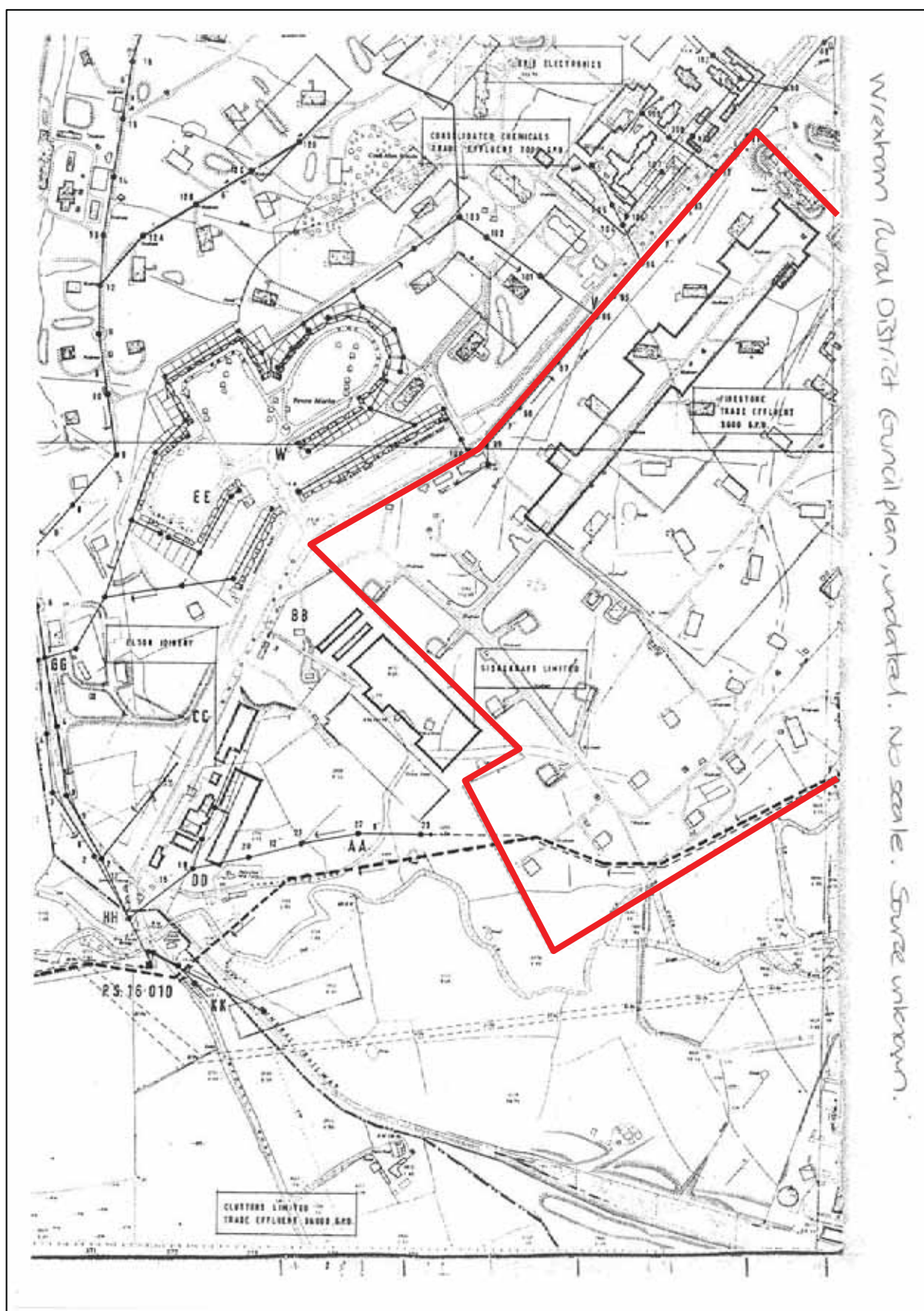
Ordnance Survey SJ3848 SJ3948 1:2,500 (1960)



