LYONS CMC
COAL MINING & GEOTECHNICAL CONSULTANCY
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Pattrick Haigh
C/O Land At The Dale Inn
408 Wakefield Road
Denby Dale
Huddersfield
HD8 8RP

Date: 29th August 2024
Your ref: (HD8 8RP)
My Ref: SI 00324

FOR THE ATTENTION OF MR PATRICK HAIGH

Dear Sir,

COAL MINING RISK INTERPRETATION REPORT – FOLLOWING THE SITE INVESTIGATION FOR PROPOSED DEVELOPMENT AT LAND AT THE DALE INN, 408 WAKEFIELD ROAD, DENBY DALE, HUDDERSFIELD HD8 8RP

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
Consultant Mining Engineer
BSci CSci MIMMM

THIS 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 workings manual". 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.

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1. Introduction

Planning permission has been granted for a small ground floor retail unit with first floor flat; this mining investigation is to satisfy Condition 15 of the permission. Cape Site Services has now undertaken the site investigation consisting of 3 boreholes, the location of which is outlined on plan no. 00324/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 Whinmoor coal seam
- Uncharted Mine Entries

As such, these risks need to be properly determined to ensure sound stability for the development. A borehole investigation consisting of 3 boreholes 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. 00324/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, Carbon Dioxide and Hydrogen Sulphide. Prior agreement had been secured for these works from the Coal Authority -permit ref: 28682 – as attached for reference in appendix 5.5.

Considering the detail (our CMRA ref: 00324 dated 5th September 2023) boreholes were decided to be taken to a maximum of 20m 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

All boreholes have proved sandstone bedrock at 2.7/2.8m deep beneath made ground and superficial clay deposits; along with what is interpreted as shallow coal workings at 8.2m/8.3m deep; with voids experienced in all holes where total loss of flush was experienced. Holes were terminated in up to 1.5m of firm strata beneath this horizon.

The voided sections were recorded as circa 1.4m thickness which coincides with the anticipated section of the Whinmoor coal seam as per our previous Coal Mining Risk Assessment.

No fugitive gases were detected at any point during the drilling operations and no adjacent water break outs were experienced.

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 what appears to be the Whinmoor coal seam at this location. ***Note: informatives 1 & 2 in appendix 5.6.*** Remediation strategies for safe development given the findings are likely to consist of one or a combination of the following:

    a. Drilling and grouting the shallow voids – for example on a 3m x 3m grid across and just outside of the proposed development footprint; a 1.5m spaced grout curtain down-dip will be an option, although the seam appears to be quite level so this may not be required;

    b. Piled foundations with ring beam – piles could be sited in the firm ground beneath the workings at a depth of around 11m or so (depending on the advice of the appointed piling contractor). Pile designs that maintain the integrity of the sandstone above the workings would be beneficial.

    c. Strengthened foundations, strip or raft - to span and cantilever a 3m soft spot for example.

    It is recommended that this information is presented to a suitably qualified structural engineer in order to arrive at an approved foundation solution - with prior Coal Authority and Local Authority agreement of such.

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 Whinmoor coal seam along with overlying sandstone. It would therefore be prudent, in the absence of any further gas monitoring ***(note informative no. 3 in appendix 2)***, to include gas protection measures (such as a methane membrane for example) within future foundation designs; 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.

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
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.

