



Contaminated Land Appraisals
Brownfield Remediation Solutions
Site Investigation Services
Earthworks Design and Control
Flood Risk Assessments

Cape Site Services Ltd
Unit 2
Rear of Castle Buildings
Carlton Road
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Barnsley
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13th December 2019

Ref C359/02/ATS

Dear Simon,

Ref: Shallow Mining Investigation on Land Adjacent to 9 Reasbeck Terrace, Barnsley, South Yorkshire.

1.0 Introduction

On the instructions of Daniel Harrison, Cape Site Services Ltd have carried out an intrusive mining investigation on land adjacent to 9 Reasbeck Terrace, Barnsley, South Yorkshire. The work was carried out in support of a planning application associated with the development of the site with a set of semi-detached residential dwellings.

A review of the Coal Authority (CA) Interactive Map (<http://mapaps2.bgs.co.uk/coalauthority/home.html>), shows the site to lie within a 'development high risk area' and an area of 'probable shallow coal mining'. An appraisal of the geological map for the area has also been undertaken as part of this investigation.

The site has been subject to a coal mining risk assessment (CMRA), prepared by Earth Environmental & Geotechnical Ltd (EEGL), details of which are summarised in Section 2 of this report and a full copy is presented in Attachment A of this report.

This investigation work was undertaken to provide information on the underlying ground conditions and assess the likelihood of historical shallow mine workings affecting the site. G&M Consulting Ltd (G&M) was present on site during the fieldwork, and this report presents the findings of the investigation.

The site is located adjacent to 9 Reasbeck Terrace in Barnsley, approximately 2km north of Barnsley town centre, South Yorkshire and is centred close to National Grid Reference SE 349 082. The site lies on the northern side of the valley of the river Dearne. The site was historically undeveloped with a set of garages along the northern boundary of the site which, at the time of the investigation, had already been demolished.

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The comments and opinions presented in this report are based on the findings of a review of available information and ground conditions encountered during the intrusive investigation work. There may be other conditions prevailing on the site which have not been disclosed by this investigation and which have not been taken into account by this report. Responsibility cannot be accepted for conditions not revealed by the investigation. Any diagram or opinion of the possible configuration of ground conditions between exploratory holes is conjectural and given for guidance only and confirmation of intermediate ground conditions should be considered if deemed necessary.

2. Background Information

2.1 Coal Mining Risk Assessment

The site, as a whole, has been subject to a coal mining risk assessment, Ref S0179, prepared by EEGL, dated July 2019.

In preparing the CMRA EEGL have reviewed the geological records held by the British Geological Survey (BGS) and obtained a "Consultants Mining Report" from the CA. A brief summary of their findings and conclusions are given below, the full report is presented in Attachment A of this report.

The Consultants Mining Report states;

There are past underground workings in four seams beneath the site, the Barnsley Seam the Top Haigh Moor, Lidgett and the Fenton coal at depths ranging of 118m and 323m, The report confirms the beds dip at an angle of between 2.1° and 3.8° to the north east and east.

There are probable unrecorded shallow workings.

There are two mine entries recorded within 100m of the site; both are approximately 50m north-east of the site.

The report does highlight the presence of both the Top and Low Beamshaw Coal outcrops; the former on the site (the TBE is indicated just clipping the north-east corner of the site) and the LBE is shown 33.9m to the south-west. Both seams are described as workable.

There is a property within 50m of the site – a house on the south side of Reasbeck Terrace that has a claim for subsidence against the Coal Authority.

EEGL discussion based on the available records is;

Our research suggest the beds are dipping at angles between 2.1° to 5° beneath the site; the depth to the Low Beamshaw beneath the site is estimated between 4.2m to 6.2m.

The Coal Authority have no records of mine entries on or near the site; however they cannot be discounted. Given the thickness of the Low Beamshaw coal and the estimated depth beneath the site, if worked it is highly likely the method of working would be via bell-pits or shallow pillar and stall.

An intrusive investigation is recommended to prove the depth, thickness and condition of the Low Beamshaw Coal. If bell-pitting has occurred then there may be little continuity of working across the site. A total of four open holing boreholes are recommended which should be drilled to a depth of 15m across the development site

2.2 Geology

Although discussed in the CMRA, G&M carried out an independent review of the geological records prior to attending site, as detailed below.

Based on a review of the geological map (Sheet No 87 – 1:50,000) the site is shown to be underlain by strata of the Pennine Middle Coal Measures. The coal measure strata comprises an interbedded sequence of sandstone, siltstone and mudstone with subordinate beds of coal, ironstone and seat earths.

The site is located between two outcropping seams, the Top Beamshaw (TBE) seam, outcropping approximately 20m to the north-east of the site, and the Low Beamshaw (LBE) outcropping approximately 60m to the south-west. The outcrops are shown roughly parallel and generally trending from north-west to south-east. The BGS memoir – 'Geology of the country around Barnsley' states that 'Around Barnsley the Beamshaw Coals are usually two, but sometimes three in number, and are much mixed with shale and of little value'

Where dips are indicated on the geological map, these are locally shown approximately 4° towards the north east, such that the Low Beamshaw seam would dip beneath the site and is therefore likely to be present at shallow depth. Based on an assessment of topographical levels, for the site and the level of the crop of the seam.

Based on the stratigraphic column presented on the geological map the LBE varies in thickness between 0 m and 1.2m. The next anticipated seam is the Kent Thin (KN) shown to be outcropping approximately 300m to the south-west. The BGS memoir – 'Geology of the country around Barnsley' records the thickness between the LBE and KN coal seams, to be 30ft (9.14m) and is named the Kent's Rock. The memoir also noted the thickness of the KN seam around Barnsley to be '1ft. 9 in (0.57m) to 2ft. (0.60m) thick'.

