LYONS CMC
COAL MINING & GEOTECHNICAL CONSULTANCY
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Mr Philip Clark
11 Woodland Rise
Silkstone Common
Barnsley
S75 4RP

Date: 10th May 2022
Your ref: (S75 4RP)
My Ref: SI 00288

FOR THE ATTENTION OF MR PHILIP CLARK

Dear Sir,

COAL MINING RISK INTERPRETATION REPORT – FOLLOWING THE SITE INVESTIGATION FOR PROPOSED RESIDENTIAL DEVELOPMENT AT 11 WOODLAND RISE, SILKSTONE COMMON, BARNSLEY S75 4RP

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

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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. 00288/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
- Geological faulting/unstable bedrock
- 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 3 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. Boreholes will be installed with piezometers for gas monitoring – a separate report will be issued at a later date subsequent to that work being completed.

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. 00288/B outlined in appendix 5.2. As part of the mine entry watching brief, a pre survey was undertaken with no visible evidence of any unchartered mine entries. 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: 24790 – as attached for reference in appendix 5.5.

Considering the geological/mining details and CMRA report (ref: G21494 by Geo-investigate Ltd dated14th December 2021) boreholes were decided to be taken to the base of the second seam (Silkstone 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

Boreholes proved between 0.9m to 1.8m of soft sandy brown clay beneath 0.3m of topsoil. Grey/brown, occasionally silty, firm mudstone bedrock was encountered below the clay above a coal seam of circa 1.8m thick @ 6.8m deep BH1; 7.6m deep BH2; and 7.4m deep BH3. The coal seam appears consistent with being the 'Silkstone Four Foot' coal seam, with a dirt band noted during drilling – although the precise thickness of this dirt band was uncertain. All holes then proved grey, silty mudstone with occasional sandstone bands to 30m deep. This infers that the second seam (Silkstone seam) will be too deep to affect stability given its nature/thickness.

No signs of underground shallow workings or unstable ground were encountered at any of the three borehole locations, with water flush maintained throughout drilling. Had the holes travelled through coal pillars associated with historic shallow pillar and stall type mining, we would have expected an element of loss of flush from the weakening of lateral support to the strata through settlement and weathering. No fugitive gases were detected at any point during the drilling operations.

The logs appear to match well at the same elevation which would infer no signs of any geological faulting between the borehole locations.

4. CONCLUSIONS AND RECOMMENDATIONS

1) Although the Silkstone Four Foot coal seam lies within an influencing depth of the proposed development, the three boreholes undertaken have proved stable ground conditions in the areas investigated, approximately three corners of 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. However, a slight risk will always remain for such in areas not covered by this investigation. Assuming no further investigations take place, it would be prudent to offer a strengthened foundation solution, such as an engineered raft or strengthened strip footings, that can span a 3m soft spot and cantilever 1.5m, in order to accommodate any residual slight risks. Regulators should be consulted for their agreement of any such proposals prior to development taking place.

2) 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.

3) No fugitive gases were encountered, and given the clay deposits the risk of such to impact on development is considered low. Nevertheless, a period of gas monitoring is scheduled to take place and a separate report will be issued at a later date to fully advise on this aspect.

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.

THIS SITE INVESTIGATION INTERPRETATIVE REPORT IS BASED ON AND LIMITED TO THE INFORMATION IN MY RECORD AT THE TIME THE ENQUIRY IS ANSWERED. It is based on my professional opinion in line with the guidelines set out in CIRIA C758D - "Abandoned Mine Working Manual." The opinion may be overruled by Government Authorities based on other information not in my record. Further site investigations may be undertaken which would supersede the factual findings of this investigation. Copyright in this report belongs to M.A.Lyons. All rights are reserved and unauthorised use is prohibited. Copyright is not transferred to external parties by possession of this report, however, those for whom the report is compiled have the right to use it. If any unauthorised third party comes into possession of this report, they rely upon it entirely at their own risk and the author does not owe them any Duty of Care or Skill.

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.

