

**Environmental
Geotechnical
Specialists**



REPORT

job number	J3905/17/EDS	site address	34 Tivydale Close,
date	18/05/17		Cawthorne,
written by	C.E. Mason		Barnsley,
			S75 4ET
checked by	J.R. Farnsworth	issued by	R.A. Palmer

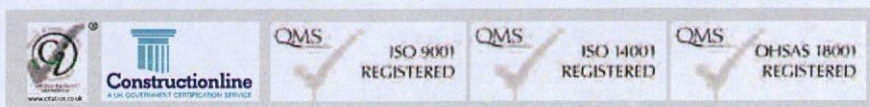
Rogers Geotechnical Services Ltd

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GEOTECHNICAL
ENVIRONMENTAL



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Report on a Coal Mining Risk Assessment

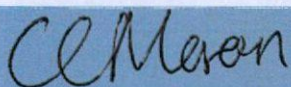
Location: 34 Tivydale Close, Cawthorne, Barnsley, S75 4ET

For: Mr Andrew Swift

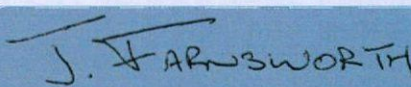
Report No. J3905/17/EDS

Report date: May 2017

For and on behalf of **Rogers Geotechnical Services Ltd**



C. E. Mason BSc FGS
Graduate Geotechnical Engineer



James Farnsworth BEng FGS
Senior Geotechnical Engineer

1. Introduction

It is understood that as part of the planning application at the site, a Coal Mining Risk Assessment has been requested by the planning authority. Consequently, a desktop study was commissioned in order to assess the risk to the development from coal mining. This report presents the findings of the study.

2. Geological Desk Study

The geological desk study has been undertaken using the following sources of information.

- British Geological Survey map sheet¹.
- British Geological Survey *Geology of Britain Viewer*².
- Coal Authority Report³.
- British Geological Survey *Borehole Records*⁴.

2.1 British Geological Survey Maps and Viewer

The appropriate map sheet for the site and the geology viewer has been examined and the following table presents the indicated geology:

¹ Sources: British Geological Survey (NERC) Map Sheet 87 ; Barnsley Solid and Drift Editions

² Sources: British Geological Survey (NERC) *Geology of Britain Viewer* [online resource from www.bgs.ac.uk]

³ Coal Authority Reference: 51001467019001 dated 15th May 2017

⁴ Sources: British Geological Survey (NERC) *Borehole Records* [online resource from <http://www.bgs.ac.uk/>]

Table 1: Geological Data for the Site

Strata Type	Strata Name ⁵	Previous Name ⁶	Description ⁶
Superficial Geology			None recorded.
Solid Geology	Pennine Lower Coal Measures Formation	-	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.

There are no dip indicators relevant to the site (i.e. within 500m of the site or within the same fault block) on the geological map. However, taking into account the structure of the regional geology and outcrop patterns, it can be anticipated that the solid geology within the local area dips at shallow angles towards the east.

In addition, the site is situated within a heavily faulted area, with a general regional fault trend pattern of northwest-southeast. Furthermore, the site is within close proximity to various infilled ground features. These features appear to be located within close proximity to coal seams, and therefore are anticipated to represent opencast mining operations.

There are two coal seams that are shown to outcrop within the local area. These seams are summarised as follows:

Table 2: Summary of coal seams within the vicinity of the site.

Seam Name	Seam thickness ^{5*}	Outcrop distance from site ⁵	Anticipated depth below site
Silkstone Four Foot (Wheatley Lime) Coal	0m – 1.6m	200m W	Within 15m bgl.
Siltstone (Blocking) Coal	0.1 – 2.3m	500m W	Within 20m to 30m bgl.

*All distances are given as approximations only. It should be noted that coal seam thicknesses vary over relatively short distances

The Silkstone Four-Foot Coal (Wheatley Lime Coal) usually lies about 35 m above the Silkstone Coal in the north-west of the Barnsley district. This seam is noted to be discontinuous in nature and is anticipated to be separated from the Silkstone Coal Seam by a parting of sandstone. Taking into account the topography of the area and the geological map, it can be assumed that this seam may be present within 15m bgl.

