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**Barnsley S75 3JR**

**LYONS CMC**  
**COAL MINING & GEOTECHNICAL**  
**CONSULTANCY**



Date: 12<sup>th</sup> June 2020  
Your ref: (S63 9DX).  
My Ref: CMRA 00230

**FOR THE ATTENTION OF PETER THOMPSON**

Dear Sir,

**COAL MINING RISK ASSESSMENT (CMRA) - FOR PROPOSED RESIDENTIAL DEVELOPMENT AT THE COACH HOUSE, HOMECROFT ROAD, GOLDTHORPE S63 9DX**

**Introduction**

Planning permission is being sought for the development of 4 No. 2 bed townhouses at the above named site, the location of which can be seen on the attached plan No. 00230/A in Appendix 1. The site is centred around national grid reference E: 445986 / N: 404024 at an elevation of 41m AOD. 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.

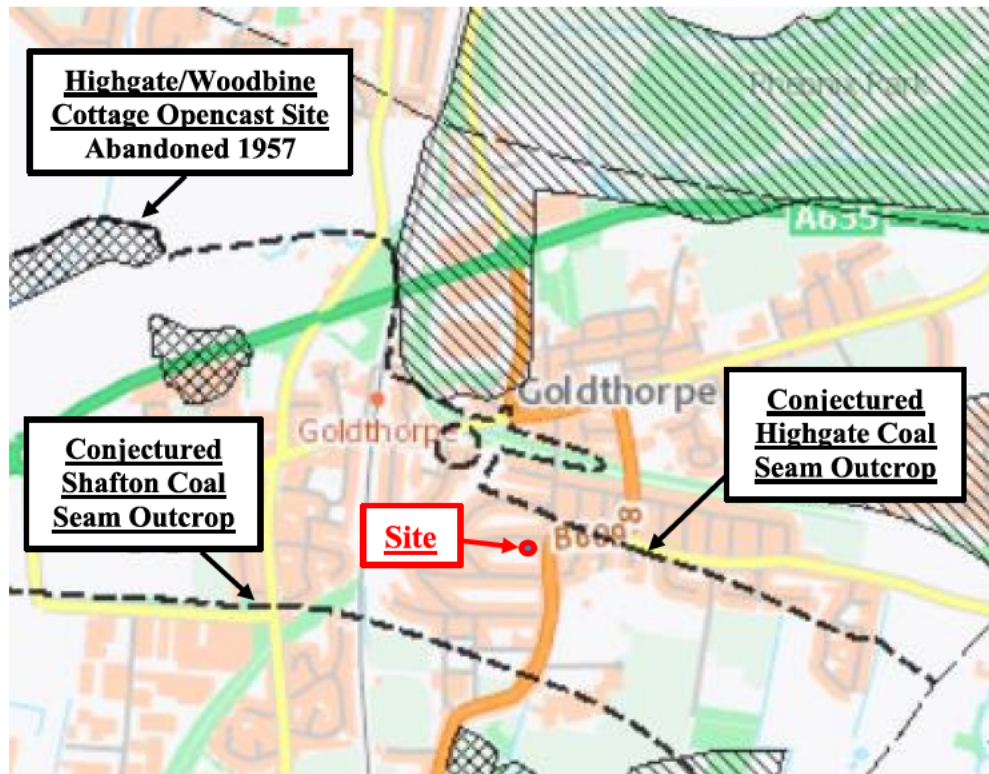
**Scope of the Coal Mining Risk Assessment**

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 sandstones, shales and mudstones of the Middle Coal Measure series from the Carboniferous formation. No superficial deposits are indicated in this vicinity. Bedrock is shown as dipping to the north-east at around 1 in 10. The following image is an extract from the Onshore Geoindex which outlines the conjectured coal seam outcrops and artificial ground in this vicinity.



## Coal Seam Outcrops

As can be seen on the above image, the Highgate coal seam is conjectured to outcrop some 60m away to the north-east of the site. As such this coal, known locally to be in the region of 0.5m in thickness, is not expected to be present beneath the site as the seam will dip away to the north-east. The Shafon Coal seam is conjectured to outcrop some 270m away to the south-west as indicated. This coal is known locally to be around 1.5m in thickness, and will dip beneath the site at anticipated depth of between 20m to 25m.