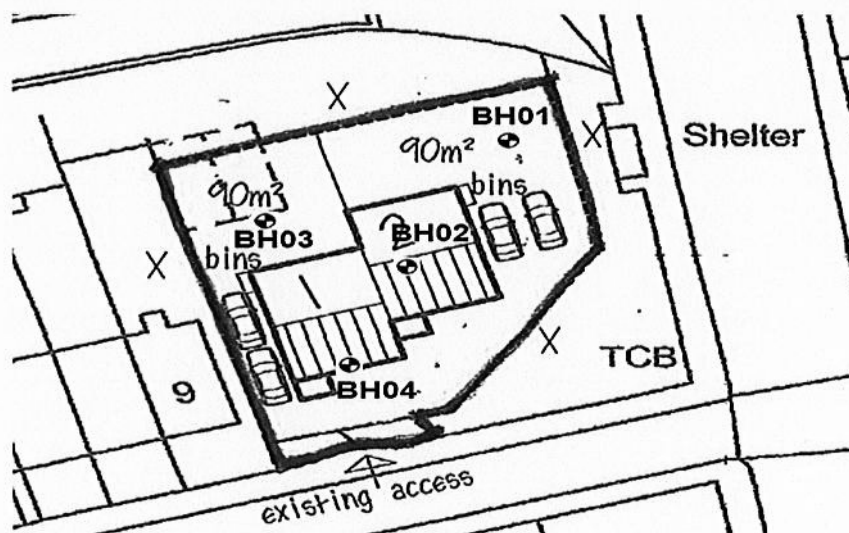
3. Fieldwork

The fieldwork, was carried out on the 26th of November 2019. Four rotary open-holes, referenced BH1 to BH4 were drilled to a maximum depth of 15.0m below ground level (bgl), to allow logging of the soils and solid strata through examination of flush returns and rate of penetration of the drill bit. Drilling was initially progressed using 150mm diameter augers through the superficial soils, and a casing set into the underlying bedrock, to aid flush returns.

The drilling works were undertaken by Cape using a Beretta T25 tracked rotary drilling rig and carried out under the Terms and Conditions of the Coal Authority Permission No 19025, a copy of which is presented in Attachment B of this report.

Drilling was undertaken using water flush. In accordance with the CA permission, the boreholes were monitored for gases during their advancement. The boreholes were backfilled on completion.

The locations of the exploratory holes are shown below.



4. Ground Conditions

Made ground comprising 'fill clay ect' (driller's description) was encountered from surface in all of the boreholes to a maximum depth of 2.5 m bgl. The made ground was immediately underlain by bedrock, which comprised mudstones which were encountered to the base of all of the boreholes. Two thin coal seams were encountered, although possibly one coal seam (potentially split into two leave), as detailed below;

Borehole No	Depth to Top of 1 st Coal (m bgl)	Thickness (mm)	Depth to Top of 2 nd Coal (m bgl)	Thickness (mm)
BH1	7.0	400	7.8	200
BH2	5.5	500	6.4	300
BH3	5.2	500	6.1	400
BH4	4.7	500	5.7	500

Borehole BH4 lost flush between 9.5 m and 10.5 m bgl. The driller noted 'juddering' of the rods on site when the flush was lost, but also resistance to drilling i.e. "solid ground", and has recorded fractures on his logs over this depth range.

The exploratory hole records are presented in Attachment C of this report.

During the drilling, monitoring of methane, carbon monoxide, hydrogen sulphide and oxygen was undertaken at the borehole surface. No significant concentrations of methane, carbon monoxide or hydrogen sulphide were recorded, as detailed on the attached logs. Oxygen concentrations of between 20.0% and 20.4% were recorded during the works.

5. Conclusions/Recommendations

In accordance with the instructions issued by Daniel Harrison, an intrusive mining investigation was carried out, which comprised the drilling of four rotary open-hole boreholes to 15m as per recommendations in the coal mining risk assessment. It is understood that the proposed development of the site is for residential purposes, comprising the construction of a pair of semi-detached dwellings.

The drilling works were carried out in accordance with the CA permission 19025.

While flush was lost within one of the boreholes (BH4 between 9.5m and 10.5m bgl), no evidence of voided strata was noted during the drilling. The driller has recorded the ground as fractured over this depth range

Two seams of intact coal were recorded in all four boreholes, within a bedrock sequence of mudstones. The second seam may represent a split of the LBE into two leaves, or be the third seam referenced in the geological memoir for the area.

Based on the geological maps it is considered likely that the shallowest coal seam encountered is the Low Beamshaw Coal. This seam is shown on the geological map to crop approximately 60m to the south-west, and dip beneath the site.

The fractures noted by the 'juddering' of the drilling rods and loss of flush noted by the driller in BH4 could be due to one, or a combination, of three possible issues;

- potential workings within the deeper Kent Thin coal seam (which is the next seam shown in the stratigraphic column to lie beneath the Low Beamshaw seam)
- fractured ground due to deeper workings within the general Barnsley area, possible from long wall mining or,
- fractured ground due to cambering of the valley sides within the competent rock underlying the site.

If the fractured ground is associated with shallow mine workings then it would probably be associated with the Kent Thin coal seam which is published in the geological memoir to be between 0.57 m and 0.60 m thick. As a general rule of thumb (10x seam thickness), a 0.60 m thick seam would need to have 6 m or less of competent rock cover for workings to affect the surface. The seam, based on dip angle, site levels and distance of the outcrop of the Kent Thin coal seam, would likely be encountered approximately 18 to 20 m bgl and therefore should not affect the surface.

However, given the presence of fractured ground, it is considered prudent to place reinforcement within the foundations such that any zones of weakness can be spanned without any detrimental effect on the property. The foundations should be designed by a suitably qualified structural engineer.

Whilst no mine entries are shown in the immediate area, there is a possibility, although considered to be very low, of a shaft or adit(s) present, as the coal is relatively shallow beneath the site. It is therefore recommended that a watching brief is maintained during the development work, and that all natural surfaces exposed during construction of the foundations are examined by a suitably qualified person, for evidence of such entries.

We trust this report and the attachments meet with your approval and are sufficient for your present needs. Your client should submit this document to the local authority for their comment/approval prior to undertaking any development work.

