



**Desk Study
of
Land
At
Burton Road, Barnsley S71 2JS
for
Strategic Community Infrastructure Partnership Ltd**

**Met Consulting Engineers Ltd
Southgate House
Pontefract Road
Stourton
Leeds
West Yorkshire
LS10 1SW**

**T: 0113 270 1199
F: 0113 270 1292
E: mail@metengineers.com
W: www.metengineers.com**

**Ref: 12794-5004
Date: April 2011**

Contents

- 1. Introduction**
 - 1.1. General Introduction
 - 1.2. Objectives
 - 1.3. Scope of Works
 - 1.4. Limitations of the Report
- 2. Site Study**
 - 2.1. Site Setting
 - 2.2. Site History
- 3. General Geology and Hydrogeology**
 - 3.1. General Geology
 - 3.2. Mining
 - 3.3. Hydrogeology
 - 3.4. Radon
 - 3.5. Flood Risk
 - 3.6. Drainage
 - 3.7. Pollution Incidents
 - 3.8. Discharge Consent
 - 3.9. Pollution Controls
 - 3.10. Surface Water Features
 - 3.11. Registered Landfill Sites
- 4. Potential Contamination**
 - 4.1. Background
 - 4.2. Historical Overview of Area
 - 4.3. Current Situation
 - 4.4. Identified Sources
 - 4.5. Preliminary Risk Assessment
 - 4.6. Conclusion
- 5. Recommendations**

Appendix

1. EnviroInsight/GeoInsight Report
2. Coal Authority Report

1. Introduction

General Introduction

This Report presents the results of a Phase I GeoEnvironmental Site Assessment of a site at Burton Road, Barnsley, West Yorkshire S71 2JS (Grid Reference: 436636, 407713) for Strategic Community Infrastructure Partnership Ltd. The Desk Study comprised obtaining research/archive information from Emapsite.com, in the form of an EnviroInsight/GeoInsight Report. The EnviroInsight/GeoInsight Report provides the basic background information including Historical Ordnance Survey Plans, British Geological Survey Plans, Coal Authority Report and Environment Agency Report (including Radon). This Desk Study presents the findings of this background information as it relates to the proposed end use of the site and considers the potential for contamination of the site. The EnviroInsight/GeoInsight Report is attached as Appendix 1.

1.1. Objectives

This Desk Study was conducted in order to formulate an opinion as to the potential for hazardous substances to exist on, at, or in the surrounding area of the site which might affect the future development of the site, appropriate to the proposed end use of the site. The “surrounding area” of the site for the purposes of this Report is defined as being located within an approximate 250m radius of the site.

The objectives of the Desk Study were aimed to determine:-

- The historic site usage, identifying any factors, based on the Archive Ordnance Survey Maps, which might give rise to the potential for hazardous substances to exist on, at, or near the vicinity of the site.

- The general ground conditions at the site, based on published Geological Maps, identifying any significant geotechnical conditions which might affect the future redevelopment of the site.
- Current operations undertaken within the site and in the surrounding area, based on the EnviroInsight/GeoInsight database, which might give rise to the potential for hazardous substances to exist on, at, or near the vicinity of the site and which might affect the future redevelopment of the site.

1.2. Scope of Works

In order to meet the above objectives, Met Consulting Engineers obtained research information from Emapsite.com which includes data from the following sources: -

- Historical Ordnance Survey Plans
- British Geological Survey Plans and Radon Report
- Environment Agency Report
- Coal Authority Mining Report

This Report presents the findings of the Desk Study as related to the proposed end use of the site. The purpose of the Desk Study is to allow an opinion to be formulated as to the likely GeoEnvironmental conditions at the site and the potential implications for the end use. This report does not quantify those findings nor provide any recommendations for remedial works, mitigation or risk management

1.3. Limitations of the Report

Strategic Community Infrastructure Partnership Ltd (the Client) has requested that a Phase I GeoEnvironmental Site Assessment be undertaken in order to assess the suitability of the site for redevelopment. The Report is not a comprehensive site characterisation and should not be construed as such.

This Report has been prepared for the sole internal use and reliance of Strategic Community Infrastructure Partnership Ltd. The Report shall not be relied upon or transferred to any other parties without the express written authority of Met Consulting Engineers. If any unauthorised third party comes into possession of the Report, they rely on it at their own risk and the Met Consulting Engineers owes them no Duty of Care.

