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LYONS CMC
COAL MINING & GEOTECHNICAL
CONSULTANCY

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Date: 7th April 2022
Your ref: (S74 8EQ).
My Ref: CMRA 00290

FOR THE ATTENTION OF MR T AGUS & ATTA PROPERTIES LTD

Dear Sir,

COAL MINING RISK ASSESSMENT (CMRA) - FOR PROPOSED DEVELOPMENT AT
FOUNDARY STREET, ELSECAR, BARNSELY S74 8EQ

Introduction

Planning permission is being sought for an office and associated development at the above named site, the location of which can be seen on the attached plan No. 00290/A in Appendix 1. The site is centred around national grid reference E: 438094 / N: 400197. 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.

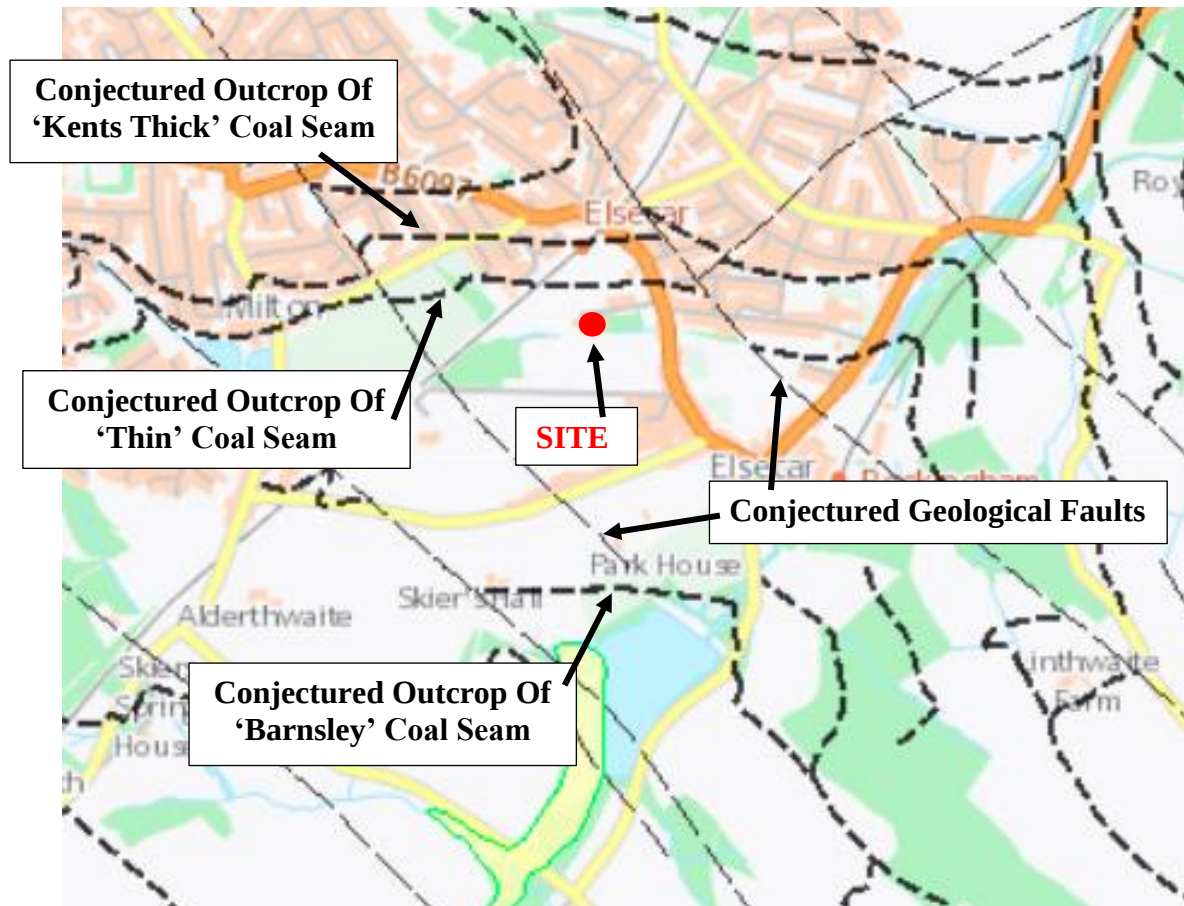
Scope of the Coal Mining Risk Assessment

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 shales and mudstones 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

Geological faulting trending in a NW to SE direction is conjectured to pass clear of the site by over 100m away to the north-east and south-west as shown on the above image.

Coal Seam Outcrops

As outlined on the extract image above from the BGS Onshore Interactive Viewer, a 'Thin' coal seam is conjectured to outcrop some 70m to the north of the site, with the Kents Thick seam some 90m further away in that direction. These seams will be present beneath the land northwards from

their outcrop position so will not be present beneath the site itself. The Barnsley coal seam is shown to outcrop some 570m away to the south as indicated, which will dip beneath the site at relatively shallow depth.

