



Cytec Industries Inc.

Phase I Environmental Site Assessment

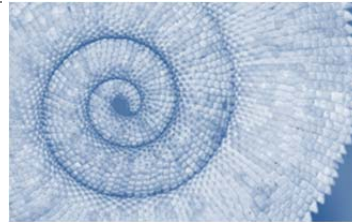
Plot for Development

Abenbury Way

Wrexham, UK

25 July 2014

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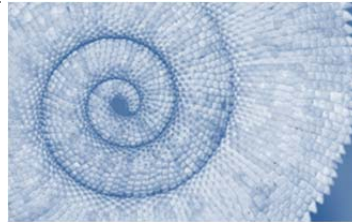
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Executive Summary & Conclusions



Environmental Resources Management Limited (ERM) completed a Phase I Environmental Site Assessment (ESA) of a plot for development located at Abenbury Way, Wrexham Industrial Estate, LL13 9UZ, UK (the “Subject Property” or the “Site”). The Phase I ESA was conducted in accordance with the scope and limitations of ASTM Standard E 1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, as applicable in the UK. Any exceptions to, or deletions from, E1527-13 are described in Section 1.3.4 of this report.

The site visit was performed on 25 June 2014 by ERM assessor, Mr. Chris Rice. ERM was accompanied on the Site visit by Mr. Peter Edwards; Cytec’s Safety, Health, and Environmental Manager for their existing facility, which adjoins the Site to the southeast. Mr. Edwards has been involved with Cytec and its existing facility for approximately one and a half years.

The Subject Property is located approximately 3.5 kilometers (km) east of Wrexham town centre, in an industrial setting within Wrexham Industrial Estate. The Subject Property is 4.1 acres (1.66 hectares) in area, is undeveloped and broadly rectangular in shape. The northern and central areas of the Site are grass-covered. Dense vegetation and wooded areas are located on the western and southern margins of the Subject Property. Fences are located along the southern and eastern boundaries of the Site, and dense vegetation forms a barrier along the western and northern boundaries.

According to various historical sources, the Wrexham Industrial Estate was formerly a Royal Ordnance factory constructed in 1939. The facility was used for the manufacture of cordite, an explosive propellant used in munitions. Aerial photographs indicate that the Subject property was located approximately 200 metres (m) north of the previous perimeter road to the factory complex.

The Royal Ordnance factory covered a large area with buildings separated by significant clear space to minimise potential damage from aerial attacks and surrounded with earth banks to deflect blasts from adjacent buildings. To connect the Subject Property to the national rail network, a large marshalling yard of ten separate roads connected to the works internal network of rail lines. All the cordite produced at the plant was taken by these sidings, along the Wrexham and Ellesmere Railway and then to Crewe located approximately 25 miles to the east of the factory site.

After 1945, the requirement for cordite ceased and the production facilities at Wrexham were left in place, and abandoned. Agricultural use was re-established as the main land use in the vicinity of the Subject Property until development of Wrexham Industrial Estate began during the early to middle of the 1960s. It is understood that some of the brick structures still remain in the area; however, none were observed by ERM during the Site visit in the vicinity of the Subject Property.

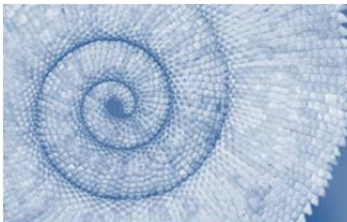
The Subject Property is currently not in use for any operation. The presence of a worn footpath from the gate located at the northern corner of the Subject Property around the accessible areas of the interior of the site indicates some use by the general public for recreational purposes.

Based on the data obtained during the Site visit, the environmental database review, and interviews with persons familiar with the Subject Property and its history, no environmental conditions were identified at the Subject Property:

Summary of Identified Issues	
ASTM E1527-13 Findings:	
Recognized Environmental Conditions (RECs)¹	
The Subject Property is located approximately 200m north west of a former explosives-manufacturing facility operable from 1939 through 1945. Specific information regarding storage and management of explosive materials, chemicals, and wastes was not available for review. The munitions facility was reportedly decommissioned in the mid-1940s; however, no formal closure documents were available for review. The Subject Property has not been subject to any environmental investigations. There is no known soil or groundwater contamination at the Site. Based on the former use of the industrial complex for explosive manufacturing, the potential exists for impacts relative to historical operations.	
Controlled Recognized Environmental Conditions (CRECs)¹	
No CRECs were identified.	
Historical Recognized Environmental Conditions (HRECs)¹	
No HRECs were identified.	
Non-ASTM E1527-13 Issues:	
Other Potential Issues	
A review of web-based Google Maps, street view photograph (https://maps.google.co.uk/) accessed on 27 June 2014 indicated the presence of a drain cover located at the southern central boundary of the Subject Property. This was not visible at the time of the site visit due to the presence of dense vegetation across the Subject Property. It is not known at this stage if this is part of the municipal drainage system that serves the wider industrial estate and crosses the Subject Property. No recent drainage inspections have been undertaken at the Subject Property.	

¹ Key ASTM definitions, including REC, CREC and HREC, are provided in Section 7.

1. Introduction and Background



1.1 Purpose and Auditors

Environmental Resources Management Limited (ERM) completed a Phase I Environmental Site Assessment (ESA) of a plot for development located at Abenbury Way, Wrexham Industrial Estate, LL13 9UZ, UK (the “Subject Property” or the “Site”). The environmental assessment was performed at the request of Cytec, which is considering the expansion of an existing facility located 20m southeast of the Site on Abenbury Way. The proposed expansion includes a small process line for water based products, a research facility with associated offices, and a car park.

The site visit was performed on 25 June 2014 by ERM assessor, Mr. Chris Rice. ERM was accompanied on the Site visit by Mr. Peter Edwards, Cytec’s Safety, Health, and Environmental Manager for their existing facility. Mr. Edwards has been involved with the existing Site for approximately one and a half years.