The Silkstone Coal seam is commonly known to have a thin dirt parting and is generally over 1.5 m thick. In the Barnsley district, a significant split develops to the east of Barrow and the Top and Low Silkstone coals are commonly separated by a body of siltstone and sandstone. Here only the top coal was usually worked; the separation of the coals may be up to 10 m. Taking the above information into consideration, it may be assumed that this seam will be present between 20m and 30m bgl.

⁵ Sources: British Geological Survey (NERC) Map Sheets 87; Barnsley; Solid and Drift Edition, and Geology of Britain Viewer [online resource from www.bgs.ac.uk]

⁶ Sources: British Geological Survey (NERC) Lexicon of Named Rock Units [online resource from www.bgs.ac.uk]

2.2 Coal Authority Mines Report

As part of this study a Non-residential Coal Authority Mining Report has been obtained. The report is presented as Appendix 2 and for the purposes of discussion has been summarised below:

Table 3: Summary of the Non-residential Coal Authority Mining Report			
Has the search report highlighted evidence or potential of:			
Ref	Mining Feature	Yes/No	Comments
1	Underground Coal Mining: Past	Yes	The property is not within a surface area that could be affected by past underground mining. However the property is in an area where the Coal Authority believe there is coal at or close to the surface. This coal may have been worked at some time in the past. The potential presence of coal workings at or close to the surface should be considered prior to any site works or future development activity. Your attention is drawn to the comments on the Coal Authority information section of the report.
2	Underground Coal Mining: Present	No	The property is not within a surface area that could be affected by present underground mining.
3	Underground Coal Mining: Future	Yes	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	Yes	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	No	Please see CON29M (51001467019001) for further information.
6	Opencast Coal Mining: Past	No	
7	Opencast Coal Mining: Present	No	
8	Opencast Coal Mining: Future	No	
9	Coal Mining Subsidence	No	
10	Mine Gas	No	
11	Hazards Related to Coal Mining	No	
12	Withdrawal of Support	No	

2.3 Geological Survey Borehole Records

The British Geological Survey (NERC) keeps borehole records from across Britain which are available for public viewing through their website⁷. As part of this study, the records in the area around the site have been reviewed in order to assist in establishing the geological conditions.

Based upon records provided by the British Geological Survey (NERC) the following table has been produced as a summary for the most applicable features of note in relation to this study, the logs of the boreholes are presented as Appendix 3:

Borehole	Approx. Distance from Site	Depth of borehole (m)	Notable features
SE20NE20	360m SW	12m bgl	Good quality coal split with a thin parting of mudstone was noted from between 10m – 10.7m bgl (0.70m thickness). Borehole records suggest that this seam is consistent with the Silkstone Coal Seam.
SE20NE21	360m SW	12m bgl.	Good quality coal split with a thin parting of mudstone was noted from between 9.3m – 10.8m bgl (1.5m thickness). Borehole records suggest that this seam is consistent with the Silkstone Coal Seam.
SE20NE22	360m SW	12m bgl	Good quality coal split with a thin parting of mudstone was noted from between 9m – 10.5m bgl (1.5m thickness). Borehole records suggest that this seam is consistent with the Silkstone Coal Seam.

It should be appreciated that there was limited borehole data within the vicinity of the site that was available for public viewing. Other borehole scans were available at a greater distance from the site (within other fault blocks), however, these were felt to be of limited value to the study as they are not anticipated to present comparable ground conditions to those below the surface of the site.

Nevertheless, the boreholes have indicated one notable coal seam is present within 12.0m of the ground surface within the local area. Based on the available geological data, it is anticipated that these seams may represent the Silkstone Coal Seam. This seam was proven intact in all borehole locations. Moreover, the seam encountered within these boreholes was of good quality and of an economic thickness. Therefore, there remains the possibility that coal seams of economic value may be present below the site surface.

Due to the location of these boreholes, no evidence of the Silkstone Four Foot (Wheatley Lime) Coal was observed. No borehole scans are available within the vicinity of the site that are likely to provide further information in regards to this seam.