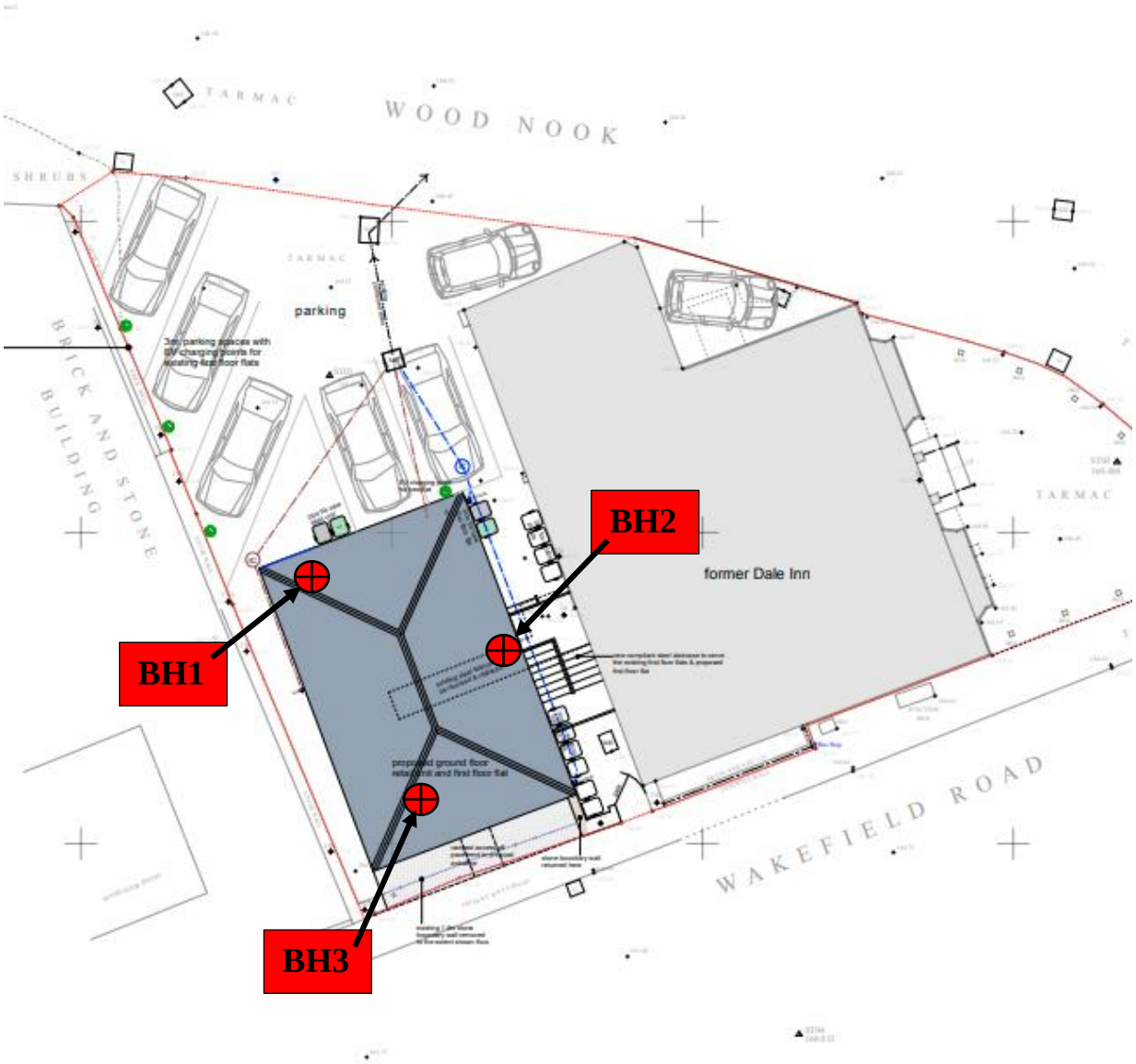
5.1.5 British Standards Institution: BS 10175 ‘The Investigation of Potentially Contaminated Sites. Codes of Practice’. BSI 2011+A1 2013.

