LYONS CMC
COAL MINING & GEOTECHNICAL CONSULTANCY
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ATTA Properties Ltd
Office Three
Victoria Road
Barnsley
S70 2BU

Date: 19th March 2024
Your ref: (S75 1LL)
My Ref: SI 00326

FOR THE ATTENTION OF MR DAVID REED & TOM AGUS

Dear Sirs,

COAL MINING RISK INTERPRETATION REPORT – FOLLOWING THE SITE INVESTIGATION FOR PROPOSED RESIDENTIAL DEVELOPMENT AT LAND ADJACENT 152 BARUGH LANE, BARNSLEY S75 1LL

I am pleased to supply the following report for the above named project and trust that this satisfies your requirements. Please do not hesitate to contact myself at any time for further clarification or advice.

Yours Sincerely,

M Lyons

M. Lyons
Consultant Mining Engineer
BSci CSci MIMMM

Contents

1. Introduction

Planning permission is being considered for the development of a detached dwelling at the above location subject to the mining legacy risks been fully realised and mitigated from on site, if necessary. Cape Site Services has now undertaken this work via an intrusive site investigation of 4 boreholes, the location of which is outlined on plan no. 00299/B – as attached and illustrated in appendix 5.2.

2. Scope of the Report

The mining legacy risks to the development are as follows:

- Instability from shallow underground coal workings
- Uncharted mine entries
- Fugitive gas emissions

As such, these risks need to be properly determined to ensure sound stability for the development. A borehole investigation consisting of 4 to 6 holes was deemed a reasonable level of investigation in the outset regarding potential void migration given the scale and nature of development combined with the available geological and mining information. A watching brief would also be implemented for any signs of mine entries.

It should be noted that this investigation is focused mainly on determining stability from potential shallow historic coal workings and will only provide limited information regarding the risks of uncharted mine entries.

3. Site Investigation

3.1 Methodology

Prior to the intrusive site investigation, a search for utilities was undertaken both via online data providers and physically on site using a Cable Avoidance Tool (CAT). Boreholes were marked out with tape measure from boundary lines as illustrated on plan no. 00299/B outlined in appendix 5.2. The process for the intrusive coal seam investigation is outlined via the system chart in appendix 5.4.

An investigation utilising a tracked Beretta Rotary Drill Rig equipped with 2m long 75mm diameter drill rods was deemed appropriate in this instance along with water flush techniques to analyse returns and minimise any risks associated with mine gas emissions and spontaneous combustion. Gas monitoring equipment would be employed during works for risks associated with Methane, Carbon Monoxide, Oxygen and Carbon Dioxide. Prior agreement had been secured for these works from the Coal Authority -permit ref: 27947 – as attached for reference in appendix 5.5.

Considering the geological/mining details and our CMRA report (ref: CMRA 00299 dated 8th September 2022) boreholes were decided to be taken to the base of the second seam (Low Haigh Moor seam) or to 30m if not encountered.

The works were to be supervised by the Drilling Engineers Mr. S. Fish and Mr I. Wiles, and overseen by the Principal Engineer Mr. M. Lyons.

3.2 Interpretation of Findings

All boreholes proved brown weather sandstone at the surface to between 1.5m - 2.4m deep, beneath 0.4m of topsoil in BH's 1 & 2; 0.8m of fill in BH3; and 0.7m of concrete fill in BH4. Below the weathered sandstone lies what is believed to be the 'Top Haigh Moor' coal seam, circa 1.4m thick (with a relatively large dirt-band of circa 0.4m): at 2.2m deep in BH1, 1.5m deep in BH2, 2.4m deep in BH3 and 2.3m deep in BH4. Silty mudstones and sandstones were then proved beneath the top coal seam to what is believed to be the 'Low Haigh Moor' coal seam, circa 0.9m thick, at 9.6m deep in BH1, 9.7m deep in BH2, 9.6m deep in BH3 and 9.5m deep in BH4. A slight dirt-band of circa 0.1m was noticed in this second seam in BH3 alone. All holes were terminated in circa 1.5m of firm silty mudstone beneath the Low Haigh Moor seam, with no loss of flush encountered.

No signs of underground shallow workings or unstable ground were noted at any of the four boreholes. It seems likely that the Top Haigh Moor coal seam will have been left unexploited in this specific area with it being too shallow/weathered and given the relatively large dirt-band. No fugitive gases were detected at any point during the drilling operations.

The logs appear to match well considering the slight variations in height across the area investigated which would infer no signs of any geological faulting between the borehole locations.

