

RAFAHART LTD

Sheffield Road, Birdwell

**Phase I Environmental
Assessment**

April 2006



Wardell Armstrong
Engineering & Environmental Solutions

DATE ISSUED: April 2006
JOB NUMBER: SH03646
REPORT NUMBER: SD06-0048

CLIENT'S REFERENCE:

RAFAHART LTD

**Sheffield Road, Birdwell
Phase I Environmental Assessment**

PREPARED BY:

G P Whitmore Principal Env Geologist

APPROVED BY:

A J Dunhill Technical Director

This report has been prepared by Wardell Armstrong LLP with all reasonable skill, care and diligence, within the terms of the Contract with the Client. The report is confidential to the Client and Wardell Armstrong LLP accept no responsibility of whatever nature to third parties to whom this report may be made known.

No part of this document may be reproduced without the prior written approval of Wardell Armstrong LLP.

WARDELL ARMSTRONG LLP
Unit 4, Newton Business Centre, Newton Chambers Road, Thorncliffe Park, Chapeltown, Sheffield S35 2PH U.K.
Tel: +44 (0)114 245 6244 Fax: +44 (0)114 245 6242 www.wardell-armstrong.com

Wardell Armstrong LLP is a Limited Liability Partnership Registered in England No. OC307138
A list of members and their professional qualifications is open for inspection at our offices.
Head Office: Stoke on Trent. Other Offices: Cardiff, Edinburgh, Leigh, Liverpool, London, Newcastle upon Tyne, West Bromwich.
Subsidiary Company: Wardell Armstrong International Limited, Truro.



CONTENTS

1. INTRODUCTION	1
2. SITE HISTORY AND PRESENT LAND USE	2
3. ENVIRONMENTAL SETTING AND CONSULTATIONS	4
4. GEOLOGICAL AND HYDROGEOLOGICAL SETTING	7
5. MINING AND QUARRYING	9
6. RISK ASSESSMENT	10
7. SUMMARY	15
8. CONCLUSIONS	17
9. RECOMMENDATIONS	17

APPENDICES

Appendix I	Standard Terms and Conditions and Limitations to Report
Appendix II	Guidance on Contamination and Land Quality Statements
Appendix III	Sources of Information
Appendix IV	Site Visit Record
Appendix V	Data from Landmark Report
Appendix VI	Coal Authority Report
Appendix VII	Schedule of Potentially Contaminative Uses

DRAWINGS

Drawing No	Title	Scale
SH03646/01	Site Location Plan	1:50,000
SH03646/02	Site Plan	1:2,500

1. INTRODUCTION

1.1 Instructions

This report is prepared in accordance with instructions from Mr A Finlay, Rafahart Ltd, Hangmanstone Depot, Sheffield Road, Birdwell, Barnsley, S70 5TR dated 06 March 2006 and in accordance with our standard terms and conditions as attached at Appendix I. This follows a proposal by Wardell Armstrong.

1.2 Site Location

The site is Sheffield Road, Birdwell, and is located as shown on the site location plan, Drawing No. SH03646/01 (1:50,000 plan) and more detailed site plan SH03646/02 (1:2,500 plan). The site comprises 0.82 hectares of open fields and is bounded by Sheffield Road to the NE, the M1 Motorway to the SW and mixed residential/agricultural land to the north and south. The site is located 1km south of Birdwell and adjacent to Junction 36 of the M1 Motorway.

1.3 Purpose and Basis of Report

The purpose of this report is to identify and examine in broad terms the potential contamination constraints and liabilities that may arise in connection with the present use or proposed use of the site. The report is designed generally in accordance with the first incremental stage of a Land Quality Statement as set out by the Royal Institution of Chartered Surveyors (RICS) in their publication "Land Contamination Guidance for Chartered Surveyors September 1995". The background to government guidance on contamination and the purpose and use of Land Quality Statements in assessing the risk of contamination at a site is described at Appendix II. The report does not constitute or contain a valuation nor is it a full rigorous environmental audit. In this instance the report is prepared for a change of ownership and proposed residential development.

1.4 Proposed Use

The proposed use of the site is high density residential properties with gardens.

2. SITE HISTORY AND PRESENT LAND USE

2.1 Data Sources

The history of the site and its immediate vicinity has been researched by consultation with a range of archive sources and statutory bodies. The topographical and environmental data is primarily based on a Landmark Envirocheck report dated 07 March 2006. Additional archives and statutory bodies contacted are given in Appendix III.

2.2 Site History

The site history has been primarily researched to identify previous land uses, including any significant potentially contaminative uses. Where other features that may have an effect on development of the site have been identified, they are described.

Table I summarises the history of the site and its immediate vicinity over the period from about 1855 to the present day.

TABLE I		
SUMMARY OF LAND USE		
Date	Site Land Use	Adjacent Land Use
1850's	A cutting of the South Yorkshire Railway line bisects the site	Open fields apparently used for agriculture.
1890 - 1900's	No significant change.	Rockingham Gas Works and Birdwell Quarry have been developed adjacent to the site (NE and N respectively). Rockingham Colliery is identified 600m NE.
1900 - 1910's	No significant change.	Several residential properties have been developed adjacent to the site.
1920- 1930's	No significant change.	Continued residential development in the region. Pilley Sewage Works is identified 400m NW.
1940- 1950's	No significant change.	Birdwell Quarry marked as disused. The gas works has been redeveloped and is now marked as NCB Central Workshop. Wharnccliffe Silkstone Colliery is identified 700m west.
1960- 1970's	No significant change.	Wharnccliffe Silkstone Colliery appears to be disused. Continued residential development in the region. The M1 Motorway has been developed. A garage is identified 150m north.

TABLE I SUMMARY OF LAND USE		
Date	Site Land Use	Adjacent Land Use
1980-1990's	The 1993 map indicates that the railway has been dismantled and the cutting infilled.	Rockingham Colliery is marked as disused. Continued residential development in the region.
Present day	No significant change	The sewage works are no longer identified on the map. Continued residential development in the region.

2.3 Present Site Use

The site was visited on 08 March 2006. At the time of the visit the site comprised open land with no buildings. The following points are of note:

- 1) A new stone wall with double wooden gates has been constructed on Sheffield road.
- 2) The NE portion of the site has recently been cleared and made ground is evident.
- 3) There appears to have been minor dumping of rubble, asphalt and domestic waste before the wall and gate was erected.
- 4) Three empty styrene drums and the shell of an IBC were identified along the northern boundary.

A Site visit record is attached at Appendix IV.

3. ENVIRONMENTAL SETTING AND CONSULTATIONS

3.1 Statutory Sources

Information from various statutory sources has been summarised utilising the information received from the Landmark Information Group Ltd. This is summarised at Appendix V. The site sensitivity map and full copy of the Envirocheck data is available on request.

3.2 Waste Management

Information supplied has indicated the presence of the following waste management sites within potential influencing distance of the site boundary.

TABLE II	
Location	Details
Licensed Waste Management Facility: Hangmanstone Depot Grid Ref: 434720, 400580 Distance from Site: 38m N	License Number: 60553 Authority: EA – North East Region Site Category: metal recycling (vehicle dismantlers) License Status: issued 22 November 1996
Licensed Waste Management Facility: Hartwoods Exports Grid Ref: 434900, 400600 Distance from Site: 181m NE	License Number: WD20 B 378 Authority: EA – North East Region Site Category: Landfill – railway cutting License Status: lapsed/cancelled/defunct/not applicable/surrendered
Licensed Landfill Site: not specified Grid Ref: 434680, 400480 Distance from Site: 0m	License Number: reference 36 Authority: Barnsley Metropolitan Borough Council Site Category: not supplied License Status: not supplied

In addition to the recorded/licensed landfilling activities at and near to the site, the possibility, of there being unrecorded landfilling activities within influencing distance of the site cannot be discounted. If at some time in the future, the presence of such an unrecorded landfill is revealed then its potential influence on the site may need to be investigated and dealt with as necessary.

