
EARTH ENVIRONMENTAL & GEOTECHNICAL

# Coal Mining Risk Assessment

## 23 Bar Lane

## Staincross

## Barnsley

## June 2024

## On behalf of

## Carl Masters

Earth Environmental & Geotechnical Ltd
Houldsworth Mill Business & Arts Centre
Houldsworth Street
Stockport
SK5 6DA

Tel : 0161 975 6088

Email info@earthenvironmental.co.uk
www.earthenvironmental.co.uk

# COAL MINING RISK ASSESSMENT

# 23 BAR LANE

# STAINCROSS

# BARNSLEY

**FOR**

**CARL MASTERS**

Earth Environmental & Geotechnical Ltd
Houldsworth Mill Business & Arts Centre
Houldsworth Street
Stockport
SK5 6DA

www.earthenvironmental.co.uk

Tel 0161 9756088

**Report No. A6037/24/CMRA/V1** **JUNE 2024**

| | | |
|---|---|---|
| **Report Title:** | **23 Bar Lane, Staincross, Barnsley** | |
| **Report Reference:** | **A6037/24** | |
| **Client:** | **Carl Masters** | |
| **Issue Date:** | **30th June 2024** | |
| **Drafted By:** | **T Opara** | |
| **Reviewed By:** | **A Czarnecki BSc (Hons) FGS CGeol** | Adam Czarnecki |
| **Authorised By:** | **A Czarnecki BSc (Hons) FGS CGeol** | Adam Czarnecki |

EARTH ENVIRONMENTAL & GEOTECHNICAL

## CONTENTS



## FIGURES



## TABLES



## APPENDICES

# 1.0 INTRODUCTION

## Appointment

1.1 Earth Environmental & Geotechnical Ltd have been commissioned by Carl Masters (the Client), to undertake a Coal Mining Risk Assessment for a development on land off 23 Bar Lane, Staincross, Barnsley.

1.2 A proposed development plan has been provided shown as Figure 1.

1.3 The site is located within a large residential area and is classed as an infill development.

1.4 The proposal involves the demolition of the existing property at 23 Bar Lane and the associated outbuildings. The new build section of the development includes for the construction of five detached properties with a service unadopted road which will connect all properties with Bar Lane.

1.5 A planning application (2023/0597) has been submitted to Barnsley Metropolitan District Council.

**Figure 1 Proposed Development Plan**

1.6 The houses are designed to use the roof spaces to decrease the footprint of the houses on the site.

1.7 All dwellings have a minimum of 2 parking spaces per dwelling, served by the internal unadopted road which includes a passing place.

**Objective**

1.8 The purpose of the Coal Mining Risk Assessment is to collate available geological, mining, and historical data in order to assess the potential for the site to be affected by underground mining.

1.9 This report has been drafted in accordance with the Coal Authority (CA) Guidance Risk Based Approach to Development Management, Version 4, 2017.

**Sources of Information**

1.10 The Coal Mining Risk Assessment compiles a review of the following information sources:

- British Geological Survey of England and Wales, SE30NW, 1/10,000 scale, edition of 2005.
- British Geological Survey of England and Wales, Sheet 87, 1/50,000 scale, edition of 2008.
- Coal Authority Interactive Map Viewer.
- Coal Authority Mining Report.
- British Geological Survey online borehole records.
- Google Earth imagery.
- Online Historical Ordnance Survey maps.
- Site Investigations in Areas of Mining Subsidence, FG Bell, 1975.
- The threat of abandoned mines on the stability of urban areas, Barry Clarke, IAEG2006 Paper Number 379, The Geological Society of London, 2006.
- The collapse of shallow coal mine workings, Durham theses, Durham University, Garrard, 1981.
- Construction over abandoned mineworking's, CIRIA Special Publication 32, 2002.
- Abandoned Mineworking's Manual, CIRIA 2019.
- Barnsley Metropolitan District Council planning portal.
- National Library of Scotland, British Geological Survey Scotland, https://maps.nls.uk/
- Sub Surface, Ground Investigation Report, December 2023.
- Whitcher Wildlife Ltd, Preliminary Ecological Appraisal, 15th November 2023.

## 2.0 SITE LOCATION AND DESCRIPTION

2.1 The site is located approximately 2.20km north of Barnsley town centre within an urban area and adjacent to Bar Lane.

2.2 The 0.3-hectare site is roughly rectangular shaped site and is bounded to the east by No. 21 Bar Lane and No.'s 100 to 110 Eastfield Crescent, to the north by an undeveloped and partially wooded area, to the west by No. 25 Bar Lane and an area of undeveloped grass surfaced land, and to the south by Bar Lane (B6131).

