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
Carlton
Barnsley
S71 3HX

18th December 2017

Ref C237/02/GS

Dear Simon,

Ref: Shallow Mining Investigation on land off Ledbury Road, Athersley South, Barnsley, S71 1EX.

1. Introduction

On the instructions of Mr Roger Hunt, Cape Site Services Ltd have carried out an intrusive mining investigation on land off Ledbury Road, Athersley South, near Barnsley, South Yorkshire. The work was carried out as a requirement of the local authority planning conditions associated with the redevelopment of the site with four new residential dwellings.

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'

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 part of the fieldwork, and this report presents the findings of the investigation.

In addition to the borehole investigation work, two soakaway tests were carried out to assess the infiltration characteristics of the near surface strata present on site.

The site is located in Athersley South approximately 3km north of Barnsley town centre, South Yorkshire and is centred at National Grid Reference SE 349 089. The site is accessed off Wingfield Road, via a gravel track, between the residences at No's 91 and 93, used to gain entry to a substation to the rear of the these dwellings.

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.

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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

Based on a review of the geological map (Sheet No 87 – 1:50,000) the site is shown to be directly underlain by the Woolley Edge Rock, which is a named sandstone unit within the Pennine Middle Coal Measures Formation.

Based on the stratigraphic column presented on the geological map the Woolley Edge Rock is immediately underlain by the Meltonfield Coal seam, also referred to as the Woodmoor or Wathwood, which varies in thickness between 0 m and 1.4 m. The next seam in the sequence is shown as the Two Foot Coal, which is approximately 12 m below the Meltonfield and varies in thickness between 0.1 m and 2.1 m. The Abdy (Winter) Coal seam is shown a further approximately 32 m below the Two Foot seam.

Where dips are shown on the geological map, these are locally shown between 3-5° towards the north east.

The site has been subject to a CA mining report, a copy of which is presented in Attachment A of this report. A summary of the findings of this assessment is as follows;

- Records indicate that the site is in the zone of physical influence from workings in 7 seams of coal from shallow to 240m depth last worked in 1956.
- The site is not in an area where the CA has plans to grant a licence to remove coal by underground methods.
- There are no recorded former mine entries within, or within 20m, of the site.
- There are no known mining subsidence claims on or near the site.
- The site is unaffected by any past, present or future opencast coal mining
- There are no records of any mine gas emissions requiring action within the site boundary

Correspondence issued by the CA states,

> *Records indicate that the Two-Foot, Winter, Beamshaw Top and Beamshaw Low seams are likely to be present at shallow-moderate depth beneath the site. Additionally the Two-Foot seam is recorded to have been worked at shallow depth beneath the W part of the site.*

A copy of this correspondence is presented in Attachment A of this report

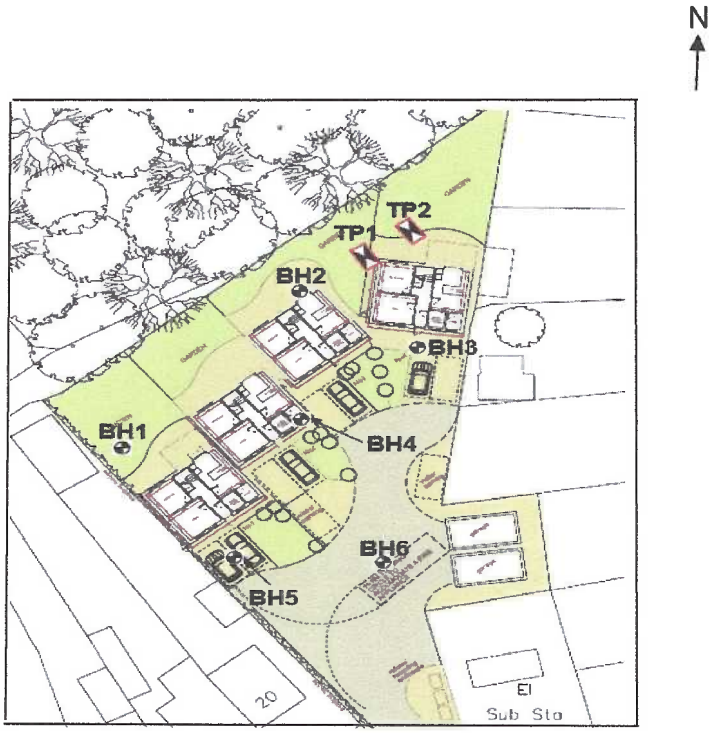
3. Fieldwork

The fieldwork, was carried out on the 6th and 7th December 2017. Six rotary open-holes, referenced BH1 to BH6 were drilled to a depth of up to 31.5 m 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 cased 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 15165, a copy of which is presented in Attachment A 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.



