

**Mr E. Nicholson
C/O Development at:
1A Brier Lane
Havercroft
Wakefield
WF4 2AS**

**LYONS CMC
COAL MINING & GEOTECHNICAL
CONSULTANCY**

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Date: 17th November 2020
Your ref: (WF4 2AS).
My Ref: CMRA 00244

FOR THE ATTENTION OF MR E. NICHOLSON

Dear Sir,

**COAL MINING RISK ASSESSMENT (CMRA) - FOR PROPOSED RESIDENTIAL
DEVELOPMENT AT 1A BRIER LANE, HAVERCROFT, WAKEFIELD WF4 2AS**

Introduction

Planning permission is being sought for a new detached dwelling at the above named site, the location of which can be seen on the attached plan No. 00244/A in Appendix 1. The site is centred around national grid reference E: 439037 / N: 413629. 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 Wakefield Local Authority.

Scope of the Coal Mining Risk Assessment

The purpose of this Coal Mining Risk Assessment Report is to:

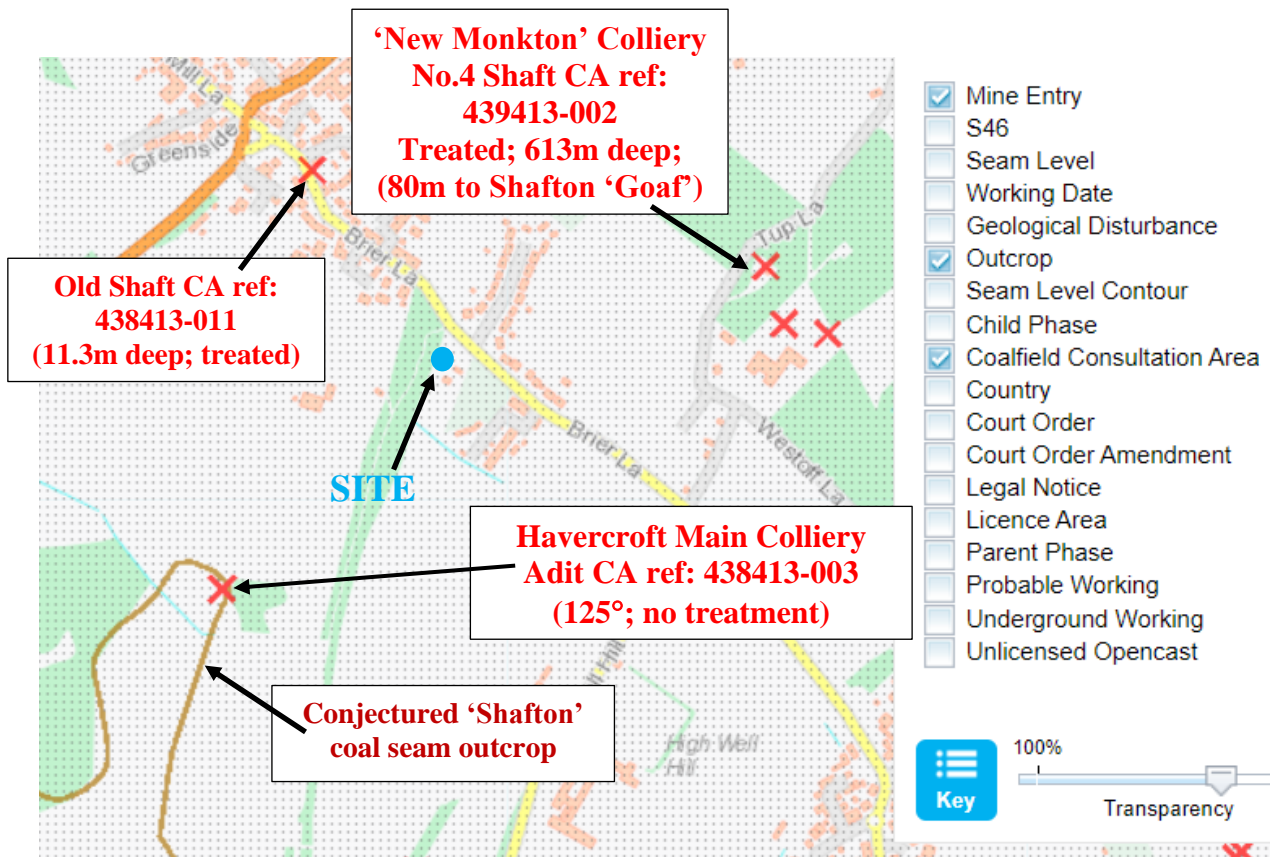
- Present a desk-based review of all available information on the coal mining issues which are relevant to the application site;
- Use that information to identify and assess the risks to the proposed development from coal mining legacy, including the cumulative impact of issues;
- Set out appropriate 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 shales, mudstones and sandstones of the Middle Coal Measure series from the Carboniferous formation. No superficial deposits are indicated in this vicinity.