3.3 Radon

The BRE document "Radon: guidance on protective measures for new dwellings" (1999) provides guidance for reducing the concentration of radon in new dwellings and a two stage procedure using accompanying maps needed to determine the level of protection for a given site. This document has been consulted and the site is shown to lie in an area where consideration should be given to geological data and whether basic protection against radon may be needed should development of residential dwellings or new structures of similar form of construction and compartmentation occur.

3.4 Environmental Issues

As a result of research mainly via the Landmark Envirocheck report, there are no records of discharge consents, air emissions or prosecutions.

3.4.1 Pollution Incidents to Controlled Waters

The Environment Agency data via the Landmark report records one category one or two (significant or major) incident at or in the near vicinity of the site.

TABLE III	
Incident	Details
Operator: Chemical Industry, Rockingham Business Park Grid Ref: 434900, 400700 Distance from Site: 239m NE	Reference: SH960338 Date: 4 July 1996 Cause: unknown Severity: Category 2 – significant incident Receiving Water: tributary of River Dearne

3.4.4 Local Authority Pollution Prevention Controls

The Environment Agency data via the Landmark report records one current or past Local Authority Pollution Prevention Controls at or near the site.

TABLE IV	
Operator and Location	Details
Operator: Hartwood Exports Grid Ref: 434720, 400590 Distance from Site: 47m N	Authority: Barnsley Metropolitan Borough Council Reference: Ppc/B/14 Date: 20 January 1998 Process: Local Authority air pollution control Description: PG1/Waste oil burners, less than 0.4MW net rated thermal input. Status: authorised

3.5 Ecology

3.5.1 Specific Ecological Issues

There are a number of legal or planning constraints relating to wildlife habitats and protected plant and animal species. Wildlife habitats and protected species can occur on or adjacent to a site. They can also be linked via surface or groundwater and can be affected by activities on the site such as noise, dust or pollution.

Reference to the Landmark Envirocheck report indicates one area of adopted greenbelt adjacent to the site and no National Nature Reserves, Marine Nature Reserves or Sites of Special Scientific Interest within 1km.

3.5.2 *Japanese Knotweed, Himalayan Balsam and Giant Hogweed*

Many foreign plants were introduced to Britain in the 19th Century, mainly for ornamental reasons. A few have become aggressively dominant, creating serious problems in some areas. Three such invasive plants are Japanese Knotweed, Himalayan Balsam and Giant Hogweed. Their spread is primarily the result of human activities, which aid their dispersal along linear corridors such as railway tracks, rivers and road verges. By forming dense stands they can displace native species and reduce wildlife interest.

Japanese Knotweed, Himalayan Balsam and Giant Hogweed were not identified as being present on site.

3.6 Asbestos

The Health and Safety at Work Act requires that Employers provide safe places of work for their employees. The Control of Asbestos at Work Regulations (CAWR) place very heavy specific duties on those who commission and carry out work on asbestos containing materials. Construction work that is likely to involve exposure of workers to hazards associated with asbestos in existing buildings will be subject to the Construction (Design and Management) Regulations which impose duties upon Clients, Designers and the Contractors carrying out the work. Other health and safety and welfare regulations place duties on Employers to undertake risk assessments and prepare hazard management plans which, in the case of a building likely to contain asbestos, could involve the commissioning of surveys, hazardous materials location registers and proposals for remedial work.

Asbestos has not been identified on site during our site walkover. However, the walkover survey does not constitute an asbestos survey and not all areas of the site may have been visited. In addition, asbestos may be present in the made ground at the site associated with past historical use. In the event that any asbestos is identified in the future or if it is considered that there is a risk that asbestos exists in the building, a full asbestos survey should be carried out. Guidance on the need for asbestos surveys and the method of carrying them out are given in HSE Publication MDHS100.

4. GEOLOGICAL AND HYDROGEOLOGICAL SETTING

4.1 Geology

The assessment of the geology of the site is based on the published geological mapping sheet (Sheet 87, Barnsley, Solid and Drift Edition, 1:50,000 scale) supplemented by the geological memoir, topographical plans and site visit. A typical summary section is provided in Table V below along with other geological data.

TABLE V	
Strata	Description
Made ground.	A significant thickness of made ground will be present associated with infilling of the former railway cutting.
Natural superfcials.	None identified.
Solid strata.	Sandstone of the Carboniferous Pennine Middle Coal Measures
Evidence of faulting.	The nearest fault is approximately 250m SE.
Landslides.	British Geological Information Services via the Envirocheck data indicate a low to moderate potential for landslide hazards onsite.
Other - brine, subsidence.	None identified.

4.2 Hydrogeology

Hydrogeological information has been obtained from a Landmark Envirocheck report, examination of the Groundwater Vulnerability maps published by the Environment Agency, Hydrogeological maps published by the British Geological Survey and by reference to both the geological information above and the Policy and Practice for the Protection of Groundwater (Environment Agency, 1998).

This information indicates the site to be underlain by sandstone of the Middle Coal Measures, which is classified as a minor aquifer.

These formations are generally fractured or potentially fractured and do not have a high primary permeability. Although not producing large quantities of water for abstraction, they are important for local supplies and in supplying base flow to rivers.

4.3 Soil Vulnerability Classification – Leaching Potential

The soil vulnerability classification groups the many different soil types of England and Wales into three soil vulnerability classes and six sub-classes. Each is based on the physical and chemical properties of the soil, which affect the downward passage of water and contaminants. This classification is not applied to soil

above non-aquifers. Soil information for urban areas is based on fewer observations than elsewhere. A worst case vulnerability is therefore assumed until proved otherwise.

The soil has a High Leaching potential (HU) due the sites urban location and hence variability.

There is one active groundwater abstraction licence within a 2km radius of the site. The closest is 1.95km SE (NGR: 435600, 398700) and is operated by Tankersley Park Golf Club which is licensed to abstract 6820m³ of groundwater per year for 'golf course: direct spray irrigation'. No revoked, lapsed or cancelled groundwater abstraction licences are listed within 2km of the site.

4.4 Hydrology

The nearest graded surface watercourse is Warren Dyke, which is approximately 164m W of the site. The Environment Agency has given Warren Dyke a General Quality Assessment (Chemistry) rating of D (fair). A small reservoir is identified approximately 800m east of the site.

The Environment Agency completed a national flood risk assessment in 2004, which used ground levels, predicted flood levels, information on flood defences, and local knowledge. The assessment predicted a likelihood of flooding in an area that was described in one of three categories, low, moderate or significant.

The Environment Agency indicative flood risks map indicates that the site is not on an identified flood plain. This means that the chance of flooding each year from rivers or the sea is 0.1% (1 in 1000) or less.

There are two surface water abstraction licences within 2km of the site. The closest is 1.9km NW (NGR 433500, 402000) and is operated by J B Hodgson, which is licensed to abstract 2728 m³ of surface water per year for 'general agriculture: direct spray irrigation'. No revoked, lapsed or cancelled surface water abstraction licences are listed within 2km of the site.

5. MINING AND QUARRYING

5.1 General

Research of the mining setting is based on examination of the published topographical and geological information as described in Section 2 and 4 of this report along with other mining archive information. A Coal Authority report for the site has been obtained, dated 07 March 2006 and is attached at Appendix VI. Examination has also been made of the Mining Instability Study of Great Britain for any evidence of past mining relating to workings other than coal.

5.2 Surface Workings

Research of topographical, geological and other archive mining records has indicated no evidence of surface extraction.

5.3 Shallow Underground Workings

From the enquiries made and examination of the geological information there is no evidence of shallow underground mining activity. However, the site is in an area where coal is believed to exist at or close to the surface that may have been worked at some time in the past. The possibility that unrecorded mineworkings may be present beneath the site cannot be discounted.

5.4 Deep Mining

The Coal Authority report has indicated evidence of deep underground mining in 7 seams of coal at 110m to 290m depth, the last date of working being 1960. Whilst ground movements would have occurred due to the mining of these deep seams, surface subsidence effects should have been largely contemporaneous with the mining. The site is considered stable in respect of any past deep mining.