3. Risk Assessment

The risk to the stability of the proposed residential development has been evaluated from the data obtained and with reference to the following ratings and definitions:

- Low - The possibility of instability is unlikely therefore no further action is necessary.
- Moderate - The possibility of instability is likely and further investigation or remedial action may be required.

High - The possibility of instability is highly likely and further investigation or remedial action will be necessary.

Table 5: Development specific risk assessment

Item	Risk of Instability	Coal Seam(s) Considered	Risk Rating
1	Shallow coal seams	Silstone Four Foot (Wheatley Lime) Coal Siltstone (Blocking) Coal	Moderate Moderate
2	Coal workings at depth	The property is not within a surface area that could be affected by past underground mining.	Low

On the basis of all of the information provided above, two coal seams are anticipated to be present within 30m of the surface at the site. Whilst these seams may be of limited thickness, the possibility of these seams being worked below the site cannot be ruled out. Historic coal mining activity is evident in the nearby area, and therefore it is considered that if coal was known to be close to ground level it could have been removed illicitly via shallow mining methods with relative ease.

It may be noted that guidance available from both the NHBC and the CIRIA publication, SP32 - *construction over abandoned mine workings*, suggests that competent overburden thickness above a coal seam should be greater than 10 times the thickness of a seam plus seam thickness in order that the collapse of workings would pose a low risk to surface structures.

On this basis, assuming a maximum thickness of the coal seams, the table below suggests the thickness of competent overburden required above each seam to mitigate instability at the surface.

Table 6: Required thickness of competent overburden

Seam Name	Seam thickness	Anticipated depth below site	Required thickness of competent overburden.
Silstone Four Foot (Wheatley Lime) Coal	0.0m – 1.60m	Within 15m bgl.	17.6m
Siltstone (Blocking) Coal	0.1m – 2.3m	Within 20m to 30m bgl.	25.3m

Based on the above information, it is considered that there may not be a sufficient thickness of competent overburden above these seams in order to prevent the risk of instability posed by the presence of any illicit workings. Therefore, a moderate risk rating has been placed on these seams and further investigation is recommended to prove or disprove the presence of illicit mining activity.

In regard to deeper mining which could affect the site, the property is not in a surface area that could be affected by underground mining at depth. Therefore, there is considered to be a low risk of instability at the site due workings at depth.

4. Conclusions

In light of the potential risks of instability at the site from the working of shallow coal at the site, it cannot be recommended that development takes place without further investigation to conclusively determine the presence of such workings. This work should include physical drilling methods to explore the ground conditions.

General practice is to undertake rotary openhole boreholes at three locations across the site to mitigate against the potential for drilling through intact columns associated with pillar and stall workings. Furthermore, it is normal to investigate the ground to 30m below ground level; any workings below this depth are unlikely to result in significant instability. However, in this case, the risk of instability is due to shallow workings, therefore, drilling to these depths may not be necessary and the objective should be to ensure that the shallow seams are un-worked or have sufficient competent cover. It may therefore be possible, in the first instance, to undertake one borehole to 30m below the top of the rockhead, with the remaining boreholes proving the depth and continuity of the coal seam. In any event, it is considered that approval should be sought with the Local Authority as to the efficacy of this approach.

Rogers Geotechnical Services would be happy to assist in any further intrusive investigation that may be required.

