Mr R. Agus
Office One
34 Victoria Road
Barnsley
S70 2BU

LYONS CMC
COAL MINING & GEOTECHNICAL CONSULTANCY
Web: www.lyonscmc.co.uk
Email: mark@lyonscmc.co.uk
Mob: 07887555580

Date: 28th June 2022
Your ref: (S75 4LE).
My Ref: CMRA 00297

FOR THE ATTENTION OF MR R. AGUS & MR. R. RICHARDSON

Dear Sirs,

COAL MINING RISK ASSESSMENT (CMRA)
FOR PROPOSED RESIDENTIAL DEVELOPMENT AT FALL HEAD FARM, FALL HEAD LANE, SILKSTONE, BARNSLEY S75 4LE

Introduction

Planning permission is being considered to demolish the existing 'Fall Head Farm Cottage' at the above named site, in order to re-build a new detached dwelling, the designs of which are yet to be fully realised. The location of the site can be seen on the attached plan No. 00297/A in Appendix 1. The site is centred around national grid reference E: 429819 / N: 406034. 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 Local Authority.

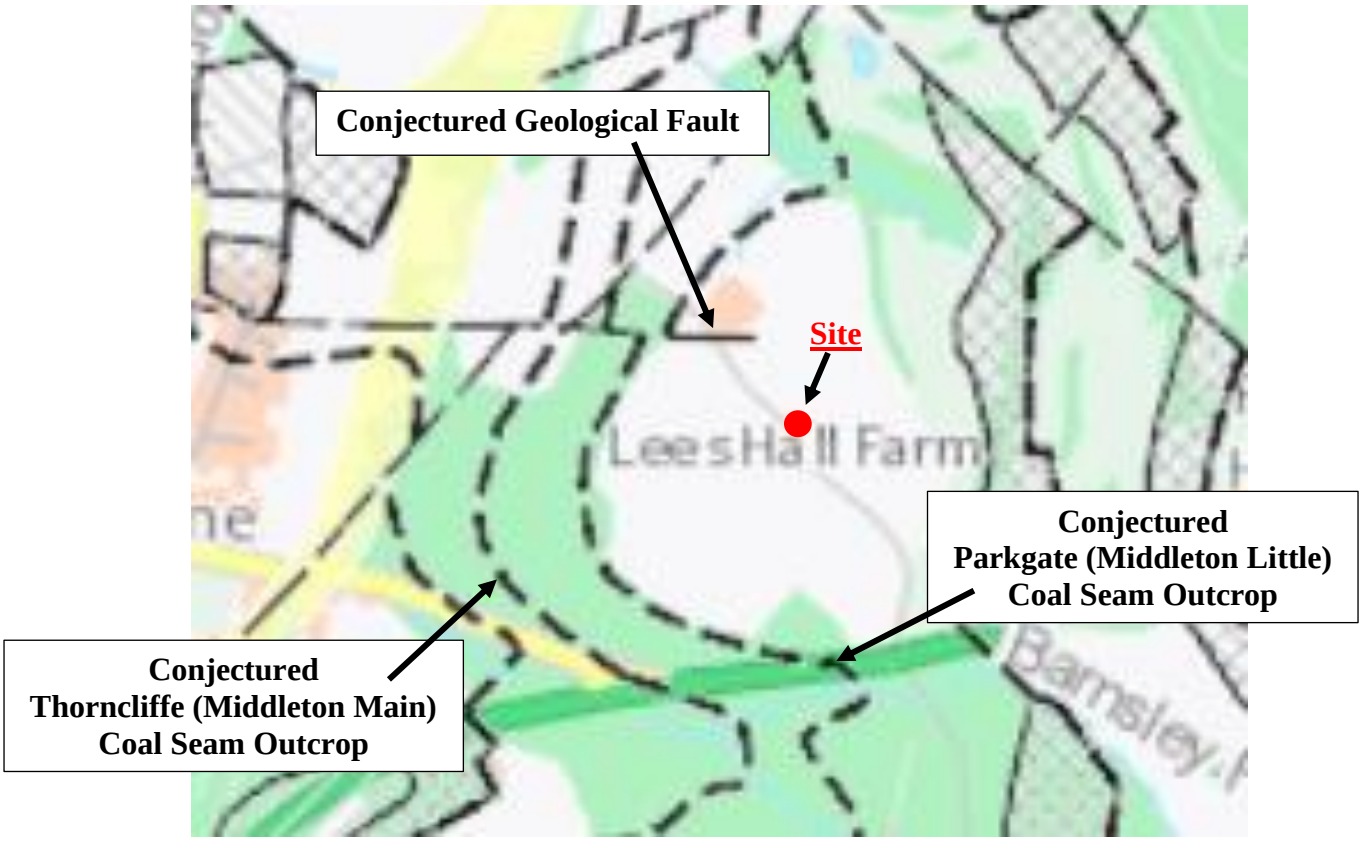
Scope of the Coal Mining Risk Assessment

