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

Date: 8th September 2022
Your ref: (S75 1LL).
My Ref: CMRA 00299

FOR THE ATTENTION OF MR TOM AGUS

Dear Sir,

COAL MINING RISK ASSESSMENT (CMRA) - FOR PROPOSED RESIDENTIAL DEVLOPMENT AT LAND ADJACENT 152 BARUGH LANE, BARNSLEY S75 1LL

Introduction

Planning permission is being sought for a detached dwelling at the above named site, the location of which can be seen on the attached plan No. 00299/A in Appendix 1. The site is centred around national grid reference E: 431326 / N: 408386. A Coal Mining Risk Assessment is required for the proposals, in order to competently address the mining legacy for the site and determine what impact this may have had upon the land. The assessment is intended to be included as a supporting document to a future planning application to Barnsley MBC.

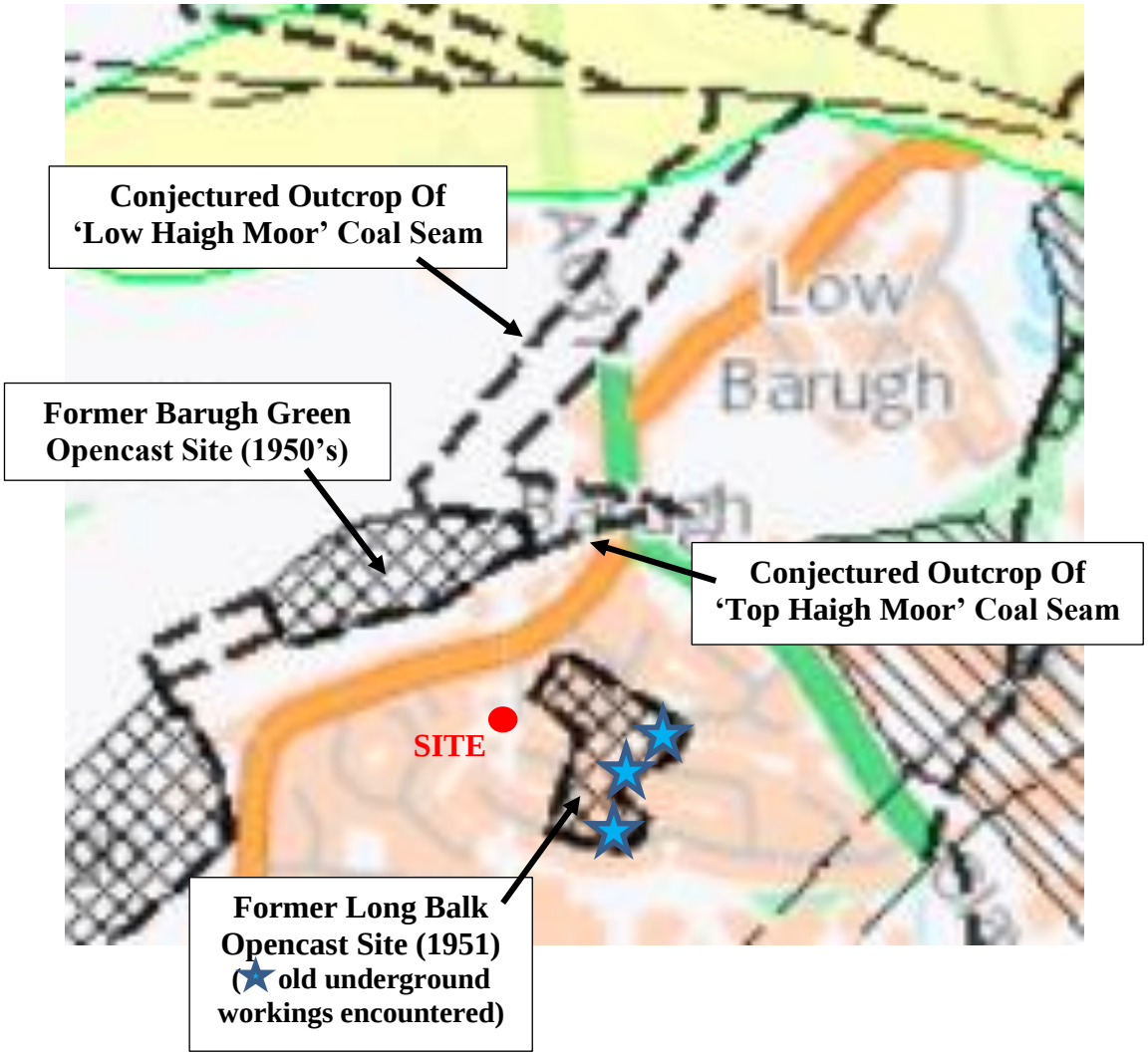
Scope of the Coal Mining Risk Assessment

