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

14th September 2018

Ref C295/02/GS

Dear Simon,

Ref: Shallow Mining Investigation on land at 'Cypress Heights', Smithies, Barnsley, S71 1WA

1. Introduction

On the instructions of Mr Ken Waddington, Cape Site Services Ltd (Cape) have carried out an intrusive mining investigation on land off Cypress Heights, Smithies, Barnsley. The work was carried out in support of the development of the site with a single detached bungalow.

This investigation work was undertaken to provide information on the underlying ground conditions and assess the likelihood of historical shallow mine workings affecting the area of the dwelling. This report presents the findings of the investigation.

The site has been subject to a preliminary assessment of coal mining prepared by South Yorkshire Mining Advisory Service (SYMAS), dated 5th October 2017, a copy of which is presented in Attachment A of this report.

In preparing this report a review of the online Coal Authority (CA) interactive map was carried out; based on the information presented there it was considered appropriate to obtain a Consultants Coal Mining report for the site from the CA. This is further discussed in Section 2 of this report.

The site is located off Cypress Heights road, Smithies, approximately 2km north east of Barnsley town centre, South Yorkshire and is centred at National Grid Reference SE 351 083. The area under investigation is roughly rectangular in shape, approximately 25m by 12m, with the long axis running south west to north east and is located adjacent to the residence at 2 Cypress Heights. Site levels generally increase from the front of the site, along Cypress Heights, by between 3-4m towards the rear. Currently the development area has been subject to a partial site strip, with the ground surface comprising exposed subsoils and gravel hardstand. The site, as a whole, is secured by Herras type fencing.

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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 has been subject to a preliminary assessment on coal mining prepared by SYMAS; this indicates that the Meltonfield Coal seam crops across the site and the site is possibly underlain by shallow coal workings. The report recommended the drilling of investigation boreholes to a depth of 15 m below ground level (bgl). This assessment does not, however, give any assessment of the likely depth of the coal, and cannot be considered a coal mining risk assessment, as defined by the Coal Authority (CA).

Four disused shafts are indicated within the report, and shown to the west of the site.

A review of the 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 'past shallow coal mine workings'. The map also shows six shafts and two adits in the vicinity of the site. As there was a discrepancy between the SYMAS records and those held by the CA it was considered prudent to obtain a Consultants Coal Mining report.

The Consultants Coal Mining report was obtained after the fieldwork was completed, a copy of which is included in Attachment A of this report.

The report shows:

- The shallowest seam recorded as worked beneath the site to be the Barnsley coal at a depth of 144m and last worked in 1867. The extracted thickness is recorded as 2.82 m. The dip of the seam is 2.9°.
- Probable unrecorded shallow workings could be present.
- There are no recorded spine roadways beneath the site.
- Eight mine entries, six shafts and two adits close to the site. Four of the shafts are shown as treated, see below for additional information.
- The Meltonfield coal is recorded as outcropping within the site and to be of workable thickness.
- The Two Foot coal is recorded to outcrop 22 m south of the site and to be a workable seam.
- The nearest mine gas incident/remediation is recorded 270.9 m south of the site.
- It is close to where the coal Authority has investigated and subsequently remediated the effects of mine or ground gas emissions following specific reported hazards.

The shafts records show that the general area has been remediated by Sirius in 2006 as part of work carried out for Portford homes. A table of the shafts and distance from the site is presented below.

	Reference	Easting	Northing	Distance from site (m)	Bearing (degrees)	Comment
Shaft	435408-031	435131	408346	13	299	Treated
Shaft	435408-032	435136	408354	15	337	Completely removed by excavation
Adit	435408-019	435147	408366	26	11	Not encountered
Shaft	435408-018	435124	408364	30	323	Treated
Shaft	435408-017	435120	408366	34	320	
Shaft	435408-030	435112	408310	42	225	Treated
Adit	435408-020	435115	408377	46	324	Not encountered
Shaft	435408-016	435110	408404	72	333	

The treatment identified in the CA report was generally carried out by first locating the shafts by a site strip, then infilling and subsequently grouting the shafts. The shaft referenced 435408-32 is shown as completely removed by excavation, suggesting a shallow depth. The two adits were not located during the site strip according to the records.