Yours sincerely

A handwritten signature in black ink, consisting of a stylized, cursive 'A' followed by a long horizontal line extending to the right.

Andrew Swinbourne
For and on behalf of **G&M Consulting Ltd**

Attachments



ATTACHMENT A – CMRA



EARTH ENVIRONMENTAL
& GEOTECHNICAL

COAL MINING RISK ASSESSMENT
LAND ADJACENT NO. 9 REASBECK TERRACE
BARNSELY
FOR
ARCHITECTURAL DESIGN CONSULTANT LTD

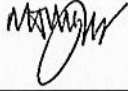
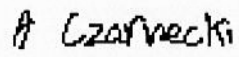
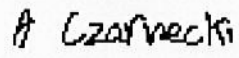
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Report No. S0179

July 2019



Report Title:	No.9 Reasbeck Terrace, Barnsley Coal Mining Risk Assessment	
Report Reference:	S0179/001	
Client:	Architectural Design Consultant Ltd.	
Issue Date:	18 th July 2019	
Drafted By:	M T Major	
Reviewed By:	A Czarnecki	
Authorised By:	A Czarnecki	

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1.0 INTRODUCTION

Appointment

- 1.1 Earth Environmental & Geotechnical Ltd have been commissioned by Architectural Design Consultant Ltd (the Client) to undertake a Coal Mining Risk Assessment at the site of land adjacent to No. 9 Reasbeck Terrace, Smithies, Barnsley.
- 1.2 It is understood that the existing open car park area and detached garages are to be demolished and replaced with a pair of new two-storey three bedroomed houses with external car parking and garden areas.
- 1.3 An extract from the proposed development is shown in Figure 1 below.
- 1.4 Reference has been made to the Barnsley Metropolitan Borough Council (BMBC) Planning Portal; a historic application for the redevelopment of the site and erection of a single detached property was submitted in October 2008 (Application No: 2008/1673). The Application was for the exact same site. The Planning Portal indicates an invalid Application for the replacement of the garage with the current scheme; it was registered on 14th June 2019 (Application No. 2019/0713/INVALID).
- 1.5 The Coal Authority Interactive Map on-line portal indicates the Site is located within a Development High Risk Area. A Coal Mining Risk Assessment is therefore required to support the Application for planning consent for the proposed development, once it has been made.

Figure 1 Extract from Proposed Development Plan





Objective

- 1.6 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. This report has been drafted in accordance with the Coal Authority Coal Mining Risk Assessment Template, January 2011.

Sources of Information

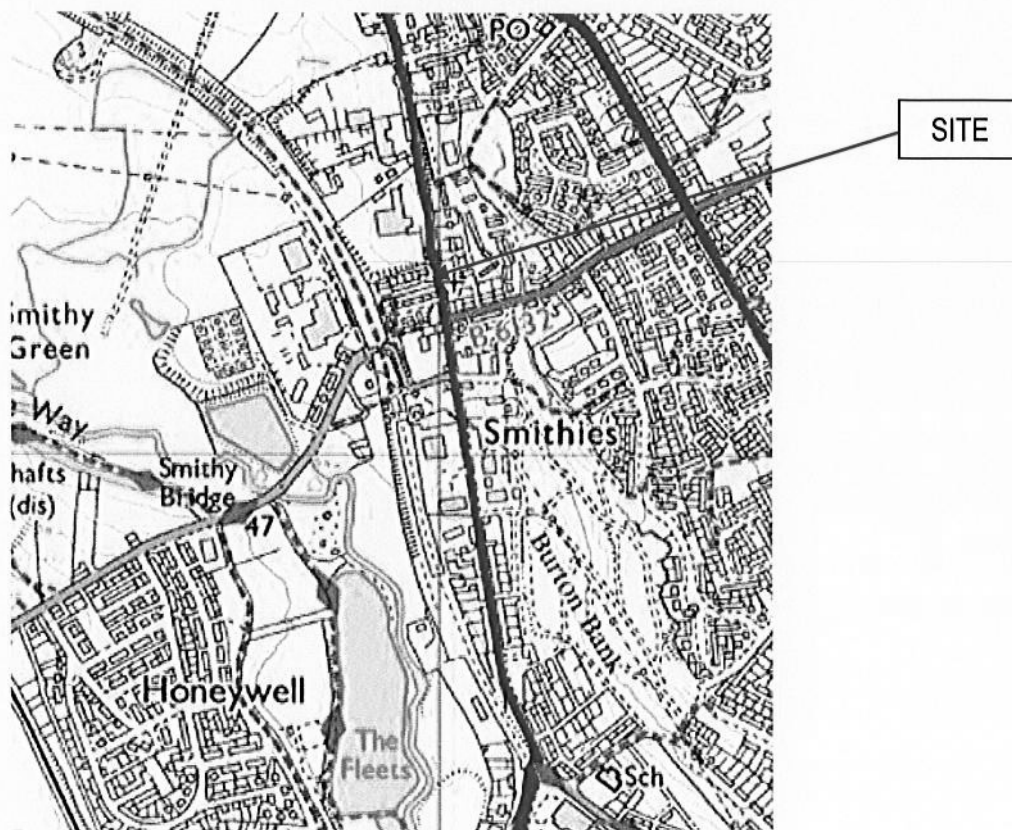
- 1.7 The Coal Mining Risk Assessment comprises of a review of the following information sources:
- Online British Geological Survey maps and data.
 - Geological Survey of England, Barnsley (Bedrock & Superficial), Sheet 87, 1: 50,000 scale, edition of 2008.
 - Geological Survey of England, Crookes, Sheet SE30NW, 1:10,000 scale, edition of 2001.
 - Coal Authority Consultants Mining Report, dated 16th July 2019.
 - Coal Authority Interactive Map Viewer.
 - British Geological Survey online borehole records.
 - Sections of Strata of the Coal Measures of Yorkshire, W H Wilcockson, Midland Institute of Mining, 1950. – East Gawber Hall Colliery (sunk 1855).
 - Google Earth imagery.
 - Online Historical Ordnance Survey maps.
 - Barnsley Metropolitan Borough Council planning portal.
 - 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 mineworkings, CIRIA Special Publication 32, 2002.
 - Abandoned Mineworkings, Draft Guidance, CIRIA 758.



