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Consulting Engineers

**Title:** Phase 1 Desk Top Study:

Site at
Warwick Road
Batley
WF17 6BS

**For:** Mohammed Patel

**Prepared by:** Simon Kitchingman

**Date:** 3rd February 2011

**Ref:** NG7620/WAR/SK

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Chkd: ndt

Date: 3rd February 2011

Robert Halstead Chartered Surveyor
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Dear Sirs

**Re: Initial Phase 1 Desk Top Study on the PP23 Requirements for site at Warwick Road, Batley**

## 1. INTRODUCTION

It is proposed to redevelop a site at Warwick Road in Batley for residential purposes. The proposals include refurbishment of the existing buildings and construction of new build properties to the rear. The site boundary is shown outlined on the attachments; however, a strip of land running off the south west corner is also considered in this report.

### 1.1 Sources of Information

Information on the above site has been obtained from a full Envirocheck Report centred on the site, examination of all the currently available historic maps of the site, examination of the 1:50,000 geological survey maps of the area, a Mining Report and a walkover survey.

## 2. THE SITE

The site lies to the south of the town centre of Batley at approximate grid references of 424450, 423230 on Warwick Road.

### 2.1 Present Land Use/Walk Over Survey/Trees

A walkover survey was carried out on the 21st January 2011, on a cold dry day. The site currently has a large multi storey building fronting the boundary along Warwick Road. There are a number of other minor buildings to the rear with temporary buildings within the rear yard. The buildings are in sound condition for their age. The drains appeared to be in a poor state of repair.

Warwick Road falls to the south and the ground floor is set above the highway level. There is a basement in the building that was not inspected during the survey. The building is currently used for storage. There was some damp in the rear building, possibly from the roof leaking.

The foundry to the south appears to be set at a lower level than the site as it follows the topography of Warwick Road. There are houses to the north with possible basement areas fronting the rear yard to the site.

The rear yard is currently used for storage. There is a retaining wall running across the site beyond which is a sloped hillside overgrown with vegetation. This could not be inspected in detail but did not show signs of recent movement. The area of land running off the south west corner appeared to be an excavated rock face.

There were no obvious signs of contamination from spillage or spoil heaps although this was difficult to judge with accuracy due to the amount of stored materials on the site.

**3. SITE HISTORY**

Examination of the published Ordnance Survey maps of the area revealed the following:

| **Map** | | **Features** | |
|---|---|---|---|
| **Year** | **Scale** | **On Site** | **Off Site** |
| 1854-1855 | 1,10,560 | Undeveloped land | The land around the site boundaries is undeveloped fields. To the North in the region of 750m is the Town of Batley and 200m South is the North outskirts of Dewsbury. With several mills in this area mainly classified as woollen. To the East approximately 250m lies Batley Beck. |
| 1804 | 1:2,500 | The eastern edge of the site has been developed with the Atlas Brewery. A well is also shown on site along the northern boundary. The site is shown as sloping in nature. | On the opposite side of Warwick road a skating rink is now shown. A chimney is shown adjacent to the southern boundary of the site with several buildings. 25m South is the first of several mills and Mill ponds. The area to the North of the site has been developed for residential use. 260m South East the Victoria Oil works is shown. Batley sewage works lays to the East around 200m. |
| 1895 | 1,10,560 | Unchanged | Unchanged |
| 1907 | 1:2,500 | The building fronting Warwick Road is listed as Anchor Foundry. | The buildings and chimney adjacent to the Southern boundary are listed as Brickworks. The skating rink is now listed as a work house. 150m to the East tanks are shown |
| 1908 | 1:10,560 | Unchanged | Batley Corporation Gas Works lays 650m to the North East. |