In an attempt to identify the full scope of the remediation carried out for Portford Homes a search of the planning portal for Barnsley Metropolitan Borough Council was carried out. A report by Haigh Huddleston & Associates was found for a smaller site, presumably sold off as part of the Portford Homes development, this site appears to be immediately north of the subject site. The Haigh Huddleston report contains extracts from the Sirius report including a plan of boreholes drilled for a drill and grout programme. A copy of this plan is presented in Attachment A of this report. It can be seen from this plan that the majority of the boreholes encountered solid ground and that broken ground was only encountered in close proximity to the shafts. The area adjacent to, and north of, the subject site shows solid ground.

2.2 Geology

A review of the 1:50,000 geological map (Sheet No 87 – Barnsley 2008) indicates the site is underlain by the Pennine Middle Coal Measures, which comprises mudstones, siltstones and sandstones, with coal seams, ironstone and seatearth beds. The Woolley Edge sandstone is shown to lie immediately adjacent to the north of the site. The Meltonfield coal seam is shown to crop on or immediately adjacent to the site

Based on the stratigraphic column presented on the geological map the Meltonfield Coal seam, also referred to as the Woodmoor or Wathwood, 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 Coal 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, with a thickness of between 0 m and 1.9 m.

Where dips are shown on the geological map, these are locally shown between 3-5^{o} towards the north east.

A normal fault, with the downthrow to the east, trending north east – south west, and referenced 'St Helens Fault' is shown approximately 20 m to the south east of the site.

An area of worked ground is shown on the geological map, close to the western boundary of the site. This area is shown within the Woolley Edge sandstone, and is likely to have been associated with the quarrying of this stone, although removal of the Meltonfield Coal, which lies immediately below the sandstone is also possible.

3. Fieldwork

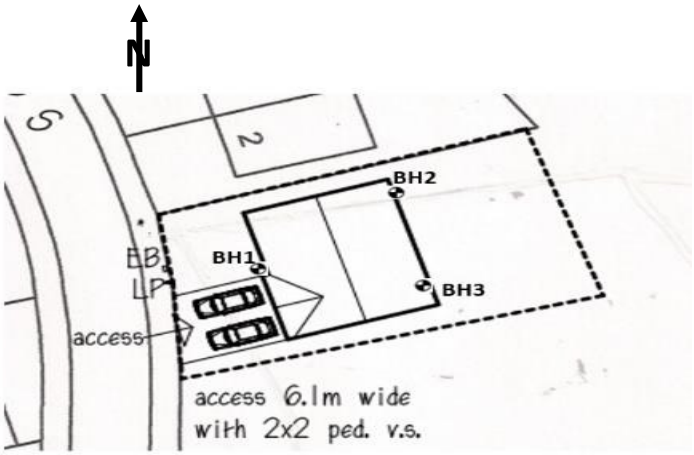
The fieldwork, was carried out on the 28th August 2018. Three rotary open holes, referenced BH1 to BH3 were drilled to a maximum depth of 18.0 m bgl, to allow logging of the soils and solid strata through examination of flush returns and rate of penetration of the drill bit.

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 CA Permission No 16471, 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 at surface for gases, during their advancement. The boreholes were backfilled on completion with arisings and bentonite pellets.

The locations of the exploratory holes are shown below.



4. Ground Conditions

Made ground was recorded in all of the boreholes to depths of between 0.6 m and 1.2 m bgl. The made ground was immediately underlain by a bedrock sequence, which predominantly comprised mudstones encountered to the base of the boreholes. Coal seams were encountered within the sequence, as follows;

BH No	Depth (m)	Depth to Top of Bed (m bgl)	Thickness (mm)	Probable Seam
1	18	1.1	200	Meltonfield
		8.0	800	Two Foot
2	18	0.5	100	Meltonfield?
		9.0	900	Two Foot
3	18	1.2	200	Meltonfield
		8.7	900	Two Foot

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 20.8% and 21.4% were recorded during the works.

5. Conclusions/Recommendations

In accordance with the instructions issued by Mr Ken Waddington, an intrusive investigation has been carried out to investigate the possible mining legacy in the area of a proposed residential dwelling on the site. The investigation comprised the drilling of three rotary open-hole boreholes, to a maximum depth of 18 m bgl.

The drilling works were carried out in accordance with the CA permission 16471.

No evidence of soft (backfilled) or voided strata, or any loss of flush was noted during the drilling.