5. Ground Conditions

'Fill/building waste' (driller's description) was encountered in all of the boreholes to depths of between 0.4 m and 0.7 m bgl, these materials were underlain by clay subsoil to a maximum depth of 2.2 m bgl (BH4). The subsoil was immediately underlain by a bedrock sequence, which in boreholes BH1, BH2 and BH4 initially comprised a grey mudstone, to a maximum depth of 3.4 m (BH1) below which a light brown sandstone with occasional bands of mudstone was encountered. This sandstone directly underlaid the subsoils in the remaining boreholes, and was encountered to depths of between 15.5 m (BH1) and 19.0 m bgl (BH3). This sandstone stratum was immediately underlain by a coal seam as follows:

Borehole No	Depth to Top of Coal (m bgl)	Thickness (mm)
BH1	15.5	1100
BH2	18.8	1000
BH3	18.7	1000
BH4	18.3	1100
BH5	16.5	900
BH6	17.2	1100

This seam of coal was underlain by a grey mudstone the base of boreholes BH2, BH3, BH4 and BH6 at 30 m bgl

However evidence of workings was encountered in BH1 and BH5. The driller recorded *'coal workings – partial loss of flush'* between 28.5 m and 29.2 m bgl (0.7 m) in BH1 and *'void – lost flush, no returns'* in BH5 between 29.5 m and 30.2 m bgl (0.7 m).

The driller was able to prove solid bedrock below these workings, and extended BH1 to 31.0 m bgl and BH5 to 31.5 m bgl, both without flush returns to surface.

The driller also records a thin seam of coal, 200mm thick, at 4.6 m bgl in BH3, within the sandstone.

The exploratory hole records are presented in Attachment B 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 19.9% and 20.4% were recorded during the works.

Careful monitoring of borehole gases was maintained during the fieldworks, as the CA had recorded, in their correspondence presented in Attachment A of this report, that;

'The Authority has historically monitored for mine gas at two mine gas venting sites approximately 0.75 – 0.90 km S of the site, where high concentrations of methane and carbon dioxide have been recorded. There is quite an extensive history of mine gas issues across the area, relating to methane emissions at a number of properties, where the Local Authority demolished houses due to gas incidents and remediation was undertaken at various other properties'.

6.Soakaway Testing

Two trial pits were dug using a 14 tonne rated hydraulic excavator. The pits, referenced TP1 and TP2, were excavated to depths of 1.5 m and 2.4 m bgl respectively. The locations of these pits are shown on the drawing presented above. Each of the pits was 0.6 m wide; TP1 was 1.8 m in length, and TP2 was 2.0 m in length.

The near surface geology in both pits, is summarised below;

TP No	Strata Depth (m)	Strata Description
1	GL - 0.2	Firm dark brown very sandy gravelly CLAY (Topsoil). Gravel subangular to subrounded fine to coarse of various lithologies, including brick, tile and concrete
	0.2 – 1.0	Firm orangish brown mottled grey very sandy CLAY, locally grading to very clayey fine and medium SAND
	1.2 – 1.5	Firm to stiff poorly fissured orangish brown locally mottled grey sandy silty CLAY
2	GL – 0.2	MADE GROUND: Firm dark brown very sandy gravelly CLAY (Topsoil). Gravel subangular to subrounded fine to coarse of various lithologies, including brick, tile and concrete
	0.2 – 1.1	Firm orangish brown mottled grey very sandy CLAY, locally grading to very clayey fine and medium SAND
	1.1 – 2.3	Firm to stiff poorly fissured orangish brown locally mottled grey sandy locally very sandy silty CLAY
	2.3 – 2.5	Medium strong light yellowish brown thinly bedded SANDSTONE; recovered as gravel and cobble sized fragments.