2.3 The site is currently occupied by a two-storey detached house of brick construction and some outbuildings/ animal barns. There is evidence of past animal storage such as horses on site and fruit trees in the north west.

2.4 The site is not within a conservation area and is currently a sustainable site with an existing residential dwelling sited at the front of the land in line with adjoining properties on Bar Lane.

2.5 There is a mixture of varying types of residential properties along Bar Lane of varying heights and roofscapes with adequate footpath width and additional grass verges before the boundary line of some of the properties is reached.

2.6 The approximate National Grid Reference for the centre of the site is SE 33711 09791 (433711 409791), with the site postcode being S75 6GE.

2.7 The application site is located within an residential area setting and lies at an elevation of approximately 99mAOD.

2.8 A location plan is shown overleaf as Figure 2.

**Figure 2 Site Location Plan**

## 3.0 ASSESSMENT OF DATA

### Geological Information

3.1 The geology of the site has been determined from geological maps for the area and examination of Coal Authority (CA) records.

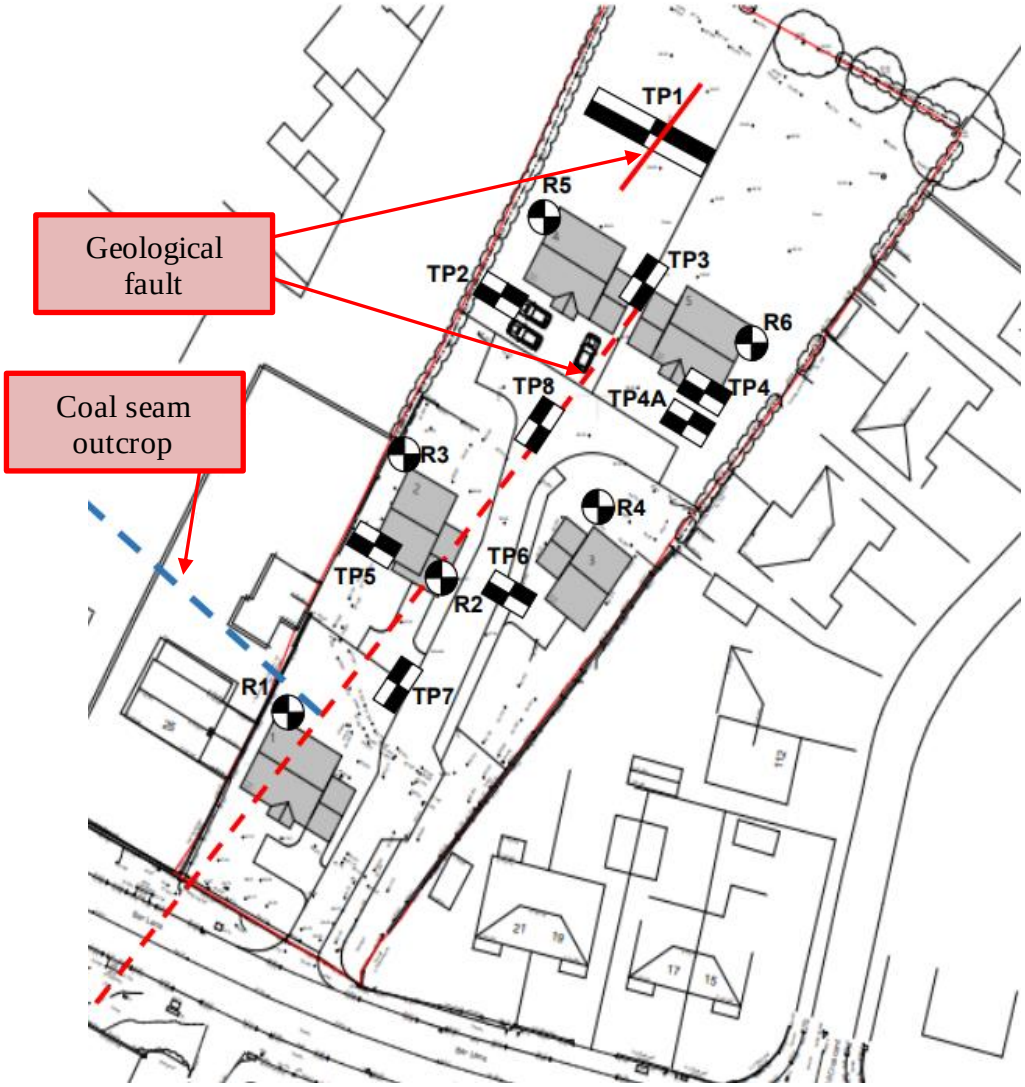
### British Geological Survey Published Data Assessment

3.2 The BGS states that the site area is not underlain by superficial deposits.

3.3 The solid geology beneath the site is shown to be Pennine Middle Coal Measures Formation and the Woolley Edge Rock Sandstone.