## Made Ground

No made ground is indicated in the vicinity.

## Fault Planes or Fissures

No geological faulting is known within 50m of the site. Any sandstone bedrock may contain natural fissures that could have been opened out by the past deep coal mining in the area.

## Opencast Coal Workings.

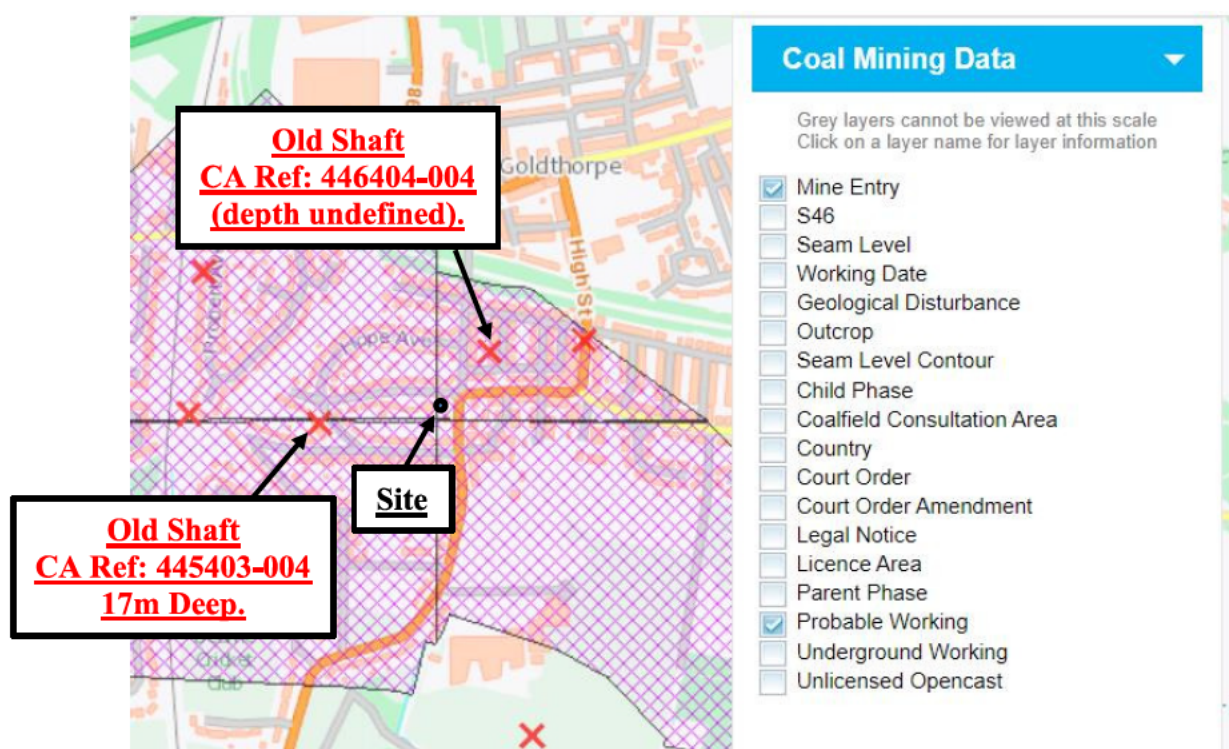
None known within 100m of site. The former 'Highgate/Woodbine' Opencast, abandoned in 1957, worked the Highgate coal seam around 1km away to the north-west – as shown on the above image. Those operations indicated a seam thickness for the Highgate coal of 0.45m.

## 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

Although no known underground workings are shown beneath the site itself, it is indeed shown to be within an 'area of probable shallow workings' from the Coal Authorities interactive viewer as shown in the extract image below. The probable workings are in relation to the Shafton coal seam, with anticipated extraction thicknesses in the region of 1.5m. Current guidelines (CIRIA C758D) suggests that at least 10 times the seam thickness of competent strata above the workings would be required for the land to be considered stable. Indeed the seam may be intact and not worked, in which case the land would be stable regardless of depth. As such, considering anticipated depths to the seam/old workings as 20m or more, it is likely that any unrecorded workings are too deep to have a stability impact on the proposals. As this detail is based on conjecture however, a slight degree of uncertainty will remain.