2.0 SITE LOCATION AND DESCRIPTION

- 2.1 The site is located in the ward of Smithies, located 1.8km (1.1miles) north of Barnsley town centre. The approximate National Grid Reference for the site of the new-build is SE349083 (434980E 408305N) with the closest postcode being S71 1NW.
- 2.2 The lot of the proposed new-build, adjacent to 9 Reasbeck Terrace is roughly square-shaped, with the south-east corner cut-off. The maximum approximate dimensions 21m by 22m and currently comprises an open tarmac-paved area with single-storey garages on it.
- 2.3 The site is accessed directly off Reasbeck Terrace, which runs along the southern boundary.
- 2.4 Reasbeck Terrace appears to be an Edwardian terraced street. The A61 Wakefield Road runs north-south beyond the eastern boundary and the land to the north is a builder's merchant yard. Reasbeck Terrace slopes west, away and down from Wakefield Road.
- 2.5 A location plan is shown below as Figure 2.

Figure 2 Site Location Plan



- 2.6 A street-view photo of the existing garage building is shown below in Figure 3



Figure 3 Street view photograph of existing site





3.0 ASSESSMENT OF DATA

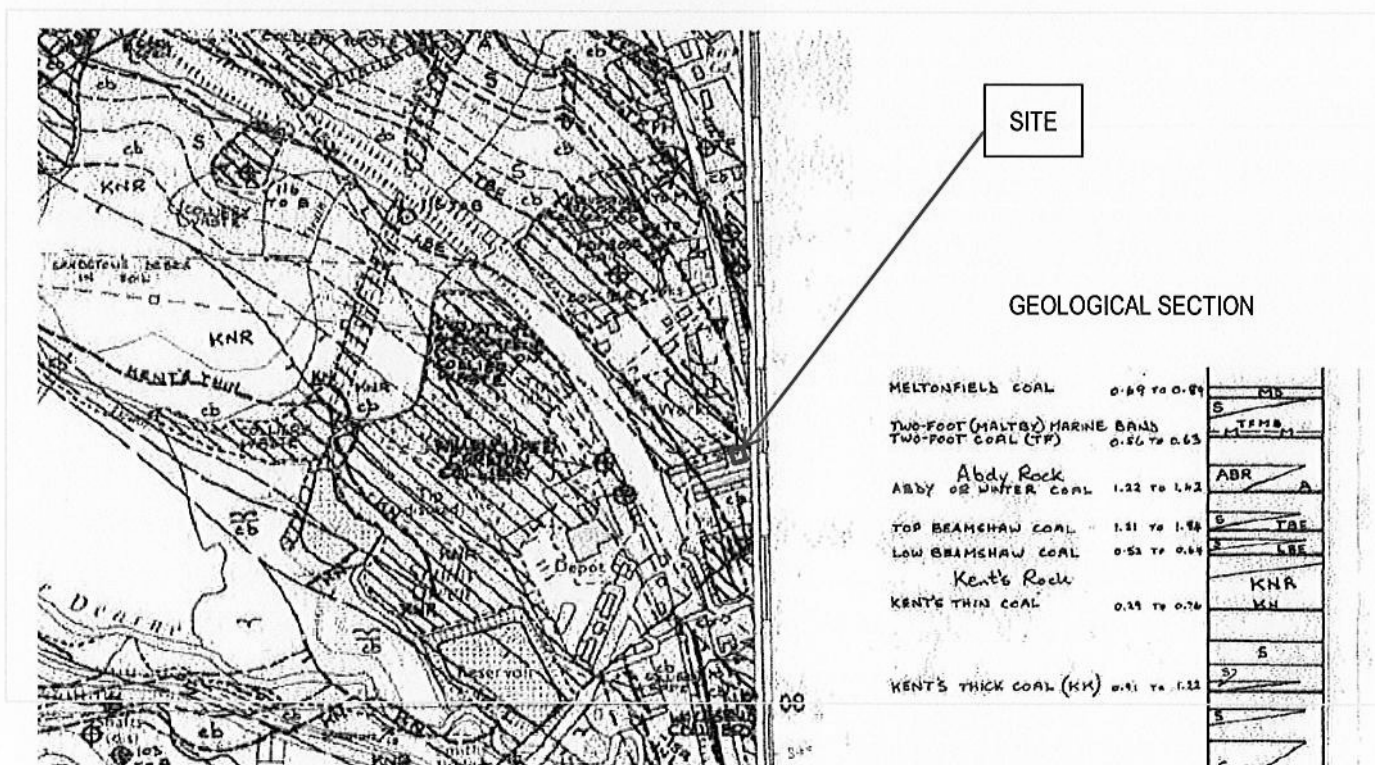
Geological Information

- 3.1 The geology of the site has been determined from acquisition of geological maps for the area, geological memoirs, shaft Sections of former collierys and examination of Coal Authority records.
- 3.2 The BGS states that no superficial deposits underlie the site.
- 3.3 The solid geology beneath the site comprises Pennine Middle Coal Measures Formation (mudstone, siltstone, sandstone and coal seams). The BGS describes the Middle Coal Measures Formation as being:

'Interbedded grey mudstone, siltstone and pale grey sandstone, commonly with mudstones containing marine fossils in the lower part, and more numerous and thicker coal seams in the upper part.'

- 3.4 The 1:50,000 scale 2008 BGS geological map, Sheet 87 (Barnsley) and 1:10,000 scale 2001 map Sheet SE30NW (Barnsley) have been reviewed. Figure 4 (below) shows an extract from the 1:10,000 scale (Solid) map.