Appendix 1

Site Plan

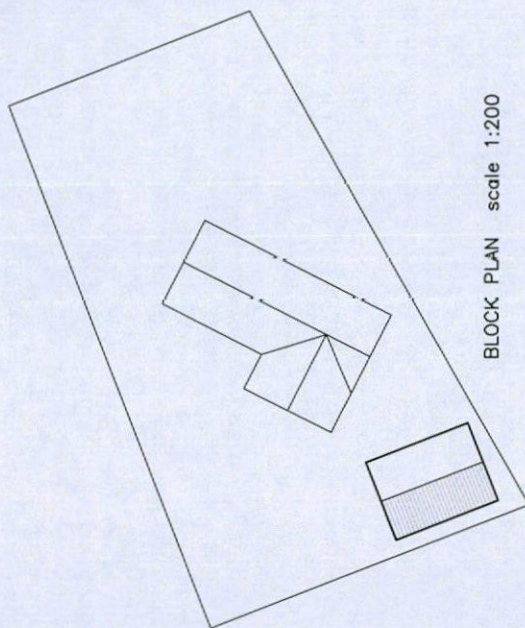
ROOF

WALLS

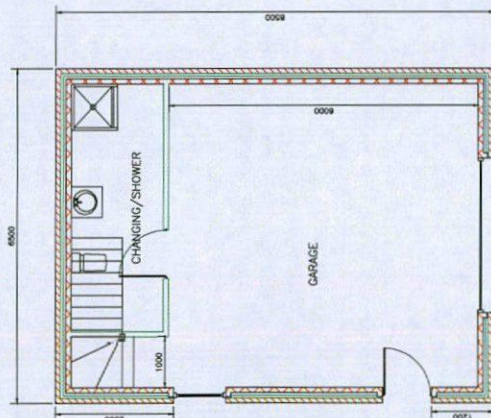
FOUNDATION

REAR ELEVATION

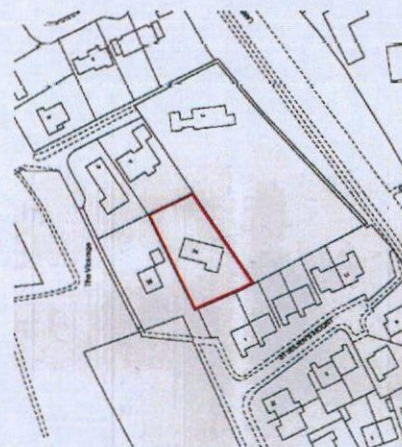
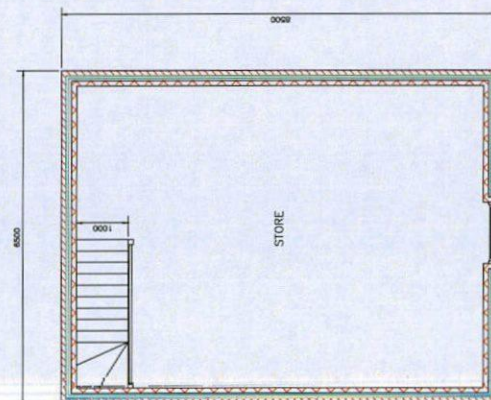
BLOCK PLAN scale 1:200



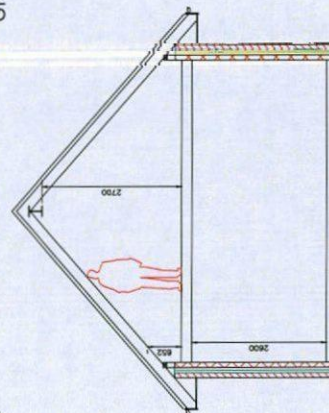
GROUND PLAN



GROUND PLAN



SECTION



Actual depth of foundations to be determined on site.
All work to be to the satisfaction of the local authority.
All dimensions to be checked on site and any discrepancies must be notified immediately.
All dimensions are in millimetres unless otherwise stated.
Information given on this drawing is subject to local authority approval.
Do not scale this wing.

PROJECT MANAGEMENT



4 HIDDENFIELD ROAD, BURNLEY, SOUTH LANCASHIRE, B7 9LJ
 TELEPHONE (01226) 386276 E-mail: info@pmcdesign.co.uk
 FAX (01226) 731282

MR. A. SWIFT

PROJECT	PROPOSED DOMESTIC GARAGE&WORKSHOP 34 TIVYDALE CLOSE CAWTHORNE
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FILE NAME	CMSLING	SOURCE DATE	DATE	VERSION	REQ.
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Appendix 2