The boreholes encountered made ground up to a maximum thickness of 1.2 m bgl. The bedrock sequence comprised predominantly mudstones, with two seams of coal encountered in boreholes BH1 and BH2 and possibly in BH2, although the driller only records one occurrence of coal as *'coal/mudstone/clay mix (fill)'* in BH2 between 0.5 m and 0.6 m bgl. Based on the evidence of the three boreholes drilled it is considered unlikely that the site is adversely affected by shallow mine workings within 18 m of the ground surface of the locations investigated, that would warrant any further ground treatment. This is corroborated by the records from the Haigh Huddleston report.

Based on a possible interpretation of the borehole information, and information provided in the SYMAS report it is probable that the shallower of the coal seams encountered represents the Meltonfield seam. It is therefore likely that the second seam of coal, encountered between 8.0 m and 9.0 m bgl in all three boreholes, represents the Two Foot seam.

Eight mine entries are shown within 100 m of the site, it is therefore a possibility, based on the above interpretation, that the site may be underlain by workings within the seams with lie beneath the Two Foot seam. According to the stratigraphic column shown on the geological map, the Abdy (Winter) seam is shown approximately 32 m below the Two Foot seam, with a potential thickness of up to 1.9 m.

Whilst no mine entries are shown on the site, there is a possibility, based on the likely location of the crop of the Meltonfield seam, although considered to be very low, of bell pit entries, or crop workings, as the coal is relatively shallow beneath the site. As a consequence of this, it would be prudent, that as part of the site strip during the enabling works, that the natural founding surfaces exposed are further examined by a qualified person for evidence of ground disturbance/infill which may indicate the presence of a shallow mine entry/extraction point. A report of findings for this work should be produced for the record and/or action. If a mine entry is suspected works should cease and the advice sought of a suitably qualified engineer.

It is likely, considering the presence at shallow depth of a coal, that foundation excavations will encounter this seam. Where this occurs the excavations should be deepened through the seam onto the underlying strata, and the exposed coal blinded with lean mix concrete to prevent the possibility of spontaneous combustion. It would also be prudent to include some reinforcement into the foundations to accommodate the possibility of any softened zones associated with the shallow coal seam.

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 relevant 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 – BACKGROUND INFORMATION

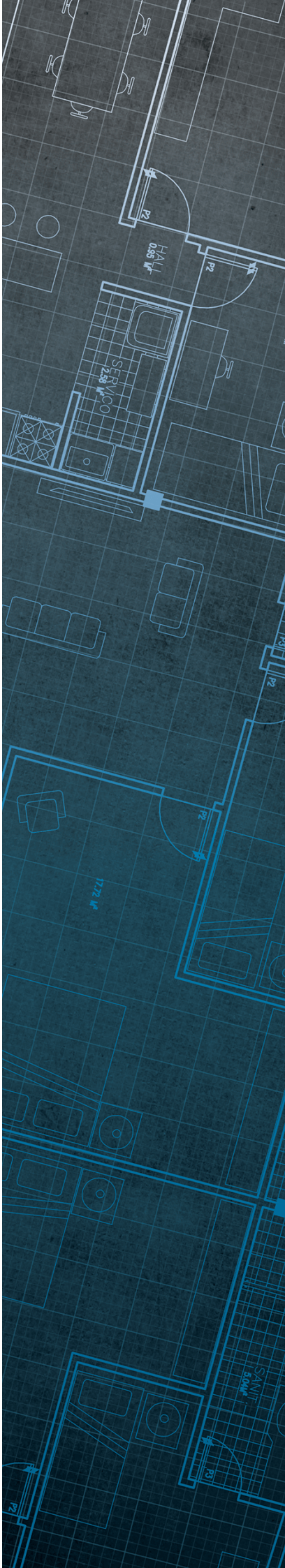
The Coal Authority

Consultants

Coal Mining Report

2 Cypress Heights
Smithies
Barnsley
S71 1WA

Date of enquiry:	**13 September 2018**
Date enquiry received:	**13 September 2018**
Issue date:	**13 September 2018**
Our reference:	**51001943686001**
Your reference:	**C295**