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. 00324/B

LAND AT THE DALE INN, 408 WAKEFIELD ROAD, DENBY DALE, HUDDERSFIELD HD8 8RP
Site Investigation
Borehole Location Plan
(NTS)



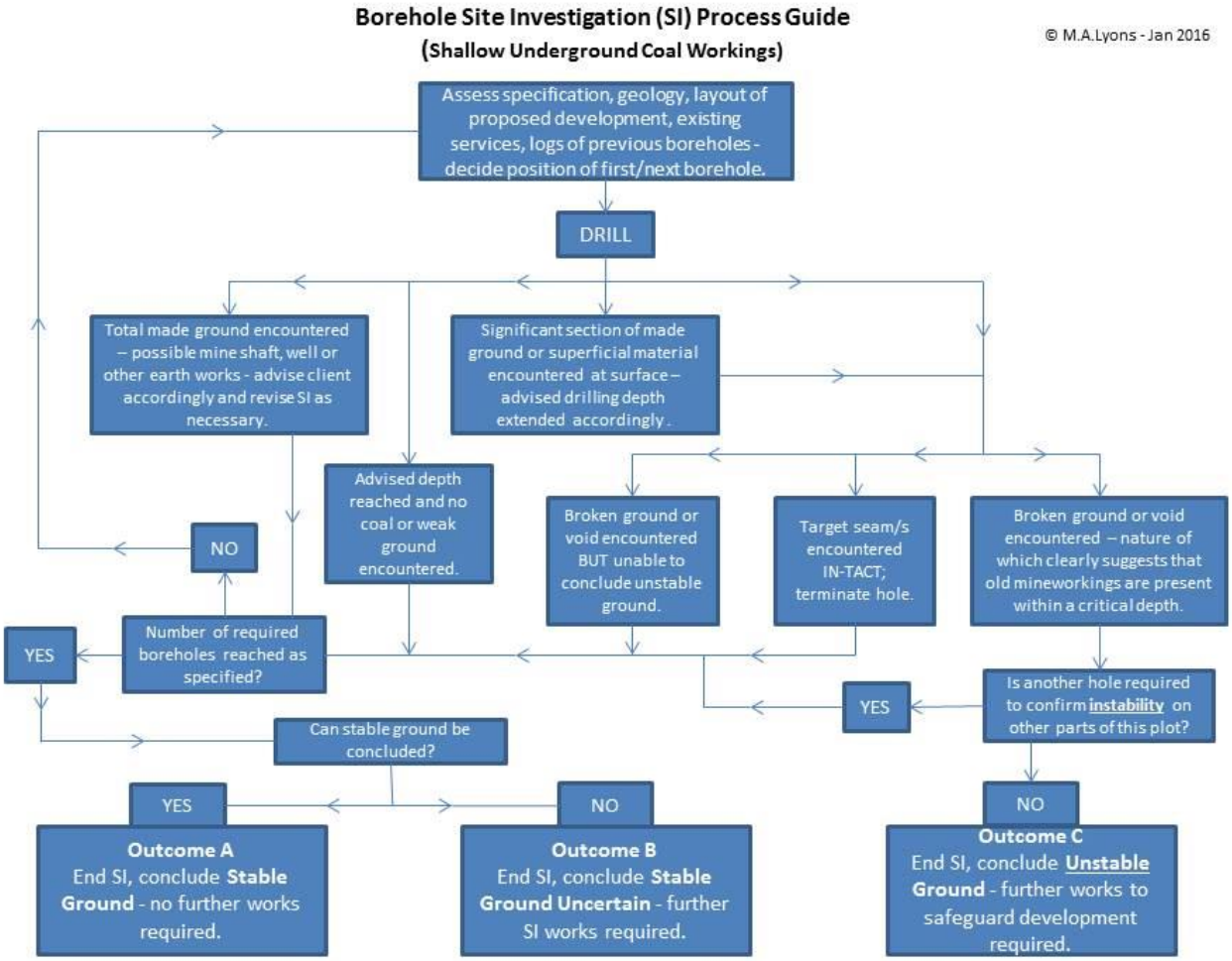
5.3 Drilling log sheet

Client: **Patrick Haigh**	**Site: Land at 408 Wakefield Road, Denby Dale, Huddersfield.** **HD8 8RP**		**Cape Site Services unit 2, rear of Castle Buildings Carlton Road, Barnsley, S71 3HX**
Date: 14/08/2024	**Method:** **water flush**	**Permit No:** **28682**	
Driller: Ian Wiles		**Driller Assistant: Richard Hawkins, Simon Fish Jonathon Doughty**	