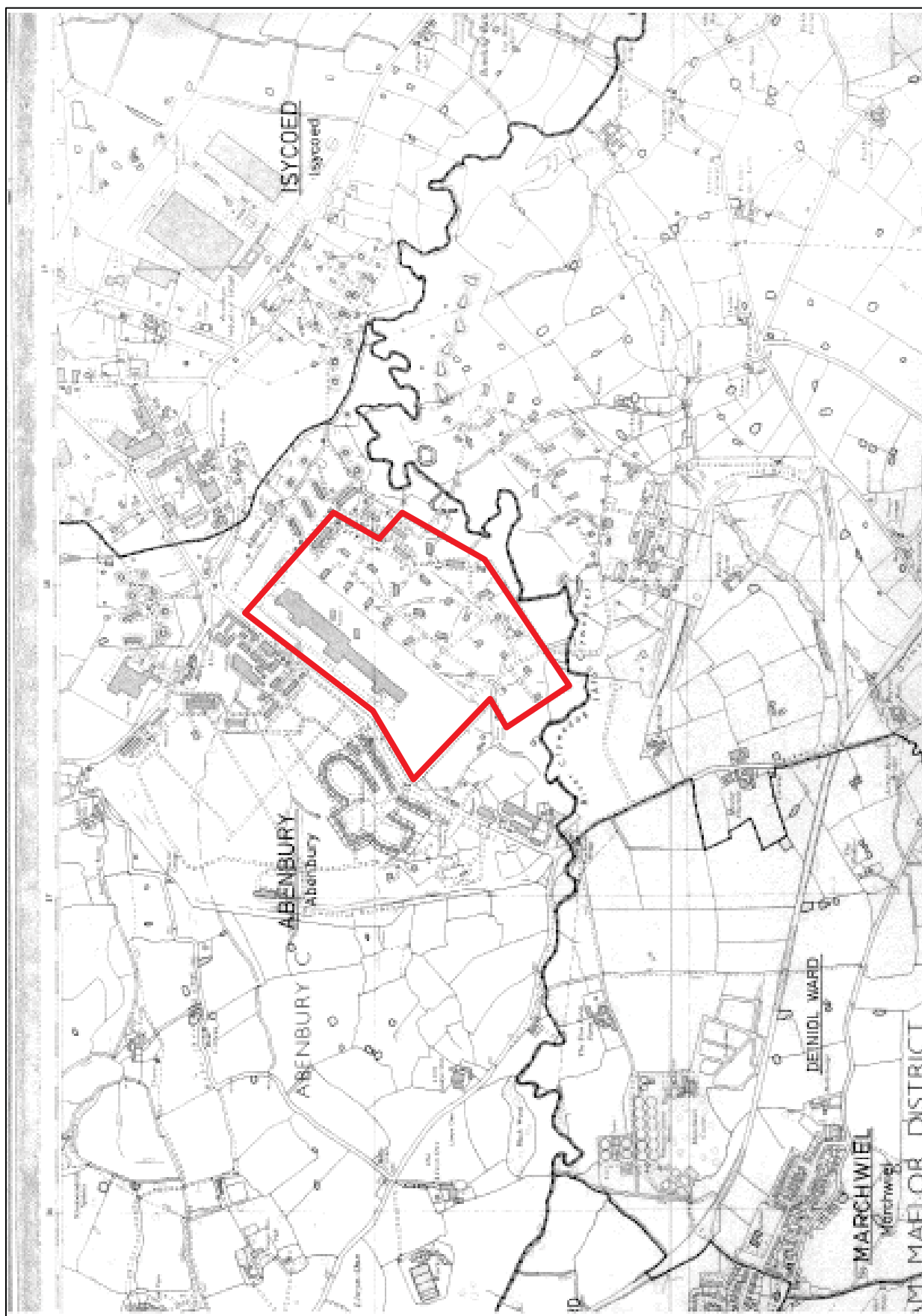
Ordnance Survey Sheet SJ34NE 1:10,560 (1964)



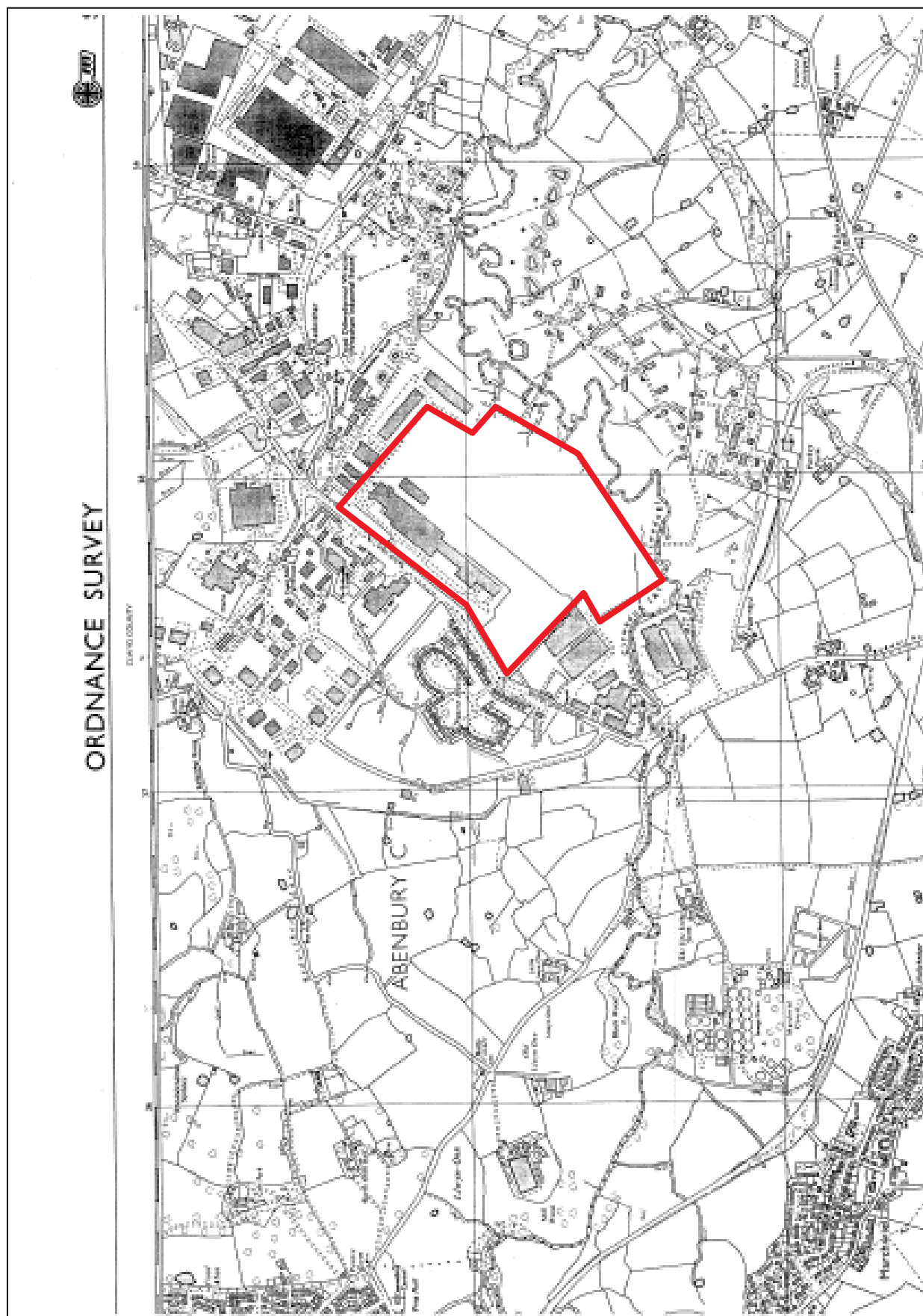
Wrexham Rural District Council Plan (c. mid 1960s)