A single soakaway test was carried out in each of the pits, to assess the drainage characteristics of the near surface subsoils and the weathered sandstone surface beneath these soils. The test procedure was carried out in general accordance with the requirements of BRE 365 (2016) and the test results are presented in Attachment C of this report.

Clean potable water for the tests was supplied from a 1000 litre intermediate bulk container (IBC) provided by the client, which was emptied to rapidly fill each of the test pits.

7. Conclusions/Recommendations

In accordance with the instructions issued by Mr Roger Hunt, an intrusive mining investigation was carried out, which comprised the drilling of six rotary open-hole boreholes on the site. It is understood that the proposed redevelopment of the site will comprise four new residential dwellings.

The drilling works were carried out in accordance with the CA permission 15165.

An upper seam of coal, which appeared to be intact, was recorded between 15.5 m and 18.8 m bgl, in all of the boreholes, within a bedrock sequence typically of shallow sandstone and deeper mudstones. Probable workings were encountered in BH1 and BH5 at depths of 28.5 m and 29.5 m bgl respectively and approximately 0.7 m in thickness. Solid strata was proved beneath the likely workings in both boreholes.

Based on the geological maps it is considered likely that the shallowest coal seam encountered is probably the Meltonfield Coal and that the sandstone encountered above this seam is the Woolley Edge Rock.

The probable workings encountered in the deeper coal are likely within the Two-Foot seam. Within BH1 and BH5, the separation between the base of the Meltonfield and the base of the workings was recorded as 12.8 m; according to the stratigraphic column of the geological map the separation of these two seams is approximately 12 m.

Using the top of the Meltonfield seam as a reference, it appears that there is a general dip in the strata eastwards across the site. Boreholes BH1 and BH5, drilled close to the western boundary of the site, encountered the Meltonfield at the shallowest depths, between 15.5 m and 16.5 m bgl respectively; whereas in BH2 and BH3 (in the eastern part of the site) encountered this seam at 18.8 m and 18.7 m bgl respectively. Consequently, working on a seam separation of 12.8 m, the Two-Foot seam would be encountered below 30 m bgl in these locations, as evidenced by the fact that the lower seam was not encountered in the remaining boreholes, which were all drilled to 30 m bgl.

Based on the evidence of the boreholes drilled, it would appear that the Meltonfield Coal is intact across the area of the proposed dwellings, however, the deeper Two-Foot seam appears to be worked, where encountered.

It is generally accepted that there is a risk of surface instability where the thickness of competent bedrock above the worked seam is less than ten times the seam thickness. In both instances where probable workings were encountered, and based on a worked thickness of 0.7 m, between 41 and 42 times seam thickness of competent bedrock is present. Notwithstanding this, the workings are also overlain, higher up the borehole sequence, by between approximately 12 m and 17 m of the Woolley Edge Rock sandstone. The geological memoir describes this stratum as *'Where developed in the present area it is a massive sandstone'.*

It is considered unlikely that the site is adversely affected by shallow mine workings within a distance of the ground surface, at the locations drilled, that would warrant any further ground treatment. However, based on the above and considering the general mining legacy in the area, it is considered prudent that advice is sought from a structural engineer regarding suitable foundation options for this development.

Ground gases were only recorded at each borehole position during the fieldwork, no longer term monitoring has been carried out as part of this commission.

A single soakaway test was undertaken in each trial pit TP1 and TP2, as part of this investigation. Both tests were abandoned after 120 minutes, as the infiltration rate was not sufficiently rapid to allow monitoring of the water level to 75% and 25% effective storage depth. Considering the above information, the use of traditional soakaways as a means of disposal of surface water run-off, in the area of the two locations investigated, is likely to be of limited success.

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 appropriate regulatory bodies for their comment/approval prior to undertaking any development work.

