Mr R. Agus
Office One
34 Victoria Road
Barnsley
S70 2BU

CAPE SITE SERVICES
COAL MINING & GEOTECHNICAL CONSULTANCY
Web: www.cape-site.co.uk
Email: cape-site@btconnect.com
Tel: 01226 725050

Date: 2nd December 2020
Your ref: (S71 1UA).
My Ref: CMRA 00247

FOR THE ATTENTION OF MR R. AGUS

Dear Sir,

COAL MINING RISK ASSESSMENT (CMRA) - FOR PROPOSED RESIDENTIAL DEVLOPMENT AT CARLTON ROAD, SMITHIES, BARNSLEY S71 1UA

Introduction

Planning permission is being sought for a pair of semi-detached dwellings at the above named site, the location of which can be seen on the attached plan No. 00247/A in Appendix 1. The site is centred around national grid reference E: 435077 / N: 408277. 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.

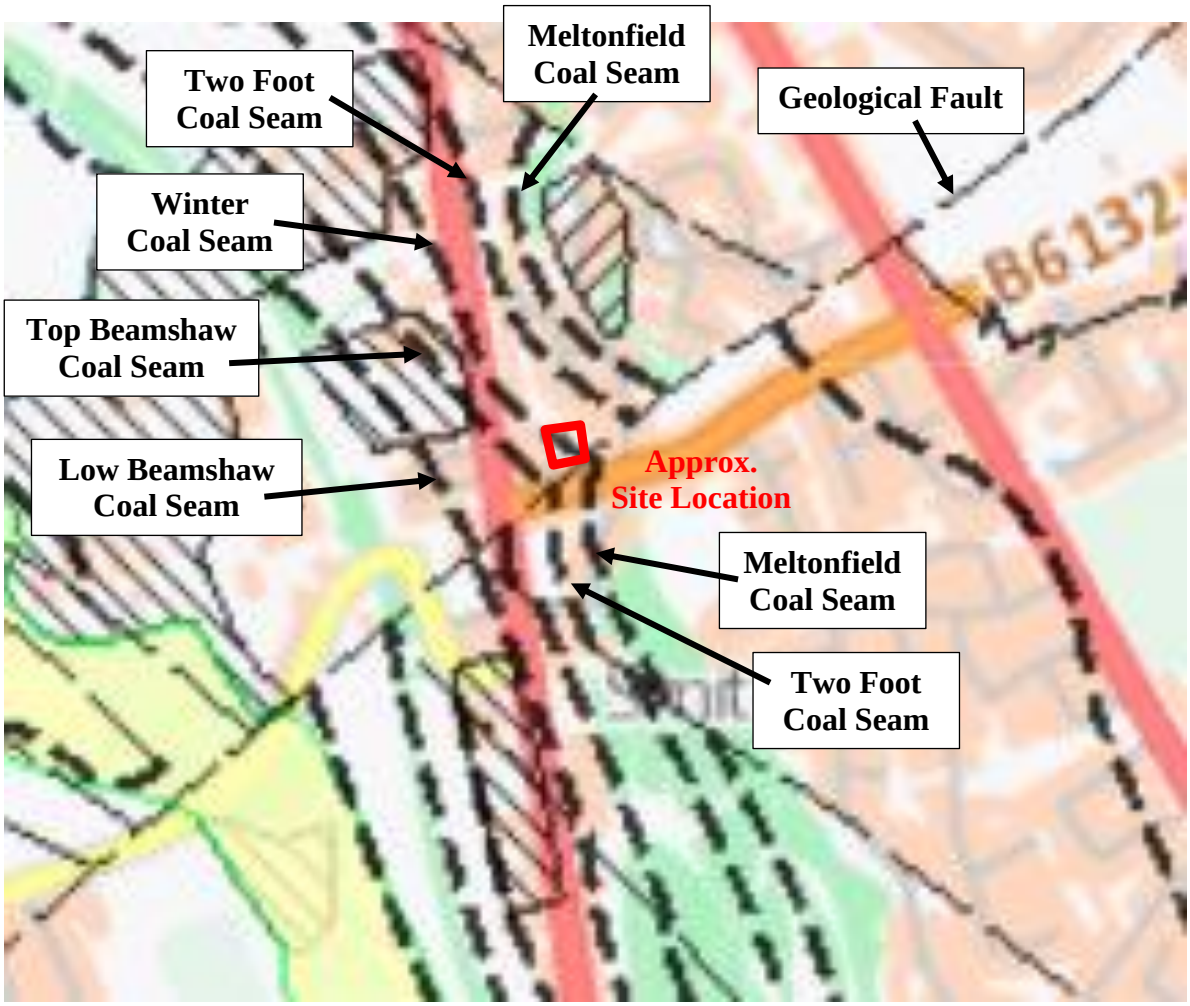
Scope of the Coal Mining Risk Assessment