Figure 4 Geological Map Extract (Sheet SE30NW 1:10,000)



- 3.5 Both geological sheets show the site is positioned on the vertical section just below the Top Beamshaw coal (TBE), meaning the Low Beamshaw coal (LBE) seam to be outcropping close to the south-west of the site, dipping beneath the site at probable shallow depth. The vertical geological section indicates the LBE to be between 0.52m to 0.64m thick.



- 3.6 The beds dip at a relatively shallow angle to the north-east. A significant geological fault – the St Helen's Fault – trending north-east/south-west, downthrown to the south-east is indicated a couple of hundred metres to the south of the site. The affect of the fault on the site is unclear, but believed to be minimal.
- 3.7 The thickness of the Low Beamshaw Coal on the geological section of the 1:50,000 map indicates the seam to be between 0m and 1.2m thick; however, the vertical section on the 1:10,000 sheet (SE30NW), supported by colliery sections of nearby former collieries suggest in this part of Barnsley, the Low Beamshaw Coal is significantly thinner; the shaft section of East Gawber Hall Colliery (sunk in 1855), to the north and slight west of the site, recorded 20½" (520mm) of coal.
- 3.8 The shaft section from East Gawber Hall Colliery further indicates the LBE is 6.29m beneath the TBE. The next seam is the Kent's Thin – 0.46m of coal 14.30m below the LBE, separated by a competent named sandstone stratum – the Kent's Rock.
- 3.9 Taking the conjectured outcrop positions of the TBE and LBE from the 1:10,000 geological sheet (SE30NW) and using the vertical separation of the seams from the map key and the old shaft section for East Gawber Hall Colliery, we are able to calculate the beds are dipping at approximately 5° to the north east. Accordingly, using trigonometry, the LBE coal may be expected at an approximate depth of between 4.2 and 6.2m below the site's surface – shallowest on the western (down-slope) side.
- 3.10 There are a number of BGS borehole records available to view online located within a few hundred metres. The boreholes are of limited value in relation to establishing if potential workings are present in the Low Beamshaw on the Site, as it is difficult to correlate stratigraphically with the beds beneath the site. Coal is noted in many of the boreholes and has been worked.

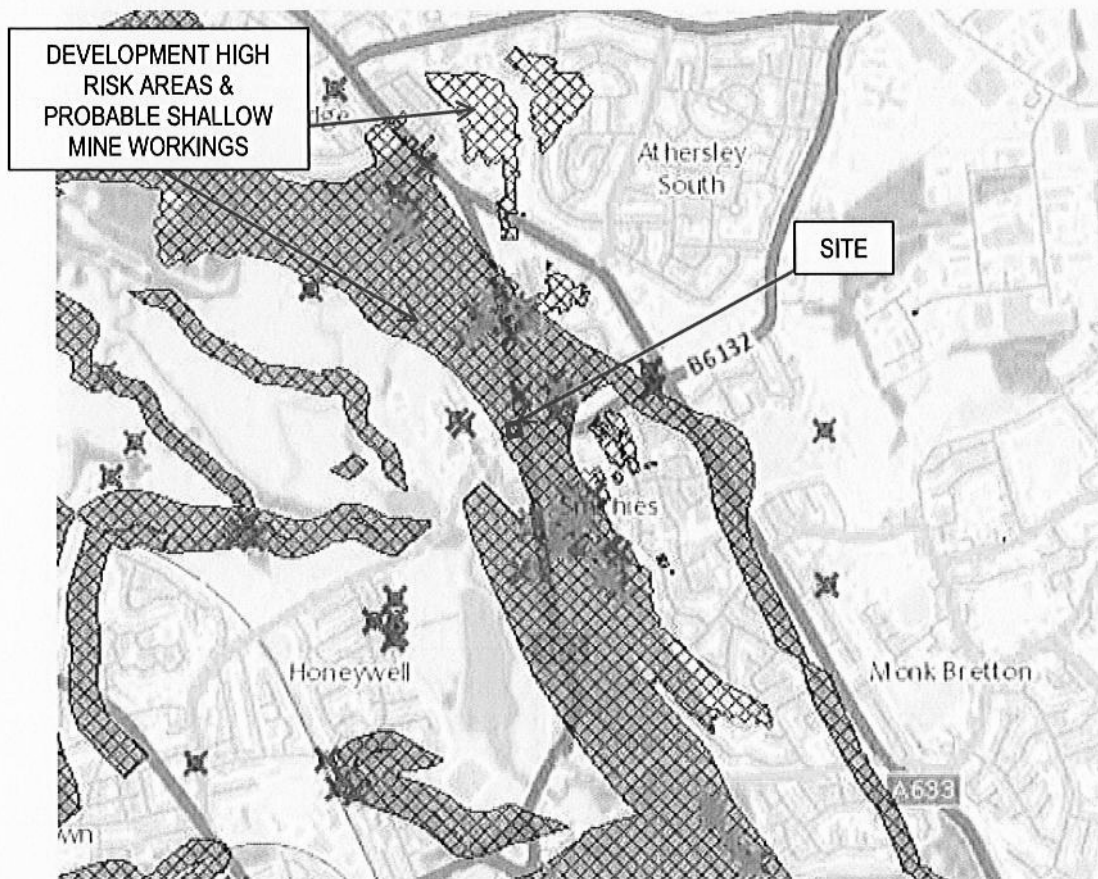
Coal Authority Records

- 3.11 A Coal Authority Consultants Mining Report has been acquired for the Site; it is appended to this report in Appendix 1.
- 3.12 There are past underground workings recorded in four seams beneath the site, the Barnsley Seam, the Top Haigh Moor, Lidgett and the Fenton coal at depths ranging of 118 to 323m. The Report confirms the beds dip at an angle of between 2.1° and 3.8° to the north-east and east.
- 3.13 There are probable unrecorded shallow workings.
- 3.14 There are no underground spine roadways recorded at shallow depth.
- 3.15 There are two mine entries recorded within 100m of the Site; both are approximately 50m north-east of the site, the closest has coordinates 435007E 408360N.
- 3.16 The report does highlight the presence of both the Top and Low Beamshow Coal outcrops; the former on the site (the TBE is indicated just clipping the north-east corner of the site) and the LBE is shown 33.9m to the south-west. Both seams are described as workable.
- 3.17 There are no opencast or CA licensed tips within 500m of the Site.