4. CONCLUSIONS AND RECOMMENDATIONS

1) Although the Top Haigh Moor coal seam lies within an influencing depth of the proposed development, the four boreholes undertaken have proved stable ground conditions in the areas investigated across the proposed footprint area – given current deigns/layouts. At such a relatively shallow depth and given the findings/maintenance of flush, it is unlikely that historic underground mining has taken place. As such the risk of shallow mining instability is considered low. Having said this it would be prudent to offer an element of strengthened foundations (such as thickened & strengthened strip footings with two layers of mesh for example), in order to accommodate any residual slight risks within areas not covered by this investigation. Regulators should be consulted for their agreement of any such proposals prior to development taking place.

2) Should any coal be exposed in future foundation work then an appropriate sulphur resistant concrete grade should be utilised and the coal should be totally blinded off to minimise spontaneous combustion risks.

3) No signs of any mine entries were observed during the investigation, however slight risks are always present within the exposed coalfield for discovering such features. Watching briefs would be prudent during future ground works for any associated signs of either an old mine shaft or adit. The Coal Authority should be notified where any such feature is suspected.

4) No fugitive gases were encountered, however given the relatively shallow workable coal and overlaying porous sandstone the actual position may vary across the site depending on site specific conditions in areas not covered by this investigation (note: associated risks will increase significantly if any unchartered mine entries are discovered). A period of gas monitoring would be an option, although it may be a more desirable solution to include gas protection measures (such as a methane membrane and/or positive ventilation layers) within future foundation designs in any case; which could also protect from radon issues if required. All usual safety precautions should be employed regarding possible fugitive gases in any deep excavation work taking place.

This report and future development proposals should be submitted to the regulators for their approval prior to any works taking place.

I trust that this satisfies your requirements, however please do not hesitate to contact myself at any time for further clarification or advice.

Yours Sincerely,

M Lyons

M. Lyons
Consultant Mining Engineer
BSc Csci MIMMM

Enc.

5 Appendix

5.1 References

5.1.1 CIRIA C758D ‘Abandoned mine workings manual’.

5.1.2 British Standards Institution: BS 5930:2015 ‘Code of practice for ground investigations’ BSI 2015.

5.1.3 British Standards Institution: BS EN ISO 14688-1: 2002 + A1 2013 ‘Geotechnical Investigation and Testing – Identification and Classification of Soil – Part 1 – Identification and Description. BSI 2013.

5.1.4 British Standards Institution: BS EN ISO 14689-1: 2003 ‘Geotechnical Investigation and Testing – Identification and Classification of Rock – Part 1 – Identification and Description. BSI 2003. Incorporating Corrigendum No. 1 February 2007.

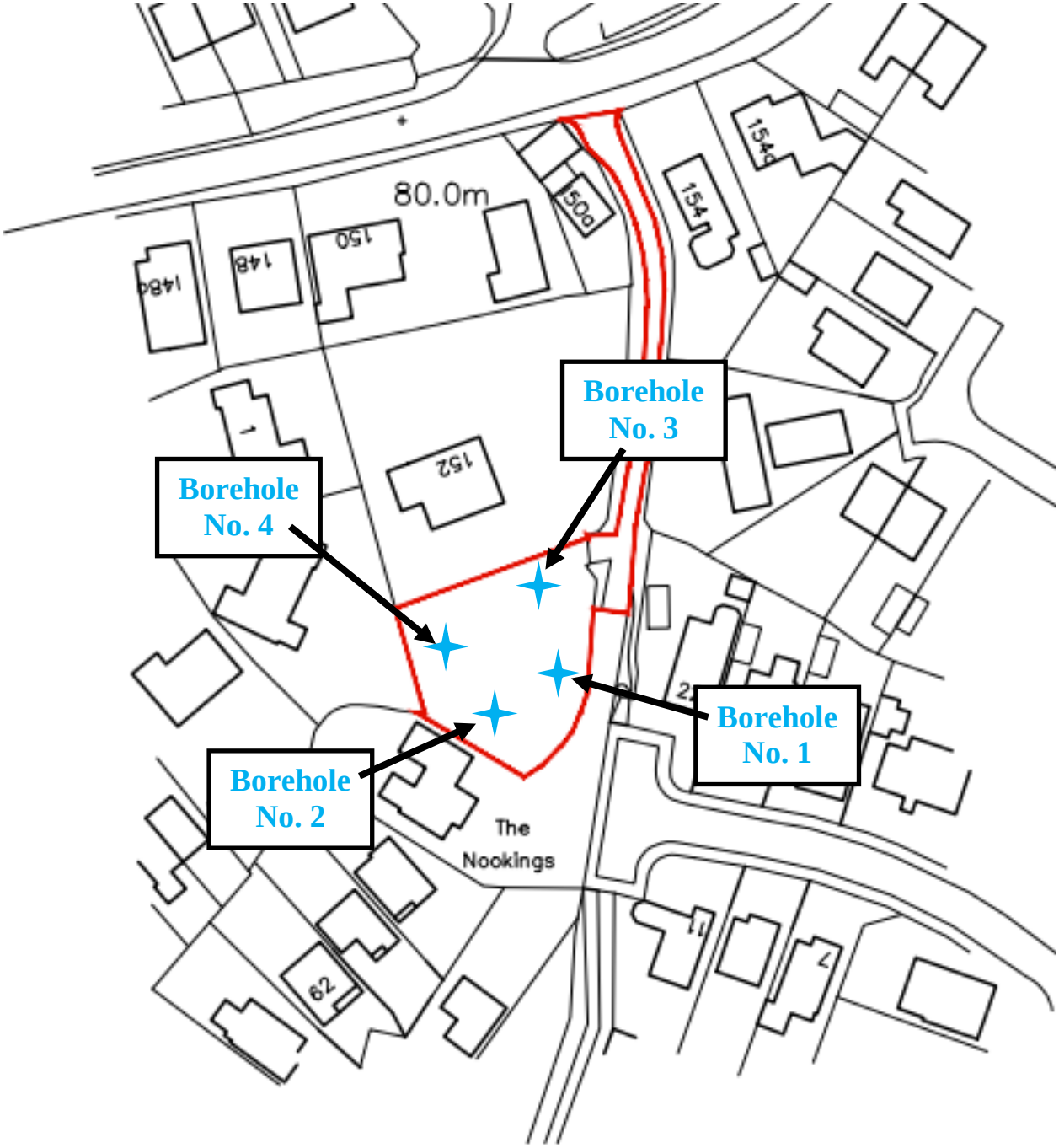
5.1.5 British Standards Institution: BS 10175 ‘The Investigation of Potentially Contaminated Sites. Codes of Practice’. BSI 2011+A1 2013.

