LYONS CMC
COAL MINING & GEOTECHNICAL CONSULTANCY
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Mr David Clayton
Shaw Lane Sports Club
Shaw Lane
Barnsley
S70 6HZ

Date: 23rd August 2024
Your ref: (S70 6HZ)
My Ref: SI 00350

FOR THE ATTENTION OF MR DAVID CLAYTON

Dear Sir,

COAL MINING RISK INTERPRETATION REPORT – FOLLOWING THE SITE INVESTIGATION FOR PROPOSED PADDLE COURT SPORTS DEVELOPMENT AT SHAW LANE SPORTS CLUB, SHAW LANE, BARNSLEY S70 6HZ.

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 a 'paddle court' sports development at the above location subject to the mining legacy risks been fully realised and mitigated from on site, if necessary. The report is written on the understanding that no major structures (such as buildings) are part of the proposed development. Cape Site Services has now undertaken this work via an intrusive site investigation of 2 boreholes, the location of which is outlined on plan no. 00350/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 in the Barnsley seam
- Geological faulting/unstable bedrock
- Uncharted Mine Entries

As such, these risks need to be properly determined to ensure sound stability for the development. A borehole investigation consisting of up to 5 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 Elemental GI visited the site and marked out borehole locations as illustrated on plan no. 00350/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, Carbon Dioxide and Hydrogen Sulphide. Prior agreement had been secured for these works from the Coal Authority -permit ref: 28275 – as attached for reference in appendix 5.5.

Considering the detail boreholes were decided to be taken to a maximum of 30m deep if no coal or coal workings are encountered.

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

3.2 Interpretation of Findings

Borehole no 1 clearly encountered old unrecorded coal workings (which are likely to have included an element of void migration) from 4.4m to 8.3m deep. Mudstone bedrock beneath topsoil and clay was noted at 1m deep at this location. With total loss of flush the hole was terminated in firm strata beneath the seam horizon at 9m deep; no dangerous levels of gas emissions were noted throughout drilling.

Borehole no 2 was interpreted as travelling though the side of a coal pillar (given the loss of flush as it passed through the coal seam), with coal encountered at between7.3m to 10m deep – consistent with being the Barnsley coal seam. Mudstone bedrock beneath surface soils and clays was encountered at 2.5m deep at this location, suggesting possible made ground to level the land for its previous use as a bowling green. With poor returns/loss of some flush, and considering that no other workable coal seams will be of concern below the Barnsley coal seam horizon from a shallow mining aspect, this hole was terminated in the firm strata beneath the coal seam at 11m deep; no dangerous levels of gas emissions were noted throughout drilling.

Given the findings of the two holes at each side of the site it is clear that old workings, likely via pillar and stall methods, will affect the whole of this site. Given the age of the workings much settlement will have already taken place, however certain areas of remaining voids will have the potential to manifest to the surface over time as sink holes/crown holes. Any substantial development (although not thought as proposed) which would put a significant load on the strata may encounter future ground settlement as coal pillars deteriorate and the voided ground settles further over time.

4. CONCLUSIONS AND RECOMMENDATIONS

1) Given best practice guidance for development above abandoned mine workings (CIRIA C758D) it is clear that a stability issue is present for this site by way of the shallow coal workings in the Barnsley coal seam at this location. Ground treatment works (such as drilling and grouting) will be an option to stabilise the land (which would be required for any substantial structures or buildings for example), although given the nature of the current proposals (sports courts) it may be acceptable to adopt an appropriately designed formation level alone that mitigates to a satisfactory level for its intended use – via the use of geotextile membranes/matting for example. This information should be presented to an appropriately qualified specialist/structural engineer in this field in order to arrive at an acceptable proposal which is to the agreement of the Coal Authority (as owners of the mining voids).

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 - grey circular areas of fill material within natural bedrock would be an indication of an old mine shaft for example. The Coal Authority should be notified where any such feature is encountered or suspected.

3) No fugitive gases were encountered during this investigation; however, some associated risks will exist given the shallow coal workings within the Barnsley coal seam which is known for spontaneous combustion risks. All suitable safety precautions regarding fugitive gases should be employed where any personnel are working in deep trenches or confined spaces and future development should consider appropriate formation level designs so as to positively vent any build-up of ground gases.

Note: should there be any uncertainty of actual conditions during future ground works Lyons CMC or indeed the Coal Authority themselves can be further consulted for on site assessment if necessary.