Yours sincerely



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

Attachments

ATTACHMENT A – COAL AUTHORITY INFORMATION

The Coal Authority

Resolving the impacts of mining



CON29M Non-Residential Mining Report



LEDBURY ROAD
ATHERSLEY SOUTH
BARNSLEY
S71 1XE



Date of enquiry:	03 November 2017
Date enquiry received:	03 November 2017
Issue date:	03 November 2017
Our reference:	51001686114001
Your reference:	C237

CON29M Non-Residential Mining Report

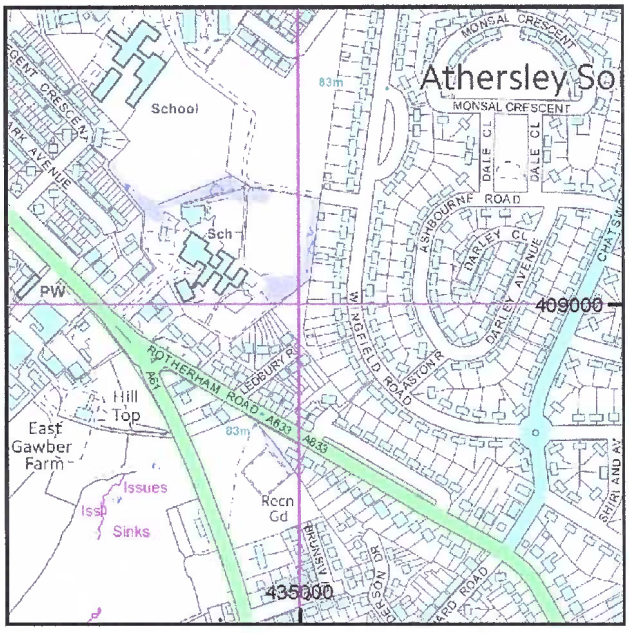
This report is based on, and limited to, the records held by the Coal Authority and the Cheshire Brine Subsidence Compensation Board's records, at the time we answer the search.

Client name

Graeme Swinbourne

Enquiry address

LEDBURY ROAD, ATHERSLEY SOUTH, BARNSLEY, S71 1XE



Approximate position of property

Map data

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Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

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/coalauthority

Summary

Has the search report highlighted evidence or potential of		
1	Past underground coal mining	Yes
2	Present underground coal mining	No
3	Future underground coal mining	Yes
4	Mine entries	Yes
5	Coal mining geology	No
6	Past opencast coal mining	No
7	Present opencast coal mining	No
8	Future opencast coal mining	No
9	Coal mining subsidence	No
10	Mine gas	No
11	Hazards related to coal mining	No
12	Withdrawal of support	Yes
13	Working facilities order	No
14	Payments to owners of former copyhold land	No
15	Information from the Cheshire Brine Subsidence Compensation Board	No

For detailed findings, please go to page 4.

Detailed findings

1. Past underground coal mining

The property is in a surface area that could be affected by underground mining in 7 seams of coal at shallow to 370m depth, and last worked in 1956.

2. Present underground coal mining

The property is not within a surface area that could be affected by present underground mining.

3. Future underground coal mining

The property is not in an area where the Coal Authority has plans to grant a licence to remove coal using underground methods.

The property is not in an area where a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area likely to be affected from any planned future underground coal mining.

However, reserves of coal exist in the local area which could be worked at some time in the future.

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

4. Mine entries

There are no known coal mine entries within, or within 20 metres of, the boundary of the property.

There may however be mine entries/additional mine entries in the local area which the Coal Authority has no knowledge of.

5. Coal mining geology

The Coal Authority is not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining.

6. Past opencast coal mining

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

7. Present opencast coal mining

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

8. Future opencast coal mining

There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary.

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

9. Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

10. Mine gas

The Coal Authority has no record of a mine gas emission requiring action.

11. Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Authority, under its Emergency Surface Hazard Call Out procedures.

12. Withdrawal of support

The property is in an area where notices to withdraw support were given in 1982.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

13. Working facilities order

The property is not in an area where an order has been made, under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

14. Payments to owners of former copyhold land

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

15. Information from the Cheshire Brine Subsidence Compensation Board

The property lies outside the Cheshire Brine Compensation District.

Comments on the Coal Authority information

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In view of the mining circumstances a prudent developer would seek appropriate technical advice before any works are undertaken.

Therefore if development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply good engineering practice developed for mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or mines of coal without the permission of the Coal Authority. Developers should be aware that the investigation of coal seams/former mines of coal may have the potential to generate and/or displace underground gases and these risks both under and adjacent to the development should be fully considered in developing any proposals. The need for effective measures to prevent gases entering into public properties either during investigation or after development also needs to be assessed and properly addressed. This is necessary due to the public safety implications of any development in these circumstances.