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 Parkgate Rock Sandstone of the Middle Coal Measure series from the Carboniferous formation. No superficial deposits are indicated in this vicinity. The strata is shown to dip to the east-north-east at a rate of around 1 in 14 (4°) in this vicinity. Surface geology is outlined on the extract image below from the BGS Onshore Interactive Viewer:



Coal Seam Outcrops

As outlined on the extract image above from the BGS Onshore Viewer, the Parkgate coal seam (also known as the Middleton Little seam) is conjectured to outcrop some 220m away to the west/south-west of the site, which will dip beneath the site at an estimated depth of between 15m to 20m. The Thorncliffe coal seam (also known as the Middleton Main seam) is conjectured to outcrop some 320m away to the west as indicated, which will lie beneath the Parkgate seam by a further 20m or so. *Note –as a degree of uncertainty exists with the information being conjectured, the coal seams may be shallower or deeper than anticipated.*

Fault Planes or Fissures

No geological faulting is known within 60m of the site; the closest being some 100m away to the north as shown above. Considering the geology, although no fissuring is known in the area the likelihood of past deep coal mining settlement 'opening out' natural fissures in sandstone bedrock should not be entirely ruled out.

Made Ground

No made ground is indicated in the vicinity.

Opencast Coal Workings.

No opencast coal operations are known in the vicinity of the site.

Underground Coal Workings - Deep

Deep coal mining (over 50m deep) has taken place beneath this area in several coal seams in the past; all associated settlement will be long complete and 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 underground workings are known beneath this area in the Parkgate coal seam, it is known to have been worked via such methods in the wider area as a whole. The former 'Silkstone Fall' Colliery approximately 800m away to the SSE (south-south-east), worked the seam in the late 1800's and early 1900's. The shaft section detail from that colliery shows a section for the Parkgate seam as 2.3m but which includes 3 'black bind' dirt bands and a band of 'fireclay & black shale'. The former Dodworth Colliery (around 1.3km away to the east) worked the Parkgate seam and indicates a section of 1.22m which includes a 0.43m dirt band.

The shaft section of the Silkstone Fall colliery shows a seam thickness for the Thorncliffe coal as 1.7m, however the surrounding underground mining information of this seam is quite limited and indicates a section of coal worked in the region of 0.5m. The shaft section shows that the Thorncliffe seam lies at around 20m below the Parkgate seam. As such it would be considered that the Thorncliffe seam is too deep to 'interact' with the high Parkgate seam from a void migration aspect.

Wherever there is a workable quality coal seam at shallow depth, there is always a possibility that un-recorded, possibly illicit, workings may be present. Such historic workings would be very likely to be via pillar and stall workings, from which any associated mining voids may remain that could impact upon surface stability. At the anticipated depth, any such workings of the Parkgate coal seam may impact upon these proposals unless it can be proved that the coal is too deep

considering its thickness ***(the general rule of thumb from CIRIA C758D (Abandoned mine workings manual) guidelines is that a site would need ten times the coal seam section of competent natural strata beneath the formation level and top of the coal for it to be considered as stable whether worked or otherwise).***

Mine Entries

No mine entries are known within 200m of the site itself. It should be noted however that some potential will exist for other mine shafts or adits being encountered which there are no records considering the shallow workable coal.

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 a slight risk for associated gases in relation to the shallow coal, particularly if worked and considering the overlaying porous sandstone that may be fissured.

Historical Records

According to the historical records for this site, 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**
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*	**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 SE 20 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 would be recommended to undertake a borehole site investigation to check the depth nature of the Parkgate coal, namely whether any potential old mining voids require further considerations for safe development. Given the anticipated nature of the proposals (single detached new dwelling) between three to five holes to maximum depths of 25m below rockhead (beneath any fill/made ground) should suffice for this. If any voids are encountered that may compromise stability then further ground treatment works and/or strengthening of foundations may be required. A guide to a recommended site investigation process is outlined in appendix 2. A prior permit from the Coal Authority would be required to facilitate such an investigation.

3) 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.

