LYONS CMC
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**Mr Omar Sharif**
**C/O:**
**Orchard Views**
**Gawber Road**
**Barnsley**
**S75 2AN**

Date: 29th September 2020
Your ref: (S75 2AN).
My Ref: CMRA 00240

**FOR THE ATTENTION OF OMAR SHARIF & PETER THOMPSON**

Dear Sir,

**COAL MINING RISK ASSESSMENT (CMRA) - FOR PROPOSED CARE HOME DEVELOPMENT AT ORCHARD VIEWS, 39 GAWBER ROAD, BARNSLEY S75 2AN**

## Introduction

Planning permission is being sought for further care home development at the above named site, the location of which can be seen on the attached plan No. 00240/A in Appendix 1. The site is centred around national grid reference E: 433500 / N: 407043. Proposed development is focused to the south-west of the existing care home facility. 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:

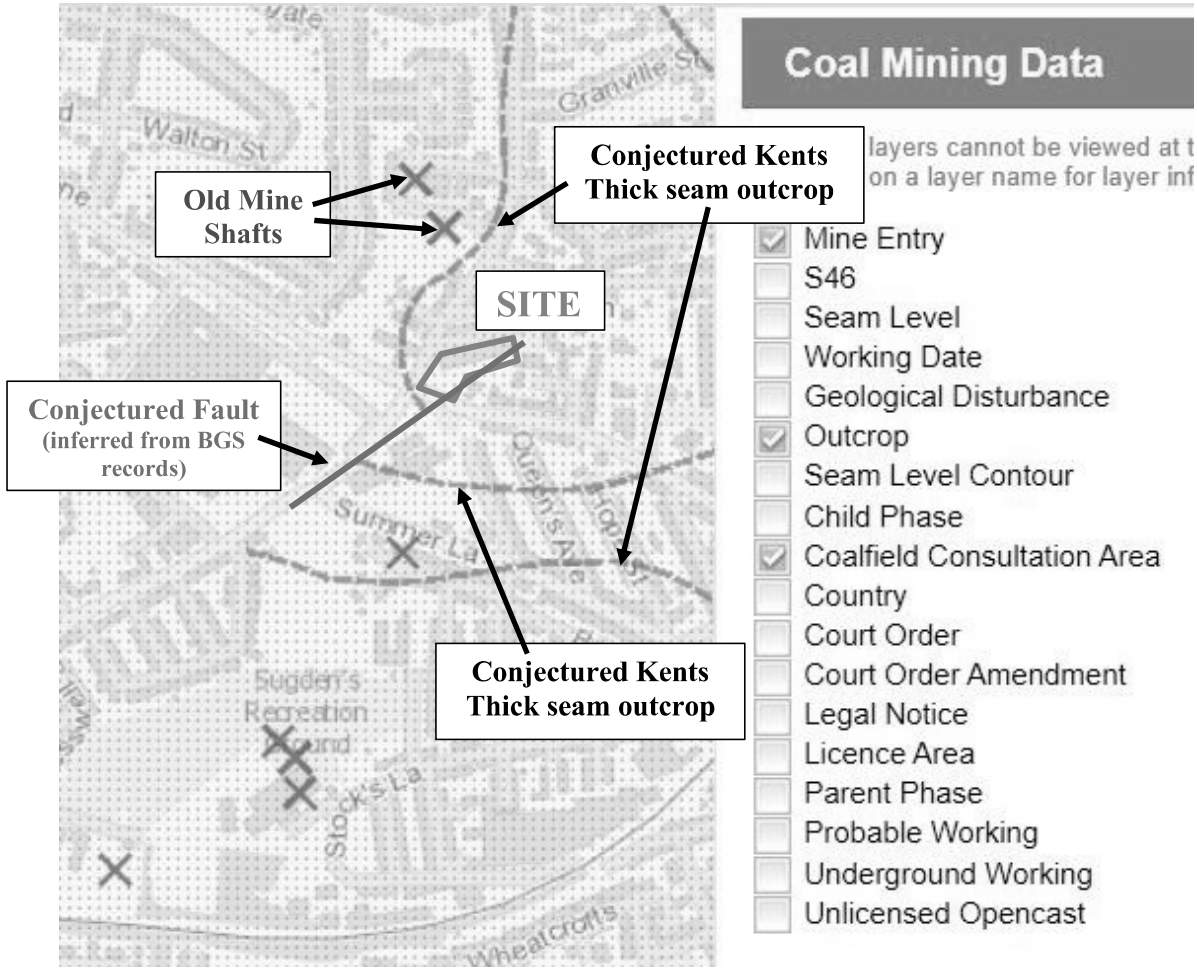
- Present a desk-based review of all available information on the coal mining issues which are relevant to the application site;
- Use that information to identify and assess the risks to the proposed development from coal mining legacy, including the cumulative impact of issues;
- Set out appropriate 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 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 'Kents Thick' coal seam is conjectured to outcrop close to the west of the site which, if accurate, will dip beneath the proposed development at shallow depth. Local mining records indicates that the Kents Thick seam as of around 1.1m thickness. To the south-east of the geological fault (which throws the strata down in this direction) the shallowest anticipated coal with be the 'Kents Thin' seam, of around 600mm in thickness, at around 10m deep or so (if the conjectured detail is accurate). The Kents Thick seam is expected to lie beneath the Kents Thin seam by around 20m or so in this vicinity. No other workable coal seams are anticipated at an influencing depth below the Kents Thick coal.