Consultants

Coal Mining Report

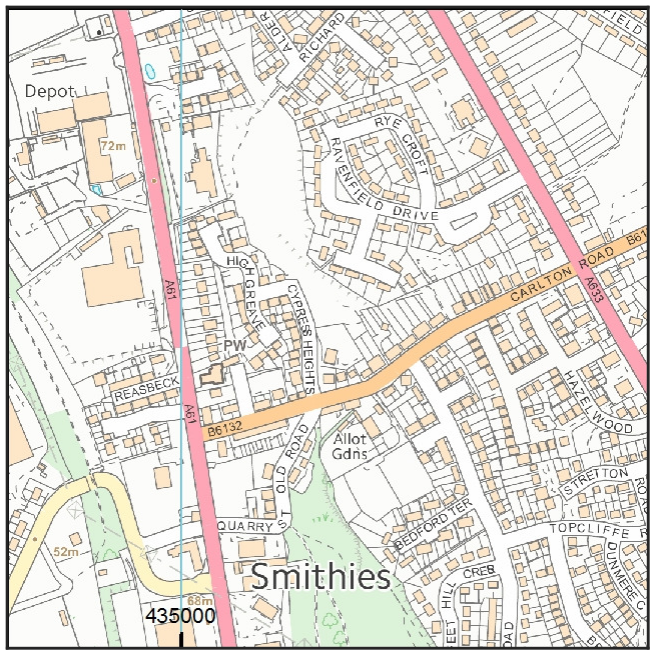
This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

Graeme Swinbourne

Enquiry address

2 Cypress Heights
Smithies
Barnsley
S71 1WA



Approximate position of property

Map data

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How to contact us

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200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

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/company/the-coal-authority
/thecoalauthority
/thecoalauthority

Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	BARNSLEY	Coal	637Q	144	Beneath Property	2.9	North-East	282	1867
unnamed	TOP HAIGH MOOR	Coal	637X	211	North-East	2.1	North	84	1929
unnamed	LIDGETT	Coal	6388	255	Beneath Property	2.2	North-East	79	1950
unnamed	LIDGETT	Coal	6387	255	North-West	2.5	East	81	1949
unnamed	LIDGETT	Coal	6389	276	South-East	2.5	North-East	79	1957
unnamed	FENTON	Coal	638E	352	Beneath Property	2.9	North-East	145	1964

Probable unrecorded shallow workings

Yes.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

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Mine entries

Entry type	Reference	Grid reference	Treatment description	Mineral	Conveyancing details
Shaft	435408-016	435110 408404		Coal	
Shaft	435408-017	435120 408366		Coal	
Shaft	435408-018	435124 408364	was found filled and subsequently drilled and grouted to full depth by Sirius for Portford Homes Ltd. in 2006	Coal	
Adit	435408-019	435147 408366	was not encountered during a site strip of the area prior to development undertaken by Sirius for Portford Homes in 2006	Coal	
Adit	435408-020	435115 408377	was not encountered during a site strip of the area prior to development undertaken by Sirius for Portford Homes in 2006	Coal	
Shaft	435408-030	435112 408310	was found filled and subsequently drilled and grouted to full depth prior to development by Sirius for Portford Homes in 2006	Coal	
Shaft	435408-031	435131 408346	was found filled and subsequently drilled and grouted to full depth prior to development by Sirius for Portford Homes in 2006	Coal	
Shaft	435408-032	435136 408354	was found filled by site strip and subsequently completely removed by excavation prior to development by Sirius for Portford Homes in 2006	Coal	

Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

10131	DN42	M459
6190	NE534	4419
DN44	180A	M363

Our records show we have more plans than those shown above which could affect the enquiry boundary.

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
MELTONFIELD	Coal	Yes	Within	N/A	105
TWO FOOT	Coal	Yes	22.0	South	290

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

Please refer to the “Summary of findings” map (on separate sheet) for details of any opencast areas within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

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Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations

Distance to site investigation (m)	Direction
Within	N/A

See Section 4 for further information.

Remediated sites

None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31st 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.

Mine gas

Distance to gas incident/remediation (m)	Direction
270.9	South
452.8	East

See Section 4 for further information.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

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Section 3 – Licensing and future mining activity

Future underground mining
None recorded.

Coal mining licensing
None recorded within 200 metres of the enquiry boundary.

Court orders
None recorded.

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

Withdrawal of support notices
The property is not in an area where a notice to withdraw support has been given.