Coal Authority Report



The Coal
Authority

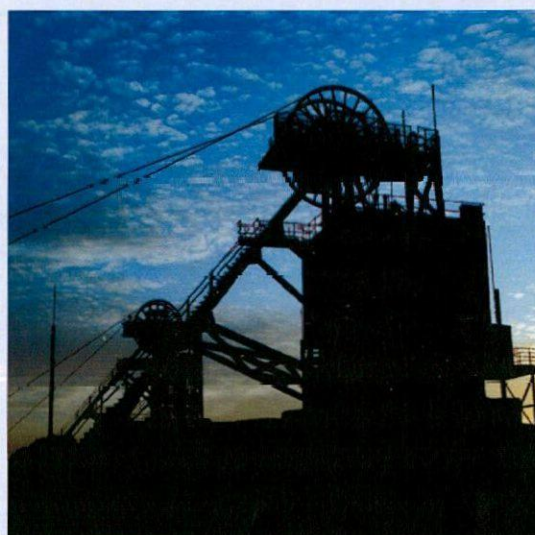
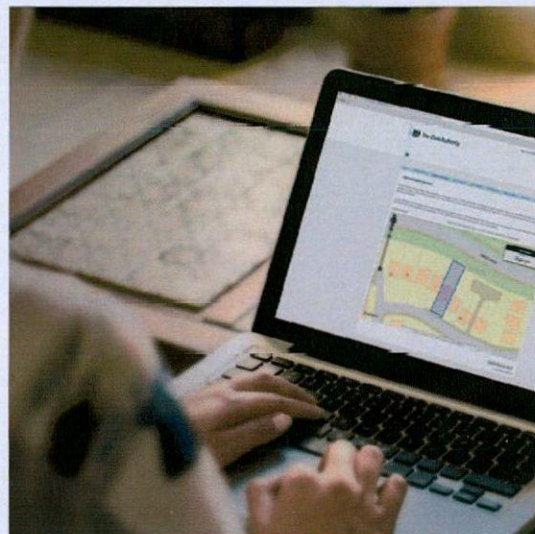
Resolving the **impacts** of mining

CON29M Non-Residential Mining Report

34 TIVYDALE CLOSE
34
TIVYDALE CLOSE
CAWTHORNE
BARNLEY
SOUTH YORKSHIRE
S75 4ET

Date of enquiry:	15 May 2017
Date enquiry received:	15 May 2017
Issue date:	15 May 2017

Our reference:	51001467019001
Your reference:	J3905_17_EDS



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

ROGERS GEOTECHNICAL SERVICES LTD

Enquiry address

34 TIVYDALE CLOSE, 34, TIVYDALE CLOSE,
CAWTHORNE, BARNSELY, SOUTH YORKSHIRE, S75
4ET

How to contact us

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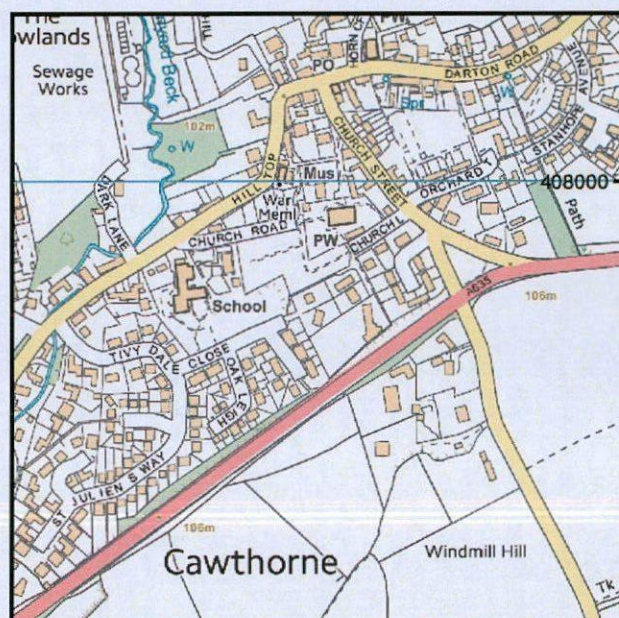
200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

 /company/the-coal-authority

 /thecoalauthority

 /coalauthority



Approximate position of property



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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	No
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 not within a surface area that could be affected by past underground mining.