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. 00350/B

Former Bowling Green At Shaw Lane Sports Club, Shaw Lane, Barnsley S70 6HZ
Site Investigation
Borehole Location Plan
(NTS)

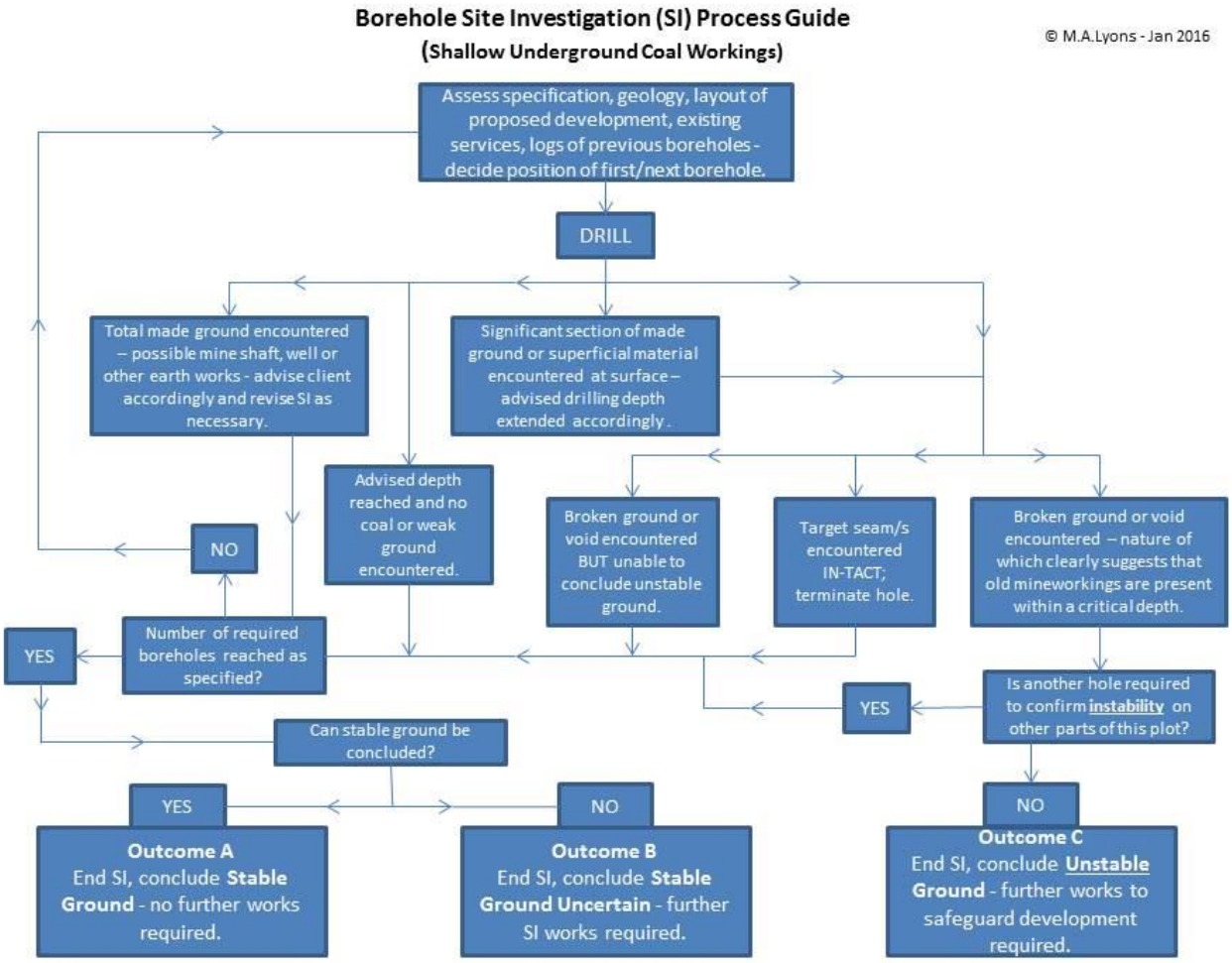
5.3 Drilling log sheets

Client: **Shaw Lane Sports**	**Site: Land at Shaw Lane Sports Ground, Shaw Lane, Barnsley. S70 6HZ**		**Cape Site Services unit 2, rear of Castle Buildings Carlton Road, Barnsley, S71 3HX**
Date: 22/08/2024	**Method:** **water flush**	**Permit No:** **28275**	
Driller: Ian Wiles		**Driller Assistant: Richard Hawkins, Simon Fish**	
		Page No: 1	

Measurements In Meters

BH No:	FROM	TO	THICKNESS	DESCRIPTION
1				
	0	0.4	0.4	Top soil grass
	0.4	1	0.6	Clay grey brown silty
	1	4.4	3.4	Mudstone grey some brown silty
	4.4	8.3	3.9	Voided lost water no returns
	8.3	9	0.7	Solid
2				
	0	0.4	0.4	Topsoil grass
	0.4	1.2	0.8	Clay brown grey
	1.2	1.5	0.3	Clay grey dark
	1.5	2.5	1	Clay brown grey
	2.5	4.2	1.7	Mudstone brown some grey sandy
	4.2	7.3	3.1	Mudstone grey some brown
	7.3	10	2.7	Coal some water loss
	10	11	1	Solid Mudstone grey not much returns

5.4 Site Investigation Process



5.5 Coal Authority Permit

The Coal Authority

Permit to Enter or Disturb Coal Authority Interests

Permit 28275

Name and Address of Permit Holder:

Shaw Lane Foundation
Shaw Lane Sports Ground
Shaw Lane
Barnsley

S60 6HZ

Site Location:

Land at
Shaw Lane Sports Ground
Shaw Lane
Barnsley

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

Ground investigation by five boreholes to 30m to determine the nature and condition 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: *Christopher Bunyan* Granted Date: ***21st August 2024***

For and on behalf of The Coal Authority

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