- 3.18 There is a property within 50m of the site – a house on the south side of Reasbeck Terrace that has a claim for subsidence against the Coal Authority.
- 3.19 There is a one property 331m to the south-east with a mine-gas incident.
- 3.20 The Coal Authority Interactive Map Viewer (Figure 5) shows the site to be located within a Development High Risk Area associated with probable shallow coal mine workings.

Figure 5 Development High Risk Area, Past and Probable Shallow Coal Workings



- 3.21 The Coal Authority Consultant's Report (Appendix 1) includes a detailed plan indicating the site and the two conjectured coal seam outcrops relative to the site; the Top and Low Beamshaw Coal. The plan also shows a claim for subsidence and an area affected by mine gas.
- 3.22 No geological faults or site investigations are recorded at or within close proximity of the site.
- 3.23 There are no future plans for coal working on or near the site.

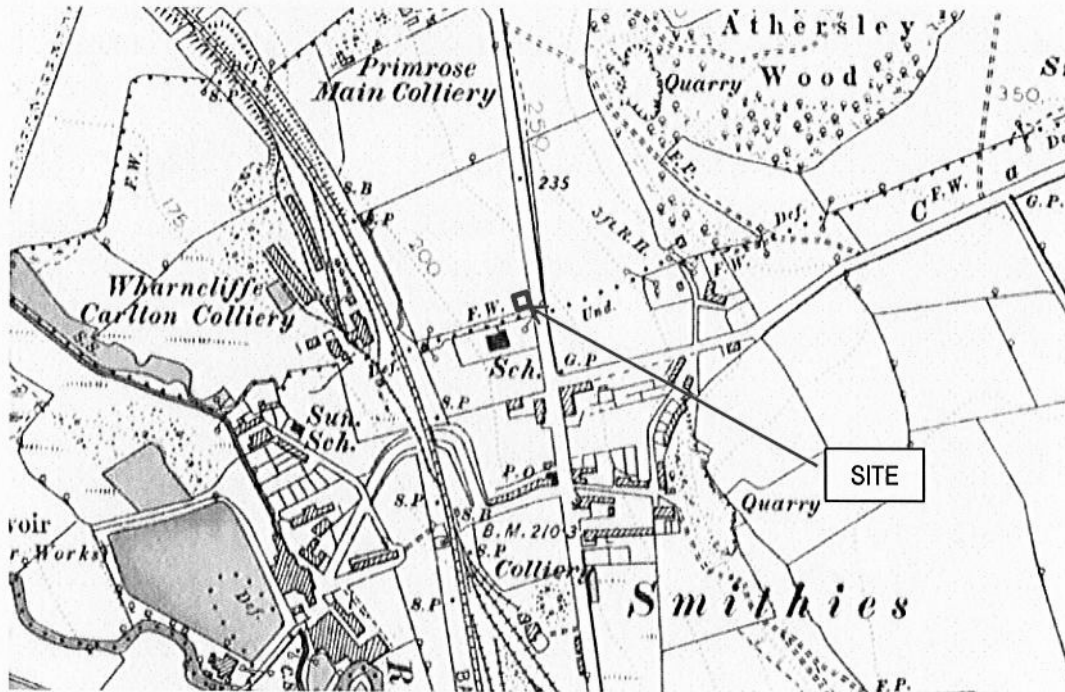
Historical Records

- 3.24 Historical mapping dating from 1855 has been reviewed.
- 3.25 On the earliest map seen of note, the 1894 sheet (Yorkshire sheet 274 NE (1:10,560)), the housing on Reasbeck Terrace are not yet built; there is a school on the land that is now the southern side of the Terrace. In the wider area there are a number of collieries marked. There



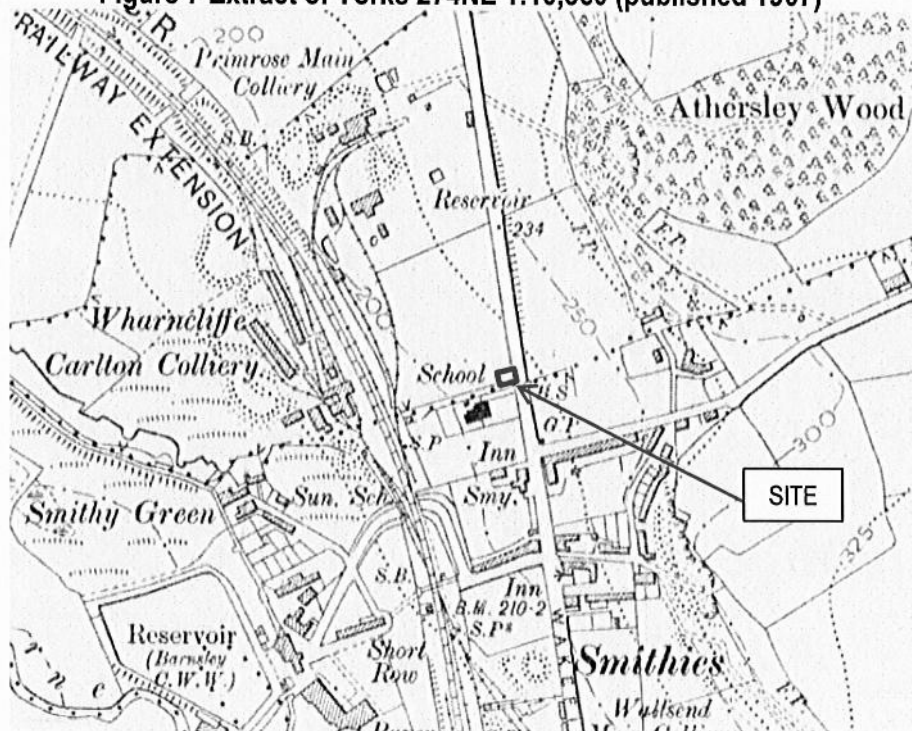
appears to be just fields on the site itself. See Figure 6 below with an extract of the 1894-published map.