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.

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.

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Section 4 – Further information

The following potential risks have been identified and as part of your risk assessment should be investigated further.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

Site investigations

The site is within an area of previous interest. It is close to where the Coal Authority has received information relating to past site investigations.

The site requires further investigation and may influence how you approach your risk assessment.

Mine gas remedial works

The site is within an area of previous interest. It is close to where the Coal Authority has investigated and subsequently remediated the effects of mine or ground gas emissions following specific reported hazards.

The site requires further investigation and may influence your risk assessment. We recommend that you order the **Coal Authority Mine Gas Emission Report**, which will include more information about the hazard.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

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Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk.**

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

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Opencast mines
Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips
Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations
Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites
Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence
Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas
Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission.

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Mine water treatment schemes
Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining
Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing
Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders
Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices
Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices
Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

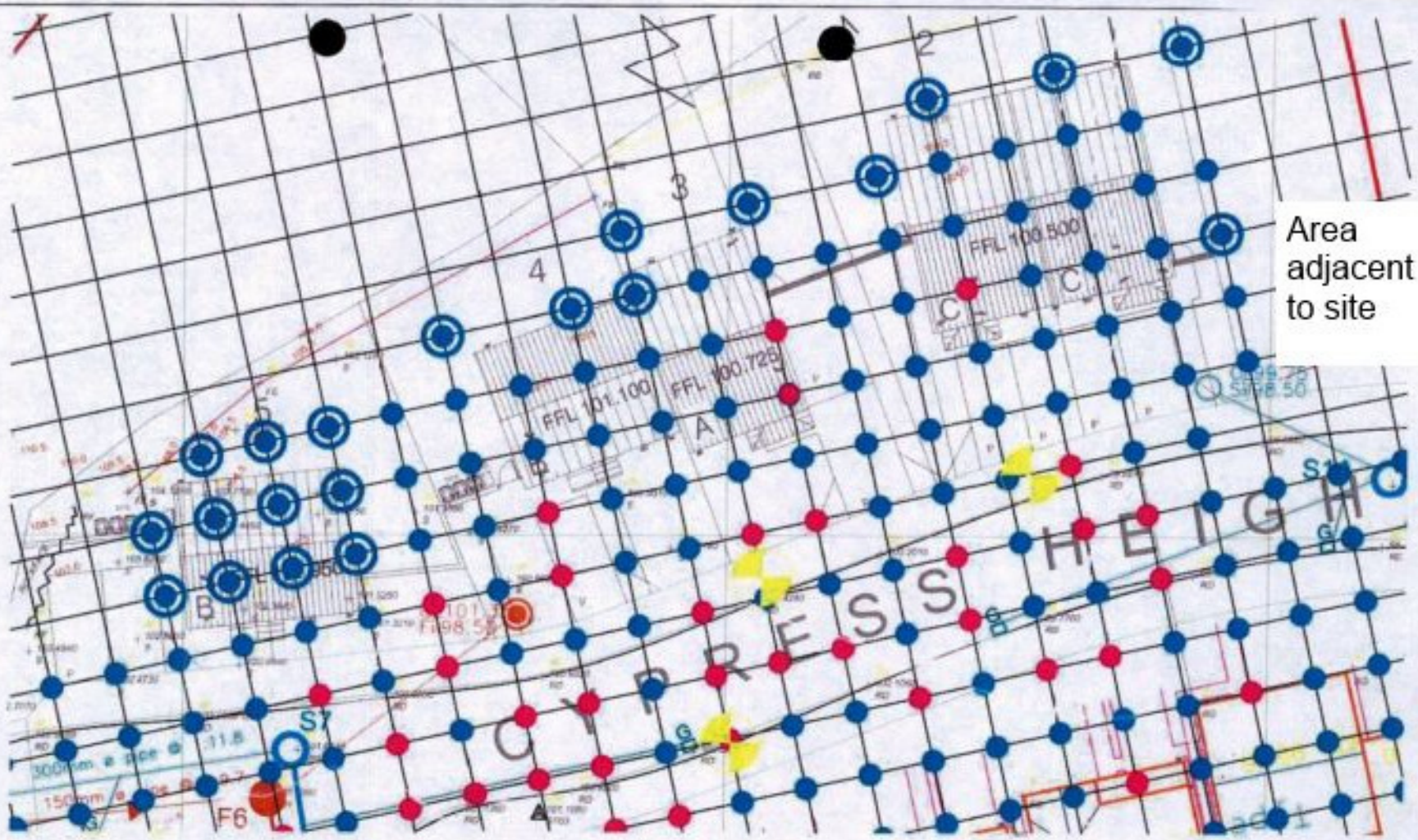
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VAT receipt