However the property is in an area where the Coal Authority believe there is coal at or close to the surface. This coal may have been worked at some time in the past. The potential presence of coal workings at or close to the surface should be considered prior to any site works or future development activity. Your attention is drawn to the Comments on the Coal Authority information section of the report.

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 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.

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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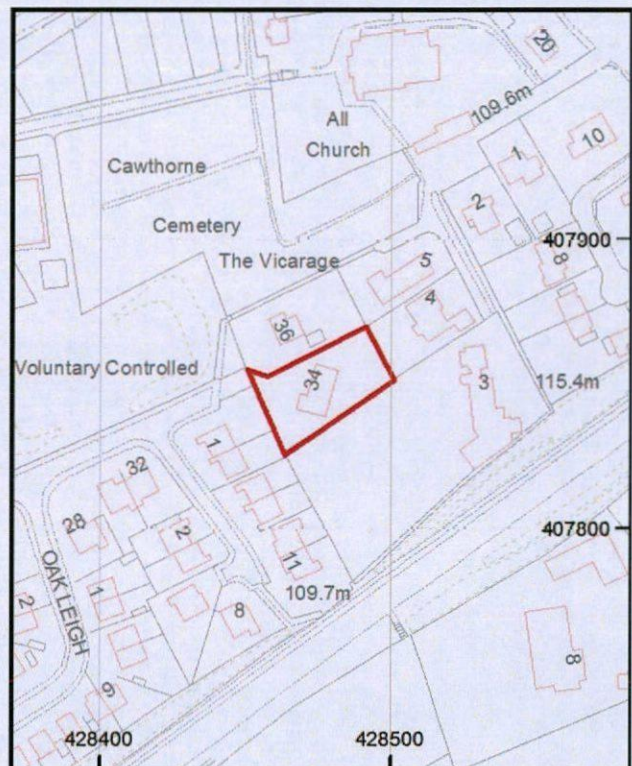
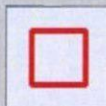
Alternative formats

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

Enquiry boundary

Key

Approximate position of enquiry boundary shown



How to contact us

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 /coalauthority



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VAT receipt

Issued by	The Coal Authority 200 Lichfield Lane Mansfield Nottinghamshire NG18 4RG
Tax point date	15 May 2017
Issued to	ROGERS GEOTECHNICAL SERVICES LTD BARNCLIFFE MILLS NEAR BANK SHELLEY HUDDERSFIELD KIRKLEES HD8 8LU
Property search for	34 TIVYDALE CLOSE 34 TIVYDALE CLOSE CAWTHORNE BARNLEY SOUTH YORKSHIRE S75 4ET
Reference number	51001467019001
Date of issue	15 May 2017
Cost	£78.30
VAT @ 20%	£15.66
Total received	£93.96
VAT registration	598 5850 68