Figure 6 Extract of Yorks Sheet 274NE 1:10,560 (published 1894)



- 3.26 By 1907, the the site appears unchanged – fields; although the surrounding area houses in Smithies have been built off Wakefield Road. Please see below in Figure 7.

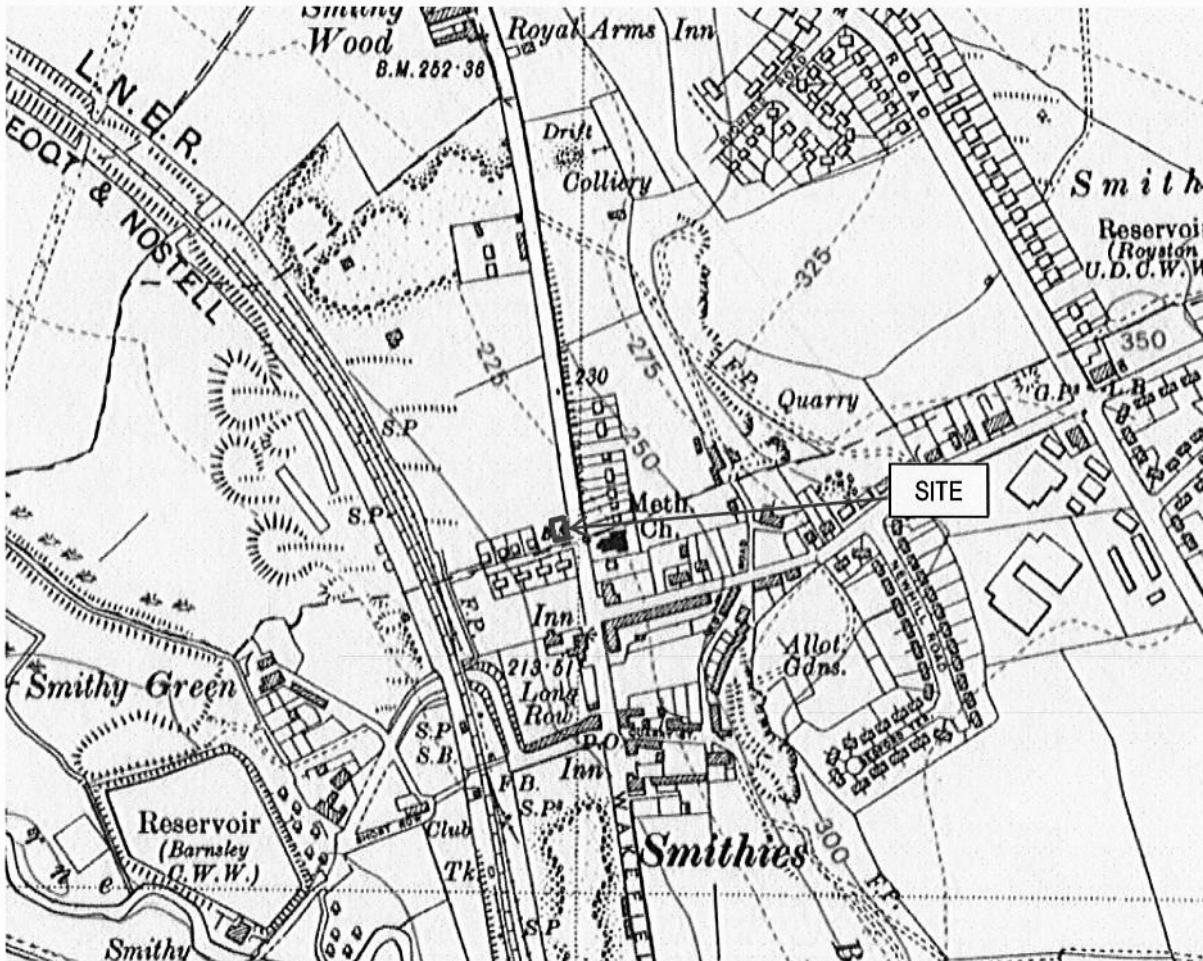
Figure 7 Extract of Yorks 274NE 1:10,560 (published 1907)





- 3.27 By 1937, Reasbeck Terrace is built, the former school is gone. There is a vacant plot on the site as it is today. The former Warcliffe Carlton and Primrose Main Collieries shown on previous editions are gone; only mounds and an indication they were once there can be seen. A drift colliery is marked north of the site – in the area of the Coal Authority recorded shafts. Please see below in Figure 8.

Figure 8 Extract of Yorks 274NE 1:10,560 (published 1948)





4.0 COAL MINING RISK ASSESSMENT

Scope of Coal Mining Risk Assessment

- 4.1 The objectives of the Coal Mining Risk Assessment are to provide a desk-based assessment of available geological, historical and mining information relating to the site (and wider area) and to use this information so as to identify real and potential hazards and in turn risks present to the development from the legacy of mining, if present.
- 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 (NPPF).

Data Limitations

- 4.4 It should be appreciated that it did not become a legal requirement to deposit coal mining abandonment plans until the 1870s 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 invariably they could have been worked by formal or informal means. The absence of any recorded working does not necessarily mean there are no workings.
- 4.5 It is also possible that if unrecorded workings are present then similarly unrecorded mine entries may also be present.

Coal Mining Risks

- 4.6 The Hazards associated with coal mining are as follows:
- Collapse of relict workings beneath buildings causing damage to the building fabric and infrastructure. This may include sudden collapse at surface.
 - Migration of mine gases from old mine works and mine entries resulting in build-up 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 mineworkings.



