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**LYONS CMC
COAL MINING & GEOTECHNICAL
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Date: 19th August 2019
Your ref: (S70 1PY).
My Ref: CMRA 00217

FOR THE ATTENTION OF TOM AGUS

Dear Sir,

**COAL MINING RISK ASSESSMENT (CMRA) - FOR PROPOSED RESIDENTIAL
DEVELOPMENT AT 11A PARK GROVE, BARNSELY S70 1PY.**

Introduction

Planning permission is being sought for the development of flats at the above named site, the location of which can be seen on the attached plan No. 00217/A. The site is centred around national grid reference E: 434114 / N: 406020. 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.

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

Surface Geology (inc. any superficial deposits)

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

Coal Seam Outcrops

The 'Kents Thin' coal seam is conjectured to outcrop just to the west of the site which will dip beneath the land gently to the east below the site under consideration. Records indicate that this specific coal is of around 0.55m in section. If the geological detail is accurate this seam should be encountered very close to the surface, unless it has been removed historically by being 'dug out', or if the outcrop is actually slightly further eastwards.

The 'Kents Thick' coal seam is the next workable coal beneath the Kents Thin seam horizon by around 10m to 20m, and which is conjectured to outcrop some 60m to the west of the site as indicated on plan. From closest available mining information (as detailed below) the likely thickness of this coal is around 1.4m.

Made Ground

No made ground is indicated in the vicinity; a slight potential will exist however which may be associated with historic small scale quarrying or 'digging out' of coal if shallow enough, considering the geological information.

Fault Planes or Fissures

No geological faulting or fissuring is known or conjectured in the vicinity of the site.

Abandoned Mines Records

Opencast Coal Workings.

None known within 250m of site.

Underground Coal Workings - Deep

Deep coal mining (over 30m 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

There are no records of any shallow underground workings in either the Kents Thin or Thick coal seams in the immediate vicinity of the site. However, considering the information below the likelihood of historic workings being present of which there is no record should not be discounted.

The closest recorded workings of the Kents Thin coal seam are from the former Barnsley Main Colliery in 1961, some 1.8km away to the east of the site which proved the seam (in that area) to be 0.55m thickness.

The closest recorded workings of the Kents Thick coal seam are from the former Barnsley Main Colliery in 1959, some 1.3km away to the north-east of the site which proved the seam (in that area) to be 1.07m thickness.

Mine Entries

No mine entries are known within 150m of the site. However, considering shallow workable coal is estimated at shallow depth, some risk will exist for mine entries being present of which there are no records. The former 'High Stile Colliery' shafts, some 200m away to the east, indicates the Kents Thick seam at 40m deep at that location.

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 likely shallow coal, particularly if shallow coal workings exist along with fissured sandstone bedrock.

Historical Records

According to the historical OS sheets for this area no indications are apparent of any old quarrying or other mining related operations within this site 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
Mine entries (shafts and adits)	Moderate
Geological faulting	Low
Geological fissures	Moderate
Fugitive gas emissions	Moderate to Low
Surface mining (opencast workings)	Low
Aggressive ground (e.g. colliery spoil)	Low to Moderate
Coal exposed / near foundation level	High

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 to Occasional
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*	20m (Note - if no coal encountered then 1 or 2 holes to a maximum of 30m may be prudent)

Key:

** The critical depth is calculated according to Ciria Publication 32 guidance which details that for the land to be regarded as stable from any voided mine workings, 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

Note: permission is not usually required for coal that is encountered in excavations for foundations for example.

Information sources:

- *British Geological Survey Map Sheet SE 30 NW*
- *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) Considering the level of risk from the **Shallow Coal Mining** perspective a borehole site investigation would be required to check for any unrecorded mining voids that could compromise the stability of the development. If any voids are encountered then further works to safeguard the development may be necessary. Given the anticipated thickness and depths of the coal seams between 2 and 5 boreholes would be deemed appropriate to determine the position. If the Kents Thin seam is determined at or near the surface then at least one hole should confirm that the deeper Kents Thick seam is not within an influencing distance below whether worked or otherwise – in this instance 15m. If the Kents Thick seam is proved within an influencing depth then enough information should be collated of that coal in order to be able to conclude sound stability or otherwise. In the event of no coal being encountered, then at least one hole to 30m would be prudent. *A system chart is included in the appendix which explains the site investigation procedure.*
- 3) Any coal exposed during future excavation/foundation work should be removed so as to found off the underlying bedrock and any exposed coal blinded off to help prevent spontaneous combustion risks.
- 4) A watching brief should be employed during any 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, the Coal Authority (as owners) should be notified immediately if any are suspected.
- 5) Similar to 5 above, the watching brief should also check for any signs of made ground that may be associated with small scale quarries of the shallow coal of which there is no record. Implications on foundation design would need careful considerations if encountered.
- 6) Considering the likely shallow coal, all usual safety precautions should be employed regarding possible fugitive gases in any deep excavation work taking place. Precautions within foundations, such as a methane membrane and/or positive ventilation designs, may also be required.

It should be noted that should any investigations commence specifically for coal and/or coal mining related features then a prior license will be required from the Coal Authority. 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 – such as drilling and grouting shallow voids and/or strengthened foundation designs.

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

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 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.

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

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