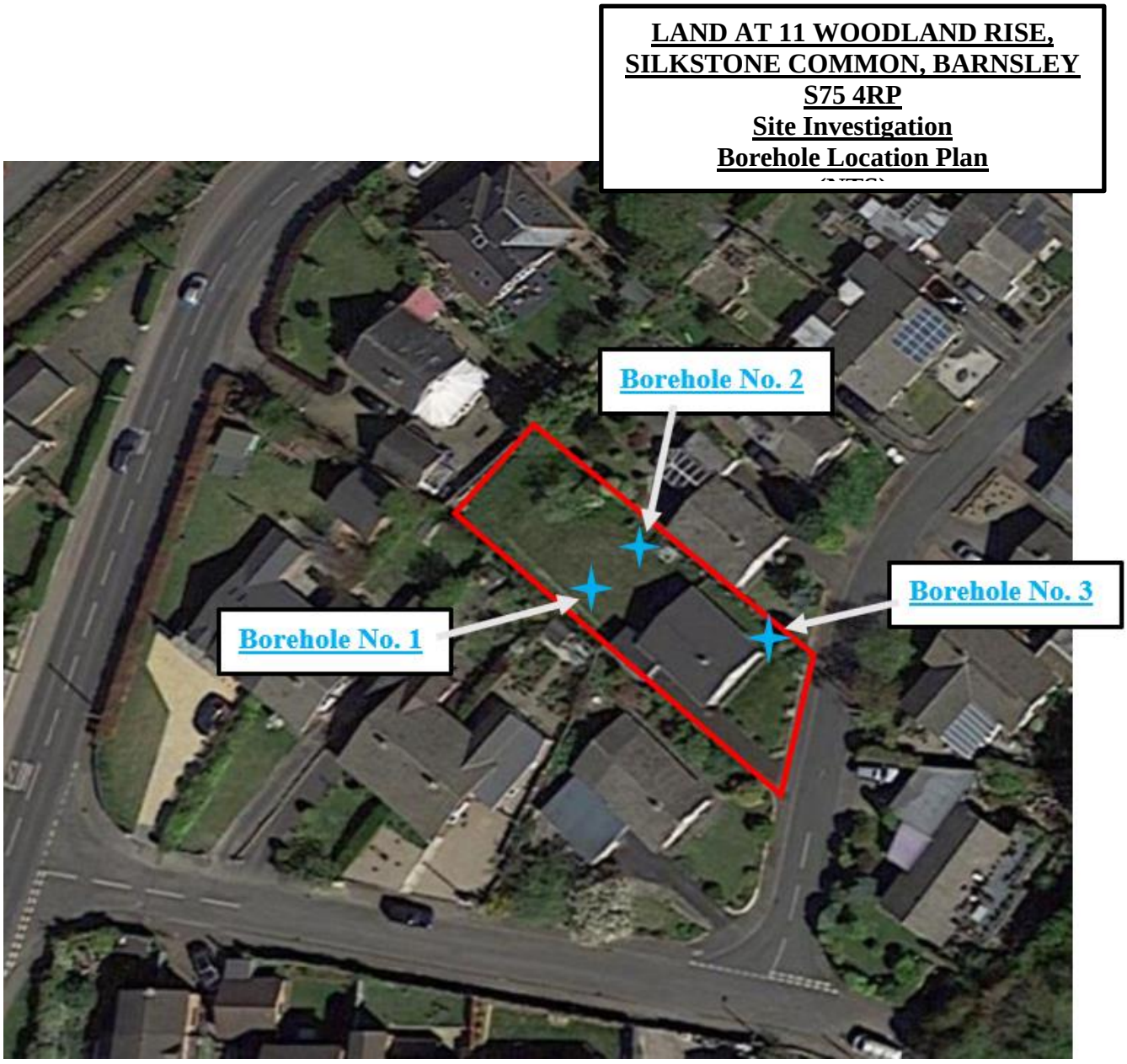
5.1.4 British Standards Institution: BS EN ISO 14689-1: 2003 ‘Geotechnical Investigation and Testing – Identification and Classification of Rock – Part 1 – Identification and Description. BSI 2003. Incorporating Corrigendum No. 1 February 2007.