The findings and opinions conveyed via this Report are based on information obtained from a variety of sources as detailed within this Report and which Met Consulting Engineers, believes are reliable. Nevertheless, Met Consulting Engineers, cannot and does not guarantee the authenticity or reliability of the information it has relied upon. The information contained in this Report is to the best of our knowledge accurate at the date of issue, however, sub-surface conditions, including ground water levels, may vary, especially with time.

It is possible that the EnviroInsight/GeoInsight Report may not include information from every information source. Assuming such further information sources actually exist, their information has not been considered in the formulation of these findings and opinions; this Report only considers the information contained within the EnviroInsight/GeoInsight Report.

In preparing this Report it has been assumed that all past and present occupants and Third Parties have provided accurate information, especially relating to known or potential hazards. This Report does not identify deficiencies or mistakes in the information provided by the user/owner, or from any other source, except where obvious in the light of other information.

This Report is relevant at the date the report was written and should be read in the light of any subsequent changes in legislation, statutory requirement or industry practices.

The Report represents the technical findings and opinions of Met Consulting Engineers, and does not constitute any legal advice. As such, the advice of a Solicitor may also be required.

2. Site Study

2.1. Site Setting

The Site is located approximately 2.6km northeast of Barnsley town centre and is approximately 0.96 Hectares in area.

At present the site is undeveloped grassland used for the grazing of horses. The site is a trapezoidal-shaped piece of land bounded on the northwest by the back of the footpath to Burton Road, to the West by the gardens of adjacent properties on Littleworth Lane, to the South by a small wooded area and to the East by a Public Footpath and open fields beyond. There are trees lining the Public footpath on the East boundary and also some isolated trees on the Burton Road boundary. The site appears to slope quite steeply from Burton Road down towards the East.

2.2. Site History

Examination of historical maps can provide valuable information regarding any previous site usage, possibly providing an indication of potential sources of contamination. It should be noted that the accuracy and completeness the site history using historical maps is dependent on the period of time between editions.

The following information is compiled from a review of the Historical Ordnance Survey Maps contained within the EnviroInsight/GeoInsight Report. The relevant maps are included in the Appendix 1.

2.2.1. Historical Maps

- a. The earliest OS Map of 1890 (1:10,560 scale) shows the site to be an undeveloped open field in predominantly undeveloped surroundings. A railway line and canal are shown to the southeast, with Osborne House and isolated out-buildings on the opposite side of Burton Road. A School and Church are shown to the West of the site.

- b. The 1892 Map (1:2,500 Scale) shows no significant change to the site or surroundings.
- c. The 1904 Map (1:10,560 Scale) shows no significant change to the site, except that a pub (The Sun Inn) is shown on the opposite side of Burton Road, to the West of Osborne House. The surroundings are relatively unchanged except that The Monk Bretton Colliery is now shown to the northeast of the site.
- d. The 1906 Map (1:2,500 Scale) shows no significant change to the site or the surrounding area.
- e. The 1930 Map (1:10,560 Scale) shows no significant change to the site or the surrounding area.
- f. The 1938 Map (1:10,560 Scale) shows no significant change to the site or the surrounding area.
- g. The 1948 Map (1:10,560 Scale) shows no significant change to the site or the surrounding area.
- h. The 1951 Map (1:10,560 Scale) shows no significant change to the site or the surrounding area.
- i. The 1961 Map (1:2,500 Scale) shows no significant change to the site or the surrounding area, except that one of the out-buildings of Osborne House is now indicated as a Factory with an adjacent small pond. Also a Church Hall has appeared immediately to the West of The Sun Inn.
- j. The 1966 Map (1:10,560 Scale) shows no significant change to the site or the surrounding area, except that The Monk Bretton Colliery is now labelled simply as "Mine" and a new "Works" has appeared to the North of this. There are two large areas to the East of the railway line that are now hatched to represent Refuse or Slag Heaps. The most southerly of these is accessed

by several spurs from the railway line that are labelled as the Mineral Railway.

