

**Mr Gordon Bird
C/O Proposed Development
Land to rear of 266 Dodworth Road
Barnsley
S70 6PN**

**LYONS CMC
COAL MINING & GEOTECHNICAL
CONSULTANCY**

Web: www.lyonscmc.co.uk
Email: mark@lyonscmc.co.uk
Mob: 07887555580

Date: 1st September 2020
Your ref: (S70 6PN).
My Ref: CMRA 00239

FOR THE ATTENTION OF GORDON BIRD & ANDREW BAILEY

Dear Sirs,

**COAL MINING RISK ASSESSMENT (CMRA) - FOR PROPOSED RESIDENTIAL
DEVELOPMENT AT LAND TO REAR OF 266 DODWORTH ROAD, BARNSELY S70 6PN**

Introduction

Planning permission is being considered for residential development at the above named site, the location of which can be seen on the attached plan No. 00239/A in Appendix 1. The site is centred around national grid reference E: 432367 / N: 405908. 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:

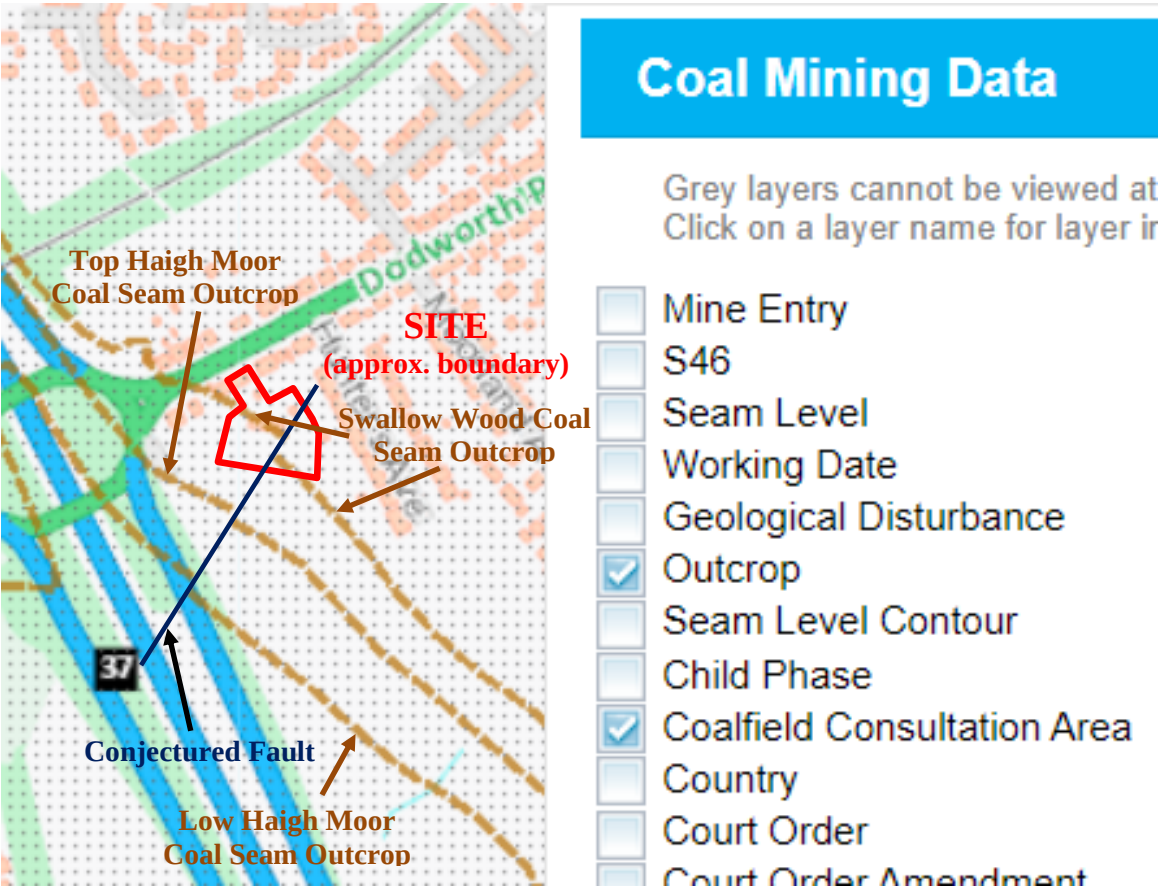
- Present a desk-based review of all available information on the coal mining issues which are relevant to the application site;
- Use that information to identify and assess the risks to the proposed development from coal mining legacy, including the cumulative impact of issues;
- Set out appropriate 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.