1.2 Scope of Work

This environmental assessment was conducted in conformance with ERM’s proposal dated 20 May 2014 and with the requirements of American Society for Testing and Materials (ASTM) Standard E 1527-13; Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, as applicable in the UK. Any exceptions to, or deletions from, E1527-13 are described in Section 1.3.4 of this report.

ERM’s Phase I ESA sought to gather information regarding: (1) current and past property uses and occupancies; (2) current and past use of hazardous substances and petroleum products; (3) waste management and disposal activities that could have caused a release or threatened release of hazardous substances; (4) current and past corrective actions and response activities to address past and on-going releases of hazardous substances at the Subject Property; and (5) properties adjoining or located near the Subject Property that have environmental conditions that could have resulted in conditions indicative of releases or threatened releases of hazardous substances to the Subject Property.

The scope of this Phase I ESA included:

- An on-site inspection to evaluate current conditions and identify areas of potential concern;
- A review of Subject Property and site area history through interviews and a review of various historical sources;
- Observation of adjacent properties and the local area to evaluate the potential for adverse environmental impact to the Subject Property;
- Interviews/research of local city/county, tribal, state, and federal records, including contracting of Landmark Envirocheck data to identify regulatory listed sites as required in the regulatory records review section of the ASTM standard for Phase I ESAs, where available; and
- Interviews and/or requests for information from the User and Subject Property owner, as deemed appropriate by the Environmental Professional.

1.3 Limiting and Special Conditions

1.3.1 Limiting Conditions During the Site Visit

Vegetation at the Subject Property was dense, which prevented access to some areas of the Subject Property. Dense vegetation was present in the south and west portions of the Site, including a drainage ditch located adjacent to the western boundary. No other limiting conditions were encountered during the site visit.

1.3.2 Data Gaps

The following table summarizes the data gaps identified during the Site assessment.

Table 1-1 Data Gap Summary

Data Gap / Failure	Sources Consulted to Address Data Gap
Owner/operators of adjacent properties were not interviewed.	ERM reviewed those reasonably ascertainable sources listed below.
	ERM interviewed the site representative and reviewed historical aerial photographs, historical topographic maps, and city directories.
A Chain-of-Title was not provided for review by the client.	Based on Interviews, personnel from Cytec's existing facility are aware of the Subject Property but have limited historical knowledge of the Subject Property. Historical topographic maps, aerial photos, and available data in the Landmark Envirocheck Report were consulted. Information readily available from Environment Agency website and British Geological Survey website was also reviewed. No environmental liens were reported for the subject property.

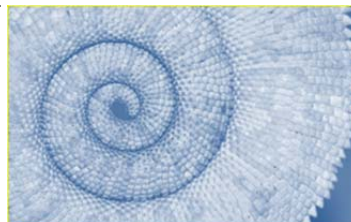
1.3.3 Significant Assumptions

No significant assumptions have been made.

1.3.4 Exceptions and Deletions to the ASTM E1527-13 Standard

ERM has not identified exceptions to, or deletions from the ASTM E1527-13 standard.

2. Physical Site Setting



2.1 Location

The Subject Property is located approximately 3.5km east of Wrexham town centre, in an industrial setting within Wrexham Industrial Estate. The location of the Subject Property is shown on *Figure 1*. A site layout figure is presented in *Figure 2*.

2.2 Topography and Hydrology

The Subject Property is located at an elevation of approximately 44 meters (145 feet) above mean sea level (AMSL). The land is relatively level, gently sloping to the southeast towards the Redwither Brook and the River Clywedog. Surface water at the Subject Property drains via an unnamed, on-Site surface water ditch which runs parallel and directly adjacent to the western boundary of the Subject Property. The drain is culverted and reemerges 20m south east of the Subject Property. This drain appears to flow towards the Redwither Brook, which is located 1.25km south east of the Subject Property. Redwither Brook is a tributary of the River Clywedog.

According to the River Basin Management Plans for Rivers on the Environment Agency website (accessed on 10 June 2014), the River Clywedog is located approximately 1.5km south east and has been designated as currently having 'moderate' ecological potential. The current chemical quality has been designated as a 'fail'. The predicted ecological quality for 2015 is 'good' and the predicted chemical quality for 2015 is 'fail'.

According to the Environment Agency website, the Subject Property is not located in a surface water Nitrate Vulnerable Zone.

There has been one pollution incident to controlled waters at an off-Site property located within the industrial complex. The incident involved the release of light oil via direct discharge which caused a category 3 'minor' incident in June 1998. The location is detailed as being 'Grounds of Speywood'. An internet search by ERM (23 June 2014) indicated this location to be within the current demise of Ipsen Biopharm Limited located on Ash Road, Wrexham Industrial Estate which took over Speywood in 1995. The northern boundary of this Site is approximately 20m south of the Subject Property. However, the *Landmark Envirocheck* Site Sensitivity map (Scale 1:2,500) details the incident (Number 39) as being located within the central southern area of the Subject Property. A copy of this map is presented in *Appendix D*. There have been 37 pollution incidents to controlled waters within one km of the Subject Property, 11 of which were category 2 'significant' incidents and 26 were category 3 'minor' incidents. The nearest to the Subject Property involved the release of an unknown pollutant 90m east of the Subject Property in December 1991, from a 'Factory' location causing a category 2 'significant' incident.

There have been two prosecutions relating to controlled waters 60m east for polluting a tributary of Red Wither Brook in August 1997; and 840m south for polluting Red Wither Brook in November 1991.

According to the Environment Agency website (accessed on 10 June 2014), and Envirocheck report (Reference: 57165870_1_1, dated 10 June 2014) the Subject Property is not located within an area at risk from flooding from rivers and seas (i.e. flood zone 2 or 3). The land adjacent to a surface water drain located 400m east has been designated as

flood zone 3 which is classified as having 'a flood that has a one percent (1 in 100) or greater chance of happening each year'.