There are no current mining activities affecting the site and the site does not lie within influencing distance of any presently known planned future workings.

5.5 Mine Entries

The Coal Authority report has indicated that there are no records of abandoned mineshafts or adits beneath or within influencing distance of the site. However, the possibility of there being unrecorded mine entries at the site cannot be discounted. If during any future works at the site a feature is discovered which may represent an unrecorded mine entry, such as circular brickwork or anomalous areas of fill/timber, it should be reported, investigated and acted upon as necessary.

5.6 Coal Mine Gas

Examination of the mining and geological information indicates that it is possible that gases migrating from now abandoned coal mine workings may affect the site.

6. RISK ASSESSMENT

6.1 Introduction

The main issues considered in the risk assessment are:

- The environmental risks identified, if any, that may have implications for the current use of the site.
- The environmental risks identified, if any, that may have implications for the proposed use of the site if different from its current use.
- How likely it is that the environmental risks identified may affect the site. This is considered against a background of continuation of the current use and potential for the site to be redeveloped in accordance with the proposed use.
- Other areas of primary concern from a ground engineering and environmental viewpoint that may have been revealed as a result of the research carried out. These features are limited to the scope of work/research carried out and may not cover such factors as the wider planning constraints, archaeology, ecology etc.

6.2 Environmental Issues

Conclusions are drawn from the preceding information in terms of potential sources of contamination, possible receptors that may be affected by any sources of contamination and the pathways that exist between source and receptor. This basic risk assessment allows identification of the suitability of the site for its current and future use and evaluation of any potential environmental liability that may attach to the site. A description of past or existing uses that may be defined as potentially contaminative is provided in the schedule as attached at Appendix VII. The issues can be broadly addressed as follows.

- Land contamination
- Groundwater contamination
- Ground gases (radon)
- Surface water contamination
- Air pollution
- Other

The land use history has identified the following potentially significant contaminative uses both on the site and adjacent to the site.

Potentially Significant Contaminative Uses On Site:

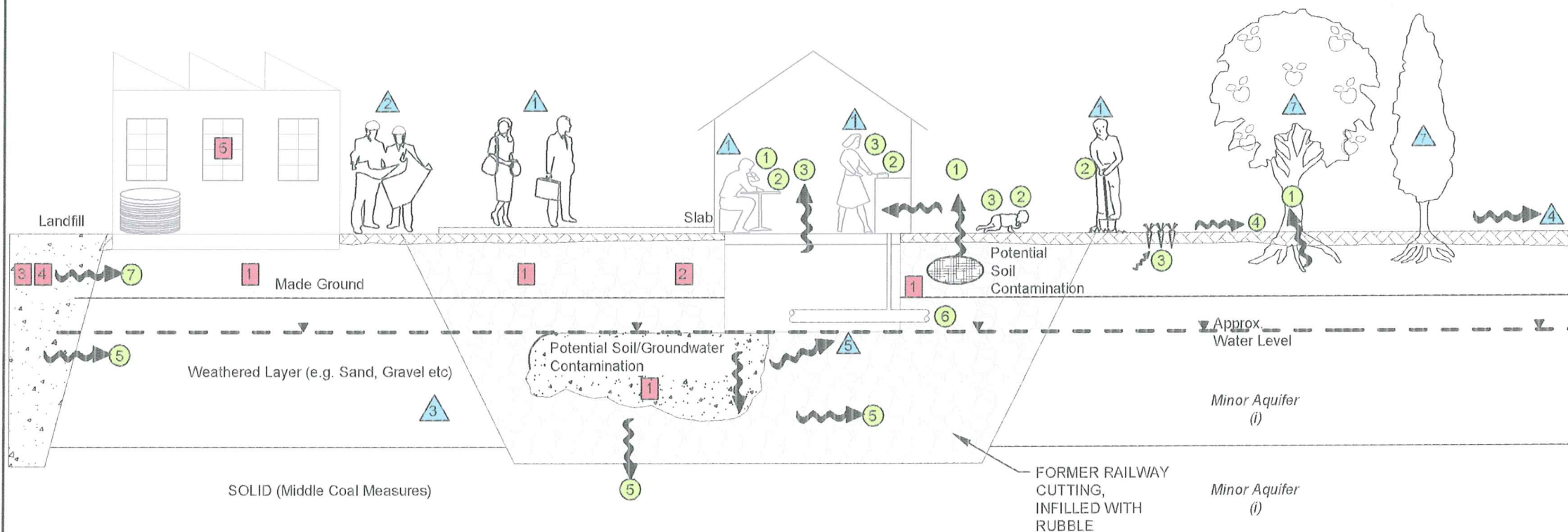
Historic railway line and subsequent dismantling and infilling of the railway cutting which bisected the site.

Potentially Significant Contaminative Uses Off Site:

Gas works, areas of landfill and a garage.

As a result of the above land use history the site may have the following sources of contamination. Table VI details the potential sources, pathways and receptors and the inter-relationship of these factors. Figure 1 presents a schematic conceptual site model based on the information presented in Table VI.

TABLE VI				
SOURCE	CONTAMINANT	PATHWAY	RECEPTOR (PRESENT)	RECEPTOR (FUTURE)
1. Made ground present across the site.	Heavy and phytotoxic metals. PAH.	1. Inhalation. 2. Dermal contact. 3. Ingestion. 4. Surface runoff. 5. Groundwater migration. 6. Direct contact (aggressive attack).	3. Groundwater. 4. Surface water. 6. Flora and Fauna.	1. Future occupiers. 2. Construction workers. 3. Groundwater. 4. Surface water. 5. Subsurface building materials. 6. Flora and Fauna.
2. Historic building material and made ground.	Asbestos.	Disturbance and inhalation.	None identified.	1. Future occupiers. 2. Construction workers.
3. Landfill. (historic).	Leachate.	2. Dermal contact. 3. Ingestion. 4. Surface runoff. 5. Groundwater migration. 6. Direct contact (aggressive attack).	3. Groundwater. 4. Surface water. 6. Flora and Fauna.	1. Future occupiers. 2. Construction workers. 3. Groundwater. 4. Surface water. 5. Subsurface building materials. 6. Flora and Fauna.
4. Landfill and mining (historic).	Landfill / Mine gas.	1. Inhalation. 5. Groundwater migration. 7. Gas migration.	3. Groundwater. 6. Flora and Fauna.	1. Future occupiers. 2. Construction workers. 3. Groundwater. 6. Flora and Fauna.
5. Surrounding historical industry (gas works, electrical substations, garage).	Hydrocarbons. Solvents. Metals. Phenols. PCB's	1. Inhalation. 2. Dermal contact. 3. Ingestion. 4. Surface runoff. 5. Groundwater migration. 6. Direct contact (aggressive attack).	3. Groundwater. 4. Surface water. 6. Flora and Fauna.	1. Future occupiers. 2. Construction workers. 3. Groundwater. 4. Surface water. 5. Subsurface building materials and plastic service pipes. 6. Flora and Fauna.



Source

- 1 Made Ground
- 2 Historic Building Material in Made Ground
- 3 Landfill Leachate
- 4 Landfill/Mining Gas
- 5 Surrounding Historical industry

Pathway

- 1 Inhalation of Vapours and/or Dust
- 2 Dermal Contact with Soil or Dust
- 3 Ingestion of Soil, Dust and/or Plant Matter
- 4 Surface Water Runoff
- 5 Groundwater Migration
- 6 Subsurface Attack
- 7 Gas Migration Through Geology

Receptor

- 1 Future Occupiers
- 2 Construction Workers
- 3 Groundwater (minor)
- 4 Surface Water Body (River, Lake, Canal etc.)
- 5 Building (Proposed)
- 6 Flora & Fauna

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D
----------	---------	------	-------	-------	-------

CLIENT

RAFAHART LTD.