Summary of Hazards and Assessment of Risk

- 4.7 The Site is located within a Development High Risk Area. The Top Beamshaw Coal Seam is inferred?? to outcrop on or close to the eastern boundary, the Low Beamshaw Coal outcrops to the south-west of the site dipping beneath it at a shallow angle and hence is present under the site at shallow depth. The Low Beamshaw Coal is of workable thickness; research has identified the probable thickness of the coal seam as 520mm in the area of the Site.
- 4.8 Our research suggest the beds are dipping at angles between 2.1° to 5° beneath the site; the depth to the Low Beamshaw beneath the site is estimated between 4.2m and 6.2m.
- 4.9 The Coal Authority have no records of past underground workings but they state there are probable unrecorded workings on or near the site. There are no recorded mine entries on or within 20m of the site. There is recorded mine gas within 500m of the site. There is a claim for subsidence within 50m of the site.
- 4.10 Whilst the Coal Authority have no records of past workings, the presence of unknown workings cannot be fully discounted.
- 4.11 The Coal Authority have no records of mine entries on or near the site; however they cannot be discounted. Given the thickness of the Low Beamshaw Coal and the estimated depth beneath the site, if worked it is highly likely the method of working would be via bell-pits or shallow pillar and stall. Bell-pits are vertical shafts excavated to the coal seam and it is then worked radially from the central shaft.
- 4.12 This desk-based assessment cannot provide adequate evidence to discount the risks posed to the development by past coal mining activity. An intrusive ground investigation to satisfy the Coal Authority/Local Planning Authority in relation to potential coal legacy is considered **necessary**.

Proposed Mitigation Strategy

- 4.13 Mitigation works are considered necessary on the site for the proposed construction of the two-storey development.
- 4.14 An intrusive investigation is recommended to prove the depth, thickness and condition of the Low Beamshaw Coal. If bell-pitting has occurred then there may be little continuity of working across the site. A total of four rotary open holing boreholes are recommend which should be drilled to a depth of 15m across the development area.
- 4.15 During drilling mine gas concentrations should be monitored in the borehole annulus when adding drilling rods.
- 4.16 Due to the urban nature of the site, the Coal Authority requires the risk of potential mine gas migration are mitigated by using a water-flushing medium.
- 4.17 Any investigation into coal seams or workings requires permission from the Coal Authority, with the payment of a fee and the development of a risk assessment.



ATTACHMENT B – COAL AUTHORITY DRILLING PERMIT



The Coal
Authority

Permit to Enter or Disturb Coal Authority Interests

Permit 19025

Name and Address of Permit Holder:

Daniel Harrison
12 Tamplin Close
Barnsley
S70 4NZ

Site Location:

9 Reasbeck Terrace
Smithies
Barnsley
S71 1NW

This certificate hereby grants the above named Permit Holder a Permit to carry out:-

A ground investigation comprising four rotary boreholes to 15m depth or as required to determine conditions of underlying strata and determine the risk posed by possible unrecorded shallow mineworkings all within the Authority's interests at the identified site location above as shown on the Grant Permit Boundary (overleaf) for the period of 12 months from the granted date shown below. The granting of this Permit does not constitute advice given by the Authority in relation to the proposed operations. It is the Permit Holder's responsibility to obtain appropriate health, safety, environmental, technical and legal advice.

Conditions:

- Water flush
- Gas Monitoring CO, CH₄, CO₂, O₂, H₂S at borehole and rig
- Operators undertaking the work must be in possession of this certificate and the Permit boundary plan at the time of works

Signed: Leigh Sharpe Granted Date: 07/11/2019

For and on behalf of The Coal Authority

Nominated Representative: Leigh Sharpe, Permitting Manager;
The Coal Authority, Permitting Office, 200 Lichfield Lane, Mansfield, Notts, NG18 4RG
Tel: 01623 637450; E-Mail: permissions@coal.gov.uk



ATTACHMENT C – EXPLORATORY HOLE RECORDS

Client: Daniel Harrison	Site: 9 Reasbeck Terrace, Smithies Barnsley. S71 1NW	Cape Site Services Ltd Unit 2, Rear of castle buildings, Carlton Road, Barnsley, South Yorkshire, S71 3HX	
Date: 25/11/19	METHOD Rotary Water Flush		

Measurements In Meters

BH no	FROM	TO	THICKNESS	Description
1				
	0.0	2.0	2.0	Fill clay etc.
	2.0	4.5	2.5	Mudstone grey brown weathered silty
	4.5	7.0	2.5	Mudstone grey brown silty
	7.0	7.4	0.4	Coal
	7.4	7.8	0.4	Mudstone grey brown silty
	7.8	8.0	0.2	Coal
	8.0	15.0	7.0	Mudstone grey brown silty
				Cased to 2.8m no gases recorded
2				
	0.0	2.0	2.0	Fill clay etc
	2.0	5.5	3.5	Mudstone grey brown silty soft
	5.5	6.0	0.5	Coal
	6.0	6.4	0.4	Mudstone grey brown silty
	6.4	6.7	0.3	Coal
	6.7	15.0	8.3	Mudstone grey brown silty
				Cased to 2.8m no gases recorded
3				
	0.0	2.5	2.5	Fill clay etc
	2.5	5.2	2.7	Mudstone grey brown silty soft
	5.2	5.7	0.5	Coal
	5.7	6.1	0.4	Mudstone grey brown silty
	6.1	6.5	0.4	Coal
	6.5	15.0	8.5	Mudstone grey brown silty
				Cased to 2.8m no gases recorded
4				
	0.0	1.5	1.5	Fill clay etc
	1.5	4.7	3.2	Mudstone grey brown silty soft
	4.7	5.2	0.5	Coal
	5.2	5.7	0.5	Mudstone grey brown silty
	5.7	6.2	0.5	Coal
	6.2	15.0	8.8	Mudstone grey brown silty
				Cased to 2.0m no gases recorded fractures at 9.5m 10.5m lost flush no returns

Driller I Wiles	Driller's Assistant S Fish + R Hawkins
Driller's Signature 	Page ...1..... of 1.....