

**Mr Robert Agus
Office One
34 Victoria Road
Barnsley
S70 2BU**

**CAPE SITE SERVICES
COAL MINING & GEOTECHNICAL
CONSULTANCY**

Web: www.cape-site.co.uk
Email: cape-site@btconnect.com
Tel: 01226 725050

Date: 8th January 2019
Your ref: (S74 8JR).
My Ref: CMRA 00208

FOR THE ATTENTION OF ROBERT AGUS

Dear Sir,

**COAL MINING RISK ASSESSMENT (CMRA) - FOR PROPOSED RESIDENTIAL
DEVELOPMENT AT LAND ADJACENT 44 WILKINSON ROAD, ELSECAR, BARNSELY S74 8JR**

Introduction

Planning permission is being sought for the development of two detached dwellings at the above named site, the location of which can be seen on the attached plan No. 00207/A. The site is centred around national grid reference E: 443783 / N: 406108. 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

Surface Geology (inc. any superficial deposits)

Records indicate the site to be located on sandstones, shales and mudstones of the Middle Coal Measure series from the Carboniferous formation. No superficial deposits are indicated in this vicinity. Sandstone bedrock may contain natural fissures that could have been opened out by the past deep coal mining as detailed below.

Coal Seam Outcrops

The 'Kents Thin' coal seam is conjectured to outcrop some 20m to the south of the site which will dip beneath the land gently to the north-east below the site under consideration circa 5m deep (*if conjectured detail is accurate*). Records indicate that this specific coal is of around 0.6m in section. The 'Kents Thick' coal seam of around 1.2m in thickness will lie beneath the Kents Thin seam by around 20m or more.

Made Ground

No made ground is indicated in the vicinity; some may be experienced from the past development on the site.

Fault Planes or Fissures

A geological fault is conjectured around 30 m to the south-east of the site which passes roughly in a south-west to north-east direction. BMBC Local Authority has information to suggest that past deep coal mining led to subsidence along what is thought to be a fault line passing through the site from the north-west. The subsidence at that time led to the demolition of the former properties which were subject to a claim from British Coal – further details may be obtained from The Coal Authority if required.

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

Given the geological and coal mining information the only seam that may be of a concern to the development from a shallow historic coal mining perspective will be any such old workings of the Kents Thin coal seam. Given only minimal knowledge of associated underground workings of this seam in the wider vicinity as a whole, it is considered a LOW to MODERATE risk that historic underground workings would be present. It may be the case that the coal is at the surface (and encountered in excavations etc), in which case there will be little to no risks of historic mining void migration. The Kents Thick coal seam is expected to be too deep to affect surface stability be it worked or otherwise.

Mine Entries

No mine entries are known within 20m of the site and considering the geological and mining information the likelihood of discovering uncharted mine entries is considered LOW to MODERATE.

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 and considering the geological faulting and porous 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 in the vicinity of this land. The housing estate appears to have been built in the early 1950's.

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 to Moderate
Mine entries (shafts and adits)	Low to Moderate
Geological faulting	Very High
Geological fissures	Moderate to High
Fugitive gas emissions	High
Surface mining (opencast workings)	Low
Aggressive ground	Low
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) Occasional
Intrusive Site Investigation of Coal Seam / Mines of Coal (given nature of proposals).	(Required / Recommended / Unnecessary)** Recommended
Advised critical depth beneath foundation level to investigate considering geology and nature of the shallow coal/s*	12m (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 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 :**

<i>Required</i>	<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>
<i>Recommended</i>	<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>
<i>Unnecessary</i>	<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 'incidental' coal that is encountered in excavations for foundations for example.

Information sources:

- *British Geological Survey Map Sheet ST 67 SW 1955 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) Considering the level of risk from the **Shallow Coal Mining** perspective a borehole site investigation would be required to check for any remaining mining voids that could compromise the stability of the development. Given the anticipated thickness of the coal seam in question it is considered that boreholes to either the base of the coal seam or to 12m would be adequate – however, regulators may require 1 or 2 holes to 30m deep if no coal is encountered. As with all such operations, the investigation will evolve depending on the findings of each borehole taking place. The ‘Recommended Site Investigation Process’ in the appendix to this report illustrates a competent procedure. Given the nature of the proposals, between 2 and 6 boreholes would be thought appropriate to ultimately determine the position – if the coal is discovered within critical depth then four holes on each corner of the development footprint and one or two within would be prudent to lessen the likelihood of drilling through coal pillars rather than mining voids.
- 3) To facilitate the site investigation a permit from the Coal Authority should first be obtained to intersect/disturb their interests.
- 4) Given the VERY HIGH risk of geological faulting on this site (with reports of past property damage/demolition) it is strongly recommended to either check for the areas of bedrock affected or to suitably design/strengthen the whole of the foundations accordingly, to accommodate any further residual movement that may occur. It is unlikely for large amounts of future movement (similar to what would have been experienced in the past from the deep coal mining subsidence at the time), but further slight movement should not be ruled out. It would be prudent to employ a suitably qualified structural engineer for such considerations.
- 5) Any coal exposed during future excavation/foundation work should be removed to found off the underlying bedrock and coal blinded off to help prevent spontaneous combustion risks.
- 6) A watching brief should be employed for 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.
- 7) Considering the shallow coal, geological faulting and sandstone bedrock, 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
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 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

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

© M.A.Lyons - Jan 2016