| Map | | Features | |
|---|---|---|---|
| Year | Scale | On Site | Off Site |
| 1922 | 1:2,500 | The slopes to the rear of the buildings appear to have moved back towards the West. Cranes are indicated. | Some of the Mills to the South now listed as warehouses. |
| 1931 | 1:10,560 | Unchanged | Unchanged |
| 1938 | 1:2,500 | Unchanged | Unchanged |
| 1938 | 1:10,560 | Unchanged | Unchanged |
| 1948 | 1:10,560 | Unchanged | Unchanged |
| 1956 | 1:1,250 | Unchanged | 20m from the western boundary are allotments. |
| 1956 | 1:2,500 | The buildings are shown as Engineering Works. | Atlas brick works is now disused. |
| 1957 | 1:10,000 | Unchanged | Unchanged |
| 1961-1974 | 1:1,250 | Unchanged | Atlas brick works now a builders yard. |
| 1969-1974 | 1:1,250 | Unchanged | 100m South West is a refuse tip and Atlas quarry works. |
| 1972-1974 | 1:10,000 | Unchanged | Unchanged |
| 1982-1983 | 1:10,000 | Unchanged | Unchanged |
| 1989 | 1:10,000 | Unchanged | Unchanged |
| 1980-1991 | 1:1,250 | Unchanged | Unchanged |
| 1981-1992 | 1:1,250 | Unchanged | Sub-station in the south east corner |
| 1992 | 1:1,250 | Unchanged | Refuse tip no longer shown |
| 1994-1996 | 1:1,250 | Unchanged | Unchanged |
| 2000 | 1:10,000 | Unchanged | Unchanged |
| 2006 | 1:10,000 | Unchanged | Unchanged |
| 2010 | 1:10,000 | Unchanged | Unchanged |

From the historic map study, the site appears to have first been developed between 1855 and 1890. The historical site uses include a brewery, iron foundry and an engineering works.

The surrounding area includes previous uses of mills, mainly woollen, and brick works. Some of these former sites are now used as warehouses and for residential purposes.

There is a refuse tip shown between1969 and 1992 approximately 150m to the South West. The site slopes up towards the West significantly.

## 4. GEOLOGY, HYDROLOGY AND HYDROGEOLOGY

### 4.1 Geology

Examinations of the published geological map of the area indicated, Sheet 77, Huddersfield, indicates the site is underlain by the Birstall Rock, part of the Lower Coal Measures.

There are no faults or abnormal features indicated.

### 4.2 Mining

A Mining Report for the area was obtained and this revealed that there are no previous recorded coal workings under the site in the likely zone of physical influence on the surface.

The report states that coal is in reserve, though no workings are currently planned.

The property is **not** situated within the boundary of a former opencast coal mining site, 200m of a currently operating opencast coal mining site or 800m of the boundary of a future opencast coal mining site.

It indicates that one mine entry **is** located within the boundary of the site. This is shown in the location indicated on the OS plans as a Well.

There is no evidence of coal mining related subsidence claims in relation to the property in the past 10 years.

### 4.3 Hydrology/Hydrogeology

The Environment Agency ground water vulnerability map records the bedrocks in this area to be a minor aquifer, of variable permeability and high leaching potential.

Minor aquifers can be fractured or potentially fractured rocks which do not have a high primary permeability, or other formations of variable permeability, including consolidated deposits. Although not producing large quantities of water for abstraction, they are important for local supplies and supplying base flows to rivers.

Soils are of high leaching potential. These are soils where pollutants are likely to penetrate the soil layer because water movement is largely horizontal or they contribute to groundwater recharge elsewhere in the catchment.

The nearest surface water feature is 178m south east of the site.

The nearest water abstraction licence is 263m to the south of the site at Carr Dyke Mill, Bradford Road, Dewsbury and is used for general industry.

## 5. INFORMATION HELD BY STATUTORY AUTHORITIES

This section details any relevant information held in the registers maintained by statutory bodies as identified in the Envirocheck Report.

### 5.1 Landfill Sites

The Envirosearch has highlighted that there are three registered landfill site between 434m and 969m away. There are 3 historical landfill sites between 674m and 879m away. The registered sites are listed to have construction, demolition, inert non-hazardous and non toxic materials. The historical sites are listed to have inert and commercial waste. There is also a refuse tip shown on the OS maps within 250m of the site boundary.

### 5.2 Waste Management Facilities

The nearest waste management facilities are 380m to the north east. Due to the distance and topography of the site this does not pose a risk.

**5.3 Contaminated land Register Entries and Notices**
The Envirocheck Report does not identify any Contaminated Land Register Entries and Notices within 1km of the site.

**5.4 Local Authority Pollution Prevention and Controls**
On site a permit PPC E 31 for Atlas foundry has been issued for PG2/4 Iron, steel and non-ferrous metal foundry processes.

**5.5 Integrated Pollution Control (IPC) Authorisations**
The Envirocheck Report does not identify any Integrated Pollution Control (IPC) Authorisation within 1km of the site.