3.4 A previous site investigation report has been provided by the client.

**Figure 3 Previous Site Investigation Boreholes**



3.5 Table 1 below provides a summary of the ground conditions encountered within the rotary open hole boreholes that were drilled to a depth of 25m below ground level and excavated trial pits.

**Table 1 Summary of Site Investigation Data**

| Location | Made Ground Thickness (m) | Rockhead (m) | Sandstone (m) | Coal Seam (m) |
|---|---|---|---|---|
| TP1 | 0.30 | 1.60 | | 2.10 -2.40 (0.3) |
| TP2 | 0.40 | 2.80 | | None Encountered |
| TP3 | 0.30 | | | None Encountered |
| TP4 | 0.45 | | | None Encountered |
| TP5 | 0.20 | | | None Encountered |
| TP6 | 0.40 | | | None Encountered |
| TP7 | 0.40 | | | None Encountered |
| TP8 | 0.60 | | | None Encountered |
| R1 | 0.30 | 2.50 | 2.50 – 6.10 | None Encountered |
| R2 | 0.50 | 2.20 | 2.20 -7.20 | None Encountered |
| R3 | 0.40 | 2.10 | 2.10 -6.00 | 7.50 -7.70 (0.2) Beamshaw Top coal seam outcrop? |
| R4 | Not Encountered | 2.80 | 2.80 -7.50 | 8.60 -9.00 (0.4) |
| R5 | Not Encountered | 2.50 | 2.50 -3.10 | 10.5- 10.80 (0.30) Beamshaw Top coal seam outcrop? |
| R6 | Not Encountered | 3.60 | 3.60 -9.50 | None Encountered |

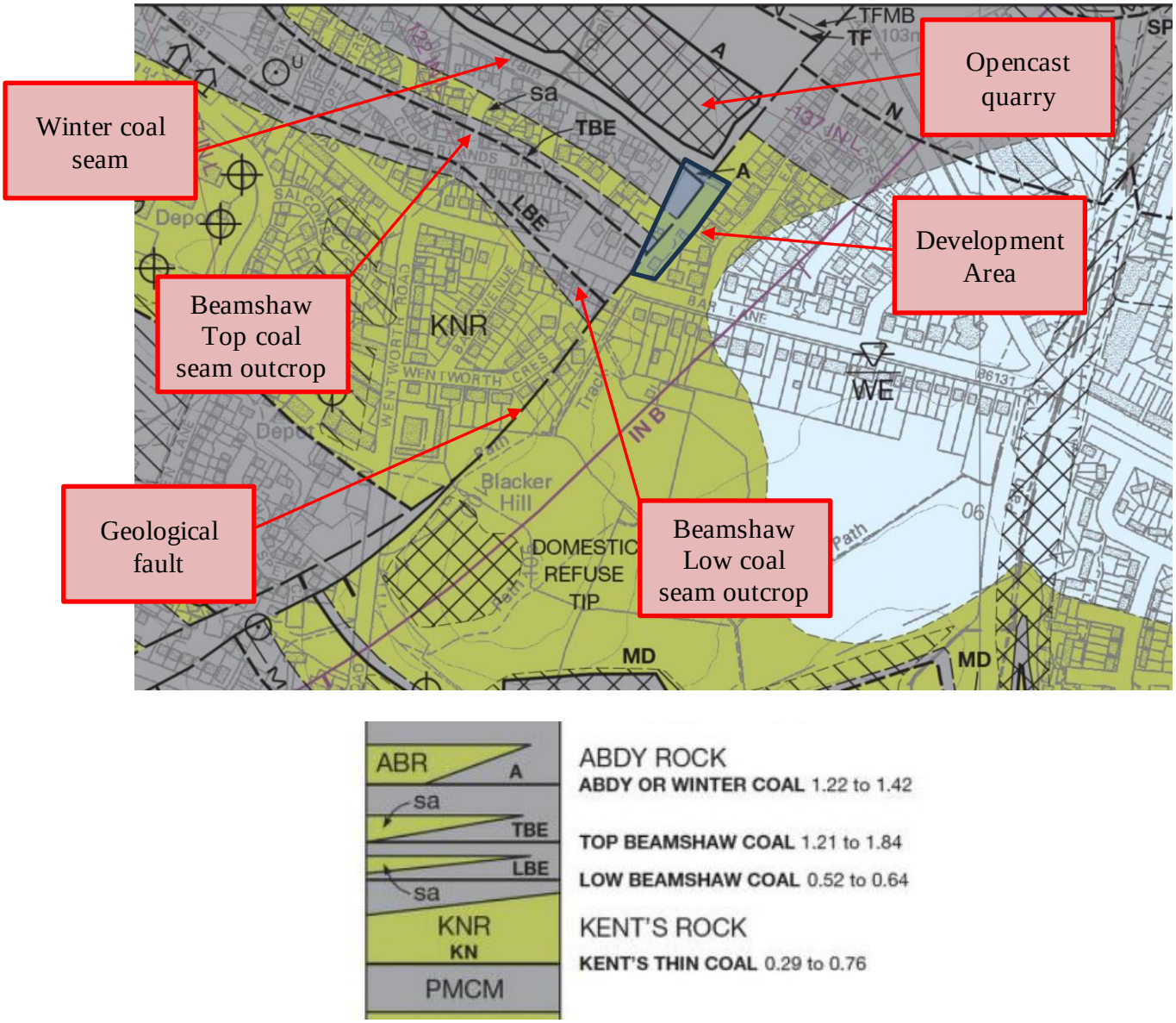
3.6 During the drilling there was no loss of flush, voiding or evidence of broken ground.