5.1.6 British Standards Institution: BS EN ISO 22476-3: 2005 + A1 2011 ‘Geological Investigating and Testing. Field Testing. Standard Penetration Test’.

5.1.7 British Stardard 1377:1990 Parts 1-9 ‘Methods of Test for Soils for Civil Engineering Purposes’.

5.2 Borehole Location Plan No. 00299/B

LAND ADJACENT 152 BARUGH LANE
BARNSLEY S75 1LL
Site Investigation
Borehole Location Plan
(NTS)



5.3 Drilling log sheets

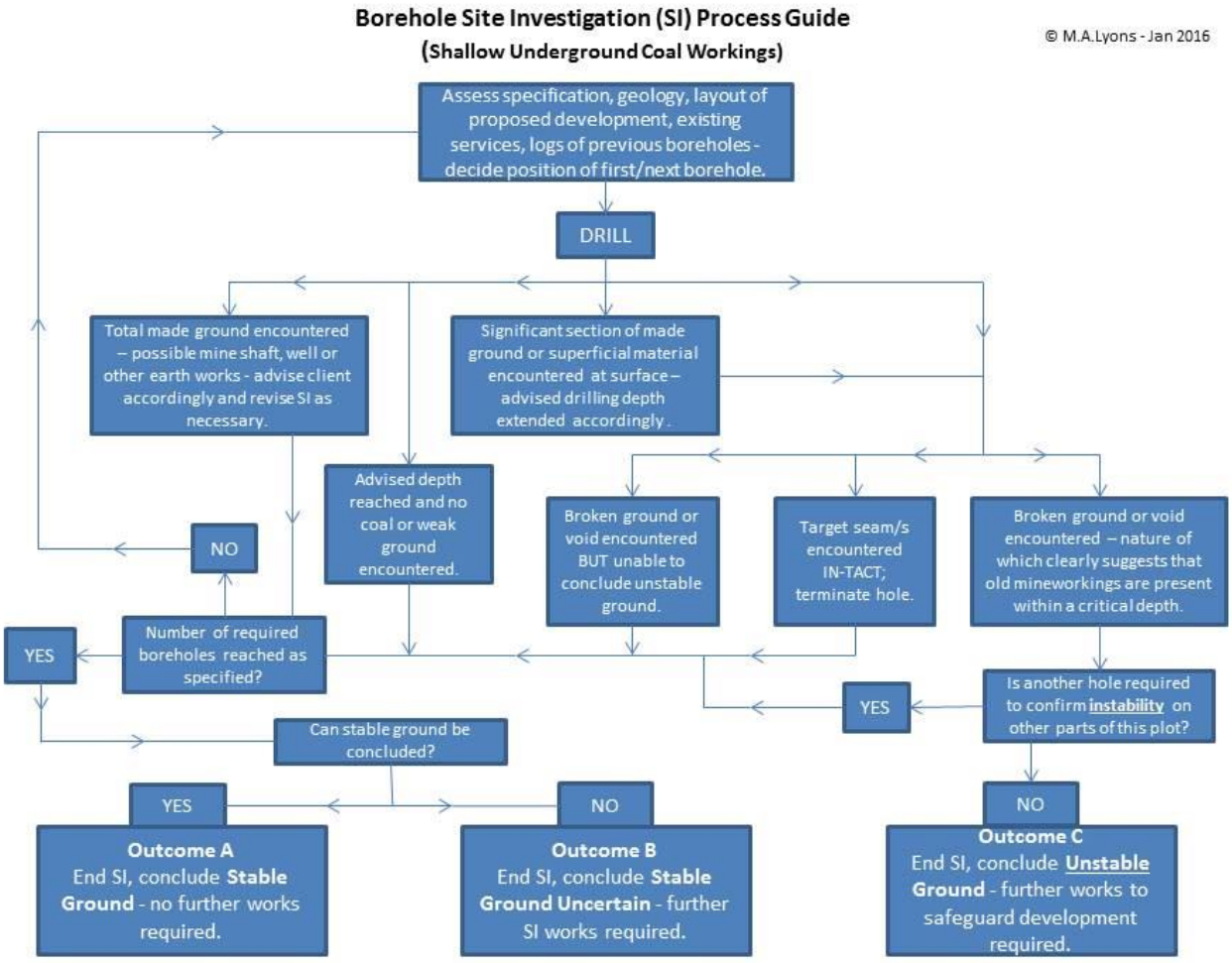
Client: Lyons CMC	Site: Land Adj to 152 Barugh Lane, Barugh Green, Barnsley. S75 1LL	Cape Site Services Ltd Unit 2, Rear of castle buildings, Carlton Road, Barnsley, South Yorkshire, S71 3HX
Date: 07/03/2024 Permit No: 27947	METHOD Rotay Water Flush	