- k. The 1969 Map (1:2,500 Scale) shows no significant change to the site or the surrounding area.
- l. The 1970 Map (1:2,500 Scale) shows no significant change to the site or the surrounding area.
- m. The 1974 Map (1:10,000 Scale) shows no significant change to the site. However, the surrounding area is now extensively developed with residential housing to the North, West and South. To the East, the surroundings have remained as open fields, although the Mine and the Mineral Railway are no longer indicated.
- n. The 1982 Map (1:2,500 Scale) shows no significant change to the site. Within the surroundings, the railway line is now labelled as “Disused” and the canal is no longer shown.
- o. The 1983 Map (1:1,250 Scale) shows no significant change to the site or the surrounding area.
- p. The 1992 Map (1:10,000 Scale) shows no significant change to the site or the surrounding area.
- q. The 1993 Map (1:1,250 Scale) shows no significant change to the site or the surrounding area.
- r. The 2002 Map (1:10,000 Scale) shows no significant change to the site or the surrounding area, except that the course of the former canal is now indicated as “Drain”.
- s. The 2011 Maps (1:1,250 and 1:10,000 Scale) shows no significant change to the site or surrounding area.

Based upon the above it would appear that the site has never been developed.

The surrounding area has been developed from open fields to, generally, residential properties with associated highways, etc. The only industrial development that might have affected the site, is the potential underground mining from the former Monk Bretton Colliery and the associated Refuse/Slag Heaps to the East of the site (but see paragraph 3.2, later).

3. General Geology and Hydrogeology

3.1. General Geology

From an examination of the published Geological Maps (1:625,000 Scale, Solid Edition), the site is shown to be very close to the boundary between the Lower Westphalian (A&B) measures and the The Upper Westphalian (C&D) measures. The EnviroInsight/GeoInsight Report, which is based on information provided by the British Geological Survey shows the underlying bedrock/solid geology to be Oaks Rock, a Sandstone material.

Drift deposits are not known

3.2. Mining

The EnviroInsight/GeoInsight Report states that the site is located within an identified mining area with a Low-Moderate risk from shallow mineworking. Consequently, a Coal Authority mining report was obtained for the site.

The report states:

The property is in the likely zone of influence from workings in 10 seams of coal at 110m to 470m depth, and last worked in 1990. Any ground movement from these coal workings should have stopped by now.

The property is not in the likely zone of influence of any present underground coal workings.

The property is not in an area for which a licence has been granted to remove coal using underground methods.

The property is not in an area that is likely to be affected at the surface from any planned future workings. However reserves of coal exist in the local area which could be worked at some time in the future.

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

The property is not within 800 metres of the boundary of an opencast site for which the Coal Authority is determining whether to grant a licence to remove coal by opencast methods.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

There is no record of a mine gas emission requiring action by the Coal Authority within the boundary of the property.

3.3. Hydrogeology

The EnviroInsight/GeoInsight Report, which is based on information provided by the British Geological Survey and Environment Agency, shows the site is located over a Secondary (A) Aquifer within the underlying Bedrock. This is described as 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.

There are no recorded ground water abstraction licences within 500m of the site.

3.4. Radon

Referring to the BRE publication BRE211, 'Radon: Guidance on protective measures for new dwellings', the site is within in an area where Basic Radon Protection is required. The EnviroInsight/GeoInsight Report, which is based on information provided by the British Geological Survey, also confirms that the site is in a Radon Affected Area as between 1% and 3% of properties are above the action level. However, the report then appears to contradict itself by going on to say that no Radon Protection Measures are required. In this instance, it would be prudent to assume that Basic

Radon Protection Measures will be required, but this can be confirmed with the Local Authority.

3.5. Flood Risk

The site is not shown to be within the indicative flood plain as determined by the Environment Agency. However, the Local Planning Authority should be consulted to confirm whether a detailed Flood Risk Assessment will be required for redevelopment.

3.6. Drainage

The site has not previously been developed and it is unlikely that the site has the benefit of a positive drainage system discharging to a public system. However, this should be confirmed with the Local Authority.

3.7. Pollution Incidents

There are no recorded pollution incidents occurring within 250m of the site.

3.8. Discharge Consents

There are no known licensed discharge consents within 250m of the site.

3.9. Pollution Controls

There are no recorded Pollution Controls within 250m of the site.

3.10. Surface Water Features

The nearest Surface Water Feature is 220m to the East of the site, designated as a Drain and classified as a Tertiary River.