Appendix 3

BGS Borehole Records

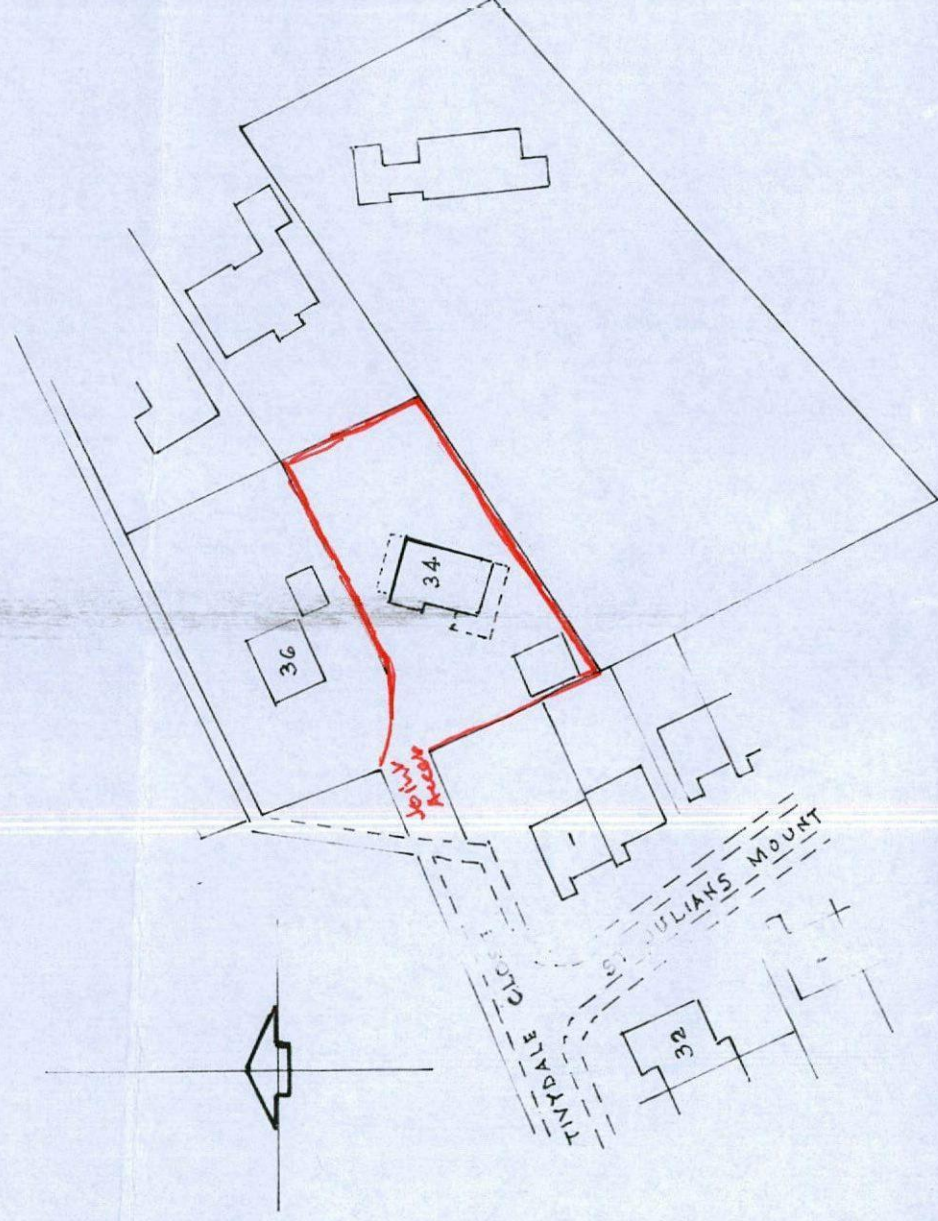
SG 2DNE 2D 281-076

Michael D. Joyce Associates Consulting Geotechnical Engineers				BOREHOLE RECORD		BOREHOLE NUMBER 1
Site: Five Dale Road				Location: Carthage		SHEET 1 of 1
Client: Classic Construction				Method/Size: Rotary Openhole/15cm		
BORING			STRATA RECORD			
DATE	CASING (m)	WATER (m)	DEPTH (m)	LEVEL (m)	REMARKS	DESCRIPTION
10/2/89	0.00	0.00	0.0			Top of Borehole
			0.5			MADE GROUND Fine to silty gray-brown silty clay with mudstone and shale fragments.
			2.00			
			3.50			Medium gray-brown ironstained, silty, shaly weathered MUDSTONE, with interbedded black shale bands.
			5.00			Medium gray-brown ironstained silty shaly MUDSTONE.
						Medium gray ironstained silty shaly MUDSTONE. Occasional thin black shale bands. Occasional thin gray-brown siltstone bands.
			9.50			
			10.00			Good quality COAL (Bilstonia Coal seam).
			10.25			Medium gray-brown MUDSTONE.
			10.70			Good quality COAL (Bilstonia Coal seam).
			11.50			Light gray silty shaly MUDSTONE (Batearth).
10/2/89			12.00			Medium gray ironstained, silty shaly MUDSTONE.
						End of Borehole.
Remarks and Water Observations Borehole dry on completion of drilling. Groundwater seeped into open borehole after removal of drill rods. Poor air returns 0.1 - 1.5m. Good air returns 1.5 - 12.0m.						