4) A similar watching brief should be employed for any opened out fissures in sandstone bedrock that may require ground treatment works to stabilise and/or appropriately designed/strengthened foundations.

5) Considering the relatively shallow coal and sandstone bedrock, usual safety precautions should be employed regarding possible fugitive gases in any deep excavation work taking place, particularly if shallow coal workings are proven and more so if any mine entries are discovered. Mitigation measures may be required within foundation design, such as a methane membrane or positive ventilation; a period of gas monitoring could also be considered to better inform any such requirements.

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

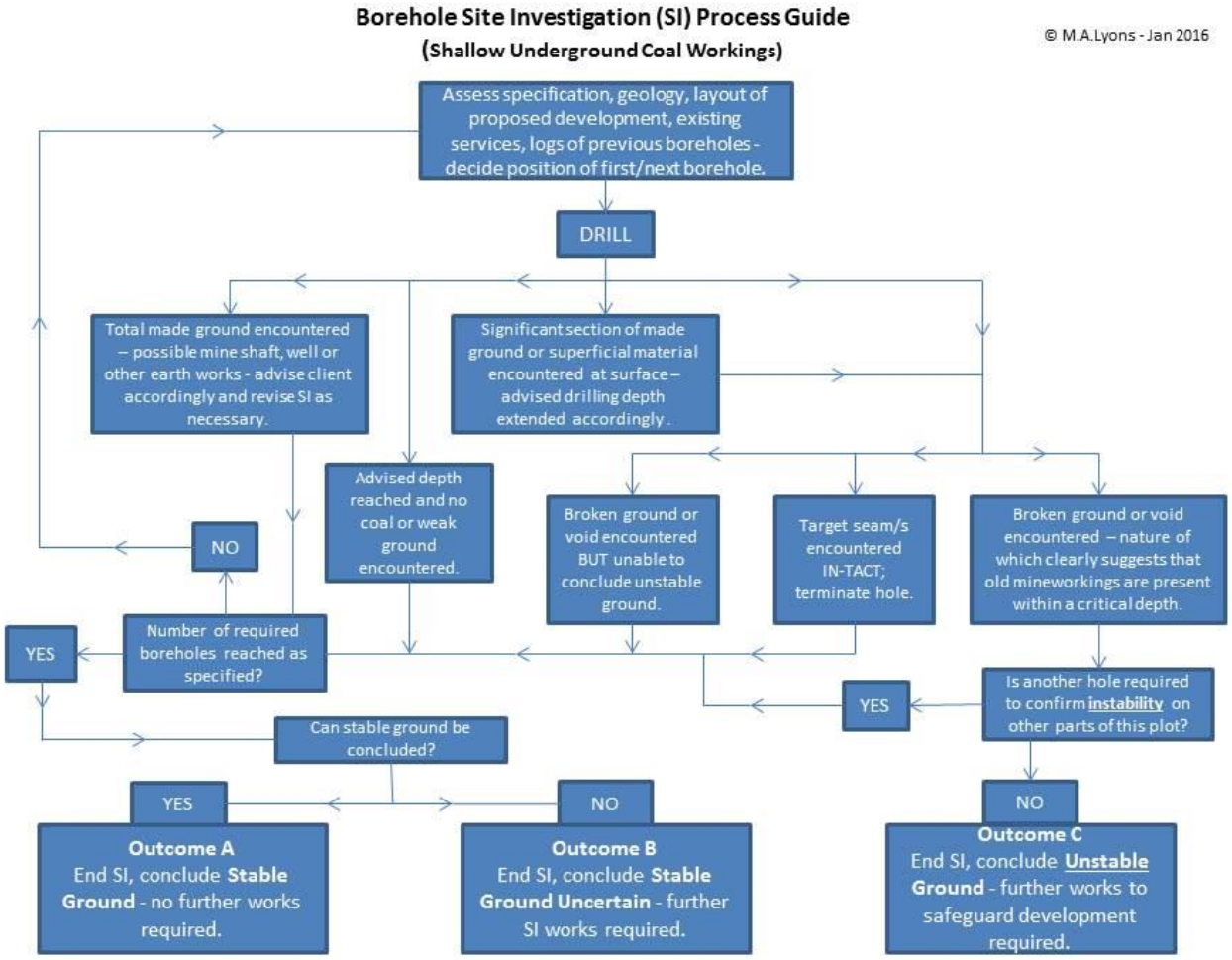
Enc.

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. 00297/A
(Not To Scale)
Site centred at O.S. 429819 / 406034



Appendix 2


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