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. The strata is shown to dip to the north-east at a rate of around 1 in 10 (5°) in this vicinity. Surface geology is outlined on the extract image below from the BGS Onshore Interactive Viewer:



Fault Planes or Fissures

A geological fault trending in a south-west to north-east direction is conjectured to pass close to the south-eastern boundary of the site as shown on the above image. This fault throws the strata down to the south-east by around 4m or so.

Coal Seam Outcrops

As outlined on the extract image below from the BGS Onshore Interactive Viewer, various coal seam are conjectured to outcrop in the vicinity of the site, summarised in the following table, where the available nearby mining records have been utilised to determine the likely coal seam thicknesses:

Coal Seam	Thickness (circa)	Estimated depth (beneath site)
Meltonfield seam	1m	(not anticipated beneath site)
Two Foot seam	0.9m	(not anticipated beneath site)
Winter seam	1.2m	surface to 5m;
Top Beamshaw seam	1.2m	10m to 15m
Low Beamshaw seam	0.5m	19m to 24m

Providing the conjectured position of the geological fault is accurate, the Meltonfield and Two Foot coal seams will dip away clear of the site to the north-east, and will therefore not be present beneath the site itself. However, should the site actually span the fault, then those seams may be encountered at shallow depth on the south-eastern side (the down-throw side) of the fault.

Made Ground

No made ground is indicated in the vicinity. A slight potential will exist for historic small scale 'digging out' of coal, considering its likely shallow depth – associated pockets of made ground could be encountered.

Opencast Coal Workings.

No opencast coal operations are known within 50m of the site. (*Note from above: slight potential will exist for historic small scale 'digging out' of coal, considering its likely shallow depth – associated pockets of made ground could be encountered).*

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

Although no underground workings are recorded beneath this site itself, past shallow workings from the early 1900's are known adjacent to the north in the Winter coal seam known as 'Greens