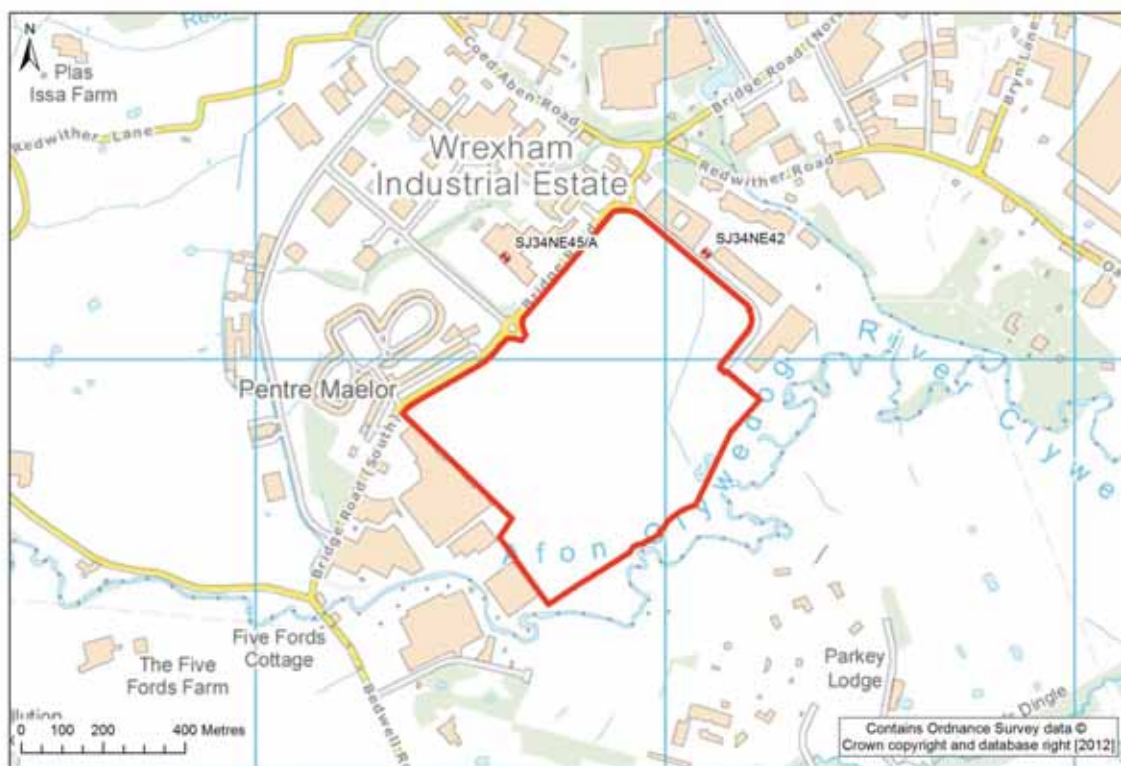
Ordnance Survey Sheet SJ34NE 1:10,000 (1979)



Ordnance Survey Sheet SJ34NE 1:10,000 (1992)



BGS borehole locations



3.5 SITE PHOTOGRAPHS

Photo 1 General view of Site showing tracks used by members of public



Photo 2 General view of Site showing mixed surface cover



**Photo 3 Exposed surficial soils (containing crushed concrete)
evident at ground surface**



**Photo 4 Close up of exposed surficial soils (containing fragments of brick)
evident at ground surface**



Photo 5 Access route onto Site used by members of the public