The fringes of the Flood Zone 3 area adjacent to a surface water drain located 400m east have also been designated a flood zone 2 which is classified as having 'a flood that has a 0.1 percent (1 in 1000) chance of flood occurring each year'.

2.3 Geology and Hydrogeology

According to the British Geological Survey (BGS) website (accessed on 10 June 2014), the Subject Property is underlain by superficial deposits of Till. Till is further underlain by the Kinnerton Sandstone Formation, which is described by BGS as 'Sandstone, red-brown to yellow, generally pebble-free, fine- to medium-grained, and cross-stratified. It is dominantly aeolian'.

The soils have been reported as being of low leaching potential, which is described in the Envirocheck Report as 'soils in which pollutants are unlikely to penetrate the soil layer because water movement is largely horizontal or they have large ability to attenuate diffuse pollutants'.

According to the Environment Agency website (accessed on 10 June 2014) the superficial deposits have been designated as Unproductive Strata. The underlying Kinnerton Sandstone Formation has been designated as a Principal bedrock aquifer.

The Subject Property is located within an Environment Agency Zone 3 (Total catchment) Source Protection Zone. Source protection zones are defined by the Environment Agency around boreholes and wells used for potable water supply.

According to the River Basin Management Plans for Groundwater on the Environment Agency website, the current quantitative quality has been designated as 'poor' and the current chemical quality has been designated 'good'. The 2015 predicted classification of the qualitative quality is poor and the predicted chemical quality of groundwater is 'good'.

Well Data

Given that the soils are assumed to be of low leaching potential, groundwater vulnerability (the potential for a release from the Subject Property to actually impact the receptor) is considered to be low.

Owing to the absence of groundwater abstractions within 800m of the Subject Property and designation of the Principal bedrock aquifer, sensitivity (a measure of the degree of impact, which a potential release from the facility may have on a receptor) is considered to be moderate.

According to information provided in the Landmark Envirocheck report, there is one groundwater abstraction within one km of the Subject Property used for general farming and domestic purposes, registered to Mr. G Taylor (850m northeast). No groundwater abstraction wells used for drinking water were identified.

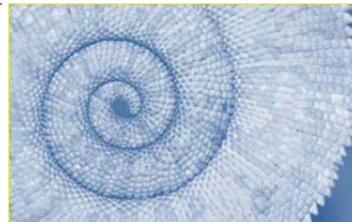
While groundwater flow direction at the Subject Property has not been confirmed by ERM, based on surface topography, it is expected that groundwater generally flows to the south towards the River Clywedog.

It is important to note that groundwater flow direction can be influenced locally and regionally by the presence of local wetland features, surface topography, recharge and discharge areas, horizontal and vertical inconsistencies in the types and location of subsurface soils, and proximity to water pumping wells.

ERM completed a review of the BGS website which details the presence of two boreholes having been advanced on the Subject Property, as follows:

- Borehole Reference SJ35SE 32 Institute of Geological Sciences advanced to 18 m below ground level (bgl). The strata description in the borehole log detailed the presence of upper boulder clay comprising reddish brown, firm clay with slightly silty and occasional coarse pebbles and traces of sand and fine gravel-sized coal to a depth of 18m bgl where the borehole was completed. A water level of 4.5 m bgl was also indicated in the borehole log; and
- Borehole Reference SJ35/108, Welsh Water Authority, Dee and Clwyd Division advanced to 41.7 m bgl. The description of strata was limited to 'boulder clay' to a depth of 41.7 m bgl. No further description of ground conditions was provided.

3. Site Description, Operations & History



3.1 General Site Description

3.1.1 Real Estate Ownership Information

According to Site management, the Subject Property is owned by Wrexham County Borough Council and is available for development.

3.1.2 Subject Property Layout

The Subject Property is 4.1 acres (1.66 hectares) in area, is undeveloped and broadly rectangular in shape. The northern and central areas of the Site are grass-covered. Dense vegetation and wooded areas are located on the western and southern margins of the Subject Property. Fences are located along the southern and eastern boundaries of the Site, and dense vegetation forms a barrier along the western and northern boundaries.

No evidence of any structures having been constructed at the Subject Property was observed by ERM during the site visit.

A site layout plan is presented in *Figure 2*. A photo log of the Subject Property and land immediately adjacent to the Subject Property is presented in *Appendix A*.

3.2 Current Site Operations

The Subject Property is currently not in use for any operation. The presence of a worn footpath from the gate located at the northern corner of the Subject Property around the accessible areas of the interior of the Subject Property indicates some use by the general public for recreational purposes.

A review of web-based Google Maps; street view photograph (<https://maps.google.co.uk/>) accessed on 27 June 2014 indicated the presence of a drain cover located at the southern central boundary of the Subject Property. This was not visible at the time of the site visit due to the presence of dense vegetation across a large portion of the Subject Property. It is not known at this stage if this is part of the municipal drainage system that serves the wider industrial estate and crosses the Subject Property. No recent drainage inspections have been undertaken at the Subject Property.

3.3 Historical Site Operations

3.3.1 Historical Summary

According to various historical sources, the Subject Property has always been undeveloped land.

3.3.2 Evaluation of Historical Information Sources.

To determine past uses of the Subject Property and surrounding properties, ERM reviewed historical sources of information as outlined in the References section of this report (*Section 6*). Copies of pertinent historical sources are also appended.

The on-site history is based upon a Landmark© Envirocheck report which was obtained by ERM and provides historical maps and data for the Subject Property (Reference 57165870_1_1, dated 10 June 2014). Historical maps are presented in *Appendix B*.