Coal Seam Outcrops

As outlined on the extract image below from the Coal Authorities Interactive Viewer, the 'Shafton' coal seam is conjectured to outcrop some 350m away to the south-west of the site which dips to the north east and beneath the proposed development at a shallow rate of around 1 in 12 or 5°. Local mining records indicates that the Shafton seam is of around 1.5m thickness in this vicinity. No other workable coal seams are anticipated at an influencing depth (from a shallow mining stability aspect) either above or below the Shafton coal.



Considering the dip of the strata (around 1 in 12 to the north-east) along with the elevation difference (around 15m from seam outcrop position compared to site position), the Shafton seam would be anticipated at a depth of around 45m beneath the site itself (however as this is based on conjecture an element of uncertainty will exist).

Made Ground

No made ground is indicated in the vicinity; however some may be experienced associated with the adjacent old railway cutting which presumably has been infilled (checks may be required with Wakefield Council as to whether this is classed as a landfill site for any associated gas risks).

Fault Planes or Fissures

No geological faulting or fissures are known in the vicinity of the site.

Opencast Coal Workings.

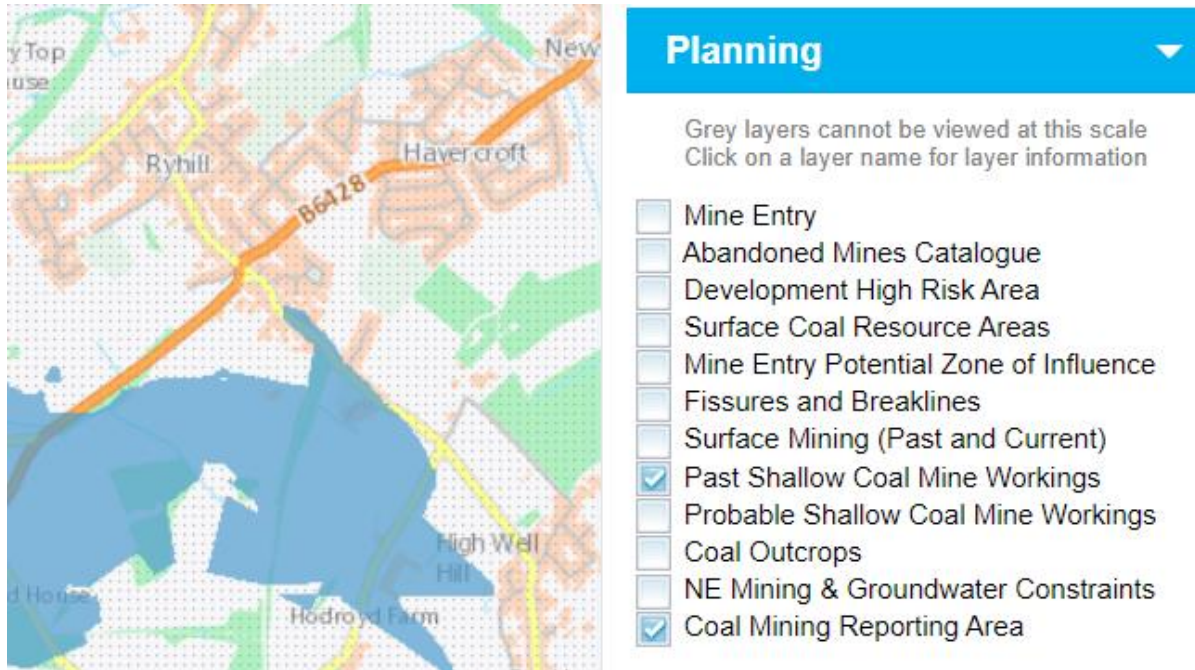
No opencast coal operations are known within 250m of the site.