Coal Seam Outcrops

Three different coal seams are known to outcrop in this vicinity as detailed on the Coal Authorities Interactive Viewer and illustrated in the extract image below. The ‘Swallow Wood’ coal seam (of around 900mm in thickness) is conjectured to outcrop through the site, with the ‘Top Haigh Moor’ and ‘Low Haigh Moor’ coal seams conjectured to outcrop just to the south-west as shown. Both Haigh Moor seams are likely to be up to 1m in thickness, with the Top Haigh moor some 10m below the Swallow Wood seam. The interval between the Top and Low Haigh Moor seams is uncertain, but expected to be between 5m to 10m. The coal seams will gently dip beneath the land to the north-east at around 6 degrees (1 in 10).



Made Ground

No made ground is indicated in the vicinity; some may be experienced should any historic small scale ‘digging out’ of the shallow coal, illicit or otherwise, of which there are no records.

Fault Planes or Fissures

A geological fault is shown to pass through the site as indicated on the above image, from south-west to north-east. This plane of weakness throws the strata down by a few meters or so to the south-east – i.e. the coal seams will be slightly deeper on this side of the fault. As with all faults, the plane of weakness may be either a single plane or a ‘zone’ of various planes in the same orientation.

Opencast Coal Workings.

None known within 40m of site. The former ‘Hunters Cottage’ opencast site worked the Swallow Wood coal close to the north-west of Dodworth road up to 1950. The former ‘Horse Wood’ opencast site also worked the Swallow Wood coal around 200m away to the south-east, again in the 1940’s.

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.