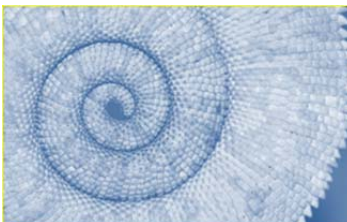
Table 3 Historical Timeline

Timeframe	Discussion
1879 - 2014	According to the historical Ordnance Survey maps dated between 1879 and 2014, the Subject Property was undeveloped. No buildings or construction of any type have been identified on Site. However, an unidentified dotted line is noted on historical maps (1:2,500 scale) from 1990 to the most recent map (dated 1995) which runs from the central southern boundary trending north-west across the site to the north west corner of the Subject Property.
Present	Observations made at the time of ERM's Site inspection are discussed in <i>Sections 3.1</i> and <i>3.2</i> and throughout this report.

3.3.3 Discussion of Historical Environmental Issues/ Assessments/ Investigations

Cytec management confirmed that they were not aware of any previous environmental reports having been prepared for the Subject Property.

4. Environmental Operations & Regulatory Issues



4.1 Environmental, Health and Safety Management Systems

The Subject Property has not historically been subject to development and is currently non-operational. Therefore, no environmental, health and safety management systems are required at the Subject Property.

4.2 Hazardous Material Use and Storage

The Subject Property has not historically been subject to development and is non-operational. Therefore, no hazardous material use and storage is undertaken at the Subject Property.

4.2.1 *Underground Storage Tanks (USTs)*

Cytec management confirmed they were not aware of any USTs being currently or historically located on the subject property. No evidence of USTs was observed by ERM during the Site walkover.

4.2.2 *Aboveground Tanks (ASTs)*

Cytec management confirmed they were not aware of any ASTs being currently or historically located on the subject property. No evidence of ASTs was observed by ERM during the Site walkover or review of the historical documents.

4.2.3 *Chemical Reporting*

As the Subject Property is located outside of the U.S., the facility is not subject to SARA Tier II reporting or Toxic Release Inventory (TRI) reporting under Section 313 of SARA Title III. Although similar reporting obligations exists in the UK, no such reporting is expected given the non-operational use of the Site.

4.2.4 *Spill Prevention Control and Countermeasures (SPCC) Plan*

The Subject Property is currently non-operational and SPCC Plan noting is not applicable in the UK.

4.3 Waste Management

4.3.1 *Hazardous Waste*

The Subject Property has not historically been subject to development and is currently non-operational. Therefore, no hazardous wastes are generated at the Subject Property.

4.3.2 *Non-Hazardous Waste*

The Subject Property has not historically been subject to development and is currently non-operational. Therefore, no non-hazardous wastes are generated at the Subject Property.

4.3.3 Other Regulated Waste

The Subject Property has not historically been subject to development and is currently non-operational. Therefore, no other regulated wastes are generated at the Site.

4.3.4 Off-Site Disposal Liabilities

The Subject Property has not historically been subject to development and is currently non-operational. Therefore, no other regulated wastes are generated at the Site.

4.4 Water Supply, Wastewater and Storm Water

4.4.1 Water Supply

The Subject Property has not historically been subject to development and is currently non-operational. Therefore, there is no water supply at the Subject Property. No wells were observed during ERM's Site visit.

4.4.2 Wastewater

The Subject Property has not historically been subject to development and is currently non-operational. Therefore, no wastewater is generated at the Subject Property.

4.5 Air Emissions

The Subject Property has not historically been subject to development and is currently non-operational. Therefore, no air emissions are generated at the Subject Property.

4.5.1 Risk Management Program

The Subject Property has not historically been subject to development and is currently non-operational. Therefore there are no risk management programs at the Subject Property.

In addition, site operations in the UK are not subject to the requirements of 40 CFR 68 (Risk Management Program).

4.6 Ozone Depleting Substances (ODSs)

The Subject Property has not historically been subject to development and is currently non-operational. No evidence of ozone depleting substances at the Subject Property was observed by ERM at the time of the visit.

4.7 Polychlorinated Biphenyls (PCBs)

The Subject Property has not historically been subject to development and is currently non-operational. No evidence of polychlorinated biphenyls at the Subject Property was observed by ERM at the time of the visit.

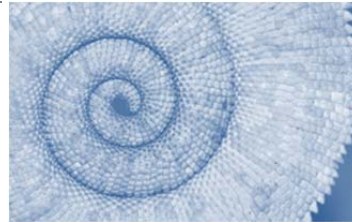
4.8 Asbestos-Containing Materials

The Subject Property has not historically been subject to development and is currently non-operational. No evidence of asbestos-containing materials at the Subject property was observed by ERM at the time of the Site visit.

4.9 Radioactive Materials

The Subject Property has not historically been subject to development and is currently non-operational. No evidence of radioactive materials at the Subject Property was observed by ERM at the time of the Site visit.

5. Site Vicinity Operations & History



5.1 Summary

The Subject Property is located in an area that is currently characterized by mixed industrial and commercial use to the east, west and south and agricultural land use to the north. The history of the surrounding area was primarily agricultural until the 1940s when it was industrialized as a Royal Ordnance Factory. Historical operations on surrounding properties have included a Royal Ordnance factory, foundries, metal shops, and auto repair facilities. Additionally, paint shop operations, distribution, and warehousing companies have been present since the 1990s. Given the long industrial history of the Site area, former and current surrounding property use represents a general impact concern to the Subject Property. Ipsen Biopharm Limited, which immediately bounds the Subject Property to the south, and Cytex Industries existing facility borders the Subject Property to the south-west are both down gradient topographically of the Subject Property.

A stile for public footpath access was located adjacent to the gate at the northern access providing footpath access to the adjacent field to the northeast of the Subject Property.