3.7 A mapped geological fault was encountered in TP1.

3.8 An extract from the most recently published geological map (1:10,000 scale map) showing the approximate site location and key local geological features is presented in Figure 4.

3.9 The map shows a geological fault on the site together with two inferred coal seams outcropping on the site, the Beamshaw Top (1.21m to 1.84m thick) and Winter coal (1.22 to 1.42m thick) seams.

**Figure 4 Geology Map Extract**




## Coal Authority Records

3.10 Reference to the Coal Authority Online Interactive viewer shows the site to be located within a Development High Risk Area and within an area of shallow probable mine workings.

3.11 A Coal Authority Mining Report has been acquired for the site and reveals that there are number of proven records of past underground mine workings beneath the site. The worked coal seams beneath the site are summarised in Table 2 overleaf.

**Table 2 Summary of Shallow Worked Coal Seams**

| Coal Seam Name | Depth (m) | Dip of Worked Coal Seam (degrees) | Direction of Dip | Extraction Thickness (m) | Year Last Mined |
|---|---|---|---|---|---|
| Barnsley | 119 | 7.9 | North East | 2.77 | 1877 |
| Top Haigh Moor | 185 | 3.6 | East | 0.94 | 1945 |
| Low Haigh Moor | 190 | 3.7 | North East | 0.64 | 1943 |
| Lidgett | 223 | 2.8 | East | 0.72 | 1935 |

3.12 An extract from the Coal Authority report is shown in Figure 5.

3.13 There are 2no. seam outcrops on site the Beamshaw Top and Winter coal seams with the Beamshaw Low coal seam outcropping 45.2m to the south west of the site. This accords with the evidence from the 1/10,000 scaled geological map.

3.14 There is record of 1no. of a claim for mining subsidence within 50m of the property boundary.

3.15 A geological fault bisects the site with the coal seams terminating against it.

**Figure 5 Coal Authority Map Extract**

## 4.0 COAL MINING RISK ASSESSMENT

### Scope of Coal Mining Risk Assessment

4.1 Objectives of the coal mining risk assessment are to provide a desk-based assessment of available geological and mining information relating to the site (and wider area) and to use this information so as to identify risks present to the development from the legacy of mining.

4.2 As part of the risk assessment, potential mitigation measures (if required) should be considered, including any necessary remedial works.

4.3 The outcome of the risk assessment should demonstrate to the Local Authority that the proposed development is or can be made safe (and stable) to meet the requirements of the National Planning Policy Framework (NPF 4).

### Data Limitations

4.4 It should be appreciated that it did not become a legal requirement to deposit coal mining abandonment plans until the 1870's and that this requirement was not rigorously enforced for some time after. Many shallow coal seams were worked prior to the introduction of first edition Ordnance Survey Maps and information on these workings is often not available. Therefore, if coal seams were accessible then there is the potential that they could have been worked by formal or informal means.

4.5 It is also possible that if unrecorded workings are present then unrecorded mine entries may be present.

### Coal Mining Risks

4.6 The risks associated with coal mining are as follows:

- Collapse of relict workings beneath buildings causing damage to the building fabric and infrastructure.
- Migration of mine gases from old mine workings and mine entries resulting in accumulation of flammable and asphyxiating gases in confined areas.
- Consolidation of relict workings and overlying strata causing structural defects in building fabric and infrastructure.
- Failure of mine entries causing loss of ground beneath building and external areas.
- Spontaneous combustion of old mine workings.

