LYONS CMC
COAL MINING & GEOTECHNICAL CONSULTANCY
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White Agus
Office One,
Drill Hall,
11 Eastgate,
Barnsley S70 2EU

Date: 26th September 2024
Your ref: (S75 6GP).
My Ref: CMRA 00375

FOR THE ATTENTION OF MR TOM AGUS

Dear Sir,

COAL MINING RISK ASSESSMENT (CMRA) - FOR PROPOSED RESIDENTIAL DEVELOPMENT AT 284 NEW ROAD, STAINCROSS, BARNSLEY, S75 6GP

Introduction

Planning permission is being sought for a detached dwelling at the above named site, the location of which can be seen outlined in red on the attached plan No. 00375/A in Appendix 1. The site is centred around national grid reference 432587E / 410508N. 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.

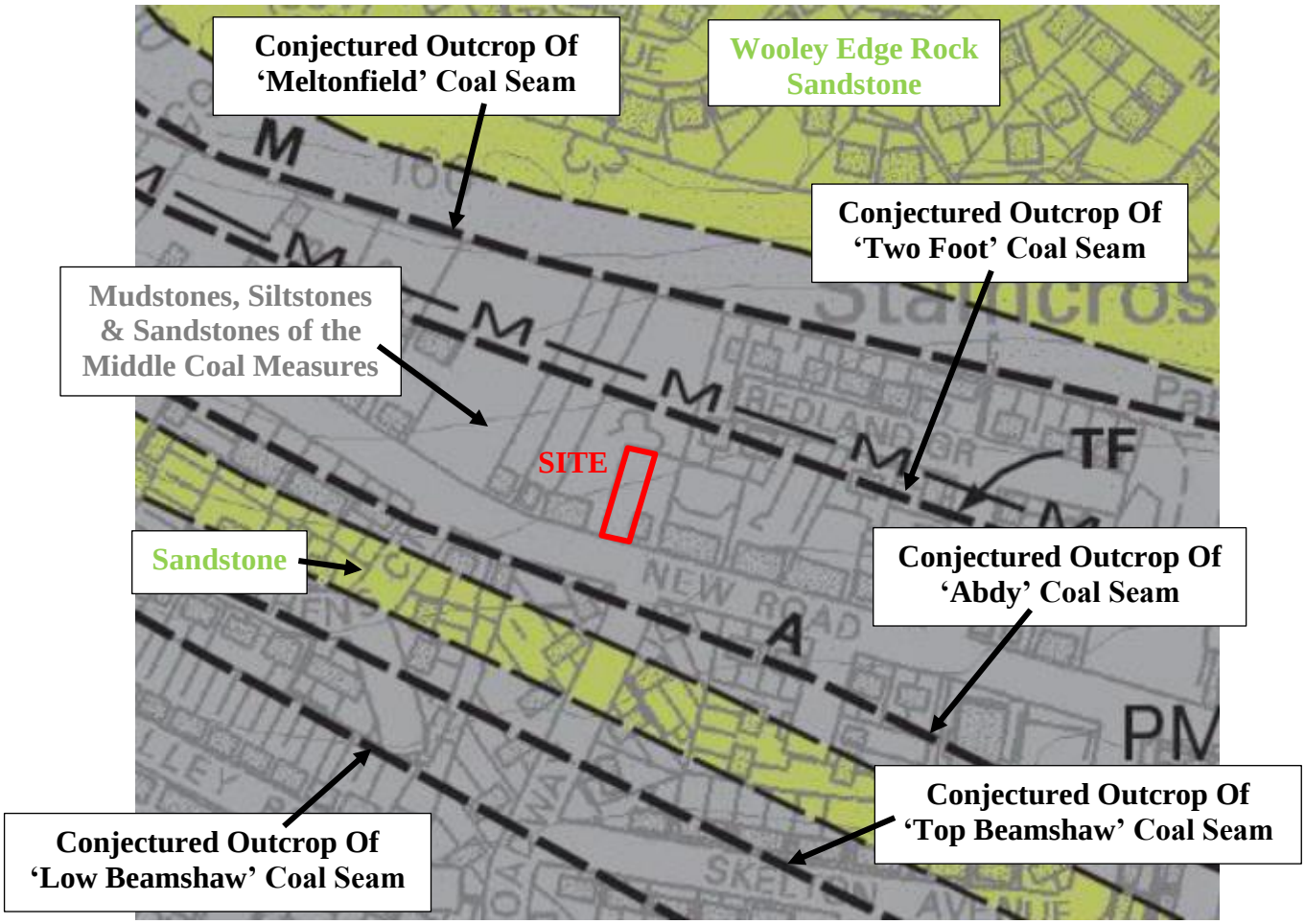
Scope of the Coal Mining Risk Assessment

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.
- The report will not consider other geotechnical and/or geo-environmental issues.