Made Ground

No made ground is indicated in the vicinity; however, considering the land was once occupied by a former foundry it will be quite likely that an element of such may be encountered across the site.

Opencast Coal Workings.

No opencast coal operations are known within 50m of the site.

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

According to the Coal Authorities details the southern part of this site is indicated to be within an area of 'Past Shallow Workings'. This would appear to relate to the Barnsley coal seam workings from either the former 'High Elsecar' colliery some 600m away to the west, or the former 'Milton House' colliery some 320m away to the SW. The workings in the Elsecar vicinity indicate a seam thickness for the Barnsley coal in the region of 2.7m. No other viable coal seam (via underground mining methods) is anticipated in this vicinity above the Barnsley seam and below the Kents Thick seam.

Little information is available from the mining records as to the depth of the Barnsley seam beneath this specific location. The thin coal seam below the Kents Thick seam shown on BGS records is likely to be the 'Bastard' coal seam referred to in the shaft section details of the Elsecar Main No. 1 shaft some 900m away to the east. Those records show the Bastard seam at approximately 50m above the Barnsley coal seam. Given this along with the other available geological and mining details (notably the mine entries as detailed below) it is expected that the Barnsley seam workings will lie at circa 45m deep.

Mine Entries

No mine entries are known within 20m of the site itself. The closest are illustrated in the extract image below (from the Coal Authorities Interactive Viewer), which include:

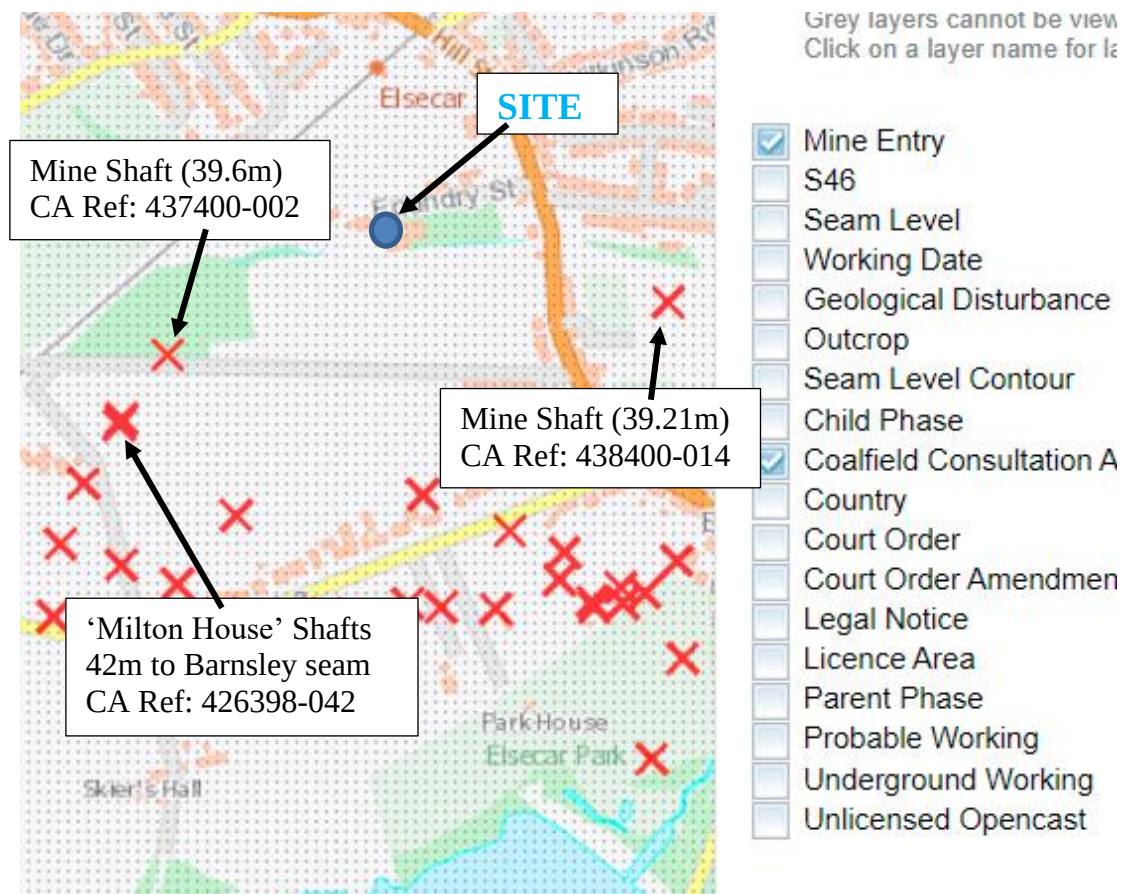
Shaft CA ref: 438400-014

Approximately 300 away ESE; detailed as 39.21m deep - presumably to the Barnsley coal seam;

Shaft CA ref: 437400-002

Approximately 260m away SW; detailed as 39.6m deep – presumably to the Barnsley coal seam (particular considering the nearby Milton House shaft, some 80m away SW from this shaft, that records the Barnsley seam at 42m deep).