**5.7 Pollution Incidents**
There have been 8 pollution incidents within 250m of the site to Batley Beck these have been category 2 and 3 incidents.

**5.8 Discharge Consents**
There are 8 discharge consents within 250m of the site these are mainly for sewage.

**5.9 Contemporary Trade Directory Entries**
There are two active Contemporary Trade Directory Entries for the site one for Batley foundries and the other for Naylor Myers LTD both at Atlas foundry.

**5.10 Fuel Sites**
There is a fuel site 111m to the south east of the site. This is downhill from the site and is unlikely to pose a threat.

**5.11 Radon**
The site is situated in an area in which the British Geological Survey states that less than 1% of homes are above the action level. No Radon protection measures are necessary in the construction of a new dwellings or extensions.

**5.12 Environmentally Sensitive Areas**

**5.12.1 Flooding**
The agency and hydrological (flood) map shows that the site is not in an area that is affected by flooding from rivers or seas.

**5.12.2 Nitrate Vulnerable Zones**
The site is within a nitrate vulnerable zone. This would only be applicable to agricultural usage of the site.

## 6.0 ADDITIONAL INFORMATION

### 6.1 Services
These have not been examined as part of the Phase 1 report. Enquiries should be made to ensure that the site can be fully serviced and that there are no restrictions or easements across the site which would impede the proposed development.

### 6.2 Site Investigation
No intrusive investigations have been undertaken.

### Summary
The desktop study has highlighted that the site and surrounding area has been used for a number of purposes that may give rise to potential contamination on the site. These include a brewery, iron foundry and engineering works on site, and woollen mills, brickworks and refuse tip off site.

The site has been re-shaped in the past, possibly as part of the brickworks operation leaving significant sloped to the West. Consideration should be given to the potential filling of some of these areas.

A possible mine shaft/well has been identified to the North of the site.

## 7.0 CONCEPTUAL MODEL

### 7.1 General
This section provides a conceptual model and qualitative assessment of the potential risks posed to human health and environmental receptors from potential on-site and off-site sources of contamination. The assessment is presented as a 'source-pathway-receptor' model in accordance with Part IIA of the Environmental Protection Act 1990.

Part IIA of the Environmental Protection Act, 1990 was introduced on 1 April 2000. It created a new statutory regime for the identification and remediation of land where contamination poses an unacceptable risk to human health and the environment.

Part IIA provides a statutory definition of contaminated land:

*"any land which appears to the Local Authority in whose area it is situated to be in such a condition by reason of substances in, on or under the land, that significant harm is being caused, or that there is a significant possibility of significant harm being caused, or that pollution of controlled waters is being or is likely to be caused".*

To determine whether land falls under the Part IIA definition of contaminated land the site should be evaluated in the context of a risk based framework. The assessment of contaminated land is typically a two-phase process which is initially based on a qualitative assessment of the likelihood of complete pollution linkages, with a quantitative element which seeks to determine the degree and the significance of the harm. Land is only defined as 'Contaminated Land' if a "significant pollutant linkage" is present.

A pollutant linkage must comprise the following:

**Source** - a contaminant at a concentration capable of causing adverse health or environmental effects.

**Receptor** - there must be a human or environmental receptor present, which may be at risk of harm or impact from the source.

**Pathway** - there must be an exposure pathway through which the receptor comes into contact with the contamination source.

If a pollutant linkage is demonstrated, then the Part IIA legislation provides powers for remedial action to be enforced by the Local Authority in whose area the contaminated land is situated.

### 7.2 Potential On-site Sources of Contamination

The site has been used as a brewery, iron foundry and engineering works in the past. These uses may have contaminated near surface soils with metals, organic and inorganic compounds and there is a potential for gases to be present in the ground. There is also a possibility of areas to the rear of the site having made ground consisting of deposited natural ground from the brickworks operation on the adjacent site. Again there is a potential for the above contamination and land fill gases.

### 7.3 Potential Off-Site Sources of Contamination

There are a number of historic woollen mills in the area along with a brickworks and refuse tip. The woollen mills may have contaminated near surface soils in the surrounding areas. The brickworks operation may have produced waste that has been deposited containing contaminants. There are no records of the material deposited in the refuse tip however there is a potential for landfill gases.