5.2 Current Surrounding Properties

Land use in the area of the Subject Property includes agricultural, recreational, commercial / industrial land with sparse residential properties. *Figure 3* appended shows the surrounding land uses in the vicinity of the Subject Property. The adjacent properties and nearby land use, as observed by ERM at the time of the Site inspection, is as follows:

Table 5-2 *Current Surrounding Properties*

Direction	Discussion
North	Immediately to the north is agricultural land, beyond which is a surface water drain 330m north, Clays Plantation 410m northwest, a surface water pond 420m north, a golf course 500m north and a caravan site 520m northwest beyond which is the golf course.
East	Immediately east of the Subject Property are industrial / commercial properties which form part of Wrexham Industrial Estate and Redwither Industrial Complex up to 700m east.
South	Immediately south of the Subject Property are industrial / commercial properties (Ipsen Biopharm Limited and Cytex Industries existing facility) and Abenbury Way (which is south east), beyond which is Erlas Black Wood 400m southeast and Big Wood 550m southwest.
West	Immediately to the west is Erlas Lane beyond which is agricultural land and Redwither Wood 300m northwest.

ERM conducted a review of a Landmark Envirocheck regulatory database for the Site (as detailed in Section 5.5 below) and also reviewed the contaminated land section (http://www.wrexham.gov.uk/english/environment/contaminated_land/contaminated_land.htm) of Wrexham County Borough Council website.

5.3 Site Vicinity Historical Summary

The off-Site history is based upon a Landmark© Envirocheck report which was obtained by ERM and provides historical maps and data for the Subject Property (Reference 57165870_1_1, dated 10 June 2014).

The earliest available map dated 1873 depicts the surrounding land use as predominantly undeveloped, presumably agricultural. A road is located adjacent to the west of the Subject Property, which is later identified as Erilas Road in the 1899 map. A brick works is identified 720m north in the larger scale map (1:10,560) which is no longer depicted in the 1900 map. Redwither Brook, which flows towards the east, is depicted 580m south

The 1914 map depicts a sewage works with associated sludge tanks and filter beds 750m west of the Site. This works is no longer present in the 1964 map.

By 1954, development of commercial / industrial properties are depicted south and east of the Subject Property, which later form part of Wrexham Industrial Estate. The nearest of these commercial / industrial properties is located 170m southeast. A railway is located approximately 120m southeast of the Subject property in a northeast-to-southwest orientation. Some areas appear to be sloped around some properties, which may indicate the construction of embankments to protect buildings. The buildings are relatively small rectangular structures which are evenly spread and separated by approximately 80m. These buildings extend beyond one km to the south and southeast from the Subject property, the nearest of which is located 550m east. A large works is depicted 900m southeast; however, there is no information on the historical map regarding the activities associated with this facility. One of the buildings associated with this works appears to be demolished in the 2006 map.

By 1979, many of the buildings located over 700m directly to the south of the Subject Property are no longer present. A secondary large scale works is depicted 650m southeast, which is present in the most recent map dated 2014. By 1982, further development of Wrexham Industrial Estate is identified with additional commercial / properties depicted to the south and southeast of the Subject Property. A factory is located 160m northwest of the Subject Property. However, the activities associated with the adjacent properties are not identified. Three electricity substations are located 90m east, 100m south, and 260m northeast from 1982 to at least 1995 (scale 1:2,500); however, it is not possible to identify them in the larger scale maps (1:10,000) between 2006 and 2014. An additional electricity substation is located 200m east between 1988 and 1995, which is also not possible to identify on the larger scale maps. This presence of an additional substation is detailed 90m south of the Subject Property from 1990 to the most recent map in 1995 but it is not possible to identify in the larger scale maps (1:10,000). A tank associated with the factory is identified 300m northeast between 1982 and 2014. A secondary tank is depicted adjacent to the first between 2006 and 2014.

From 1992, commercial / industrial properties located 850m southeast are identified within Redwither Industrial Complex. By 2006, additional commercial / industrial properties are identified with the nearest located 630m southeast and 900m east of the Subject Property.

The 2006 map depicts the construction of a large commercial / industrial property 430m northeast which appears to contain a circular structure (potentially a tank) located 550m northeast and remains present in the most recent map dated 2014.

The surrounding land use appears unchanged in the most recent map dated 2014.

ERM also conducted an internet review of former Royal Ordnance Factory information of the Subject Property. The Northwest Exploration website (see Table 6-2) detailed that the Wrexham Industrial Estate was formerly a Royal Ordnance factory constructed in 1939. The facility was used for the manufacture of cordite, an explosive propellant used in munitions. Based on a review of a historical aerial photograph dated 2 May 1946, the Subject property was located approximately 200m north of the previous perimeter road to the ordnance factory complex. At his time a small building was located just north of the perimeter road approximately 150m south of the Subject Property.

The Royal Ordnance factory covered a large area with buildings separated by significant clear space to minimise potential damage from aerial attacks and surrounded with earth banks to deflect blasts from adjacent buildings. To connect the site to the national rail network, a large marshalling yard of ten separate roads connected to the works

internal network of rail lines. All the cordite produced at the plant was taken by these sidings, along the Wrexham and Ellesmere Railway and then to Crewe located approximately 40 km to the east of the factory site.

In the mid-1940s, the requirement for cordite ceased and the production facilities at Wrexham were left in place, abandoned and agricultural use was re-established as the main land use in the vicinity of the Subject Property until development of Wrexham Industrial Estate began during the early to middle of the 1960s. It is understood that some of the brick structures still remain in the area; however, none were observed by ERM during the Site visit in the vicinity of the Subject Property.

5.4 Adjacent Property Agency Review

An Envirocheck report prepared by *Landmark Information Group* was reviewed by ERM as part of this assessment and is presented in the report as follows:

- Section 3.3.2 Evaluation of Onsite Historical Information Sources;
- Section 5.3 Site Vicinity (Offsite) Historical Summary; and
- Section 5.5 Environmental Database Search.

The Envirocheck report includes information held by national and local governments.

No specific interviews with the regulators were conducted as part of this assessment.