**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 be present of which there are no records.

**Fault Planes or Fissures**

A geological fault is conjectured to pass through the south-eastern boundary of the site as shown on the above image. This fault, which throws the strata down to the south-east by around 20m or so, may be experienced as a single plane of weakness or a 'zone' of various such planes.

**Opencast Coal Workings.**

None known within 100m 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**

Although no known underground shallow workings are known beneath the site itself in the Kents Thick seam, it is known to have been worked via underground methods from the former 'Mount Osbourne' colliery some 1.6km away to the east (abandonment plans of which recorded this coal as 1.1m section). There will be some potential therefore for historic unrecorded and possibly illicit workings of this coal being present beneath the site which may compromise stability of the proposed development. 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.

**Mine Entries**

No mine entries are known within 20m of the site. Various are known in the surrounding vicinity however, as indicated on the coal authority details above. Some potential will exist for other mine shafts or adits being encountered which there are no records considering the anticipated shallow workable coal.

**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, particularly if worked and considering the possible geological fault which would increase the pathway risks.

**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** **(VeryHigh/High/Moderate/Low/VeryLow)** |
|---|---|
| Underground coal mining (at shallow depths) | **Moderate** |
| Mine entries (shafts and adits) | **Moderate** |
| Geological faulting | **High** |
| Geological fissures | **Low to Moderate** |
| Fugitive gas emissions | **Low to Moderate** |
| Surface mining (opencast workings) | **Low** |
| Aggressive ground | **Low** |
| Coal exposed / near foundation level | **Moderate to 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) **Much** |
| 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* | **20m** |

| | |
|---|---|
| | |

**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.* |

**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) A moderate risk is anticipated for shallow workings of the Kents Thick coal seam that could affect the proposals. As such it will be important to ascertain the precise location, depth and nature of the seam in order to establish appropriate foundation designs in accordance with best practice as detailed in CIRIA C758D; namely whether any shallow voided ground requires further treatment/design parameters. An intrusive site investigation of between 3 to 6 boreholes would be considered an appropriate level of initial investigation. The boreholes could be terminated at the base of the Kents Thick 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 3 holes to a maximum depth of 20m below rock head would prove stability. The attached Procedure Guide in Appendix 2 outlines an appropriate methodology for such investigations *(it should be noted that prior permission from the Coal Authority should be obtained).*

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, 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.

4) Coal may be encountered within proposed formation levels which would need removal and blinding off procedures to help prevent spontaneous combustions risks.

5) A watching brief should be employed for any signs of weak/faulted bedrock with appropriate ground treatment works and/or strengthened foundations adopted as necessary. Similar considerations should be made for any areas of made ground that could be associated with small scale ‘digging out’ of shallow coal.

6) Considering the potential for shallow coal, 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,