Issued by	The Coal Authority 200 Lichfield Lane Mansfield Nottinghamshire NG18 4RG
Tax point date	13 September 2018
Issued to	GRAEME SWINBOURNE THE CHESTNUTS BRACKENHILL ROAD EAST LOUND NORTH LINCOLNSHIRE DN9 2LR
Property search for	2 CYPRESS HEIGHTS SMITHIES BARNSLEY S71 1WA
Reference number	51001943686001
Date of issue	13 September 2018
Cost	£106.79
VAT @ 20%	£21.36
Total received	£128.15
VAT registration	598 5850 68

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KEY

BOREHOLES BY SIRIUS

- SOLID GROUND
- SOFT/BROKEN GROUND
- SHAFT

BOREHOLES BY HHA

- SOLID GROUND

Rev B Key revised 26.08.15 MD
Rev A Revised to show results of additional borehole investigation works 25.06.15 MD

Haigh Huddleston & Associates
Civil Structural Engineering Consultants

Client: SAUL CONSTRUCTION

Project: CYPRESS HEIGHTS, BARNSLEY

Detail: GROUTING GRID LAYOUT

Scale	Rev	Chkd	Date	Dwg No.
1:200	LM	MH	Jun '15	E15/6070/D48

ATTACHMENT B – COAL AUTHORITY PERMIT

The Coal Authority

Permit to Enter or Disturb Coal Authority Mining Interests

Permit Reference Number 16471

Name and Address of Permit Holder:

Ken Waddington
54 Highfield Avenue
Athersley South
Barnsley
S71 3RX

Site Location:

Land adjacent to 2 Cypress Heights
Off Carlton Road
Smithies
Barnsley
S71 1WA

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

3 boreholes to 18m to investigate potential shallow workings

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: Graham Law Granted Date: ***13th August 2018***

For and on behalf of The Coal Authority

Nominated Representative: Graham Law, Permitting Manager;
The Coal Authority, Permitting Office, 200 Lichfield Lane, Mansfield, Notts, NG18 4RG
Tel: 01623 637320; E-Mail: permissions@coal.gov.uk

ATTACHMENT C – DRILLING RECORDS

Client: Ken Waddington	Site: Land adjacent to 2 Cypress Heights. Carlton Rd. S71 1WA	Cape Site Services Ltd Unit 2, Rear of castle buildings, Carlton Road, Barnsley, South Yorkshire, S71 3HX	
Date: 28/8/18	METHOD Rotary water flush		

Measurements In Meters

BH no	FROM	TO	THICKNESS	Description
1	0.0	1.1	1.1	Made ground
	1.1	1.3	0.2	Coal
	1.3	4.5	3.2	Mudstone grey brown soft
	4.5	8.0	3.5	Mudstone black
	8.0	8.8	0.8	Coal
	8.8	15.5	6.7	Mudstone grey
	15.5	16.0	0.5	Mudstone grey soft
	16.0	18.0	2.0	Mudstone grey
				Cased to 1.5m No gases recorded
2	0.0	0.4	0.4	Made ground sandstone sand brown
	0.4	0.5	0.1	Clay brown/grey
	0.5	0.6	0.1	Coal mudstone grey mix fill
	0.6	5.5	4.9	Mudstone grey brown soft
	5.5	9.0	3.5	Mudstone black
	9.0	9.9	0.9	Coal
	9.9	18.0	8.1	Mudstone grey
				Cased to 0.8m No gases recorded
3	0.0	1.2	1.2	Made ground
	1.2	1.4	0.2	Coal
	1.4	5.3	3.9	Mudstone grey brown soft
	5.3	8.7	3.4	Mudstone black
	8.7	9.6	0.9	Coal
	9.6	18.0	8.4	Mudstone grey
				Cased to 1.0m No gases recorded

Driller Ian Wiles	Driller's Assistant Deven Robson & Simon Fish
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