3.11. Registered Landfill Sites

There is a one former Historic Landfill Site located 213m to the East of the site. This is the area identified on the Archive OS Maps as Refuse/Slag Heaps. The area is now identified in the EnviroInsight/GeoInsight Report as a Historic Landfill Site and slightly encroaches into the 250m zone around the site. This site was, and still is, licensed to accept Household Waste.

4. Potential Contamination

4.1. Background

Current Environmental Legislation, in particular Part IIA of the Environmental Protection Act 1990, adopts a risk-based approach to the evaluation of contaminated sites, based on the proposed end use of the site. The commonly accepted approach is to adopt a Source-Pathway-Receptor model where the Source of the contaminant is examined in relation to potential Receptors (i.e. humans, controlled waters etc.) to determine if there is a Pathway (i.e. pollution linkage) connecting them. If any of these elements (i.e. contaminant, pathway or receptor) are absent or removed, then there is no risk

4.2. Historical Overview of Area

Based upon the archive historical maps, it would appear that the site has never been developed. The surrounding area has been developed from open fields to, generally, residential properties with associated highways, etc.

The only issue that could affect the development of the site is the Historic Landfill Site 213m to the East of the site.

4.3. Current Situation

At present the site is undeveloped grassland used for the grazing of horses.

4.4. Identified Sources

Based on the above, the possible sources of contamination include:

Historical Site Usage	Contaminants
Undeveloped	None

Historical Neighbours	Contaminants
Landfill Site	Land Gas

Current Site Usage	Contaminants
Open Field	Possible Fly-Tipping

Current Neighbours	Contaminants
Residential	None

The above list of possible contaminants has been based solely on the Historic Land Use as identified by the EnviroInsight/GeoInsight Report and should not be considered exhaustive.

4.5. Preliminary Risk Assessment

The risks identified in this report are perceived risks relative to the proposed end use. Actual risks can only be fully assessed after a thorough intrusive investigation of the site.

In considering the potential for contamination, the above information has to be assessed with respect to the development of the site for residential properties, utilising the source-pathway-receptor methodology. Should one of the three links be absent, the site cannot be considered contaminated under Part IIA of the Environmental Protection Act. The preliminary conceptual risk assessment model undertaken for the site is detailed as follows:

Source

Based on information available there is slight potential for contamination of the surface of the site as a result of unrecorded fly-tipping. As no groundworks have ever been conducted on the site, it is unlikely that any contamination will exist within the lower soil strata; therefore it is expected that any potential contamination would be localised and within the topsoil. In addition, there is potential for Land Gas to be present on the site from the Historic Landfill Site to the East.

Pathways

The potential main pathways specific to the probably future use of the site are:

1. Direct Contact
2. Ingestion/inhalation

Receptors

There is potential for Humans to come into contact with contaminated materials.

The following site-specific receptors should be considered:

1. Site Workers – construction staff involved in works at the site
2. End Users and long-term site users

4.6. Conclusion

Based on the above, it is considered that the site has slight potential to be contaminated at shallow depth from possible fly-tipping and at the surface from Land Gas from the adjacent Historic Landfill Site.

5.0 Recommendations

Overall, the site is considered to have a slight potential to be contaminated as a result of possible unrecorded fly-tipping and possible Land Gas migration from an adjacent Historic Landfill Site. An intrusive site investigation is required to assess these risks.

Generally, an intrusive investigation would be based on the indicative processes that were previously undertaken on the site, and a full targeted approach to contamination testing would be undertaken. However, as the site has never previously been developed and the potential risk is from possible fly-tipping, it is considered that a limited regime of testing should be conducted to assess this. It is recommended that a general suite of contamination testing should be conducted across the site, with the main concentrations being limited to shallow-depth samples.

In addition, gas monitoring should be carried out in order to adequately assess the risk from Land Gas migrating on to the site from the Historic Landfill Site. Given that the Historic Landfill Site only just encroaches within 250m of the site, it might be possible to undertake a desk-based Risk Assessment of this issue as an alternative to actual gas monitoring.

A site investigation is required in order to fully assess the geotechnical properties of the immediate sub-strata in order to formulate recommendations for appropriate foundations.

Following the site investigation, options for foundations and remediation (if any is required) can then be evaluated.