Additional remarks

Information provided by the Coal Authority in this report is compiled in response to the Law Society's Con29M Coal Mining and Brine Subsidence Claim enquiries. The said enquiries are protected by copyright owned by the Law Society of 113 Chancery Lane, London WC2A 1PL. Please note that Brine Subsidence Claim enquiries are only relevant for England and Wales. This report is prepared in accordance with the Law Society's Guidance Notes 2006, the User Guide 2006 and the Coal Authority and Cheshire Brine Board's Terms and Conditions applicable at the time the report was produced.

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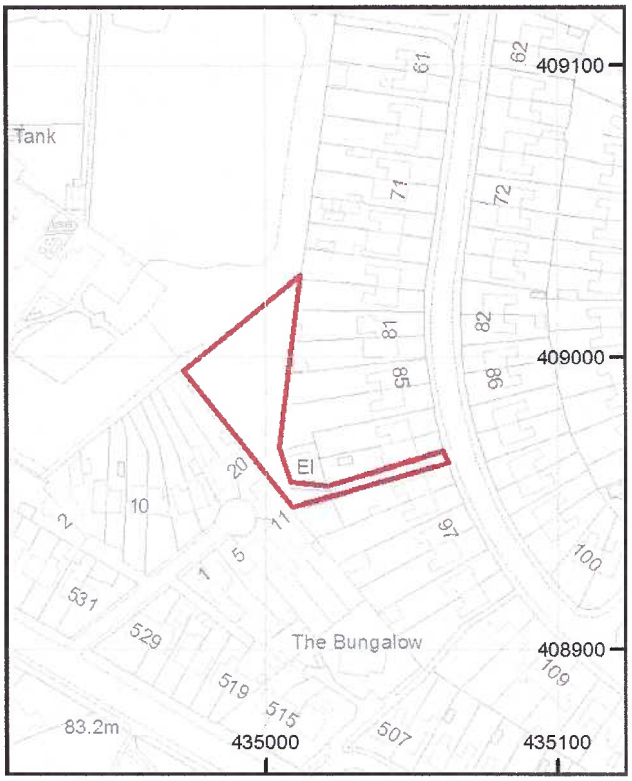
Alternative formats

If you would like this report in an alternative format, please contact our communications team.

Enquiry boundary

Key

Approximate position of enquiry boundary shown



Map data

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VAT receipt

Issued by	The Coal Authority 200 Lichfield Lane Mansfield Nottinghamshire NG18 4RG
Tax point date	03 November 2017
Issued to	GRAEME SWINBOURNE THE CHESTNUTS BRACKENHILL ROAD EAST LOUND NORTH LINCOLNSHIRE DN9 2LR
Property search for	LEDBURY ROAD ATHERSLEY SOUTH BARNSLEY S71 1XE
Reference number	51001686114001
Date of issue	03 November 2017
Cost	£78.30
VAT @ 20%	£15.66
Total received	£93.96
VAT registration	598 5850 68

Subject **Fw: Coal Authority Permit No. 15165 - Land off, Ledbury Road, South Athersley, Barnsley, S71 1XE**
From Cape Site <cape-site@btconnect.com>
To Graeme Swinbourne <graeme@soilexperts.co.uk>
Date 2017-12-08 14:06
Priority Normal

- Closure Form - 15165.docx (~34 KB)
- Granted Permit Boundary - 15165.pdf (~413 KB)
- Permit Certificate - 15165.pdf (~246 KB)
- Return Letter - 15165.pdf (~255 KB)

CAPE SITE SERVICES LTD

Unit 2, Rear of Castle Buildings, Carlton Road, Carlton, Barnsley, South Yorkshire. S71 3HX.
Telephone 01226 725050
E-Mail Enquires@cape-site.co.uk
or cape-site@btconnect.com
----- Original Message -----
From: Justyna Wroblicka
To: Cape Site
Sent: Thursday, November 30, 2017 10:02 AM
Subject: Coal Authority Permit No. 15165 - Land off, Ledbury Road, South Athersley, Barnsley, S71 1XE

Dear Simon,

Thank you for your recent permit application in respect of this site. Please find attached the issue documentation for Permit 15165 in connection with the proposed works. This email confirms the Coal Authority's agreement for work to commence.