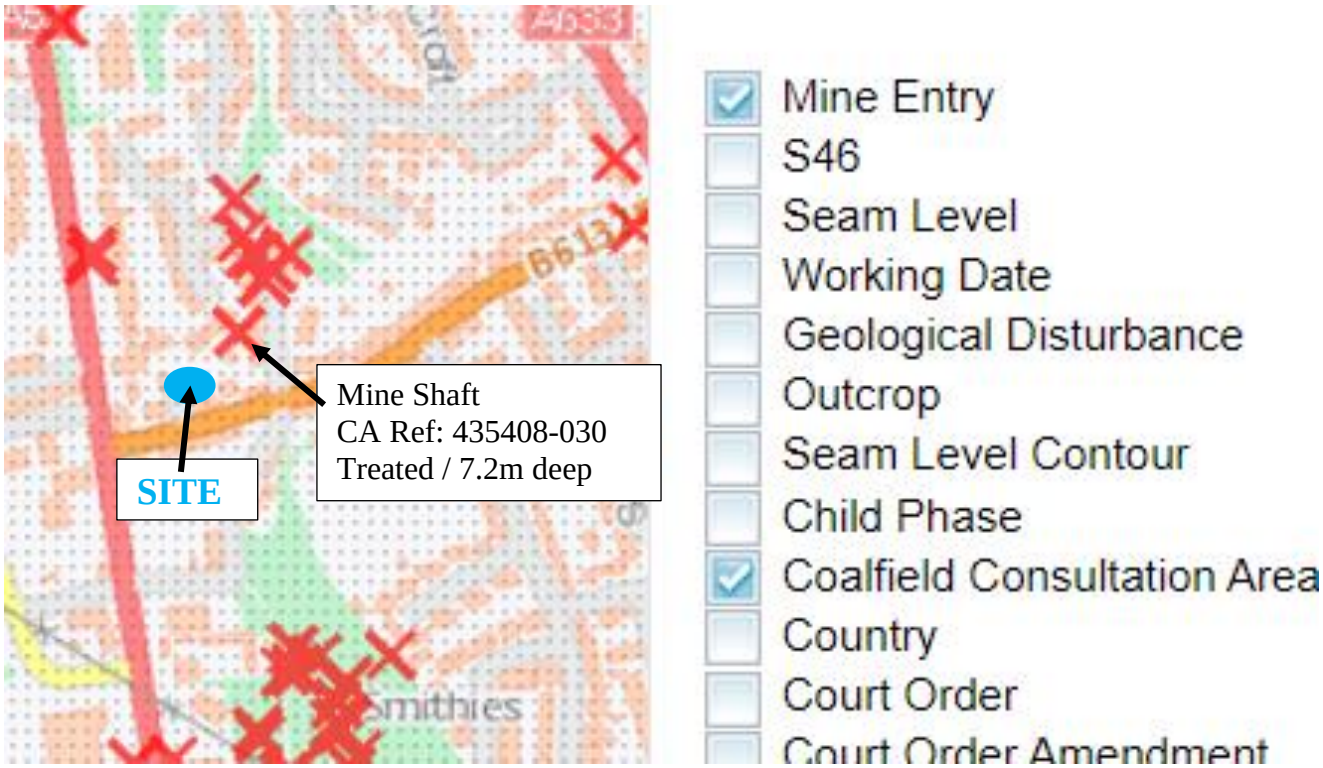
Workings'. The former 'Winter Colliery' in close proximity to the south also worked all the previously mentioned seams (with exception to the Low Beamshaw seam) beneath lands further to the north-east.

Considering the above detail, there will be some potential for other unrecorded, possibly illicit, underground workings beneath the site itself that could cause a stability hazard to development.

It should be noted that 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 itself. The closest, as can be seen in the extract image below (from the Coal Authorities Interactive Viewer), is an old mine shaft (Coal Authority Ref: 435408-030), detailed as 7.2m deep and treated.



It should be noted that some potential will exist for other mine shafts or adits being encountered which there are no records considering the 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 any sandstone bedrock is present and more so if mining voids are proved.

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)	**High**
Mine entries (shafts and adits)	**Moderate**
Geological faulting	**High**
Geological fissures	**Moderate**
Fugitive gas emissions	**Moderate**
Surface mining (opencast workings)	**Low to Moderate**
Aggressive ground	**Low to Moderate**
Coal exposed / near foundation level	**Very 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*	**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	*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 NE 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** position, it would be recommended to undertake a borehole site investigation to check the nature of the shallow coal seams; namely whether any potential old mining voids require further considerations for sound stability. Given the nature of the proposals between three to six holes to maximum depths of 25m below rockhead (below any fill/made ground) should suffice for this. It should be noted that workings of the 'Top Beamshaw' seam could interact with workings of the higher 'Winter' seam. If 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. A prior permit from the Coal Authority would be required to facilitate such an investigation.

3) An element of trenching would be advised to check for any possible shallow coal and/or made ground/spoil which would need removing and blinding off if encountered; along with any faulted bedrock that may require treatment and/or foundations designed accordingly.