Underground Coal Workings - Deep

Deep coal mining (over 50m 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

Quite extensive underground mining of the Shafton coal seam is known in this area as a whole. The former 'Havercroft Main' Colliery Adit (as indicated on the above image) worked the seam from its outcrop position to the south-west. The former 'New Monkton' Colliery (No. 4 Shaft indicated on the above image) recorded the 'goaf' of the Shafton coal seam at 80m deep – indicating that the shaft travelled through old workings of the Shafton seam as it extended to greater depths to work other coal seams. The extract image from the Coal Authorities Interactive Viewer below indicates the 'past shallow coal workings' beneath the site, which relates to the Havercroft Main Shafton seam workings. Little information is apparent on the abandoned mine plans to suggest the depth to these workings in the vicinity of the site.



The general rule of thumb from CIRIA C758D (Abandoned mine workings manual) guidelines is that a site would need ten times the coal seam section of competent natural strata beneath the formation level and top of the coal for it to be considered as stable whether worked or otherwise. In this instance, around 20m of competent natural strata beneath the proposed base of foundations would make for sound stability. It seems quite likely that this will be the case for the development, but an element of uncertainty is present as to the actual position for this specific location. The mine entry to the north-west, recorded as 11.3m deep, may suggest that the Shafton seam is shallower than anticipated, which could be due to the throw of a geological fault or other unproven localised geological conditions.

Mine Entries

No mine entries are known within 20m of the site itself. However, as can be seen in the extract image on page 2, various are known in the surrounding vicinity, which are as follows (in order of closeness to site):

Mine Shaft Coal Authority Ref: 439413-002; New Monkton No. 4 Shaft – 613m deep; treated; recorded Shafton seam ‘Goaf’ at 80m deep.

Mine Shaft Coal Authority Ref: 438413-011; indicated as 11.3m deep; not shown to be treated; no details as to what seam.

Mine Adit Coal Authority Ref: 438413-003; indicated as travelling at 125° (ESE); no treatment details.

It should be noted that some potential will exist for other mine shafts or adits being encountered 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 coal workings, particularly if any sandstone bedrock be present.

Historical Records

According to the historical records for this site, no nearby 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)	Moderate to High
Mine entries (shafts and adits)	Low to Moderate
Geological faulting	Low
Geological fissures	Low
Fugitive gas emissions	Low to Moderate
Surface mining (opencast workings)	Low
Aggressive ground	Low to Moderate
Coal exposed / near foundation level	Low

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
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*	25m

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 31 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) Given the **Shallow Coal Mining** details of the Shafton seam in this area, it would be recommended to undertake a limited borehole site investigation to ensure that there is enough competent cover of strata above any potential old mining voids. Two to three holes to depths of 25m below rockhead (below any fill/made ground) should suffice for this, and if the seam or associated workings is not encountered then usual foundations could be utilised. If however any voids are encountered within an influencing depth then further ground treatment works and/or strengthening of foundations may be required for safe stability. A guide to a recommended site investigation process is outlined in appendix 2. There may be some possibility that the regulators (Coal Authority) may accept a strengthened foundation solution without a prior investigation in this instance – however this should be established with them prior to any development works on site.
- 3) A small potential exists for discovering fill material associated with the adjacent railway cutting, which may contain an element of colliery spoil material given. Trenching would be prudent to determine any areas that will require spoil removal and blinding off techniques to help prevent spontaneous combustion risks and chemical attack risks.
- 4) 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, circular areas of grey fill within bedrock would be an indication. If suspected the Coal Authority (as owners) should be notified immediately for appropriate deliberations.
- 5) Considering the relatively shallow coal, coal workings and nearby mine entries, 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, mines of coal 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,