Measurements In Meters

BH No:	FROM	TO	THICKNESS	DESCRIPTION
1				
	0	0.1	0.1	Tarmac
	0.1	1.4	1.3	Made ground clay sand limestone brown grey
	1.4	2.7	1.3	Till Clay sandstone boulders brown orange
	2.7	4	1.3	Sandstone brown soft
	4	6.5	2.5	Sandstone brown grey some fractures & waterloss
	6.5	6.6	0.1	Flash of coal
	6.6	8.2	1.6	Sandstone grey brown
	8.2	9.5	1.3	Void total water lost
	9.5	11	1.5	Solid
2				
	0	0.1	0.1	Tarmac
	0.1	1.4	1.3	Made ground clay sand limestone brown grey
	1.4	2.8	1.4	Till Clay sandstone boulders brown orange
	2.8	4	1.2	Sandstone brown soft
	4	6.8	2.8	Sandstone brown grey some fractures & waterloss
	6.8	6.9	0.1	Some coal tracers
	6.9	8.2	1.3	Sandstone grey brown
	8.2	9.5	1.3	Voided total water lost
	9.5	11	1.5	Solid some coal trace on bit
3				
	0	0.1	0.1	Tarmac
	0.1	1.2	1.1	Made ground clay sand limestone brown grey
	1.2	2.8	1.6	Till Clay sandstone boulders brown orange
	2.8	4.2	1.4	Sandstone brown soft
	4.2	6.9	2.7	Sandstone brown grey some fractures & waterloss
	6.9	7	0.1	Coal trace
	7	8.3	1.3	Sandstone grey brown
	8.3	9.7	1.4	Voided total water lost
	9.7	11	1.3	Solid

5.4 Site Investigation Process



5.5 Coal Authority Permit

The Coal Authority

Permit to Enter or Disturb Coal Authority Interests

Permit 28682

Name and Address of Permit Holder:

David Haigh
The Dale Inn
408 Wakefield Road
Denby Dale
Huddersfield
HD8 8RP

Site Location:

Land at
408 Wakefield Road
Denby Dale
Huddersfield

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

Ground investigation by three boreholes to 20m

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: ..... Granted Date: ***5th August 2024***

For and on behalf of The Coal Authority

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

Appendix 5.6 Informatives:

1) The relatively recently revised CIRIA document titled 'Abandoned Mine Workings Manual', which replaced Special Publication 32 (1984), indicates that the use of empirical or 'rule of thumb' guides, as the design basis for treatment depth, has been successfully observed for many years for a wide range of abandoned mine workings and overlying rock/soil strata scenarios. As such, the guidance indicates that further design/ground stabilisation consideretions will be required if there is less than 10 times the aggregate measured height of mine workings as competent rock cover above the workings.

2) For information, should the grouting of any mine workings be required, a 10:1 PFA/cement mix or similar would need to be injected into the workings and any other disturbed strata above it under pressure on an OS coordinated treatment grid approved by the Coal Authority (and Building Control/third-party Warranty provider as required). Specific proposals to treat any mine workings would need to be submitted in the form of a standalone 'Specification', with a separate permit to treat being obtained from the Coal Authority. The method of consolidation is dependent on the nature of the bedrock strata and the underground mining conditions encountered, although fissile strata, such as shales and mudstone deposits, do permit mining voids to migrate upwards to quite high levels. All grouting works would need to be supervised by a competent engineer, with a final validation report being produced to confirm what works were undertaken and whether they were successful or not.

3) Ground gas monitoring can be undertaken to confirm or discount the presence of an elevated gassing regime within the underlying soils. Elevated concentrations of mine gases (e.g. CO2, CH4) may be present within the coal seams, voids in or above any shallow mine workings, areas of made ground/opencast backfill, and in any permeable bedrock strata (and any organic rich surficial soils). The period of monitoring to be undertaken should be broadly completed in accordance with current guidance [BS8485]. Piezometers would need to be installed (during drilling works for example) to facilitate this.