The purpose of this Coal Mining Risk Assessment Report is to:

- Present a desk-based review of all available information on the coal mining issues which are relevant to the application site;
- Use that information to identify and assess the risks to the proposed development from coal mining legacy, including the cumulative impact of issues;
- Set out appropriate mitigation measures to address the coal mining legacy issues affecting the site, including any further works that may be necessary; and
- Demonstrate to the Local Planning Authority that the application site is, or can be made, safe and stable to meet the requirements of national planning policy with regard to development on unstable land.

Surface Geology (inc. any superficial deposits)

Records indicate the site to be located on the Haigh Moor Rock sandstone of the Middle Coal Measure series from the Carboniferous formation. No superficial deposits are indicated in the vicinity of the site itself. A summary of the surface geology is illustrated on the image below which is an extract from the BGS Onshore Interactive Viewer:



Fault Planes or Fissures

No geological faulting is known or conjectured within 250m of the site. Although no fissuring of bedrock is known in the vicinity, the likelihood of natural fissures that could have been opened out by the past deep coal mining in the area should not be precluded.

Coal Seam Outcrops

As outlined on the extract image above from the BGS Onshore Interactive Viewer, the 'Top Haigh Moor' coal seam is conjectured to outcrop some 140m away to the north-west of the site. The 'Low Haigh Moor' coal seam is conjectured to outcrop some 30m or so further to the north-west of the Top Haigh Moor outcrop position. The former Barugh Colliery (some 400m away to the east) proved the seam thicknesses as: Top Haigh Moor 1.1m (including a 100mm dirt band) and Low Haigh Moor 1m (including a 70mm dirt band). Given the details the Top Haigh Moor seam would be anticipated to be within 5m of the surface beneath this site, with the Low Haigh Moor seam a further 10m or so below the Top Haigh Moor seam.

Made Ground

No made ground is indicated beneath the site, although a slight risk for such will exist given the close proximity of the former opencast coal site as detailed below.

Opencast Coal Workings.

No opencast coal operations are known within the site itself. The former Barugh Green opencast site is located some 140m away to the NNW, as illustrated on the above image, which worked the Low Haigh Moor coal seam; and the former 'Long Balk' opencast site is located some 30m away to the east which worked the Top Haigh Moor coal seam. Details suggest that 'old underground workings' of this seam were encountered during these opencast operations along the eastern boundary of the site (Long Balk).

Underground Coal Workings - Deep

Deep coal mining (over 50m deep) has taken place beneath the site in various coal seams, all settlement from which will be long complete. As no coalfields now exist, the site should remain stable from the deep coal mining perspective for the foreseeable future.