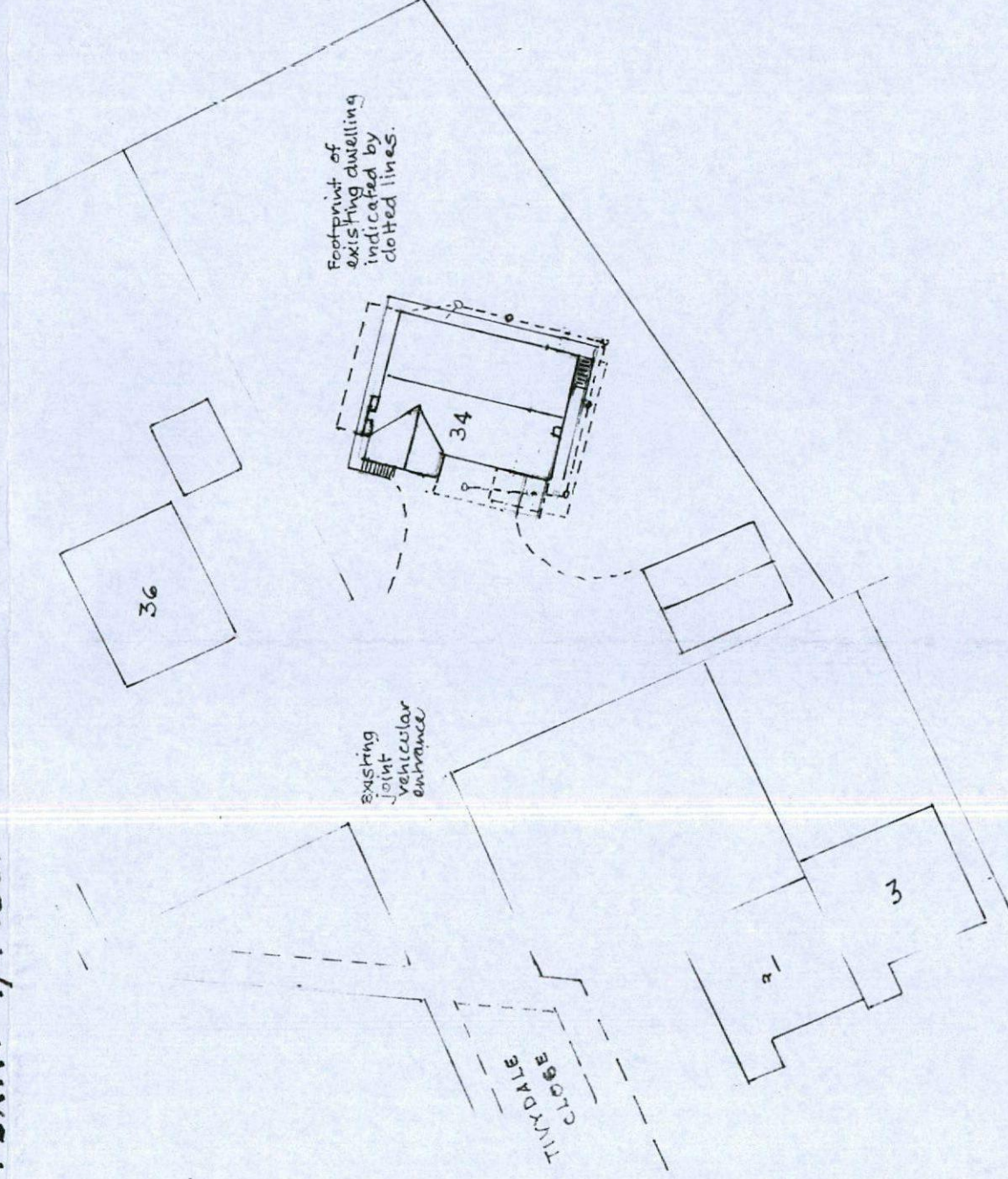
PROPOSED REBUILD

34 TIVYDALE CLOSE, CAWTHORNE S75 4ET

FOR ANDREW SWIFT ESQ



SITE PLAN: 1/1250.



BLOCK PLAN: 1/500.