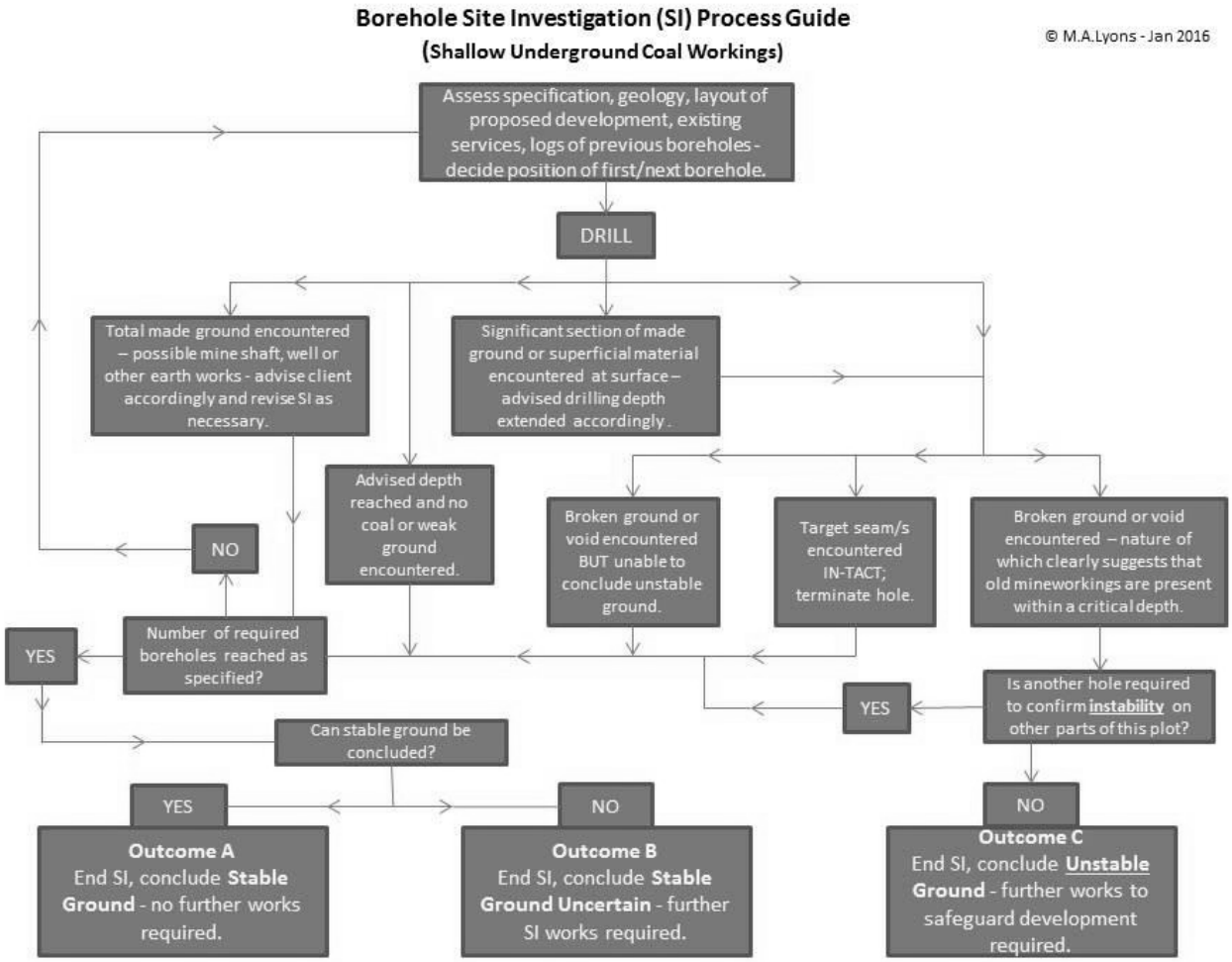
*M Lyons*

M. Lyons
Consultant Mining Engineer
BSc CSci MIMMM

Enc.

**Appendix 1 – Location Plan No. 00240/A**
**(Not To Scale)**
**Site centred at O.S. 433500 / 407043**

**Appendix 2**


Borehole Site Investigation (SI) Process Guide
(Shallow Underground Coal Workings)
© M.A.Lyons - Jan 2016
Assess specification, geology, layout of proposed development, existing services, logs of previous boreholes - decide position of first/next borehole.
DRILL
Total made ground encountered – possible mine shaft, well or other earth works - advise client accordingly and revise SI as necessary.
Significant section of made ground or superficial material encountered at surface – advised drilling depth extended accordingly.
Advised depth reached and no coal or weak ground encountered.
Broken ground or void encountered BUT unable to conclude unstable ground.
Target seam/s encountered IN-TACT; terminate hole.
Broken ground or void encountered – nature of which clearly suggests that old mineworkings are present within a critical depth.
NO
YES
Number of required boreholes reached as specified?
YES
Is another hole required to confirm instability on other parts of this plot?
Can stable ground be concluded?
YES
NO
NO
Outcome A
End SI, conclude Stable Ground - no further works required.
Outcome B
End SI, conclude Stable Ground Uncertain - further SI works required.
Outcome C
End SI, conclude Unstable Ground - further works to safeguard development required.