Underground Coal Workings - Shallow

Although no specific records of any shallow underground workings of the Top or Low Haigh Moor coal seams are known beneath the site itself, such workings are known in both seams in the surrounding vicinity. As such the likelihood of discovering uncharted historic workings within these seams should not be discounted. Having said this the Top Haigh Moor seam may be too shallow beneath this site for it to either be worked or cause a stability issue. Any such workings of the deeper Low Haigh Moor seam may be at a depth that could cause a stability concern given the guidelines as set out in CIRIA C758D. There is also the possibility that if the Top Haigh Moor seam is discovered in-tact at circa 5m deep, any workings in the Low Haigh Moor seam 'may' be too deep to affect surface stability (ie more than 10 times the seam thickness of strata above the workings).

Mine Entries

No mine entries are known within 100m of the site itself. Some potential will exist however for other mine entries being encountered which there are no records considering the shallow workable coal seams.

Fugitive Gases

As far as we are aware, no evidence of coal mining related fugitive gas emissions are known within 250m of the site. However, there will be some risk for associated gases in relation to the shallow workable coal. These risks will be greater should any shallow workings be proved and far greater should any unrecorded mine entries be discovered.

Historical Records

According to the historical records, no nearby indications of any mining or quarrying activities are noted within the site itself.

Coal Mining Risk Assessment
(based on the above).

Coal Seam / Coal Mining Issue	**Risk Assessment** **(VeryHigh/High/Moderate/Low/VeryLow)**
Underground coal mining (at shallow depths)	**Moderate to High**
Mine entries (shafts and adits)	**Low to Moderate**
Geological faulting	**Low**
Geological fissures	**Moderate**
Fugitive gas emissions	**Low to Moderate**
Surface mining (opencast workings)	**Low**
Aggressive ground	**Low**
Coal exposed / near foundation level	**Low**

Defined Risk Assessment

(Where 'Underground Coal Mining' above = Very High to Moderate)

Extent of known underground mining in this/these shallow coal seam/s in the wider vicinity	(Extensive / Much / Occasional / None Known) **Much**
Intrusive Site Investigation of Coal Seam / Mines of Coal (given nature of proposals).	(Required / Recommended / Unnecessary)** **Required**
Advised critical depth beneath foundation level to investigate considering geology and nature of the shallow coal/s*	**30m**

Key:

** The critical depth is calculated according to Ciria C758D guidance which details that for the land to be regarded as stable from any voided mineworkings, then a suitable section of competent rock cover above the workings should be proved that is equal or greater than ten times the 'in-tact' coal seam thickness. The advised critical depth to investigate to in this report takes into account the available geological information, any nearby mining records and may include a contingency for the seam to be of a slightly greater thickness than anticipated. Due care and diligence should be employed on-site to ensure that sound information is gathered of the in-tact seam thickness, particularly if concluding that old workings are outside the critical depth of affecting stability for the proposed development.*

*** Where :*

Required	*Intrusive Site Investigation **required** of the shallow coal/s and/or mine entries to determine any necessary stabilisation works for the given development.*
Recommended	*Intrusive Site investigation **recommended** – given a lower level of risk in relation to the nature of proposed development some proposals may reduce the risk to an acceptable level via suitable design considerations.*
Unnecessary	*Intrusive Site Investigation deemed **unnecessary** – given geological/mining information.*

Coal Authority

Prior written permission from The Coal Authority is required for intrusive activities which will disturb or enter any coal seams, coal mine workings or coal mine entries (shafts and adits). Further information on The Coal Authority's permissions process can be found at: www.coal.gov.uk/services/permissions/index.cfm

Information sources:

- *British Geological Survey Map Sheet SE 30 NW 1980 Edition*
- *British Geological Survey – Geology Of Britain Viewer*
- *Coal Authority Interactive Viewer and Mine Abandonment Plans*
- *Historical Mapping – old-maps.co.uk*

CONCLUSIONS

1) The site can be regarded as stable from the **Deep Coal Mining** perspective, and as no coal fields now remain this position should continue for the foreseeable future.