5.5 ENVIRONMENTAL DATABASE SEARCH

Envirocheck Landmark (Reference 57165870_1_1, dated 10 June 2014) was contracted to conduct a database search for agency records. The Subject Property and a one-kilometer radius surrounding the Subject Property were searched and the results are attached as Appendix C. The following environmental databases were searched:

- Contaminated Land Register Entries and Notices;
- Environmental Permits;
- Pollution Incidents to Controlled Waters;
- Registered Radioactive Substances;
- Landfill records (historical and current);
- Control of Major Accident Hazards Sites (COMAH);
- Explosive Sites;
- Notification of Installations Handling Hazardous Substances (NIHHS);
- Planning Hazardous Substance Consents;
- Planning Hazardous Substance Enforcements;
- Contemporary Trade Directory Entries;
- Fuel Station Entries; and
- Sensitive Land Uses (e.g. Sites of Special Scientific Interest).

According to the Envirocheck Landmark (Ref: 57165870_1_1, dated 10 June 2014) report, the following was noted:

- There are six discharge consents within one km of the Subject Property. The nearest is registered to Caparo Steel Products Ltd (290m east) for the release of surface water. The remaining five are located over 500m from the Subject Property, four of which are for the release of an unspecified discharge and one for the release of trade effluent. All of the five remaining discharge consents are released to surface water.
- There is one surface water abstraction within one km of the Subject Property, registered to Caparo Wire Ltd (350m east) for non-evaporative cooling.
- The subject property is not specifically listed in the Envirocheck report with respect to permits, licenses, or pollution incidents.
- There are five active Integrated Pollution Prevention and Control (IPPC) permits, registered to: Almetron Ltd (150m south west) for inorganic and organic chemicals; Ipsen Biopharm Ltd (160m south) for producing plant health products / biocides, Caparo Steel Products Limited (240m east) for surface treating metals and plastics; and two

registered to Oscar Mayer Limited (450m south east) for disposal of non-hazardous waste and treating animal raw materials.

- There are five Local Authority Integrated Pollution Prevention and Control permits: two are registered to Cytec Engineered Materials Ltd (90m east) for coating manufacturing processes; one is registered to Exopack Advanced Coatings (580m east) for coating processes; one registered to Intelicoat Technologies (580m east) for coating manufacturing processes; and one registered to Ball Packaging Europe Ltd (900m south east) for coating of metal packaging.
- There are eight Local Authority Pollution Prevention and Control permits, registered to: Westminster Bedsteads (240m northeast) for wood coating; JCB Transmissions (420m east) for coating of metal and plastic; Rexham UK Ltd (640m east) for film coating processes; Hoya Lens UK Ltd (700m east) for di-isocyanate processes; Trittech Precision Products Limited (900m southeast) electrical and rotary furnaces; Applied Component Technology Ltd (930m south) for di-isocyanate processes; Orchid Dry Cleaners Ltd (950m east) for dry cleaning; and Hoya Lens UK Ltd (990m east) for surface cleaning.
- There has been one Local Authority Pollution Prevention and Control Enforcement relating to air pollution 900m southeast. No date or details were supplied.
- There is one historic landfill site recorded 870m south east, registered to British Celanese Limited for industrial wastes and liquid sludge.
- There is one licensed waste management facility, registered to Clays Farm Golf Centre Limited (610m north);
- There is one registered landfill site, registered to British Celanese authorised to accept asbestos, cellulose waste, contaminated waste, delagged pipes and oil/water mixtures. This license is no longer active.
- There are four active contemporary trade directories within 200m of the Subject Property, for activities including; frozen food processors and distributors (20m south); plastic products manufacturers (70m south); gum and resin manufacturers and distributors (110m east); and building block manufacturers and distributors (180m south).
- There have been four substantiated pollution incident registers, as follows:
 - o the release of general biodegradable materials and wastes (food and drink) (830m south) causing a significant incident to water and a minor incident to land in July 2004;
 - o the release of organic chemicals, pesticides and biocides (840m southeast) causing a significant incident to water in January 2006;
 - o the release of acids (900m southeast)causing a significant incident to water and a minor incident to land in July 2001; and
 - o the release of crude sewage (940m south) causing a significant incident to water and minor incident to land in August 2002.

No sensitive land uses are detailed as being present within a one km radius of the Subject property.

5.5.1 Coal mining review

A Non-Residential Coal Authority Mining Report (Reference 510005680380010, dated 24 June 2014) from *The Coal Authority* was reviewed by ERM as part of this Assessment. According to *The Coal Authority* records, the property is in the likely zone of influence from workings in one seam of coal at 750m depth and last worked in 1973. The report confirms any ground movement from these coal workings should have stopped by now.

The *Coal Authority* records, the property is not in the likely zone of influence of any present underground coal workings and confirms the Subject Property is not in an area for which a license has been granted to remove or otherwise work coal using underground methods.

A copy of the Coal Authority report is presented in *Appendix D*.

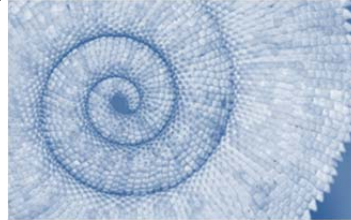
5.5.2 Subject Property

There is no formal contaminated land register on the local authority (Wrexham County Borough Council) website. Listing on the Contaminated Land register in the UK requires a site to be designated as contaminated, that is, a statutory enforcement to undertake “works” of some kind must be issued by the Environment Agency. If a site is undertaking “works” voluntarily, it would not be on the Contaminated Land register.

5.5.3 Surrounding Properties

No contaminated land register entries and notices are reported in the Envirocheck Landmark (Ref: 57165870_1_1, dated 10 June 2014) within one km of the Subject Property.

6. References



The following sources were used in conducting the Phase I Environmental Site Assessment. Where information obtained from these sources was determined to be useful by the Environmental Professional, it is summarized in the body of this report.