PROJECT

SHEFFIELD RD, BIRDWELL

DRAWING TITLE

SCHEMATIC CONCEPTUAL SITE MODEL

DRG No SH03646/Figure 1	SCALE N.T.S.	DATE MAR 2006
DRAWN BY SJA	CHECKED BY GPW	APPROVED BY GPW

☐ NEWCASTLE-UNDER-LYME (HEAD OFFICE)	TEL 01782 612626	☐ CARDIFF	TEL 029 2038 2465
☐ NEWCASTLE UPON TYNE	TEL 0191 232 0943	☐ LEIGH	TEL 01942 280101
☐ WEST BROMWICH	TEL 0121 580 0909	☒ SHEFFIELD	TEL 0114 245 0244
☐ LONDON	TEL 020 7287 2872	☐ EDINBURGH	TEL 0131 555 3311

Wardell Armstrong
Engineering & Environmental Solutions

6.3 Contamination Risk Assessment

From the combination of the foregoing information an assessment of the contamination risk is provided.

For ease of reference and understanding the risks are assessed against 3 possible levels/categories.

- **Low risk** - site considered suitable for use and environmental setting. Contaminants may be present but unlikely to have an unacceptable impact on key targets. Action unlikely to be needed.
- **Moderate risk** - site may not be suitable for use and environmental setting. Contaminants probably or certainly present and likely to have an unacceptable impact on key targets. Action may be needed in the medium term.
- **High risk** - site probably or certainly not suitable for use and environmental setting. Contaminants probably or certainly present and very likely to have an unacceptable impact on key targets. Urgent action needed in short term.

Under each of the categories the environmental issues which have been identified have been assessed with regard to a wide range of topics including (where appropriate):

- the 'source-pathway-receptor' concept
- the behaviour of potential contaminants within the environment
- environmental processes
- industrial operations and best practice
- current environmental legislation
- the views and practices of the environmental regulators
- the likelihood of environmental notices, orders or other enforcement action
- any requirements to remove waste, contaminated or hazardous materials
- the health and safety of occupiers or neighbours
- any redevelopment plans for the site
- effects on the fabric of buildings caused by contamination
- financial and cost implications

The likelihood of significant contamination or other environmental issues affecting the site or the surrounding area in connection with the present use of the site is considered to be:

On site: Low to Moderate

Surrounding area: Low to Moderate

The effect of the present site use on the surrounding area is assessed with regard to the possible contaminant migration from the site off site and with regard to the

general environmental setting and land quality of the surrounding area in order to put the on site assessment in context.

The likelihood of significant contamination or other environmental issues affecting the site in connection with the adjacent land uses is considered to be Moderate. Based on the available data the adjacent gas works and landfilling operations both onsite and nearby present a moderate risk.

From examination of the geological and hydrogeological data the risks to groundwater and surface water are as follows:

Groundwater Vulnerability: Low.

The site lies above a minor aquifer and the nearest groundwater abstraction is not for public use and is almost 2km away.

Surface Water Vulnerability: Low

The nearest surface water course is 164m away and the nearest surface water abstraction is not for public use and is 1.9km away.

From an assessment of the above potential risks it is considered that the likelihood of an environmental liability arising in connection with the past use of the site is Low to Moderate.

From an assessment of the above potential risks it is considered that the likelihood of an environmental liability arising in connection with the current use of the site is Low to Moderate.

With the site in its present state and if no further investigation or remediation works are carried out the likelihood of environmental issues affecting the future use of the site for development is considered to be Moderate. Based on the available data for the adjacent gas works and landfilling operations both on site and nearby, a moderate risk is implied until proven otherwise.

7. SUMMARY

A summary of the potential environmental, geological and other risks identified for the site is presented in Table VII. Where indicated, these risks may need to be considered for any future development of the land.

Table VII			
Issue	Summary	Risk Category	
		Humans	Property/ Environment
Contamination Potential:			
Present site use.	Vacant open land with no buildings	Low	Low – Mod.
Past site use.	Open fields, railway and landfill	Low - Mod.	Low - Mod.
Impact to site from past and present adjacent land uses.	Landfill and adjacent gas works	Mod.	Mod.
Mining history.	Historic underground mining of 7 deep coal seams. No mine entries within the vicinity.	Low	Low
Emissions, pollution incidents, discharges etc.	There is one Local Authority Pollution Prevention Control within influencing distance of the site.	Low	Low
Other issues.	None identified	-	-
Environmental Sensitivity:			
Geology.	Made ground overlying Carboniferous Middle Coal Measures.	Low	Low
Groundwater vulnerability.	This site is situated on a minor aquifer. The closest active groundwater abstraction licences is 1.95km west.	Low	Low
Surface water vulnerability.	The nearest graded surface watercourse is Warren Dyke 164m west. The closest surface water abstraction licences is 1.9km north west.	Low	Low
Geological constraints:			
Made ground / superfcials / solid geology	The railway cutting on site has been landfilled and may present issues for future foundation design.	Mod.	Mod.
Landslip hazard	British Geological Information Services via the Envirocheck data indicate a low to moderate potential for landslide hazards onsite.	Low – Mod.	Low - Mod.

Table VII			
Issue	Summary	Risk Category	
		Humans	Property/ Environment
Liability Issues:			
Risk of liability with current use of site.	Vacant open land	Low	Low - Mod.
Risk of liability for proposed use of site.	The proposed use of the site is development as residential housing	Low – Mod.	Low - Mod.
Overall Risk for Site:	Moderate		

8. CONCLUSIONS

The history of the site does indicate potential for contamination from both on site past use and adjacent operations that may have impinged upon the site.

The site is presently vacant and it is understood that a residential development is proposed. Therefore, it is considered that the site presents a low to moderate risk of hazard or environmental liability. We would anticipate that an investigation of the geological conditions will be required and it may be anticipated that some made ground and/or other unsuitable materials will be encountered. It is anticipated that some remedial measures would be necessary depending on the nature and extent of the made ground.

9. RECOMMENDATIONS

A broad quantification of contamination and geotechnical issues may be required before redevelopment was to take place. This would most likely involve:

- An initial survey comprising window sample boreholes with gas and water monitoring installations.
- Subsequent testing of soils and any groundwater encountered.

If significant contamination was indicated a series of cable percussive boreholes would be required to determine the thickness of made ground, the nature of geological strata beneath the site and provide deeper ground water monitoring installations.

APPENDIX I

Standard Terms and Conditions and Limitations to Reports

Standard Terms and Conditions and Limitations to Reports

This report is provided for the stated purpose and for the sole use of the client. It is confidential to the client and his professional advisors and cannot be shown to any other party without prior written consent. Wardell Armstrong LLP accepts no responsibility whatsoever to any person other than the client.

The findings of this report are based upon information relating to the property supplied by the client or their agents. The information has been accepted and used in good faith and unless otherwise stated, no attempts has been made to verify the information supplied. Should any of these factors or information change then the conclusions of the report may need to be amended. The information supplied is detailed at Appendix III along with details of the other published and archive sources of information used in the preparation of the report.

The opinions and findings of this report are given without the benefit of any physical site investigation, sampling and testing. A walk over site visit has been carried out.

The findings and recommendations are considered to be valid and appropriate at the time of preparation and for the specific purpose or purposes intended. Wardell Armstrong LLP will not be liable if any findings are used by third parties, without the written agreement of the company, or if an interpretation is made and action taken without further consultation.

APPENDIX II

Guidance on Contamination and Land Quality Statements

CONTAMINATION

Background

In 1990 the Government published the Environmental Protection Act which amongst other matters introduced the concept of a public register of contaminated land. The relevant section (section 143) of the Act met with a great deal of criticism and concern and was not implemented. The possibility of such a register did however create and heighten concerns and awareness of contaminated land issues that remain to date.

In the following five years there was a great deal of discussion on this issue and in particular the Government issued a consultative paper entitled "Paying for the Past" in March 1994. The Government's conclusions from this exercise were published in November 1994 under the title "Framework for Contaminated Land". This document set out the Government's proposals for a machinery for dealing with contaminated land and liabilities. Many of the main elements of this proposal remain in the present strategy for assessing and solving contaminated land problems.