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 usual safety precautions should be employed regarding possible fugitive gases in any deep excavation work taking place, particularly if shallow coal workings are proven. 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,

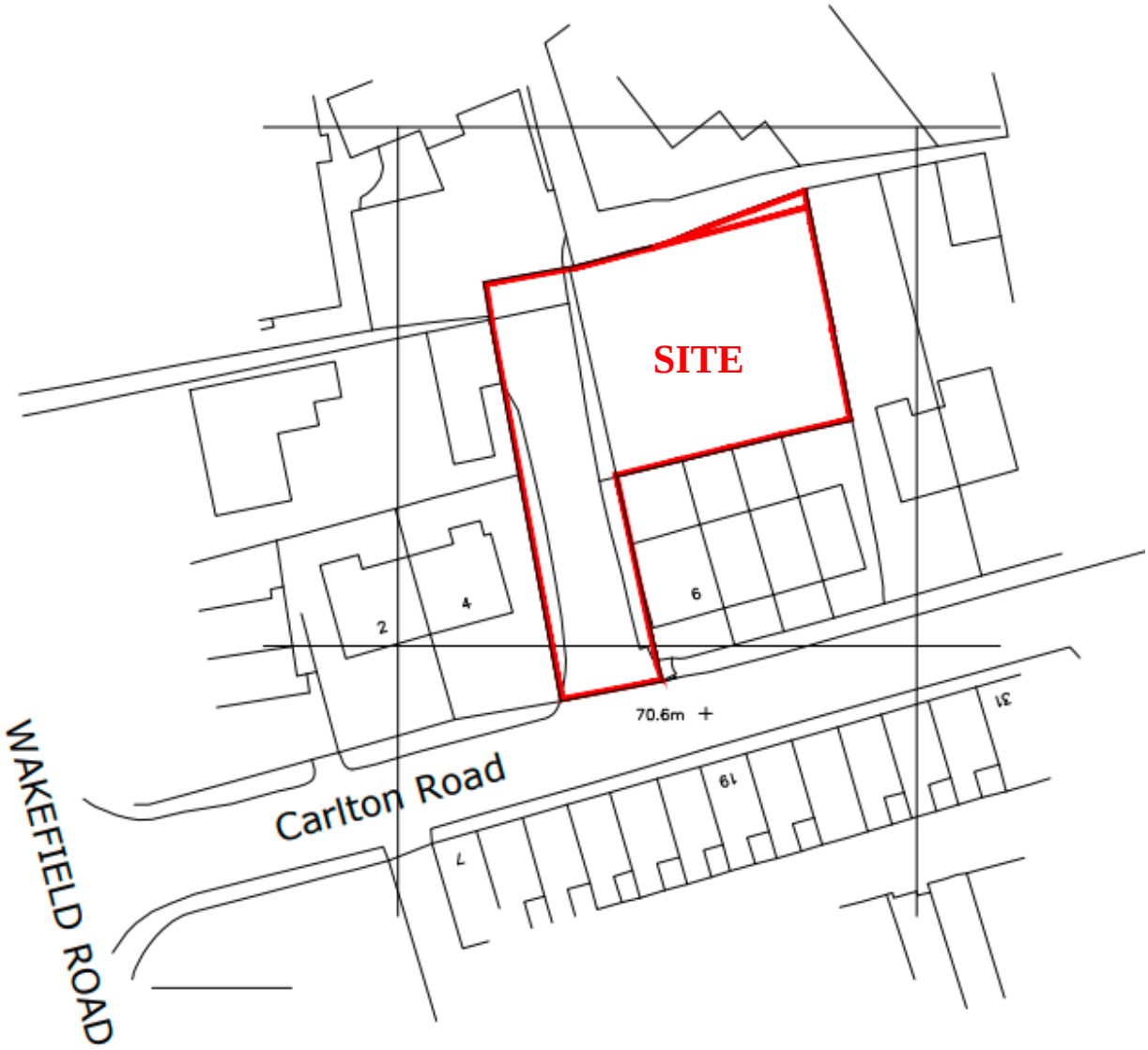
M Lyons

M. Lyons
Consultant Mining Engineer
BSc CSci MIMMM

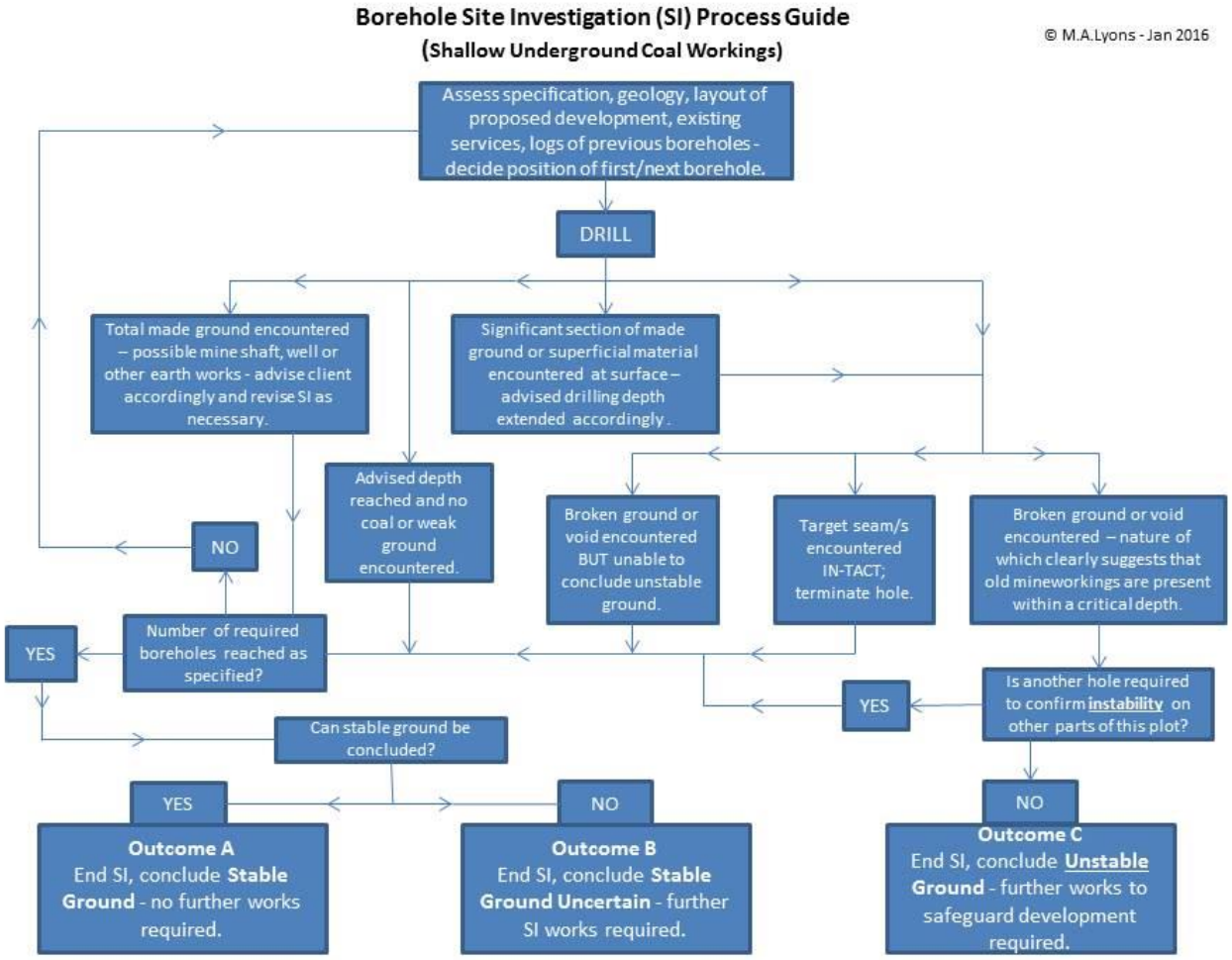
Enc.

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. 00247/A
(Not To Scale)
Site centred at O.S. 435077 / 408277



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.