The works are to be undertaken in accordance with the signed terms and conditions received, the methodology stated in your application form, the return letter and in cognisance of the *hazardous gas guidance document* published in 2012 *(note this hyperlink presently redirects to another web page. If this is a problem, please contact us).* Please ensure that all control measures, including gas monitoring proposals and safety/mitigation measures are maintained throughout the duration of the works. Please ensure that all common mine gases including carbon monoxide, carbon dioxide, methane and hydrogen sulphide are monitored for during the works.

Records indicate that the Two Foot, Winter, Beamshaw Top and Beamshaw Low seams are likely to be present at shallow-moderate depth beneath the site. Additionally, the Two Foot seam is recorded to have been worked at shallow depth beneath the W part of the site. Regional faults displace coal seams locally. Please ensure that the depth and distribution of the boreholes are adequate to assess the presence and condition of all seams and mine workings within influencing distance of the surface, drilling additional boreholes or increasing the target depth where necessary.

The Authority has historically monitored for mine gas at two mine gas venting sites approximately 0.75 – 0.90km S of this site, where high concentrations of methane and carbon dioxide have been recorded. There is quite an extensive history of mine gas issues across the area, relating to methane emissions at a number of properties, where the Local Authority demolished houses due to gas incidents and remediation was undertaken at various other properties. Please be aware that you may potentially encounter both methane and carbon dioxide during your site investigation. I would ask you to remain vigilant with your gas monitoring throughout the works and consider risk of affecting any properties in the vicinity of the site. If any abnormal gas concentrations are recorded I would ask you to halt works immediately and call our emergency hazard line on 01623 646 333 for further advice. Additionally, please be aware that mine water levels are expected to be shallow across the area.

If you have any questions please do not hesitate to contact me. We look forward to receiving the relevant completion report in due course, including any engineering interpretation / recommendations therein, along with a completed closure form (attached).

Kind Regards,

The Coal Authority

Justyna Wroblicka *BEng (Hons) FGS*
Trainee Permitting & Licensing Manager

T: 01623 637136 M: 07795 857394
E: justynawroblicka@coal.gov.uk

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The Coal Authority

Permit to Enter or Disturb Coal Authority Mining Interests

Permit Reference Number 15165

Name and Address of Permit Holder:

RJH Yorkshire Ltd
Hillside Quarry
Cross Lane
Thurlstone
Sheffield
S36 9QJ

Site Location:

Land off
Ledbury Road
South Athersley
Barnsley
S71 1XE

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

Drilling of up to six boreholes to 30m to determine ground conditions

within the Authority's mining interests at the identified site location 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 Applicant's responsibility to obtain appropriate health, safety, environmental, technical and legal advice.

Signed: Justyna Wroblicka Granted Date: ***30/11/2017***

For and on behalf of The Coal Authority

Nominated Representative: Justyna Wroblicka, Permitting Manager;
The Coal Authority, Permitting Office, 200 Lichfield Lane, Mansfield, Notts, NG18 4RG
Tel: 01623 637339; E-Mail: permissions@coal.gov.uk

ATTACHMENT B – DRILLING RECORDS

Client: RJH Yorkshire Ltd	Site: Land Off Ledbury Rd Athersley South, Barnsley	Cape Site Services Ltd Unit 2, Rear of castle buildings, Carlton Road, Barnsley, South Yorkshire, S71 3HX	
Date: 6-7/12/17	METHOD Rotary Open Hole-Water Flush		

Measurements In Meters

BH no	FROM	TO	THICKNESS	Description
1	0.0	0.5	0.5	Fill/ red brick, building waste
	0.5	2.1	1.6	Clay/Yellow/medium stiff
	2.1	3.4	1.3	Mudstone Grey soft
	3.4	15.0	11.6	Sandstone Light Brown silty bands
	15.0	15.5	0.5	Mudstone Grey silty
	15.5	16.6	1.1	Coal
	16.6	28.5	11.9	Mudstone Grey with dark silty bands
	28.5	29.2	0.7	Coal/workings- partial loss of flush
	29.2	31.0	1.8	Solid formation, no returns
				Negative mine gases recorded Borehole Backfilled to surface
2	0.0	0.5	0.5	Fill/Building rubble
	0.5	2.0	1.5	Clay, yellow/brown medium stiff
	2.0	2.5	0.5	Mudstone grey, soft
	2.5	18.8	16.3	Sandstone light brown, silty bands
	18.8	19.8	1.0	Coal
	19.8	30.0	10.2	Mudstone grey silty bands
				Negative Mine Gases recorded Borehole backfilled to surface
3	0.0	0.4	0.4	Fill/ building waste
	0.4	2.0	1.6	Clay yellow/light brown medium stiff
	2.0	4.6	2.6	Sandstone light brown
	4.6	4.8	0.2	coal
	4.8	18.7	13.9	Sandstone light brown with occasional silty mudstone band
	18.7	19.7	1.0	Coal
	19.7	30.0	10.3	Mudstone Grey silty dark grey bands
				Negative Mine Gases Recorded Borehole Backfilled to surface
4	0.0	0.5	0.5	Fill/Building waste
	0.5	2.2	1.7	Clay yellow/Brown
	2.2	3.2	1.0	Mudstone grey soft bands
	3.2	18.3	15.1	Sandstone light brown silty bands
	18.3	19.4	1.1	Coal
	19.4	30.0	10.6	Mudstone Grey Silty Bands
				Negative Mine Gases