A number of important points were raised:

- there is a commitment to sustainable development and to the "polluter pays" principle.
- there is a commitment to the 'suitable for use' approach to the control and treatment of existing contamination. This approach identifies that remedial action should only be required where:
 - the contamination poses unacceptable actual or potential risks to health or the environment; and
 - there are appropriate and cost effective means available to do so, taking into account the actual or intended use of the site.

ENVIRONMENT AGENCY

In order to regulate and offer guidance on issues of contaminated land the Government established the "Environment Agency". The Agency took over all the functions of the former National Rivers Authority (NRA), the Waste Regulation Authorities and Her Majesty's Inspectorate of Pollution as well as some of the functions of the Secretary of State for the Environment. It is part of the role of the Environment Agency to provide technical research and guidance in matters concerning contaminated land.

Although the need for a public register of contaminated land as set out in section 143 of the EPA 1990 has been repealed there remains within the now enacted Environment Act 1995 a role for Borough and District Councils in identifying and acting on land contamination. This has now been further defined and is outlined in the following guidance notes.

Summary Guidance Notes on the Implementation of Part IIA of the Environmental Protection Act 1990 – Contaminated Land

Introduction

The following is intended as a general guide outlining the main issues that land and property owners and developers will have to consider with regards to the contaminated land regime, which came into force on 1 April 2000.

This is the first time that contaminated land issues in England have been brought under an integrated legislative framework. In addition to the Act it is also expected during the next few years to have clarification of such issues as specific guideline values for various contaminants along with mechanisms for quantitative risk assessment. The assessment techniques are likely to develop more clearly towards a health based risk assessment utilising the significance of toxicological and ecotoxicological parameters.

Government Policy and Objectives of New Regime

There are a number of important government policies and priorities underlying the Act. The first priority is to prevent the creation of new contamination by use of this Act and other controls such as Integrated Pollution Prevention and Control and Waste Management licensing. The second is to identify and remove unacceptable risks to human health and the environment. In addition there is a desire to bring contaminated land back into beneficial use whilst seeking to ensure that the cost burdens faced by individuals, companies and society as a whole are proportionate, manageable and economically sustainable. These policy objectives are also underlain by the "suitable for use" approach to the remediation of contaminated land, which the Government considers is the most appropriate approach to achieving sustainable development. In essence the approach is not aiming at a "Garden of Eden" but a removal of unacceptable risks and a long term goal of reduction and progressive improvement in land quality.

The main objective underlying the introduction of the Part IIA Contaminated Land regime is to provide an improved system for the identification and remediation of land where contamination is causing unacceptable risks to human health or the wider environment, assessed in the context of the current use and circumstances of the land.

The new regime broadly reflects the approaches already in place under the statutory nuisance regime and Part VII of the Water Resources Act 1991. The Government's primary objectives for introducing the new regime are:

1. to improve the focus and transparency of the controls, ensuring authorities take a strategic approach to problems of land contamination;
2. to enable all problems resulting from contamination to be handled as part of the same process; previously separate regulatory action was needed to protect human health and to protect the water environment;
3. to increase the consistency of approach taken by different authorities; and
4. to provide a more tailored regulatory mechanism, including liability rules, better able to reflect the complexity and range of circumstances found on individual sites.

In addition to providing a more secure basis for direct regulatory action, the Government considers that the improved clarity and consistency of the new regime, in comparison with its predecessors, is also likely to encourage voluntary remediation. This forms an important secondary objective for implementation of the Part IIA regime.

Companies who may be responsible for contamination, for example on land they currently own or on former production sites, will be able to assess the likely requirements of regulators acting under Part IIA. They will then be able to plan their own investment programmes to carry out remediation in advance of actual regulatory intervention.

Similarly, the Part IIA regime will assist in the recycling of previously developed land. The new regime cannot be used directly to require the redevelopment of land, only its remediation. However, the Government considers that implementation of the regime will assist developers by reducing uncertainties about so-called "residual liabilities", in particular the perceived risk of further regulatory intervention. In particular it will:

1. reinforce the "suitable for use" approach, enabling developers to design and implement appropriate and cost-effective remediation schemes as part of their redevelopment projects;
2. clarify the circumstances in which future regulatory intervention might be necessary (for example, if the initial remediation scheme proved not to be effective in the long term); and
3. set out the framework for statutory liabilities to pay for any further remediation, should that be necessary.

"Suitable for Use" Approach

This approach to dealing with contaminated land recognises that the risks presented by any given level of contamination will vary greatly on a site by site basis. The approach considers 3 elements:

1. ensuring that land is suitable for current use
2. (i.e. identifying unacceptable risks)
3. ensuring that land is made suitable for any new use, as planning permission is given for that new use (i.e. identify unacceptable risks to new use).

Limiting requirements for remediation to the work necessary to prevent unacceptable risks to human health or the environment in relation to current use or future use of the land for which planning permission is being sought (i.e. identify risk to specific uses)

Main Feature of Regime

There are two main players in the new regime with differing but complementary roles as set out in Table I below.

TABLE I		
Local Authority Role	Environment Agency Role	Remarks
Enforcing Authorities for all contaminated land not designated as Special Sites.	Enforcing Authority for Special Sites.	Special Sites are to be designated by Local Authority Environment Agency based on descriptions in the regulations.
Identification and inspection of contaminated land.	Assist in identification of contaminated land particularly where water pollution is involved	A written strategy should have been published by July 2001 by each Local Authority.
Establish who should bear responsibility for remediation (appropriate person and proportion of costs).	Provide specific guidance e.g. toxicological data and assistance to Local Authorities	This is likely to be complex in some situations of multiple pollutants and multiple substances.
Issue remediation notices for contaminated sites.	Issue remediation notices for special sites.	
Hold a register of information.	Technical research.	
	Publish periodic reports on contaminated land.	

This definition is: A strategic approach is designed to enable a Local Authority to identify, in a rational, ordered and efficient manner, the land which merits detailed individual inspection, identifying the most pressing and serious problems first and concentrating resources on the areas where contaminated land is most likely to be found. In developing a strategy many factors will apply such as the history of the area and the geological and hydrogeological aspects of the area. The strategic approach has been likened to a "land MOT" picking up those features of most importance.

Definition of Contaminated Land/Risk Assessment

Contaminated land has been defined for the first time under Part 11A EPA 1990. This definition is: Contaminated land is land which appears to the local authority to be in such a condition, by reason of substances in, or under the land, that significant harm is being caused, or there is a significant possibility of such harm being caused, or that pollution of controlled waters is being, or is likely to be, caused.

The definition of contaminated land is based upon the principles of risk assessment. Risk is defined as the probability of frequency of occurrence of a defined hazard and the magnitude of the consequences.

The statutory guidance uses the concept of a POLLUTANT LINKAGE – that is a linkage between a CONTAMINANT (source) and a RECEPTOR, by means of a PATHWAY. Detailed definitions and guidance are given with regard to types of receptor and significance of harm. A Local Authority in assessing and identifying contaminated land must therefore identify A SIGNIFICANT POLLUTANT LINKAGE.

A contaminant is a substance which is in, on or under the land and which has the potential to cause harm to a receptor or to cause pollution of controlled waters. A receptor is a living organism, a group of living organisms, an ecological system, a piece of property or controlled water. A pathway is one or more routes or means by, or through, which a receptor is being or could be exposed to or affected by a contaminant.

A Local Authority will need to satisfy itself that both a pollutant linkage exists and that it is resulting in significant harm or there is significant possibility of significant harm to a receptor or pollution to controlled water is occurring or pollution may result. In assessing significance the Local Authority will look at the nature and degree of harm, susceptibility of the receptor and timescale associated with use.

A detailed definition of significant harm is provided which includes such areas as death, disease, birth defects, genetic mutation or serious injury to humans (Number of people, effect, intake and exposure to contaminant) irreversible adverse change to ecological systems (ecotoxicological properties), harm to species of special interest, crop damage, death and disease of livestock and pets, structural failure or substantial damage.

Provision for Payment

In general the responsibility for paying for remediation will, where feasible, follow the "polluter pays" principle. In the first instance, any person who caused or knowingly permitted the contaminating substance to be in, or under the land will be the appropriate person(s) to undertake the remediation and meet its costs. If it is not possible to find such a person, responsibility will pass to the current owner or occupier of the land (excluding water pollution sec 1.10).