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. 00288/B



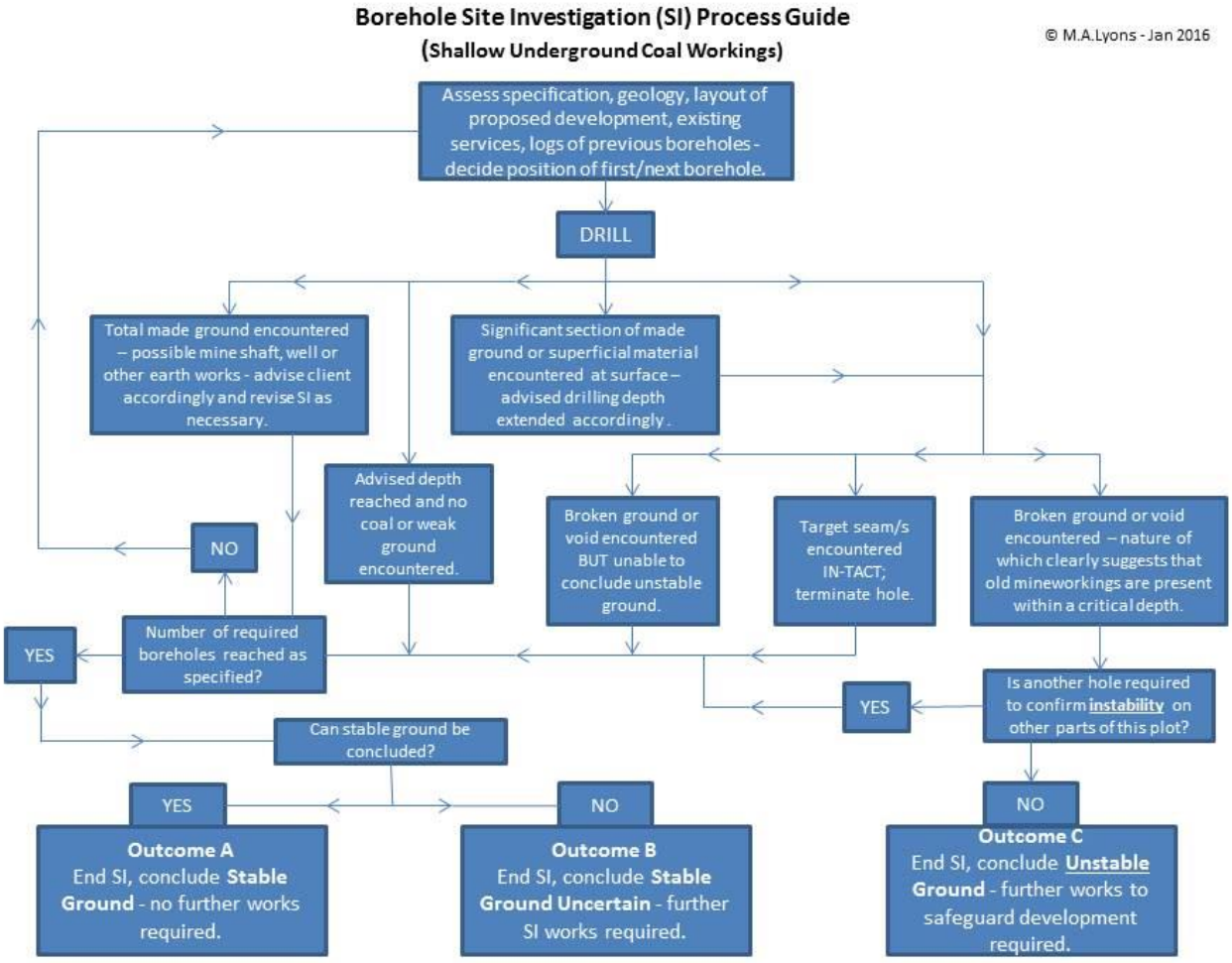
5.3 Drilling log sheets

Client: Philip Clark	**Site:** 11 Woodland Rise, Silkstone Common, S75 4RP		**Cape Site Services unit 2, rear of Castle Buildings Carlton Road, Barnsley, S71 3HX**
Date: 29/04/22	**Method:** water flush	**Permit No:** 24790	
Driller: Ian Wiles		**Driller Assistant: richard hawkins, Simon Fish**	
Drillers Signature:		**Page No:**	

Measurements In Meters

BH No:	FROM	TO	THICKNESS	DESCRIPTION
1				
	0	0.3	0.3	Top Soil
	0.3	2.1	1.8	Clay Brown Sandy
	2.1	4	1.9	Mudstone grey brown silty
	4	6.8	2.8	Mudstone grey / brown
	6.8	8.6	1.8	Coal
	8.6	11	2.4	mudstone grey silty
	11	30	19	mudstone grey silty sandstone bands
2				
	0	0.3	0.3	Top Soil
	0.3	1.5	1.2	Clay Brown Sandy
	1.5	4	2.5	Mudstone grey / brown silty weathered
	4	7.6	3.6	mudstone grey silty
	7.6	9.4	1.8	Coal
	9.4	30	20.6	mudstone grey silty sand stone bands
3				
	0	0.3	0.3	Top Soil
	0.3	1.2	0.9	Clay Brown Sandy
	1.2	4.5	3.3	Mudstone grey brown silty
	4.5	7.4	2.9	mudstone grey silty
	7.4	9.1	1.7	Coal
	9.1	30	20.9	mudstone grey silty sandstone bands

5.4 Site Investigation Process



5.5 Coal Authority Permit

The Coal Authority

Permit to Enter or Disturb Coal Authority Interests

Permit 24790

Name and Address of Permit Holder:

Philip John Clark
11 Woodland Rise
Silkstone Common
Barnsley
S75 4RP

Site Location:

Land at
11 Woodland Rise
Silkstone Common
Barnsley
S75 4RP

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

Ground investigation by three boreholes to 30m to determine the depth and nature of shallow coal seams 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: Jake Morris Granted Date: 19/04/2022

For and on behalf of The Coal Authority

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