## Mine Entries

No mine entries are known within 20m of the site. The closest is a shaft some 100m away to the north-east as indicated in the image above – CA Ref: 446404-004. Little details are known of this shaft according to the Coal Authorities details, such as depth for instance. It is possible that it could be associated with small scale underground workings of either the Highgate or Shafton seams. Another shaft, CA Ref: 445403-004, located some 175m away to the west-south-west, is indicated as being 17m deep. This would presumably be to access workings in the Shafton coal. Considering the presence of shallow workable coal, the likelihood of other mine entries being encountered of which there are no records should not be ruled out.

## 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 coal seam. This risk would increase should any workings or mine entries be encountered.

## Historical Records

According to the historical records for this site, no nearby indications of any mining or quarrying activities are noted in the vicinity.

### Coal Mining Risk Assessment (based on the above).

| Coal Seam / Coal Mining Issue               | Risk Assessment<br>(VeryHigh/High/Moderate/Low/VeryLow) |
|---------------------------------------------|---------------------------------------------------------|
| Underground coal mining (at shallow depths) | <b>Moderate to High</b>                                 |
| Mine entries (shafts and adits)             | <b>Moderate</b>                                         |
| Geological faulting                         | <b>Low</b>                                              |
| Geological fissures                         | <b>Moderate</b>                                         |
| Fugitive gas emissions                      | <b>Low to Moderate</b>                                  |
| Surface mining (opencast workings)          | <b>Low</b>                                              |
| Aggressive ground                           | <b>Low</b>                                              |
| Coal exposed / near foundation level        | <b>Low to Moderate</b>                                  |

## 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)<br><b>Much</b>    |
| Intrusive Site Investigation of Coal Seam / Mines of Coal (given nature of proposals).                               | (Required / Recommended / Unnecessary)**<br><b>Recommended</b> |
| Advised critical depth beneath foundation level to investigate considering geology and nature of the shallow coal/s* | <b>20m</b>                                                     |

### 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 :

|                    |                                                                                                                                                                                                                                      |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Required</b>    | <i>Intrusive Site Investigation <b>required</b> of the shallow coal/s and/or mine entries to determine any necessary stabilisation works for the given development.</i>                                                              |
| <b>Recommended</b> | <i>Intrusive Site investigation <b>recommended</b> – 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> |
| <b>Unnecessary</b> | <i>Intrusive Site Investigation deemed <b>unnecessary</b> – 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](http://www.coal.gov.uk/services/permissions/index.cfm)

## Information sources:

- *British Geological Survey Map Sheet SE 40 SE 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) Although there is a moderate to high risk of shallow workings being present in the Shafton coal seam beneath the site, it is likely that they are at a depth that would not affect surface stability for the proposals. The geological information along with nearby shaft details supports this. There is a slight degree of uncertainty however given the conjectured information. The only way to ultimately prove the position would be by a limited borehole investigation of 2 to 3 holes to the Shafton seam horizon. The boreholes could be terminated at the base of the coal seam as no other workable seam is anticipated at an influencing depth below this horizon. In the event that no coal is encountered, then the holes terminated at 20m below rock head would prove stability. The attached Procedure Guide in Appendix 2 outlines an appropriate methodology for such investigations. In this particular circumstance however, it may be possible that regulators would approve a strengthened foundation solution, such as re-enforced strip or raft, without a prior borehole investigation. Such an element of mitigation may reduce the risk of shallow mining instability to an acceptable level given the nature of the proposals. (Any such approvals should be secured prior to development taking place).
- 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, in this instance circular areas of grey fill within sandstone bedrock would be an indication. If suspected the Coal Authority (as owners) should be notified immediately for appropriate deliberations.

- 4) Any sandstone bedrock should be checked for fissuring that may require prior treatment works to stabilise and foundations designed accordingly.
- 5) In the unlikely event of coal being encountered within proposed formation levels it would need removal and blinding off procedures to help prevent spontaneous combustions risks.
- 6) Considering the potential for shallow coal and/or coal workings, 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 or positive ventilation.