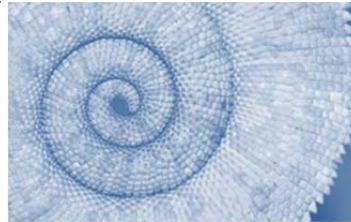
Table 6-1 Regulatory Agency Review

Agency/Company	Person Contacted	Telephone	Regarding
Internet resource: Environment Agency 'What's in your backyard?'	NA	NA	http://maps.environment-agency.gov.uk/wiyby/wiybyController?ep=maptopics&lang=_e
Internet resource: British Geological Survey 'Geology of Britain Viewer'	NA	NA	http://mapapps.bgs.ac.uk/geologyofbritain/home.html

Table 6-2 Summary of Historical Sources Reviewed

Agency/Source of Information	Data Provided	Years Reviewed (if applicable)	
		Subject Property	Adjacent Properties
Mr. Peter Edwards (Safety, Health and Environmental Manager of Cytec, potential acquirer)	General information and supporting documentation. Limited verbal information in adjacent sites	NA	2012 to present
Envirocheck Landmark Report Reference 57165870_1_1 (dated 10 June 2014)	Datasheets – relating to permitted activities, licenses, waste, hazardous substance, industrial land use, sensitive land use, etc.	Present	Present
Envirocheck Landmark Report Reference 57165870_1_1 (dated 10 June 2014)	Historical Ordnance Survey Maps	1887 - present	1887 - present
British Geological Society's map of Wrexham (Sheet 121, Solid and Drift Edition, Scale: 1:50,000)	Solid and Drift Geology of Wrexham	NA	NA
http://nwex.co.uk/showthread.php?t=6200	Historical review of land (now Wrexham Industrial Estate) from 1939 by Northwest Exploration	NA	NA
https://maps.google.co.uk/	Photo (c. 2012) of southern boundary area of the Site	NA	NA

7. Limitations and Other Considerations



7.1 General Limitations

There are a number of exclusions and limitations associated with this assessment. These are briefly outlined below:

- This report has been prepared by ERM exclusively for Clients and may not be relied upon by any other recipient, person or entity (together, henceforth, “Other Recipient”) without ERM’s express, written permission. ERM makes no warranties or representations to any Other Recipient and has no obligation to advise any Other Recipient regarding changes to this report or changes in applicable laws and regulations subsequent to the date of this report. In receiving this report, any Other Recipient agrees that that (a) it will make no claim against ERM that relates in any way to this report, or the Other Recipient’s access to this report, and (b) to the fullest extent permitted by applicable law, Other Recipient hereby releases ERM from, and will defend and hold harmless ERM from and against, any claim, action, suit, damage, loss, award, liability, expense, cost, or fees including attorneys’ fees arising from or relating to any use or disclosure of the report or any portion thereof by Other Recipient or any third party to whom Other Recipient discloses the Report. Notwithstanding the foregoing, if requested, ERM will issue reliance letters allowing lenders or other interested parties to rely on the contents of this report, in accordance with ERM’s terms and conditions, for financing or other purposes.
- ERM is an environmental consulting firm, and as such we make no representations regarding questions of legal or accounting interpretation. Consultation with an attorney and/or certified accountant should be made with respect to any legal or accounting matters, or items that require such interpretation, under any law, regulation or contract.
- ERM did not independently verify information on publicly available databases. Therefore our findings are accurate and complete only to the extent that information provided to ERM was itself accurate and complete.
- The conclusions presented in this report represent ERM’s professional judgment based on the information made available to us during the course of this assessment and are true and correct to the best of ERM’s knowledge as of the date of this report.
- No sampling or testing of soils, waters or other materials were included in the update assessment. However, reference has been made to previous testing and sampling, as appropriate.
- ERM has assumed that the Subject Property will potentially be redeveloped for light industrial use. State-specific regulations related to property transfer (or ownership changes) may apply to the proposed transaction. Costs related to compliance with these State requirements were not included in ERM’s Assessment.

7.2 ASTM Limitations

ERM has conducted this environmental assessment in accordance with the standards for conducting an all appropriate inquiry modeled on 40 CFR, Part 312, but as applicable in the UK. Those standards require the application of scientific principles and professional judgment to certain facts with resultant subjective

interpretations and exercise of discretion. Professional judgments expressed herein are based on the facts currently available within the limits of the existing data, and data gaps identified herein, scope of work, budget, and schedule. Those standards also require that the client undertake certain additional inquiries. ERM makes no warranties, expressed or implied, including, without limitation, warranties as to merchantability or fitness for a particular purpose, [all such representations, warranties, conditions and other terms are excluded to the fullest extent permitted by law](#). ERM's assessment is limited strictly to identifying recognized environmental conditions associated with the Subject Property. Results of this assessment are based upon the visual Site inspection of readily accessible areas of the Subject Property conducted by ERM personnel, information from interviews with knowledgeable persons regarding the Subject Property, information reviewed regarding historical uses, information provided by contacted regulatory agencies, and review of publicly available and practically reviewable information identifying current and historical uses of the property and surrounding properties. All conclusions and recommendations regarding the Subject Property represent the professional opinions of the ERM personnel involved with the project, and the results of this report should not be considered a legal interpretation of existing environmental regulations or legal advice. ERM assumes no responsibility or liability for errors in the public data utilized, statements from sources outside of ERM, or developments resulting from situations outside the scope of this project.

7.3 Other Considerations

7.3.1 Environmental Database Search

ERM contracted Landmark Envirocheck for a database search of agency records. The database report, (radius map presented in *Appendix E*), defines and summarizes the databases reviewed in the report and notes if any Sites (including the Subject Property) were identified in the specified radius. The locations of the Sites identified in the report were evaluated to determine which Sites were located within a onekm search radius from the Subject Property boundary.

Sites identified within the study radii were evaluated to determine if they are likely to have adversely impacted the Subject Property. The criteria used to evaluate the potential for adverse impact to the Subject Property include:

- Distance from the Subject Property;
- Expected depth and direction of groundwater and surface water flow;
- Geology and physical ground conditions;
- Expected storm water flow direction; and
- The presence/absence of documented contaminant releases at the identified sites that have not been remedied to the satisfaction of regulators.