Appropriate Person

Part 11A EPA defines two different categories (Class A and B) of Appropriate Person and sets out the circumstances in which persons may be responsible for remediation. The designation of the

'appropriate person' is classified as "any person, or any of the persons, who caused or knowingly permitted the substances, or any of the substances, by reason of which the contaminated land in question is such land to be in, on or under the land is an appropriate person. This person is a Class A person and as such the Polluter Pays. Where a Class A person cannot be found after reasonable enquiry then the owner or the occupier of the land (for the time being) becomes the appropriate person and is a Class B person.

Caused or Knowingly Permitted

The test of 'causing' will require that the person concerned was involved in some active operation, or series of operations, to which the presence of the pollutant is attributable. Such involvement may also take the form of a failure to act in certain circumstances. The meaning of the term "knowingly permit" is likely to require both knowledge that the substances in question were in, on or under the land and the possession of the power to prevent such a substance being there. In the Government's view, the test would be met only where the person had the ability to take steps to prevent or remove that presence and had a reasonable opportunity to do so. This situation is likely to become particularly complex in some instances with multiple past polluters, owners and substances perhaps with varying significance of harm.

Planning

Land contamination, or the possibility of it is a material consideration for the purposes of town and country planning. This means that the planning authority has to consider the potential implications of contamination both when it is developing structure or local plans and when it is considering individual applications for planning permission. Under the suitable for use approach, risks should be assessed and remediation requirements set, on the basis of both the current use and circumstances of the land and its proposed new use. It is intended, by DETR, to prepare further guidance on land contamination, which will amplify the guidance in PPG 23, explain the interface with Part IIA EPA from a planning perspective, and provide planning authorities with technical and practical advice on land contamination.

Water Resources Act 1991

Whilst not part of the EPA Part IIA this Act should not be forgotten. This allows an enforcement mechanism by way of a works notice served under section 161A. This is served on any person who has "caused or knowingly permitted" the potential pollutants to be in place from which it is likely to enter controlled water, or to have caused or knowingly permitted a pollutant to enter controlled waters. This is particularly appropriate for historic pollution of groundwater where the Part 11A regime does not apply. The first successful prosecution under section 161A has already occurred.

Other Matters

The importance of contamination and other environmental issues and liabilities may also need to be addressed with regard to such areas as Accountancy rules (FRS 12) which deals with provisions for contingent liabilities and also the regulations that will apply to Integrated Pollution Prevention and Control (IPPC) which will mean that baseline information regarding the status of land will be required with each permit application. Permit holders will not be able to pollute the land whilst the permit is in operation and will have to clean up to the state the land was in prior to the IPPC permit on cessation of works.

LAND QUALITY STATEMENTS

In February 1995 and in recognition of the growing need for some form of land assessment the RICS published guidance notes for Chartered Surveyors in dealing with land contamination. This guidance was further enhanced and widened with publication of "Contamination and its implications for Chartered Surveyors" in September 1997.

The RICS promoted the concept of Land Quality Statement (LQS) as the written output of an environmental risk assessment. Originally the LQS was used to identify the environmental characteristics of a site which was the subject of a planning application but its use has now expanded into a more generic role. The LQS is now routinely used by developers, purchasers, funding institutions and other professional advisers.

Wardell Armstrong produce the LQS as the first stage in the process of identifying the environmental and technical constraints affecting a site according to the proposed future use.

The LQS should generally fulfil the following:

- categorise the site according to its environmental risk;
- reassure potential purchasers about the environmental risk of a site;
- assist a vendor by removing or confirming concerns about the quality of land and its impact on sale;
- provide insurance companies with the information that is required to underwrite environmental risk;
- reassure lenders or investors about the environmental quality of land used for security or investment;
- assess the impact of environmental factors on development proposals; and
- where necessary, define the scope of a site investigation and risk assessment for the current or intended future use of the land.

The Wardell Armstrong LQS will typically assess the following:

- the current and former uses of the site and its environs in order to identify contaminative uses;
- the geological conditions pertaining to the site;
- the mining context of the site and standard Coal Authority Mining report (where applicable);
- natural cavities database search (where appropriate);
- the hydrogeological setting of the site;
- site walkover survey;
- enquiries to the Environment Agency concerning recorded landfills and water pollution incidents; and
- any other readily accessible information relevant to the context of the site.

The majority of site contamination has been caused since the beginning of the industrial revolution. A schedule of past uses which may have caused contamination is attached to the report as applicable.

APPENDIX III

Sources of Information

The following principal sources of information have been consulted in the preparation of this report:

- Landmark Envirocheck report 07 March 2006 (*a review of information provided by Landmark Information Group Ltd who were commissioned to provide an "Envirocheck" report consisting of published historical plans, environmental data sheets and environmental sensitivity plans;*
- Ordnance Survey County and National Grid Series Plans;
- Trade Directories;
- Other library archive as relevant;
- British Geological Survey published maps and memoirs;
- Environment Agency/NRA Groundwater Vulnerability Map Series;
- British Geological Survey borehole database;
- Environment Agency;
- Coal Authority;
- Other Mining Archives including the Mining Instability Study of GB prepared by Ove Arup;
- Inhouse Wardell Armstrong archives;
- Client information - copies of historical articles, leases, maps;

APPENDIX IV

Site Visit Record

SITE VISIT RECORD

Date of Visit: 8.3.06 Visited by: GPW
Client: Rafahart Job No: SH03646
Site Name: Shf Rd, Birdwell Site Contact Name: -
Refer to Drawing No: SH03646/02 Access (key required): -
Site Area (Ha):

GENERAL SITE DETAILS

Relevant Identification (names of buildings, roads etc):
vacant site bound by Shf Rd to NE, residential
& open fields to N + S, & the M1 motorway
to SW.

Present Land Use:
vacant

Adjacent Land Uses:
NW: residential & tanning shop, NE: vacant commercial
& light industrial, SE: residential & Escalibore Social
club.

Adjacent public highways, roads leading to / crossing / servicing the site:
new stone fence & double gate of Sheffield
Rd.

Site Access (main access points, dimensions, by rig/excavator etc, footpaths):
no constraints.

Site Boundary (*hedges, walls and fences open etc*):

stone wall along Shf Rd, wire fence along remaining boundaries

Topography (*general site setting, land gradients, slopes etc*):

NE portion essentially flat & recently cleared.
SW portion moderate slope towards M1

EVIDENCE OF LAND USE:

Archaeology (*old buildings, monuments, mounds, ditches, artefacts in soil, pottery/glass*):

N/A

Site Relics (*evidence of past land use, building remains, roads, humps, bumps, hollows etc*):

N/A

Buildings (*general condition/construction, eg: brick/steel framed, asbestos, pits / basement, use*):

N/A

Storage Facilities (eg: tanks/drums/chemicals/ capacity/condition/bunding/containment):

3 empty styrene drum + an empty IBC dumped
along with asphalt waste

Activities/Processes on Site (past and present/materials/equipment):

N/A

Observable Environment (noise/dust/odours/emissions):

no noise, dust, odours or emissions

Waste Management (fly tipping/waste disposal/fires):

minor tipping of rubble & asphalt

Underground Services (evidence of manholes, grates, culverts, water supply, telephone):

none observed

Overhead Services (overhead cables/pipes etc):

N/A

EVIDENCE OF GROUND CONDITIONS

Vegetation (description and condition, tree, frequency and age, bare patches, saplings, new growth):

no evidence of stress (winter)

Ecology (woodland, trees, hedges, ponds, running water, water loving plants, wild flowers, wildlife):

grassy with several small trees to SW.

