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Mr J Kilner & Mr T Agus
C/O:
Land Adj. 95 Cumberland Drive
Ardsley
Barnsley
S71 5DF

Date: 19th March 2020
Your ref: (S71 5DF).
My Ref: CMRA 00227

FOR THE ATTENTION OF MR J KILNER & MR T AGUS

Dear Sirs,

COAL MINING RISK ASSESSMENT (CMRA) - FOR A PROPOSED RESIDENTIAL BUNGALOW AT LAND ADJACENT 95 CUMBERLAND DRIVE, BARNSLEY S71 5DF.

Introduction

A planning application is being considered for the development of a detached bungalow at the above named site, centred at OS ref: 438458 / 405802; the location of which can be seen on the attached plan No. 00227.A in Annex 1. 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.

British Geological Survey Information
(SE 30 SE)

Surface Geology (inc. any superficial deposits)

Records indicate the site to be located on the Mexborough Rock Sandstone of the Middle Coal Measure series from the Carboniferous formation. No superficial deposits are indicated in the vicinity and therefore depth to bedrock is uncertain. The sandstone bedrock may contain natural fissures that may have been opened out by the past deep mining operations as detailed below.

Coal Seam Outcrops

According to the latest geological information, the conjectured outcrop of the 'Sharlston Top' coal seam is conjectured to outcrop some 300m away to the north-north-west of the site (not shown on plan). According to the available information this coal is anticipated as around 1m in thickness in these parts.

The strata is anticipated to dip to the east at around 1 in 10 (6°), therefore considering the outcrop position of the Sharlston Top coal seam along with the lay of the land it is likely to be at around 40m deep or more beneath this site.

The geological sheet does detail another 'un-named' coal seam midway between the base of the Mexborough Rock and the Sharlston Top coal seam, shown as 0.91m to 2.05m in thickness.

Made Ground

No areas of made ground are shown on the geological information – however the site is recorded as having being subjected to a past opencast operation as detailed below.

Fault Planes or Fissures

The 'Dearne Valley' geological fault is conjectured to pass close to the south of the site, trending in a north-west to south-easterly direction. This fault throws the strata down to the north-east.

Abandoned Mines Records

Opencast Coal Workings.

According to the Coal Authorities details the site is shown to be located on an area of 'Unlicensed Opencast' operations as illustrated on plan no. 00227.A – which is the reason why the site falls within a Coal Authority referral area. Little information is available of this operation at this site. The Sharlston Top coal seam is known to have been worked by opencast methods further to the north-west nearer its outcrop position, but given its expected depth at this location it is unlikely that it has been worked via such a method. There is some possibility that the operations may have worked the shallower unnamed coal seam above the Sharlston Top. Given this information it is highly likely that the site is located on an unknown thickness of fill material of which content and consistency will be uncertain. An element of coal or aggressive materials being present within such backfill should not be discounted.

Underground Coal Workings - Deep

Deep coal mining has taken place beneath this location in various coal seams at depths of greater than 50m deep. All associated settlement will be long complete and as no coalfields now exist, the site should remain stable from the deep coal mining subsidence aspect for the foreseeable future.

Underground Coal Workings - Shallow

There are no known shallow workings in this area and the Coal Authority information shows that it is not located within an area of 'Probable Shallow Workings'. This is because the Sharlton Top seam is expected to be at a depth that would not cause a stability issue at the surface be it worked or otherwise, and no other workable coal seams are known above this to the Mexborough Rock Sandstone. Nearby details from the former Grimethorpe Colliery shaft section (located around 3km away to the north-east) also shown no notable coal seams within this section of stratum. Given this information it is unlikely that any workable coal either remains or is present at a shallow enough depth to of be a concern to the development by way of potential mining void migration.

Mine Entries

No mine entries are known on the site itself or within 20m of the boundary. The closest is recorded some 40m away to the north-west as shown on plan (Coal Authority ref: 438405-001). No information by way of shaft depth or treatment details are known of this feature.

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, likely opencast backfill material and possibility of faulted and/or fissured sandstone (and therefore porous) bedrock.

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)	**Low**
Mine entries (shafts and adits)	**Low**
Geological faulting	**Moderate to High**
Geological fissures	**Moderate to High**
Fugitive gas emissions	**Moderate**
Surface mining (opencast workings)	**High to Very High**
Aggressive ground	**Moderate to High**
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) **N/A**
Intrusive Site Investigation of Coal Seam / Mines of Coal (given nature of proposals).	(Required / Recommended / Unnecessary)** **N/A**
Advised critical depth beneath foundation level to investigate considering geology and nature of the shallow coal/s*	**N/A**

Key:

** The critical depth is calculated according to Ciria Publication 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 NE 1981 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 level of risk from the **Shallow Coal Mining** perspective no intrusive investigations would be thought necessary via deep boreholes for example.

3) The development will require some considerations given to the opencast backfill material that is anticipated beneath this area. Initially trenching exercises could be utilised to better inform the near surface conditions, with subsequent boreholes if deemed necessary to determine the depth to natural bedrock. A suitably qualified engineer should be utilised to determine this information so as to provide the necessary information for a structural engineer to design a suitable foundation solution that would be deemed acceptable to the appointed building control department. It should also be noted that the development may span the 'high wall' of the edge of the opencast (quarry), which would create a potential for an element of differential settlement as the fill becomes loaded. In such a scenario, a piled foundation solution would most likely be preferred.

4) Considerations to protect the foundations against some element of coal content (sulphur attack) or other associated aggressive materials (such as burnt/red shale for example) should be taken into account and further investigated if deemed necessary.

5) The nature of bedrock (if encountered close to the surface) should be investigated for any signs of geological faulting or fissuring. Treatment works and/or suitably strengthened foundations may be required.

6) Considering the relatively shallow workable coal, potentially faulted or fissured sandstone bedrock and likely opencast backfill material, all usual safety precautions should be employed regarding possible fugitive gases in any deep excavation work taking place. Mitigation measures may also be required within foundation design, such as a methane membrane.

7) Although only a low risk, any signs of a mine entry during future ground works should be reported to the Coal Authority to establish the necessary actions.

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. Although unlikely for this development, it should be noted that any future works to investigate any coal seam or associated mine entries will need the prior consent of the Coal Authority.

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 Special Publication 32 - "Construction Over Abandoned Mine Workings." The opinion may be overruled by Government Authorities desicions 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.*

ANNEX 1: PLAN NO. 00227.A

Land Adj. 95 Cumberland Drive, Barnsley S71 5DF

Scale 1:1250 (image @A4) **OS: 438458 / 405802**