2) Given the **Shallow Coal Mining** position, and nature of development a site investigation of between 4 to 6 boreholes would be recommended to check the depth and nature of the shallow 'Top & Low Haigh Moor' coal seams; namely whether any treatment works of shallow mining voids and/or suitably designed foundations are required. Holes can be terminated in firm strata beneath the Low Haigh Moor seam, as no seams are expected to be of effect below this horizon. If no coal is encountered then at least 2 of the holes should be extended to 30m to confirm the position. A guide to a recommended site investigation process is outlined in appendix 2; CIRIA C758D 'Abandoned Mine Working Manual' guidance should be followed. A permit from the Coal Authority should be secured to enable such an investigation. Water flush drilling methods would be required to mitigate from fugitive gas risks.

3) Any coal exposed at the surface beneath surface soils/clays will require appropriate considerations for removal and blinding off to help prevent chemical attack on foundations and reduce the risk of spontaneous combustion risks.

4) In terms of the fugitive mine gas risks from the potential shallow coal, the only way to prove whether protection measures are or aren't required would be for a period of gas monitoring via boreholes and stand pipes, usually undertaken over a period of 3 to 6 months. Without this investigation it may be a more pragmatic solution to include gas protection measures (such as a methane membrane and/or positive ventilation layers) within future foundation

designs in any case. All usual safety precautions should be employed regarding possible fugitive gases in any deep excavation work taking place.

5) A watching brief should be employed during future grounds works for any signs of unrecorded mine entries. A site scrape to natural ground is the most effective procedure to check for such features; circular areas of grey fill within bedrock would be an indication. If suspected the Coal Authority (as owners) should be notified immediately for appropriate deliberations.

6) A similar watching brief should be employed during future grounds works for any signs of made ground or any opened out fissures of sandstone bedrock. Appropriate foundation design considerations may be required.

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.

A suitably qualified and competent professional should be employed to use this report to determine the conditions on site, and ultimately advise on what action, if any, is necessary to safeguard the development. It should be noted that any future works to investigate any coal seam, mines of coal or associated mine entries will need the prior consent of the Coal Authority via their permitting procedure.