Soil Cover (vegetated/unvegetated soil/made ground/hardstanding/condition/cracks/staining):

minor made ground

Evidence of Geological Setting (made ground, natural superfcials and underlying rock):

sandstone blocks may be from recent clearing or
may be dumped

Groundwater and Drainage (ponding, streams, springs, wells, marshes, tides, rivers, etc):

no ponding or marshy areas

Subsidence (*fissures, abrupt changes in slope, collapse, tilting trees/posts, property damage*):

N/A

Evidence of Mining (*surface features, shafts, trenches, tunnels, caves, wells, boreholes, gas, etc*):

N/A

HAZARDS identified:

nil

Additional Remarks:

Photographs/Video:

APPENDIX V

Data from Landmark Report

STATUTORY SOURCES OF INFORMATION

Information from the Landmark Information Group Ltd has been summarised in the Table below. The site sensitivity map and full copy of the Envirocheck data is available on request.

TABLE II Distance from an Approximate Central Point on Site*				
Agency & Hydrological	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Local Authority Pollution Prevention Controls		1	1	3
Local Authority Pollution Prevention Control Enforcements				
Contaminated Land Register Entries and Notices				
Discharge Consents			9	15
Enforcements and Prohibition Notices				
Integrated Pollution Controls				
Integrated Pollution Prevention And Control				
Local Authority Integrated Pollution Prevention And Control				
Nearest Surface Water Feature		YES		
Pollution Incidents to Controlled Waters		4	1	4
Substantiated Pollution Incident Register			1	
Prosecutions Relating to Authorised Processes				
Prosecutions Relating to Controlled Waters				
Water Industry Act Referrals				
Registered Radioactive Substances				
River Quality		1		1
River Quality Biology Sampling Points			1	
River Quality Chemistry Sampling Points				
Water Abstractions				(*3)
Groundwater Vulnerability	YES			
Source Protection Zones				
Extreme Flooding from Rivers or Sea without Defences				
Flooding from Rivers or Sea without Defences				
Areas Benefiting from Flood Defences				
Flood Water Storage Areas				
Flood Defences				
River Flood Data (Scotland)				
Waste	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
BGS Recorded Landfill Sites				
Integrated Pollution Control Registered Waste Sites				
Licensed Waste Management Facilities (Landfills Boundaries)				
Licensed Waste Management Facilities (Locations)		1		
Local Authority Recorded Landfill Sites	1	2		
Registered Landfill Sites		1		
Registered Waste Transfer Sites		1		
Registered Waste Treatment or Disposal Sites		1		

Hazardous Substances	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Control of Major Accident Hazards Sites (COMAH)				
Explosive Sites				
Notification of Installations Handling Hazardous Substances (NIHHS)				
Planning Hazardous Substance Consents				
Planning Hazardous Substance Enforcements				
Geological	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Brine Compensation Areas				
Coal Mining Affected Areas	YES**			
Shallow Mining Hazards	YES**	YES**		
Potential for Collapsible Ground Stability Hazards				
Potential for Compressible Ground Stability Hazards				
Potential for Ground Dissolution Stability Hazards				
Potential for Landslide Ground Stability Hazards	YES**	YES**		
Potential for Running Sand Ground Stability Hazards				
Potential for Shrinking or Swelling Clay Stability Hazards				
Mining Instability	YES**			
Natural and Mining Cavities				
Radon Affected Areas				
Radon Protection Measures	YES**			
Industrial Land Use	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Contemporary Trade Directory Entries		11		22
Fuel Station Entries			1	2
Sensitive Land Use	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Areas of Adopted Green Belt	1			
Areas of Unadopted Green Belt				
Areas of Outstanding Natural Beauty				
Environmentally Sensitive Areas				
Forest Parks				
Local Nature Reserves			1	
Marine Nature Reserves				
National Nature Reserves				
National Parks				
National Scenic Areas				
Nitrate Sensitive Areas				
Nitrate Vulnerable Zones	1		1	
RAMSAR Sites				
Sites of Special Scientific Interest				
Special Areas of Conservation				
Special Protection Areas				

*The distance recorded are based on an approximate central point within the site and therefore where larger sites are concerned the category distance may change if the site boundary were to be used.

** Where 'Yes' and 'No' are referred to this indicates the presence or absence of data and does not imply a potential risk or hazard.

APPENDIX VI

Coal Authority Report

DENISE PATTERSON,
WARDELL ARMSTRONG,
UNIT 5 NEWTON BUSINESS CENTRE,
THORNCLIFFE PARK,
CHAPELTOWN,
SHEFFIELD,
SOUTH YORKSHIRE,
S35 2PH

This matter is being dealt with by Darren Moody

Our Ref: 00006206-06

Your Ref: SH03646/SH0996

Electronic Ref: EME_00004206320002_005

RRUID: 005.00004206320002

Date: 07 March 2006

Dear Sir,

Coal Mining Report

LAND OFF, SHEFFIELD ROAD, BIRDWELL, BARNSLEY, SOUTH YORKSHIRE

I refer to the enquiry dated 07th March 2006, received 07th March 2006, in connection with the above.

This report is based on and limited to the records in the possession of The Coal Authority at the time the search is answered.

Ordnance Survey (O.S.) is undertaking a Positional Accuracy Improvement Programme of its mapping data. The Coal Authority (CA) has no control over the timing of issue of Positionally Improved mapping data by O.S. or over users of that data. In some instances the relative position between surface features and coal mining features may alter as a consequence of this programme. The CA will ensure that the integrity of its database is maintained by replottting some mining information to sustain the relationship between that mining information and the improved O.S. surface positions, some of which are now being released. However, mining reports are currently being produced against pre improved O.S. mapping whilst the Authority updates its database in line with the O.S. changes.

Past Underground Mining

The property is within the likely zone of influence on the surface from workings in 7 seams of coal at 110m to 290m depth, the last date of working being 1960.

Ground movement from the above mentioned past coal workings should by now have ceased.

In addition you may wish to know that the property is in an area where coal is believed to exist at or close to the surface that may have been worked at some time in the past.

Present Underground Mining

The property is not within the zone of likely physical influence on the surface from any present underground coal workings.

Future Underground Mining

The property is not within a geographical area for which a licence to extract coal by underground methods is awaiting determination by the Coal Authority.

The property is not within a geographical area for which a licence to extract coal by underground methods has been granted.

The property is not within the zone of likely physical influence at the surface from plans of future workings in our possession.

However reserves of coal exist in the locality which could be worked at some time in the future subject to feasibility, licences, and planning consents.

We have no record of any notice of the risk of the land being affected by subsidence being given under S.46 of the Coal Mining Subsidence Act 1991.

Shafts and Adits

We have no knowledge of any mine entries within, or within 20 metres of, the boundary of the property.

Surface Geology

Records in our possession do not disclose any fault or other line of weakness at the surface as having affected the stability of the property.

Past Opencast Mining

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

Present Opencast Mining

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

Future Opencast Mining

The property is not within 800 metres of the geographical boundary of an opencast site for which a licence to extract coal by opencast methods is awaiting determination.

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

Subsidence

The records in our possession do not disclose any damage notice or claim having been given, made or pursued in respect of the property since 1 January 1984.

The records in our possession do not disclose any current "Stop Notice" affecting the property.

The records in our possession do not show any request having been made to execute preventative works under S.33 of the Coal Mining Subsidence Act 1991.

Withdrawal of Support

The property does not lie within a geographical area in respect of which a notice of entitlement to withdraw support has been published.

The property does not lie within a geographical area in respect of which a notice has been given under S.41 of the Coal Industry Act 1994, revoking the entitlement to withdraw support.

Working Facilities Orders

The property is not within a geographical area that is the subject of an Order made under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

Payments to Owners of Former Copyhold Land

The property is not within an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Additional Remarks

In view of the mining circumstances a prudent developer would seek appropriate technical advice before works are undertaken on site. All proposals should have regard to good engineering practice in mining areas as identified in authoritative publications on mining stability problems. In any event, no activities should be undertaken that intersect, disturb, or interfere with any coal or mines of coal without permission of the Coal Authority.

These replies are prepared in accordance with the 2003 editions of the Coal Authority's Terms and Conditions, User Guide and the Law Society's Guidance Notes.