The identification of a Site as potentially upgradient or downgradient is based on the expected direction of groundwater flow referenced in Section 2.3.

7.3.2 User Provided Information

ERM contacted the User with respect to the following information:

- An evaluation of the presence of Environmental Cleanup Liens for the Subject Property;
- Activity and Use Limitations such as engineering controls (e.g., slurry walls, caps) and land use restrictions or institutional controls (e.g., deed restrictions, covenants) that may be in place for the Subject Property;
- Specialized Knowledge that includes personal knowledge or experience related to the Subject Property or nearby properties based on professional experience or knowledge of the Subject Property;
- Fair Market Value to evaluate whether a purchase price is significantly below Fair Market Value;
- Obvious Indicators that involve past or present spills, stains, releases, cleanups on or near the Subject Property; and
- Common Knowledge about specific chemicals, possible contamination, or past use of the Subject Property and surrounding area.

The User Questionnaire for Phase I ESA (User Questionnaire) was not completed by the User. Relevant information provided by the User is summarized under the appropriate headings of this report, and in the following table:

Table 7-1 User-Provided Information

User Request	Response
Environmental Cleanup Liens	The User is not aware of environmental liens currently recorded against the Site. User did not request that ERM perform an independent evaluation of environmental liens for the Site.
Activity and Use Limitations and land use restrictions or institutional controls	The User is not aware of Activity and Use Limitations and/or land use restrictions currently recorded against the Site.
Specialized Knowledge	User has no specialized knowledge of the Site other than what was provided to ERM as discussed. ERM is not aware of additional specialized knowledge for the Site.
Fair Market Value	User is not aware of devaluation of the purchase price or fair market value of the Site in association with environmental conditions at, on or under the Site.
Obvious Indicators that involve past or present spills, stains releases or cleanups	User was not aware of any obvious indicators which involve past or present spills, stains releases or cleanups.
Common Knowledge about specific chemicals, possible contamination, or past use	Information and documentation, including previous environmental investigations was provided to ERM in the form of access to an electronic data room and is presented throughout this report in the relevant report sections and appendices.

7.4 Key ASTM Definitions

ASTM E1527-13 prescribes the following definitions:

Recognized Environmental Condition (REC): “the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment...”

Controlled REC (CREC): “...a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls).”

Historical REC: “...a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls). Before calling the past release a historical recognized environmental condition, the environmental professional must determine whether the past release is a recognized environmental condition

at the time the Phase I Environmental Site Assessment is conducted (for example, if there has been a change in the regulatory criteria)..."

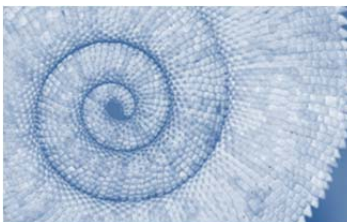
De minimis condition: "...a condition that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies..."

Data gap: "...a lack of or inability to obtain information required by this practice despite good faith efforts by the environmental professional to gather such information. Data gaps may result from incompleteness in any of the activities required by this practice, including, but not limited to Site reconnaissance (for example, an inability to conduct the Site visit), and interviews (for example, an inability to interview the key Site manager, regulatory officials, etc.)..."

Data failure: "...a failure to achieve the historical research objectives...even after reviewing the standard historical sources ... that are reasonably ascertainable and likely to be useful..."

User: "...the party seeking to use Practice E1527 to complete an environmental Site assessment of the property. A user may include, without limitation, a potential purchaser of property, a potential tenant of property, an owner of property, a lender, or a property manager. The user has specific obligations for completing a successful application of this practice..."

8. Environmental Professional Certification



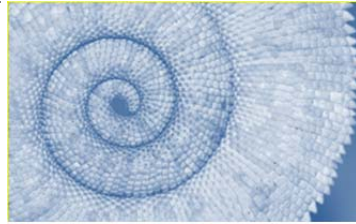
This assessment was conducted by Mr. Chris Rice of ERM. Mr. Richard Croft and Mr. Harish Pesari reviewed the contents of this report. The professional qualifications for Mr. Chris Rice, Mr. Richard Croft and Mr. Harish Pesari are included in Appendix F.

[Insert elec. sig.]

Richard Croft
UK Partner-in-Charge & Environmental Professional

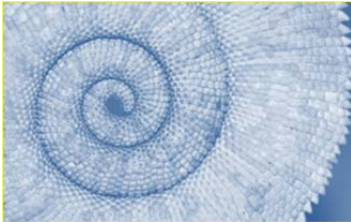
Chris Rice
Site Assessor & Environmental Professional

Figures



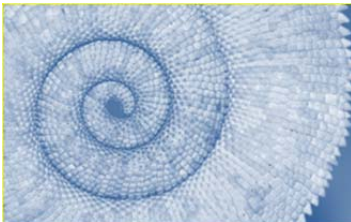
Appendix A

Site Photographs



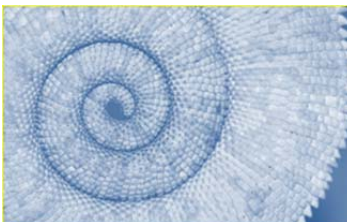
Appendix B

Historical Sources



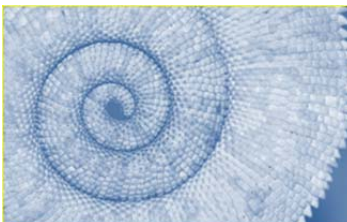
Appendix C

Prior Environmental Reports



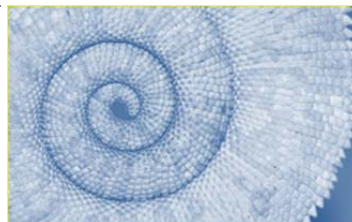
Appendix D

Other Pertinent Documents



Appendix E

Environmental Database Report



Appendix F
Professional Profiles