### 7.4 Receptors

The primary receptors, considered to be potentially at risk from any identified contamination are as follows:

**Human Health**

- Construction workers during the redevelopment phase.
- Residential end users.

**Controlled Waters**

- The nearest controlled surface water is Batley Beck 178m to the south east.
- Groundwater stored within the Minor Aquifer underlying the site.

### 7.5 Pathways

Potential contaminant migration pathways considered relevant to the site are:

**Human Health**

- Ingestion of contamination soils and dust particles
- Direct physical contact with near surface soils and contaminated dust particles.

- Inhalation of wind blown contaminated dust.
- Inhalation of vapours and gases, migrating vertically into the atmosphere.
- Inhalation of vapours and gases, migrating vertically into buildings and accumulating in confined spaces.

**Controlled Waters**

- Contaminants in Made Ground impacting groundwater underlying the site via vertical leaching mechanisms.
- Contaminants in Made Ground impacting surface water south of the site via lateral leaching mechanisms.

### 7.6 Pollutant Linkages

A 'pollutant linkage' describes the relationship between a contaminant, a pathway and a receptor, a 'pollutant' being the contaminant in a pollutant linkage. A contaminant, pathway and receptor must all be present for a pollutant linkage to exist, which forms the basis for determination that a piece of land is Contaminated Land.

- There is a pollutant linkage from source, pathway and receptor. Contamination testing of the soils and gas testing will determine the risk (if any) to receptors.

### 7.7 Risk

The risk in this case is expected to be moderate due to the historic uses of the site.

## 8. CONCLUSIONS

- A review of the historic maps highlights the site has been used as a brewery, iron foundry and engineering works in the past. These all appear to have used the current buildings and rear yard area.

- Potential on sites sources of contamination are contaminated near surface soils from previous use as a brewery, iron foundry and engineering works. There is also a possibility of areas to the rear of the site having made ground consisting of deposited natural ground from the brickworks operation on the adjacent site.

- Potential off site contamination sources are the Woolen Mills, the brickworks and the refuse tip.

- The nearest landfill site is 150m from the site, being the refuse tip.

- The site overlies a minor aquifer.

- The agency and hydrological (flood) map shows that the site is not in an area that is affected by flooding from rivers or seas.

- No radon protection measures are necessary.

- Active pollutant linkages at the site are considered to be present.
- There is a potential for slope stability issues on the site.
- There is a possible mine shaft on the site.

## 9. RECOMMENDATIONS

1. Trial pits will be required to determine the near surface soils and depth to suitable foundation for the proposed structures/alteration works.
2. Trial pits should be excavated at appropriate locations around the site and samples of soil taken for contamination testing. The testing regime should include for metals, organic and inorganic compounds.
3. Soils at proposed foundation level should be tested for sulphates and pH, in order to determine the concrete classes of buried concrete.
4. Any water encountered within the trial pits should be sampled and taken for contamination testing.
5. A slope stability assessment should be made incorporating the development proposals.
6. Should clay soils be encountered, then these should be tested for Plasticity Index and Moisture Content.
7. The possible mine shaft on the site should be investigated to determine its location, condition and depth. Depending on the results of the initial investigation boreholes should be taken on site to a depth of 30m in order to prove there are no coal workings beneath the site that would influence the foundations and ground stability on the surface. Permission should be given by the Coal Authority prior to investigation.
8. A gas monitoring exercise should be carried out beneath the site to identify any potential landfill gases.
9. Foundations to existing structures in close proximity to the proposed works should be exposed, in order to determine their influence on each other.
10. Basic Radon protection measures are <u>not</u> necessary.
11. The development proposal will probably incorporate an increase in impermeable surfacing. An assessment should be made to determine the impact of this even though the area is beyond the area at risk from flooding.
12. Provision should be made for locating existing services beneath the site during the intrusive investigations. The hand digging of the top metre should be considered.
13. During construction and reduced level dig, careful observation should be made to identify any signs that the soils could be contaminated in terms of appearance or odour. Should this be encountered, then the Engineer must be informed immediately.

14. Should any soils be imported on to site, then these should come from a supplier who can provide necessary testing certificates or the soils should be sampled and tested, to verify that the soils are suitable for their intended use.

15. Construction workers should be protected from exposure to contaminated soils with the provision of all necessary personal protective equipment.

16. An asbestos survey should be commissioned prior to any opening up works on the site.

Yours faithfully

Simon Kitchingman