Measurements In Meters

BH no	FROM	TO	THICKNESS	Description
1				
	0.0	0.4	0.4	Topsoil
	0.4	0.8	0.4	Sand clayey brown with sandstone lumps
	0.8	2.2	1.4	Sandstone brown weathered
	2.2	2.7	0.5	Coal
	2.7	3.1	0.4	Mudstone grey
	3.1	3.6	0.5	Coal
	3.6	7.5	3.9	Mudstone grey silty
	7.5	9.6	2.1	Sandstone grey silty
	9.6	10.5	0.9	Coal
	10.5	13.0	1.5	Mudstone grey silty
2				
	0.0	0.4	0.4	Topsoil
	0.4	1.5	1.1	Sand clayey brown with sandstone lumps
	1.5	1.8	0.3	Coal
	1.8	2.4	0.6	Mudstone grey silty
	2.4	3.0	0.6	Coal
	3.0	7.2	4.2	Mudstone grey silty
	7.2	9.7	2.5	Sandstone grey silty
	9.7	10.2	0.5	Coal
	10.2	10.3	0.1	Mudstone grey
	10.3	10.7	0.4	Coal
	10.7	12.0	1.3	Mudstone grey silty
3				
	0.0	0.8	0.8	Fill
	0.8	1.5	0.7	Sand clayey dark brown
	1.5	2.4	0.9	Sandstone brown weathered
	2.4	2.8	0.4	Coal
	2.8	3.1	0.3	Mudstone grey
	3.1	3.6	0.5	Coal
	3.6	7.0	3.4	Mudstone grey silty
	7.0	9.6	2.6	Sandstone grey silty
	9.6	10.5	0.9	Coal
	10.5	12.0	1.5	Mudstone grey silty
4				
	0.0	0.7	0.7	Concrete fill
	0.7	1.4	0.7	Sand clayey brown with sandstone lumps
	1.4	2.3	0.9	Sandstone brown weathered
	2.3	2.7	0.4	Coal
	2.7	3.0	0.3	Mudstone grey
	3.0	3.5	0.5	Coal
	3.5	7.1	3.6	Mudstone grey silty
	7.1	9.5	2.4	Sandstone grey silty
	9.5	10.4	0.9	Coal
	10.4	12.0	1.6	Mudstone grey silty

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

5.4 Site Investigation Process



5.5 Coal Authority Permit

The Coal Authority

Permit to Enter or Disturb Coal Authority Interests

Permit 27947

Name and Address of Permit Holder:

Haycock & Todd Ltd
The Hollies
43 Church Street
Royston
Barnsley
S71 4QU

Site Location:

Land Adj to
152 Barugh Lane
Barnsley
S75 1LL

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

A Ground Investigation comprising six boreholes to 30m 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:

- *Manned entry (i.e.) into mine entries/workings) is strictly prohibited.*
- *Water flush*
- *Gas Monitoring CO, CH_4, CO_2, O_2, H_2S 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*
- *Appropriate borehole sealing without delay and to withstand site level changes*

Signed: *Michael Amirtash* Granted Date: *23rd February 2024*

For and on behalf of The Coal Authority

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