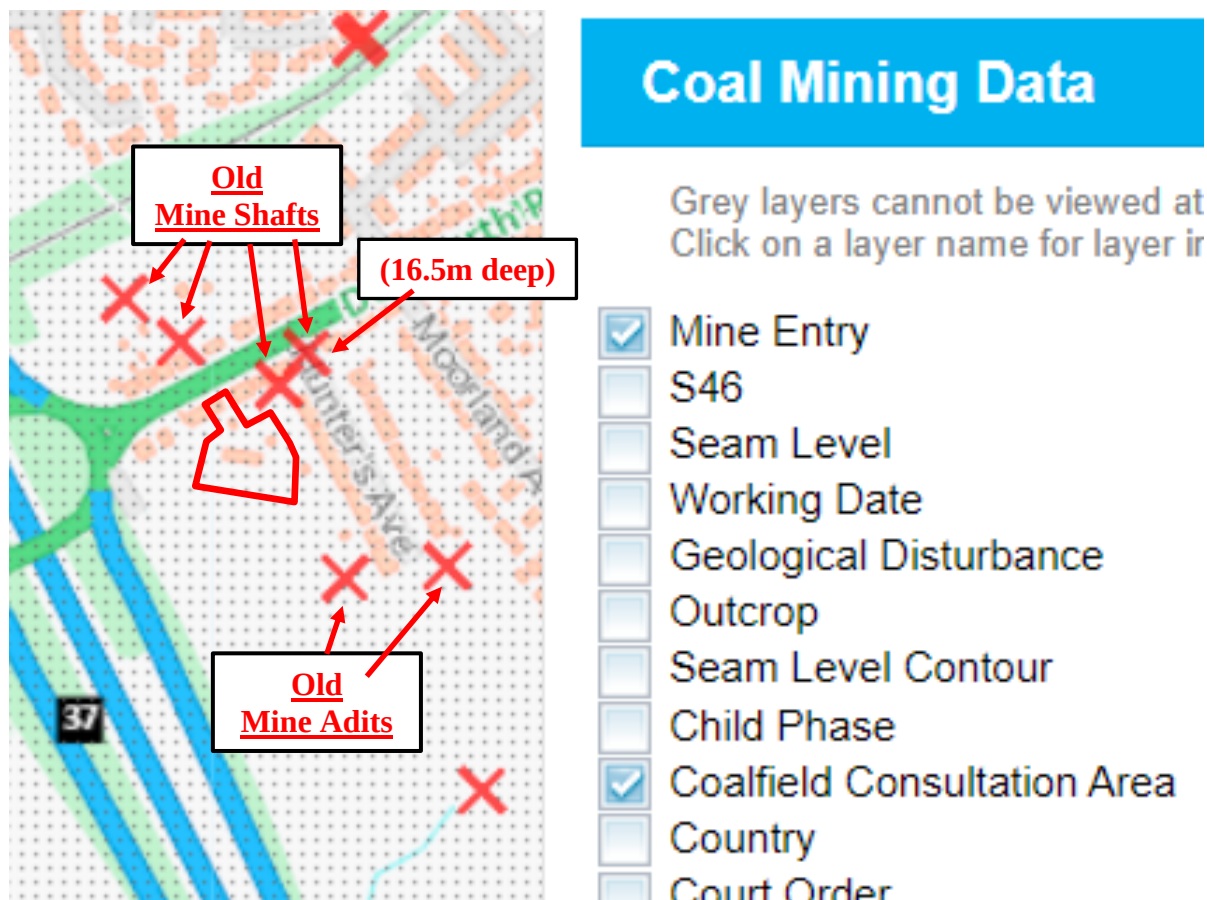
Underground Coal Workings - Shallow

The former ‘Dodworth Road Colliery’ worked the Swallow Wood coal seam via underground methods quite extensively to the east up until 1875. These operations are shown to have extended very close to the outcrop position and slightly beneath this site in the eastern part, where it is likely to be a few meters deep. Two nearby mineshafts and two adit mines are known associated with this colliery as detailed below.

No shallow underground workings are known beneath the site in the Haigh Moor coal seams, although such operations are known to have taken place in the wider area – the ‘Victoria Colliery’ worked the Top Haigh Moor seam at around 70m deep in the 1920’s some 500m away to the east; ‘Barugh Colliery’ worked the Low Haigh Moor seam (between 10m to 30m deep) in the 1920’s around 2km away to the north. As such, the likelihood of old and maybe illicit workings being present beneath the site should not be discounted – of which may be at a depth/thickness that may affect surface stability. No further workable coal seams are anticipated below this horizon.

Mine Entries

No mine entries are known within the site itself, however various are known in the wider area, as indicated on the image below, which is an extract from the Coal Authorities interactive viewer. Two shafts close to the north-east and two adits to the south-east are associated with the former ‘Dodworth Road Colliery’ which worked the Swallow Wood coal seam in the mid 19th century, abandoned in 1878. The shaft furthest to the north-east is indicated as being 16.5m deep to the Swallow Wood coal. The adits are basically tunnels following the coal seam to the north-east as it dips beneath the land. Considering the shallow workable coal, there is always a potential for discovering further mine entries of which there are no records.



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 seams, particularly considering the increased pathway along the possibly geological fault. This risk will also increase should any further mine entries be encountered.

Historical Records

According to the historical records, no indications of any mining or quarrying activities are noted within the site itself.

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)	High
Mine entries (shafts and adits)	Moderate
Geological faulting	High
Geological fissures	Low
Fugitive gas emissions	Moderate
Surface mining (opencast workings)	Low
Aggressive ground	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) Extensive 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*	30m

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 :*

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

Information sources:

- *British Geological Survey Map Sheet SE 30 NW 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) Quite a high risk is present for old voided shallow workings in the Swallow Wood coal seam that may compromise stability for development in the eastern part of the site. Only a slight risk is considered for any similar workings in the deeper Top & Low Haigh Moor coal seams. As such, prior to future development an intrusive borehole site investigation should be undertaken to determine the actual risks on site and what, if any, remedial measures are required to ensure safe foundation designs. The general rule of thumb, as outlined in the CIRIA C758D 'Abandoned Mine Workings Manual', is for at least ten times of competent strata above old mine workings for it to be considered as stable without any further works required. Further works such as grouting old mining voids, or a suitably designed foundation solution may be required. Only a limited number of holes to check the deeper Haigh Moor seams would be thought necessary – to maximum depths of 30m. The number and location of boreholes required will depend on the scale and positioning of proposed development once determined. A 'Borehole Site Investigation Process Guide' chart is attached in appendix 2 for reference.

Note: permission from the Coal Authority should be obtained prior to any investigation of any coal seam or mine entries.