Surface Geology (inc. any superficial deposits)

Records indicate the site to be located on mudstones, siltstones and sandstones of the Pennine Middle Coal Measure series from the Carboniferous formation. No superficial deposits are shown in the vicinity of the site. Strata is shown to dip towards the north-east in this vicinity at around 5° (1 in 12). A summary of the surface geology is illustrated on the image below which is an extract from the BGS SE31SW 2005 Edition:



Fault Planes or Fissures

No geological faulting is known or conjectured within 100m of this site. No fissuring is known in this vicinity, and given the anticipated geology the likelihood of any such features being encountered would be considered remote.

Coal Seam Outcrops

As shown above, the 'Meltonfield' and 'Two Foot' coal seams are conjectured to outcrop some 15m and 55m away respectively to the north-east which will dip away clear of the site.

The 'Abdy' (also known as the 'Winter') coal seam is conjectured to outcrop some 17m away to the south-west, which will dip beneath the site at between 2m to 6m deep should the conjectured detail be accurate. Local information suggests a seam thickness of the Abdy coal as around 1.1m.

The 'Top Beamshaw' coal seam of up to 1m thickness, conjectured to outcrop some 73m away to the south-west, will lie beneath the Abdy seam by around 10m or so.

The 'Low Beamshaw' coal seam of up to around 0.5m thickness, conjectured to outcrop some 105m away to the south-west, will lie beneath the Top Beamshaw seam by around 5m or so.

Made Ground / Opencast Coal Workings

No areas of made ground or former opencast coal operations are known in the vicinity of the site. A slight potential will exist for discovering infilled ground associated with small scale historic 'digging out' of the surface coal in this vicinity.

Underground Coal Workings - Deep

Deep coal mining (over 30m 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 recorded workings are known in the Abdy or Top Beamshaw coal seams in this specific area, given their nature/thickness there will be some potential for unrecorded, possibly illicit, workings being present. This is reflected in the fact that the site is located in a Coal Authority area of 'probable shallow coal workings' according to their interactive viewer information. ***Note informatives nos. 1 & 2 in appendix 2.*** Any historic coal workings would likely to have been via pillar and stall methods which follow the seam from its outcrop position via mine adits for example. No such risks would be anticipated with the Low Beamshaw coal seam and therefore no other workable coal would be anticipated beneath the Top Beamshaw seam.

Mine Entries

No mine entries are known within 50m of the site. Some potential will exist however for other mine entries being encountered which there are no records considering the shallow workable coal

seams. Grey circular areas of fill material within natural ground would be an indication of an old mine shaft for example.

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. ***Note: informative no. 3 in appendix 2.***

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**
Mine entries (shafts and adits)	**Low to Moderate**
Geological faulting	**Low**
Geological fissures	**Low**
Fugitive gas emissions	**Moderate**
Surface mining (opencast workings)	**Low**
Aggressive ground	**Moderate**
Coal exposed / near foundation level	**Moderate**

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 rock-head /foundation level to investigate considering geology and nature of the shallow coal/s*	**25m**

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 BGS SE31SW 2005 Edition*
- *British Geological Survey – Geology Of Britain Viewer*
- *Coal Authority Interactive Viewer and Mine Abandonment Plans*
- *Historical Mapping*

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 'Abdy & Top Beamshaw' 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 Top Beamshaw seam, as no seams are expected to be of effect below this horizon. If there is any uncertainty then holes should be extended to 25m deep 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. ***Note: informatives nos. 1 & 2 in appendix 2***.

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) Given the likely shallow workable coal seams, ground gas mitigation measures (such as a methane membrane for example; which could also address radon issues if required) would be a prudent consideration within any future foundation designs (particularly if any shallow mine workings are proved); unless a period of gas monitoring proves that this is not required. ***Note: informative no. 3 in appendix 2.***

5) A watching brief should be employed during any future grounds works for any signs of unrecorded mine entries; circular areas of grey fill within natural ground/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.

Appendix 1 – Location Plan No. 00375A
(Not To Scale)
Site centred at NGR: 432587E / 410508N

Appendix 2 – 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, 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.