**Conclusions**

4.7 The Coal Authority consider the site area to lie within a Coal Authority Development High Risk Area due to probable shallow worked coal seams.

4.8 A site investigation has proved a shallow rockhead, the presence of a geological fault and the presence of a shallow unworked (as described by Sub Surface) coal seam with a thickness range of 0.20m to 0.40m.

**Proposed Mitigation Strategy**

4.9 No further site investigation work or remedial measures are necessary.

4.10 This report should be provided to the Coal Authority in order to discharge relevant planning conditions.

# APPENDIX 1

# COAL AUTHORITY CONSULTANTS MINING REPORT

# APPENDIX 2

# REPORT LIMITATIONS

## REPORT LIMITATIONS

This contract was completed by Earth Environmental & Geotechnical Ltd on the basis of a defined programme and scope of works and terms and conditions agreed with the client. This report was compiled with all reasonable skill, and care, bearing in mind the project objectives, the agreed scope of works, the prevailing site conditions, the budget, and staff resources allocated to the project.

Other than that, expressly contained in the above paragraph, Earth Environmental & Geotechnical Ltd provides no other representation or warranty whether express or implied, is made in relation to the services. Unless otherwise agreed this report has been prepared exclusively for the use and reliance of the client in accordance with generally accepted consulting practices and for the intended purposes as stated in the agreement under which this work was completed. This report may not be relied upon, or transferred to, by any other party without the written agreement of a Director of Earth Environmental & Geotechnical Ltd.

If a third party relies on this report, it does so wholly at its own and sole risk and Earth Environmental & Geotechnical Ltd disclaims any liability to such parties.

It is Earth Environmental & Geotechnical Ltd understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was an important factor in determining the scope and level of the services. Should the purpose for which the report is used, or the proposed use of the site change, this report will no longer be valid and any further use of, or reliance upon the report in those circumstances by the client without Earth Environmental & Geotechnical Ltd review and advice shall be at the client's sole and own risk.

The report was written in 2024 and should be read in light of any subsequent changes in legislation, statutory requirements, and industry best practices. Ground conditions can also change over time and further investigations, or assessment should be made if there is any significant delay in acting on the findings of this report. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of Earth Environmental & Geotechnical Ltd. In the absence of such written advice of Earth Environmental & Geotechnical Ltd, reliance on the report in the future shall be at the client's own and sole risk. Should Earth Environmental & Geotechnical Ltd be requested to review the report in the future, Earth Environmental & Geotechnical Ltd shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between Earth Environmental & Geotechnical Ltd and the client.

The observations and conclusions described in this report are based solely upon the services that were provided pursuant to the agreement between the client and Earth Environmental & Geotechnical Ltd. Earth Environmental & Geotechnical Ltd has not performed any observations, investigations, studies or testing not specifically set out or mentioned within this report.

Earth Environmental & Geotechnical Ltd is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, Earth Environmental & Geotechnical Ltd did not seek to evaluate the presence on or off the site of electromagnetic fields, lead paint, radon gas or other radioactive materials.

The services are based upon Earth Environmental & Geotechnical Ltd observations of existing physical conditions at the site gained from a walkover survey of the site together with Earth Environmental & Geotechnical Ltd interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The findings and recommendations contained in this report are based in part upon information provided by third parties, and whilst Earth Environmental & Geotechnical Ltd have no reason to doubt the accuracy and that it has been provided in full from those it was requested from, the items relied on have not been verified.

No responsibility can be accepted for errors within third party items presented in this report. Further Earth Environmental & Geotechnical Ltd was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the services. Earth Environmental & Geotechnical Ltd is not liable for any inaccurate information, misrepresentation of data or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to Earth Environmental & Geotechnical Ltd and including the doing of any independent investigation of the information provided to Earth Environmental & Geotechnical Ltd save as otherwise provided in the terms of the contract between the client and Earth Environmental & Geotechnical Ltd.

Where field investigations have been carried out these have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions can also be variable and as investigation excavations only allow examination of the ground at discrete locations. The potential exists for ground conditions to be encountered which are different to those considered in this report. The extent of the limited area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition, chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and Earth Environmental & Geotechnical Ltd] based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

The groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The normal speed of investigation usually does not permit the recording of an equilibrium water level for any one water strike. Moreover, groundwater levels are subject to seasonal variation or changes in local drainage conditions and higher groundwater levels may occur at other times of the year than were recorded during this investigation.

Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan but is (are) used to present the general relative locations of features on, and surrounding, the site.