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 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,

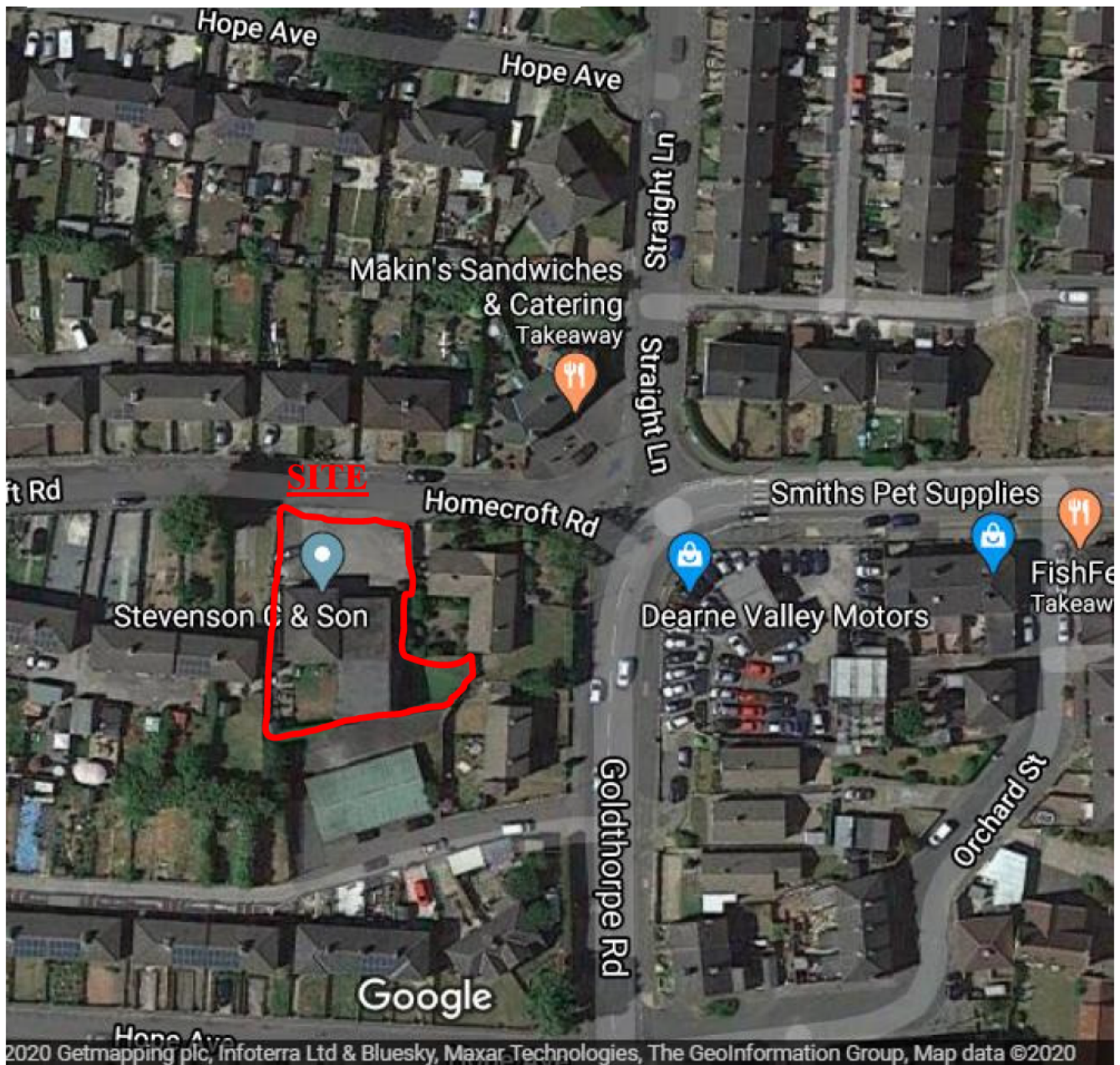


M. Lyons  
Consultant Mining Engineer  
BSc CSci MIMMM

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 1 – Location Plan No. 00230/A**  
**(Not To Scale)**  
**Site centred at O.S. 445986 / 404024**



## Appendix 2

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

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