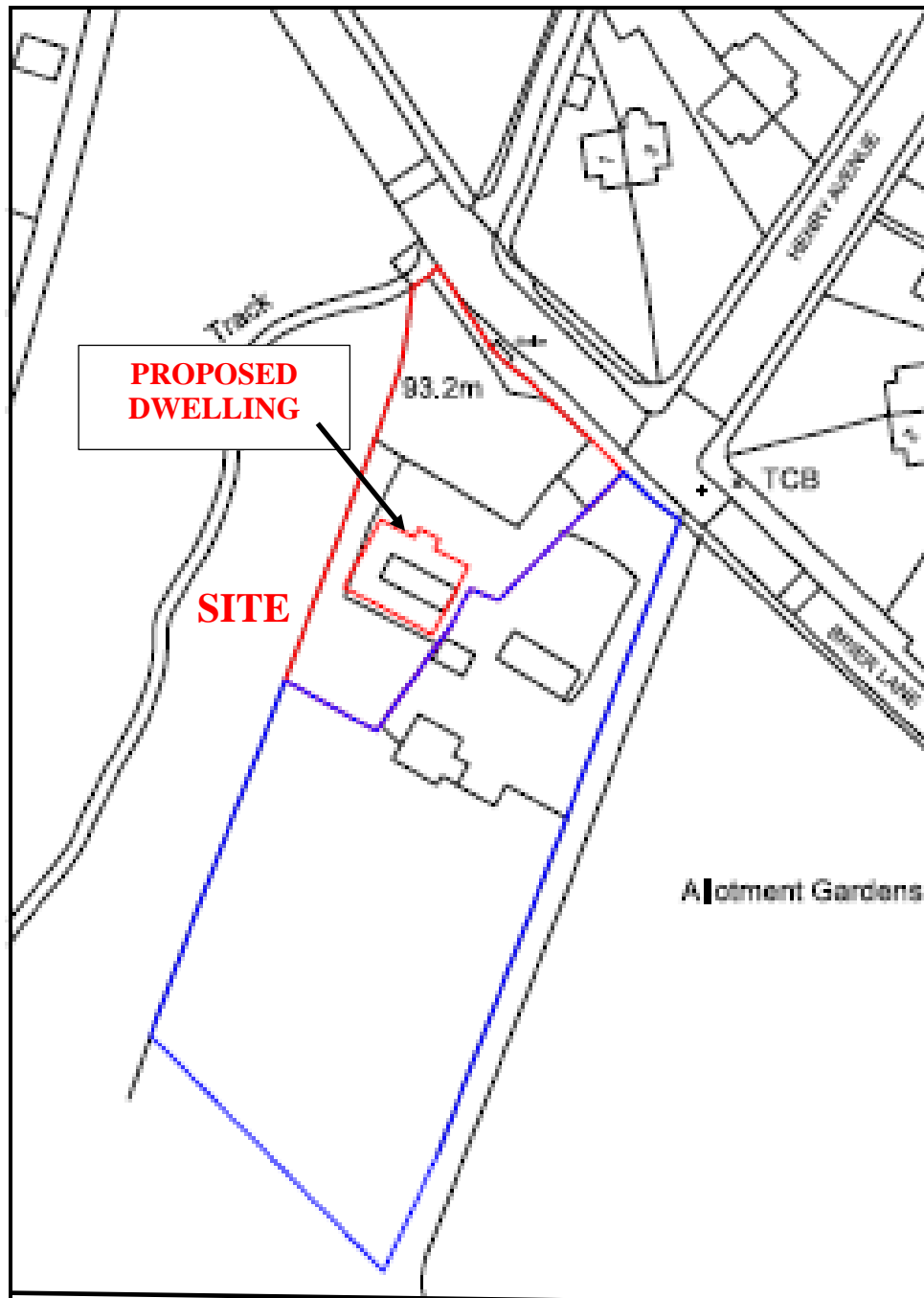
M Lyons

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 C758D "Abandoned mine workings manual." 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. 00244/A
(Not To Scale)
Site centred at O.S. 439037 / 413629



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

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