Some potential will exist for other mine entries being encountered which there are no records considering the relatively shallow coal workings.



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 relatively shallow Barnsley coal workings, which are known to be of a gaseous nature in the Yorkshire coalfield as a whole.

Historical Records

According to the historical records, no nearby indications of any mining or quarrying activities are noted within the site itself. Former terraced properties appear to have occupied the land in the past.

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 Low
Mine entries (shafts and adits)	Low to Moderate
Geological faulting	Low
Geological fissures	Low
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) Extensive
Intrusive Site Investigation of Coal Seam / Mines of Coal (given nature of proposals).	(Required / Recommended / Unnecessary)** Reccomended
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	<i>Intrusive Site Investigation required of the shallow coal/s and/or mine entries to determine any necessary stabilisation works for the given development.</i>
Recommended	<i>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.</i>
Unnecessary	<i>Intrusive Site Investigation deemed unnecessary – given geological/mining information.</i>

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 NE 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, it is very likely that the Barnsley coal seam workings are at a depth that should not cause a stability issue to the development given the guidelines (CIRA C758D) and providing that there are not any substantial amounts/thicknesses of made ground. As the depth of the workings are based on an estimation, the only way to ultimately prove the situation would be to undertake 2 to 3 boreholes to the seam/workings within the site itself, to confirm that there is (in this instance) 28m or more of competent natural strata. A 'Borehole Site Investigation Process Guide' is included in appendix 2 for reference. In the absence of such an investigation it may be accepted by the authorities to offer some further mitigation of the slight risk by including an element of strengthening in foundations, such as strengthened strip footings for example. Prior agreement from the Coal Authority and LA should be secured for any such proposals.
- 3) In terms of the fugitive mine gas risks, 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) within foundation designs in any case. All usual safety precautions should be employed regarding possible fugitive gases in any deep excavation work taking place.
- 4) 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.

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

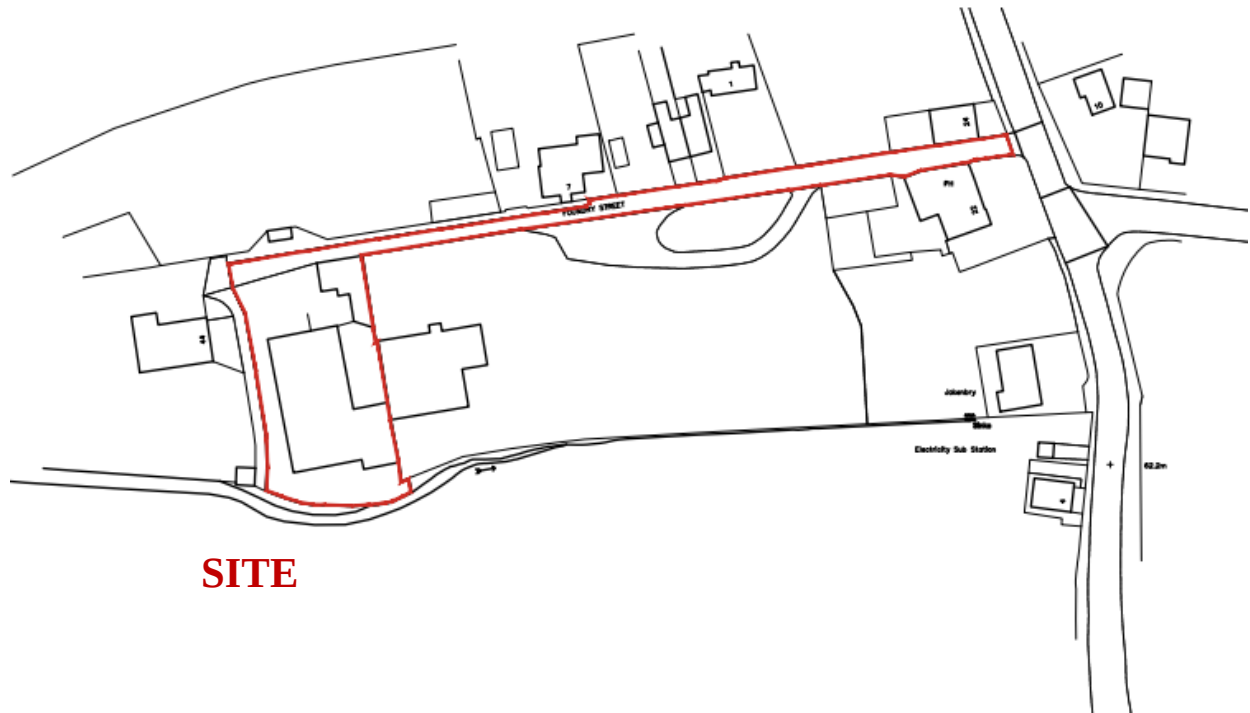
Enc.

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. 00290/A

(Not To Scale)

Site centred at O.S. 438094 / 400197



Appendix 2

Borehole Site Investigation (SI) Process Guide (Shallow Underground Coal Workings)

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