Copyright in coal mining reports and certificates belongs to the Coal Authority. Information used to compile this report is protected by the Coal Authority's database right. All rights are reserved and unauthorised use is prohibited. Copyright and other intellectual property is not transferred to external parties by possession of a mining report or certificate, however those for whom the report is supplied have the right to use it.

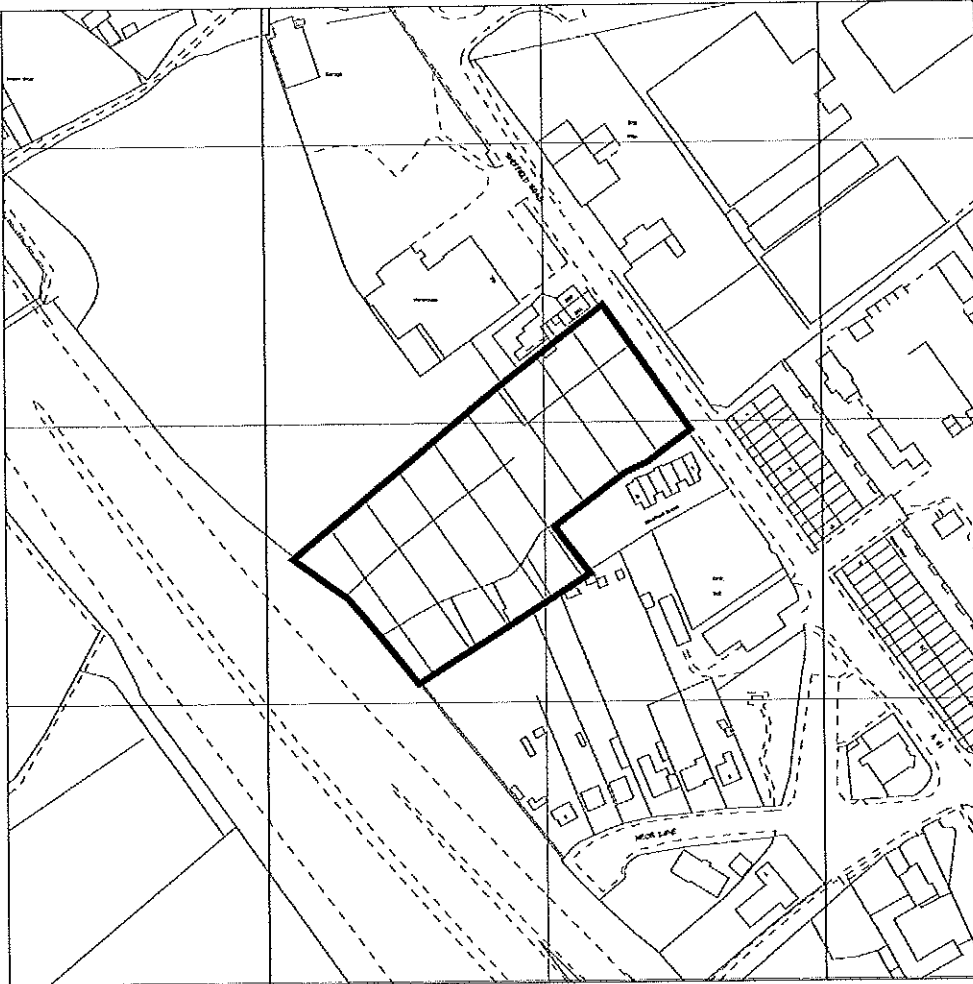
We acknowledge the receipt of your remittance in payment of our fee.

Yours faithfully



Stephen Pennell

Director of Mining Information and Services



Crown Copyright.

PLAN NOT TO SCALE

This map is reproduced from the Ordnance Survey material by The Coal Authority [or division thereof] with the permission of the Controller of Her Majesty's Stationery Office, Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Licence Number: AL5X060A001

This is a plan of the boundaries of the property in respect of which this report has been prepared. It is the responsibility of the user to ensure that the boundaries shown correspond with those of the property.

APPROXIMATE POSITION OF ENQUIRY BOUNDARY SHOWN



APPENDIX VII

Schedule of Potentially Contaminative Uses

SCHEDULE OF POTENTIALLY CONTAMINATIVE USES

Agriculture

- Burial of diseased livestock

Extractive Industry

- Extracting, handling, storage of carbonaceous materials such as coal, lignite, petroleum, natural gas, bituminous shale (not including the underground workings).
- Extracting, handling and storage of ores and their constituents.

Energy Industry

- Producing gas from coal, lignite, oil or other carbonaceous material (other than from sewage or other waste) from mixtures of those materials.
- Reforming, refining, purifying and odourising natural gas or any product of the processes outlined above.
- Pyrolysis, carbonisation, distillation, liquefaction, partial oxidation, other heat treatment, conversation, purification, or refining of coal, lignite, oil, other carbonaceous material or mixtures and products thereof, otherwise than with a view to gasification or making of charcoal.
- A thermal power station (including nuclear power stations and production, enrichment and reprocessing of nuclear fuels).
- Electricity sub-station.

Production of Metals

- Production, refining or recovery of metals by physical, chemical, thermal or electrolytic or other extraction process.
- Heating, melting or casting metals as part of an intermediate or final manufacturing process (including annealing tempering or similar processes).
- Cold forming processes (including pressing, rolling, extruding, stamping, forming or similar processes).
- Finishing treatments, including anodising, pickling, coating and plating or similar processes.

Note: Metals are taken to include scrap-metals.

Production of Non-Metals and their Products

- Production or refining of non-metals by treatment of the ore.
- Production or processing of mineral fibres by treatment of the ore.
- Cement, lime and gypsum manufacture, brickworks and associated processes.

Glass Making and Ceramics

- Manufacture of glass and products based on glass.
- Manufacture of ceramics and products based on ceramics, including glazes and vitreous enamel.

Production and Use of Chemicals

- Production, refining, recovery or storage of petroleum or petrochemicals or their by-products, including tar and bitumen processes and manufacture of asphalt.
- Production, refining and bulk storage of organic or inorganic chemicals, including fertilisers, pesticides, pharmaceutical, soaps, detergents, cosmetics, toiletries, dyestuffs, inks, paints, fireworks, pyrotechnic materials or recovered chemicals.
- Production, refining and bulk storage of industrial gases not otherwise covered.

Engineering and Manufacturing Processes

- Manufacture of metal goods, including mechanical engineering industrial plant or steelwork, motor vehicles, ships, railway or tramway vehicles, aircraft, aerospace equipment.
- Storage, manufacture or testing of explosives, propellants, ordnance, small arms or ammunition.
- Manufacture and repair of electrical and electronic components and equipment.

Food Processing Industry

- Manufacture of pet foods or animal feedstuff.
- Processing of animal by-products (including rendering or maggot farming, but excluding slaughterhouses, butchering).

Paper, Pulp and Printing Industry

- Making of paper pulp, paper or board products, including printing or de-inking.

Timber and Timber Products Industry

- Chemical treatment and coating of timber and timber products.

Textile Industry

- Tanning, dressing, fellmongering or other process for preparing, treating or working leather.
- Fulling, bleaching, dyeing or finishing fabrics or fibres.
- Manufacture of carpets or other textile floor coverings (including linoleum works).

Rubber Industry

- Processing of natural or synthetic rubber (including tyre manufacture or retreading).

Infrastructure

- Marshalling, dismantling, repairing or maintenance of railway rolling stock.
- Dismantling, repairing or maintenance of marine vessels, including hovercraft.
- Dismantling, repairing or maintenance of road transport or road haulage vehicles.
- Dismantling, repairing or maintenance of air or space transport systems.

Waste Disposal

- Treating of sewage or other effluent.
- Storage, treatment or disposal of sludge including sludge from water treatment works.

- Treating, keeping, depositing or disposing of waste including scrap (to include infilled canal basins or river courses).
- Storage or disposal of radioactive materials.

Miscellaneous

- Premises housing dry cleaning operations.
- Laboratories for educational or research purposes.
- Demolition of buildings, plant or equipment used for any of the activities in this schedule

DRAWINGS