- 3) A watching brief should be employed during future grounds works throughout this site for any signs of unrecorded mine entries (either shafts or adits). A surface scrape to natural ground is the most effective procedure to check for such features, which generally manifest as circular areas of grey fill within the bedrock. If suspected the Coal Authority (as owners) should be notified immediately for appropriate deliberations.
- 4) Coal may be encountered within proposed formation levels which would need removal and blinding off procedures to help prevent spontaneous combustions risks and protect foundations.
- 5) A watching brief should be employed to check for any signs of weak bedrock associated with the geological fault and/or any made ground that could be associated with small scale digging out of shallow coal; foundations may need to be re-designed or strengthened accordingly.
- 6) Considering the potential for shallow coal, shallow coal workings and geological faulting, 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,

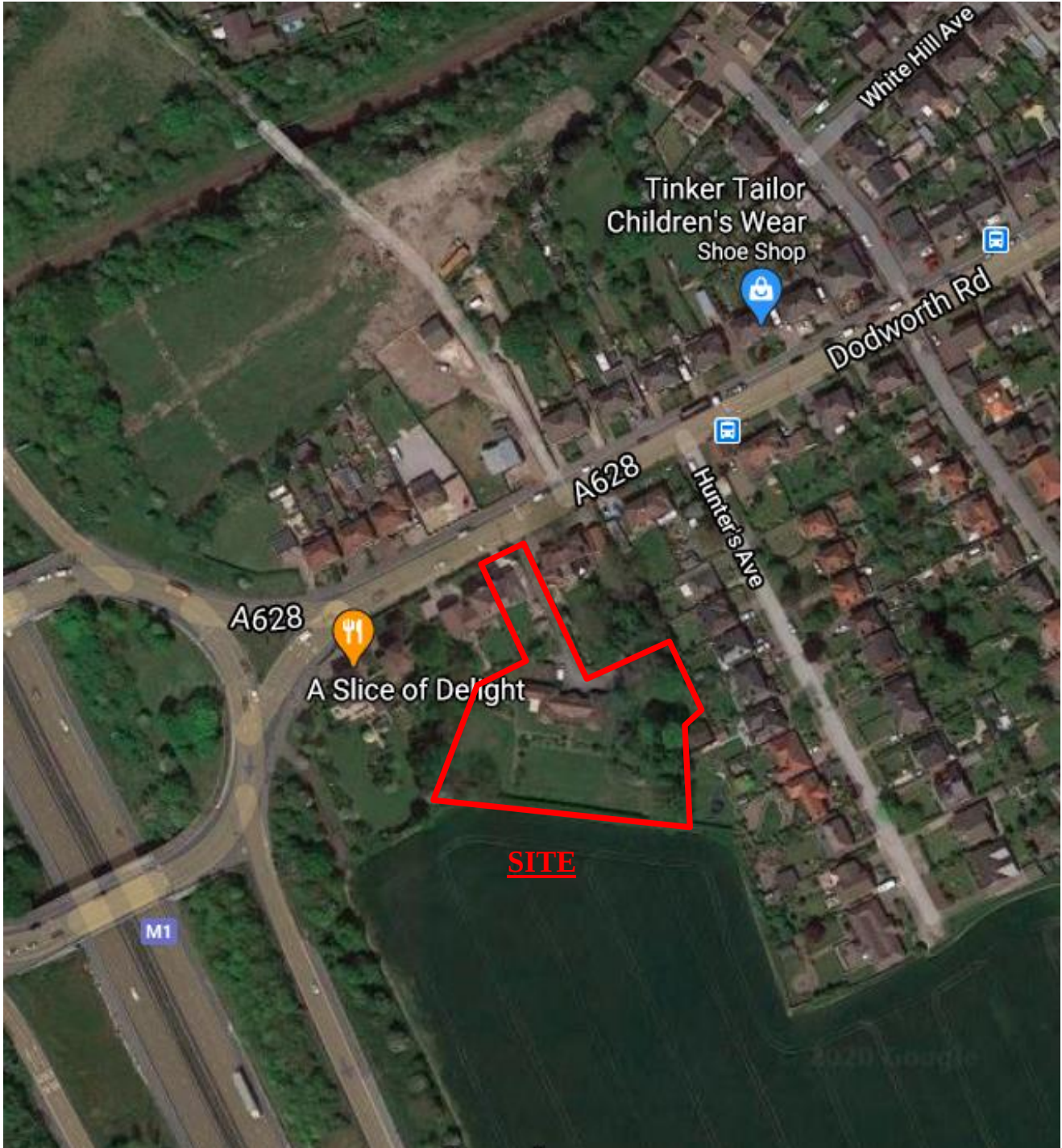
M Lyons

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. 00239/A
(Not To Scale)
Site centred at O.S. 432415 / 405994



Appendix 2

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

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