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

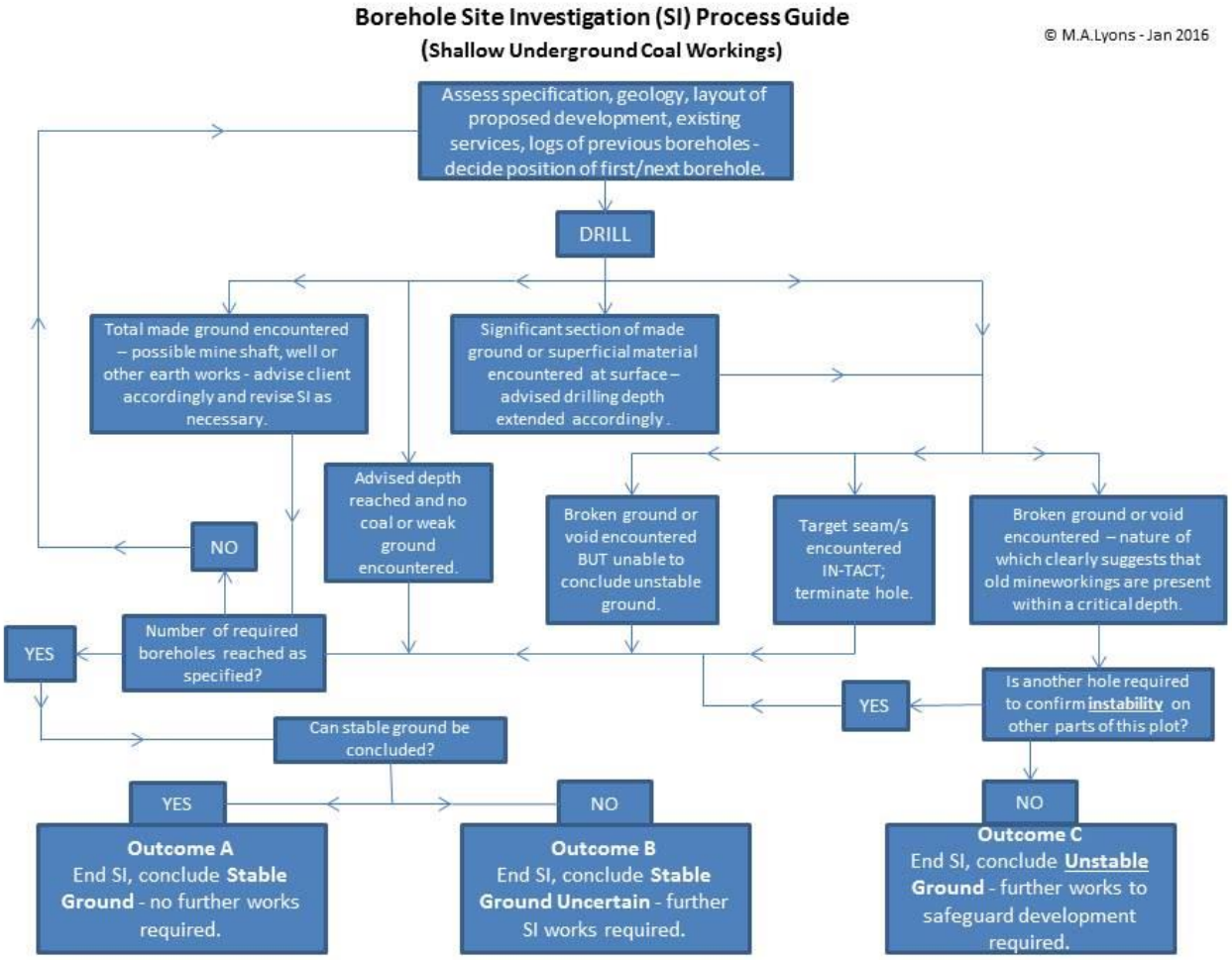
M. Lyons
Consultant Mining Engineer
BSc CSci MIMMM

Enc.

THIS COAL MINING RISK ASSESSMENT 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." The opinion may be overruled by Government Authorities decisions based on other information not in my record. If a site investigation is recommended then this risk assessment will be superseded by the factual findings of that investigation. All site investigation work should be carried out by a competent professional from which independent conclusions and recommendations for safe development should be provided. It should be noted that: no operation should be undertaken that intersects, disturbs or interferes with any coal or mines of coal without the permission of the Coal Authority. The investigation of coal seams/former mines of coal may have the potential to generate and/or displace underground gases; these risks both under and adjacent the site should be fully considered in any proposals both for personnel and public safety. Copyright in this CMRA 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.

Appendix 1 – Location Plan No. 00299/A
(Not To Scale)
Site centred at O.S. 431326 / 408386

Appendix 2


Borehole Site Investigation (SI) Process Guide
(Shallow Underground Coal Workings)
© M.A.Lyons - Jan 2016
Assess specification, geology, layout of proposed development, existing services, logs of previous boreholes - decide position of first/next borehole.
DRILL
Total made ground encountered – possible mine shaft, well or other earth works - advise client accordingly and revise SI as necessary.
Significant section of made ground or superficial material encountered at surface – advised drilling depth extended accordingly.
Advised depth reached and no coal or weak ground encountered.
Broken ground or void encountered BUT unable to conclude unstable ground.
Target seam/s encountered IN-TACT; terminate hole.
Broken ground or void encountered – nature of which clearly suggests that old mineworkings are present within a critical depth.
NO
YES
Number of required boreholes reached as specified?
YES
Is another hole required to confirm instability on other parts of this plot?
Can stable ground be concluded?
YES
NO
NO
Outcome A
End SI, conclude Stable Ground - no further works required.
Outcome B
End SI, conclude Stable Ground Uncertain - further SI works required.
Outcome C
End SI, conclude Unstable Ground - further works to safeguard development required.