Driller Ian Wiles	Driller's Assistant Deven Robson
Driller's Signature	Page 1..... of ...2.....

Client: RJH Yorkshire Ltd	Site: Land Off Ledbury Rd Athersley South, Barnsley	Cape Site Services Ltd Unit 2, Rear of castle buildings, Carlton Road, Barnsley, South Yorkshire, S71 3HX	
Date: 6-7/12/17	METHOD Rotary Open Hole, Water Flush		

Measurements In Meters

BH no	FROM	TO	THICKNESS	Description
5	0.0	0.7	0.7	Fill/Building waste
	0.7	1.4	0.7	Clay, Yellow/brown
	1.4	16.5	14.9	Sandstone Light Brown with occasional Mudstone bands
	16.5	17.4	0.9	Coal
	17.4	27.0	9.6	Mudstone Grey Silty bands
	27.0	29.5	2.5	Mudstone Dark Grey
	29.5	30.2	0.7	Void/ lost flush, no returns
	30.2	31.5	1.3	Solid formation/drilling resistance, no returns
				Negative mine gases recorded Borehole Backfilled to surface
6	0.0	0.5	0.5	Fill/builders waste
	0.5	1.5	1.0	Clay yellow brown, medium stiff
	1.5	17.2	15.7	Sandstone Light Brown with Mudstone bands
	17.2	18.3	1.1	Coal
	18.3	30.0	x Muds	Mudstone Grey Silty/ Dark grey bands
				Negative Mine Gases recorded Borehole Backfilled to surface

Driller Ian Wiles	Driller's Assistant Deven Robson
Driller's Signature	Page 2..... of ...2.....

ATTACHMENT C – SOAKAWAY TEST FIELD DATA SHEETS

Soakaway Test Results Sheet

Job No	C237
Site	Athersley South
Date	07/12/2017

Cumulative Time (mins)	Standing Water (mm bgl)	Cumulative Change (mm)	Head (m)
0	520	N/A	
1			
2			
3			
4			
5	520	0	
10			
15			
20			
25			
30			
45			
60	524	4	
75			
90			
105			
120	527	7	
150			
180			
210			
240			
270			
300			
360			
420			
480			

TP No	1

Trial Pit Dimensions

Width (m)	0.6
Length (m)	1.8
Depth (m)	1.5

Infill depth (m)	0.52
Head of water (m)	0.98
25% Depth Value (m bgl)	0.765
75% Depth Value (m bgl)	1.255

25% Depth Value (Head m)	0.735
75% Depth Value (Head m)	0.245

Carried Out By	GS

Soakaway Test Results Sheet

Job No	C237
Site	Athersley South
Date	07/12/2017

Cumulative Time (mins)	Standing Water (mm bgl)	Cumulative Change (mm)	Head (m)
0	1105	N/A	
1			
2			
3			
4			
5	1105	0	
10			
15			
20			
25			
30			
45			
60	1105	0	
75			
90			
120	1105	0	

TP No	2

Trial Pit Dimensions

Width (m)	0.6
Length (m)	2.0
Depth (m)	2.5

Infill depth (m)	1.105
Head of water (m)	1.395
25% Depth Value (m bgl)	1.454
75% Depth Value (m bgl)	2.151

25% Depth Value (Head m)	1.046
75% Depth Value (Head m)	0.349

Carried Out By	GS