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Date: 12th September 2018
Your ref: (Darley Av).
My Ref: CMRA 00201

FOR THE ATTENTION OF JOHN BLACKBURN

Dear Sir,

COAL MINING RISK ASSESSMENT (CMRA) - FOR PROPOSED RESIDENTIAL DEVELOPMENT AT LAND AT DARLEY AVENUE, WARD GREEN, BARNSLEY S70 6LS.

Introduction

Planning permission is being sought for the development of 8 dwellings in the form of town houses at the above named site, the location of which can be seen on the attached plan No. 00201/A. 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 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

(Italics – derived from other sources).

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 the vicinity and depth to bedrock is uncertain.

Strata is recorded to dip to the north-east at rates of around 1in13 (approx. 4°) in these parts – according to abandoned coal mining records as mentioned below.

Coal Seam Outcrops

The Winter Coal Seam is conjectured to outcrop clear to the north-east of the site which should not affect this development.

The Top Beamshaw Coal Seam is shown to outcrop through the site itself and therefore may be encountered beneath surface soils at very shallow depth. This coal is known locally to be thin sections of coal interbedded with dirt bands of around 1m in total section.

The Low Beamshaw Coal Seam is conjectured to outcrop some 70m to the south-west of the site which, dipping beneath the land to the north-east as anticipated (and considering surface level topography), would be expected to lie beneth the site at depths of around 10m or more. Local information suggests a seam thickness for this coal in the region of 600mm.

Considering the geological sections of the area no workable coal seam is anticipated to lie beneath the Low Beamshaw seam at a shallow enough depth to interact with any subsidence movement.

Made Ground

No areas of made ground are indicated in the vicinity of the site, although considering the possibility for shallow coal the likelihood of made ground been experienced associated with historic small scale excavations should not be discounted.

Fault Planes or Fissures

No geological faults are known or conjectured within the vicinity of the site. Although no fissures are recorded in the area, sandstone bedrock may contain natural fissures that may have been opened out by the past deep coal mining as detailed below.

Abandoned Mines Records

(Italics - derived from other sources).

Opencast Coal Workings.

None known within 250m of site.

Underground Coal Workings - Deep

Deep coal mining has taken place in various coal seams beneath this location, the latest being in the Parkgate Seam from Barrow Colliery in the early 1960's at around 400m deep. All 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

No underground coal workings are recorded beneath the site itself in either the Top or Low Beamshaw coal seams. There are no mining records of any shallow workings associated with these coal seams in this vicinity and although such historic operations should not be entirely ruled out, the likelihood for such historic mining voids would be considered relatively low. Also, given the anticipated seam thickness of the Low Beamshaw coal, it may be the case that it is too deep beneath formation levels to affect stability whether worked or otherwise – as per the current industry guidelines (CIRIA 32).

Mine Entries

No mine entry is known within the site or to within 20m of its boundary. However, old mine adits are known around 70m away to the east, which are recorded as drifting into the Winter Coal seam. Other unknown mine entries may be encountered in the area as a whole considering the shallow workable coal.

Fugitive Gases

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, particularly if voided workings are present – any accumulated mine gases would have a potential to migrate upwards through any fractured collapsing ground.

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 toModerate**
Geological faulting	**Low**
Geological fissures	**Moderate to Low**
Fugitive gas emissions	**Moderate to Low**
Surface mining (opencast workings)	**Low to Moderate**
Coal exposed / near foundation level	**High**

Defined Risk Assessment
(Where 'Underground Coal Mining' above = Very High to Low)

Extent of known underground mining in this/these shallow coal seam/s in the wider vicinity	(Extensive / Much / Occasional / None Known) **OCCASIONAL** (in much wider vicinity however)
Intrusive Site Investigation of Coal Seam / Mines of Coal (given nature of proposals).	(Required / Recommended / Unnecessary)** **RECOMMENDED**
Advised critical depth beneath formation level to investigate considering geology and nature of the shallow coal/s*	**12m**

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.

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 :*

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.*

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, and given the nature/scale of proposed development, a limited borehole site investigation would be prudent to check the nature of the shallow coals. Given the anticipated thickness of the Low Beamshaw coal seam it is considered that boreholes to either the base of the coal seam or a maximum of 12m (if no coal is encountered) would be adequate. This figure may need to be revised however if any substantial made ground or superficial material is encountered. As with all such operations, the investigation will evolve depending on the findings of each borehole taking place. The attached 'Recommended Site Investigation Process' illustrates a competent procedure.

3) To facilitate the site investigation a permit from the Coal Authority should first be obtained to intersect/disturb their interests.

4) Prior to a Borehole Site Investigation a trenching exercise may be preferred to determine the Top Beamshaw coal beneath surface soils, if present. Any exposed coal should be removed and blinded off to help prevent the possibility of spontaneous combustion. Foundations would need to be sited on firm strata beneath any coal seam horizons.

5) Although a relatively small risk, caution should be given to the possibility of encountering made ground associated with any historic small scale quarrying/opencast operations. Compaction issues and/or contamination considerations may be required.

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 workable coal, all usual safety precautions should be employed regarding possible fugitive gases in any deep excavation work taking place, particularly if shallow mining voids are present. Precautions within foundations, such as a methane membrane, may also be required.

This report should be submitted to the regulators for their comments/input regarding future requirements. 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 strengthening foundation designs etc.

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." 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.