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Mrs J Gwilliam
C/O Land Adjacent:
14 Windhill Drive
Staincross
Barnsley
S75 5BL

Date: 30th October 2019
Your ref: (S75 5BL).
My Ref: CMRA 00221

FOR THE ATTENTION OF JANE GWILLIAM

Dear Madam,

COAL MINING RISK ASSESSMENT (CMRA)
FOR PROPOSED RESIDENTAIL DEVELOPMENT AT LAND ADJACENT 14 WINDHILL DRIVE, STAINCROSS, BARNSLEY S75 3JD

Introduction

Planning permission is being sought for residential development at the above named site, the location of which can be seen on the attached plan No. 00221/A. 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.

British Geological Survey Information

Surface Geology (inc. any superficial deposits)

Records indicate the natural strata for this particular location is sandstone of the Middle Coal Measure series from the Carboniferous formation. No superficial deposits are indicated in this vicinity, although records suggest that artificial 'fill' material will be present beneath the site associated with past opencast coal operations as detailed below.

Coal Seam Outcrops

The 'Winter' coal seam is conjectured to outcrop some 80m away to the south-west of the site which will dip beneath the land gently to the north-east below the site under consideration. The coal however has been removed via the opencast coal operation as detailed below.

Fault Planes or Fissures

No geological faulting or fissuring is known in the vicinity of the site.

Abandoned Mines Records

Opencast Coal Workings.

The 'Far Moor' Opencast site worked the 'Winter' coal seam directly beneath this land in 1949. The abandonment plan detail from these operations indicate the Winter seam as being 0.9m thick in this vicinity. The plan position of the extent of coal extraction is indicated on attached plan No. 00221/A. The anticipated Conceptual Site Model section 'A'to'B' is also illustrated in Dia. 00221/B. The abandonment plan details the depth of the opencast or quarry, just on the north-eastern side of the anticipated building line, as around 11.8m deep. The high wall (transition from natural ground to fill material) associated with such quarrying operations is also illustrated on the diagram, although the exact incline/gradient is only indicative – the actual position will be dependant on the local conditions along with the mining methods at that time. It should also be noted that as the information is extrapolated from historic plans there will be some potential for the actual position of the high wall being somewhat different – i.e slightly further north-east or south-west.

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 Winter coal seam has been worked via underground methods in the 1870's from the 'Wheatley Wood Colliery' some 500m away to the north-west. These workings encroached to within around 30m of the site to the north-east – as illustrated in Dia. 00221/B. There will be some potential however that further 'un recorded' workings could be present in this seam that may encroach closer to the site – particularly if the actual position of the opencast operation is slightly different to that shown on plan.

The Wheatley Wood colliery also worked the next coal seam below the Winter seam which is shown on the abandonment plan as the 'Beamshaw' coal. This coal is known to consist of two 'leaves' in these parts: the 'Top Beamshaw', generally of around 0.4m thick in this vicinity, and the 'Low Beamshaw' of around 0.7m thickness. The intervals between these three coal seams is anticipated as between 8m to 12m. From the available information it is unclear whether the workings are related to the Top or Low Beamshaw leaves, and no indication is shown of the depths to the workings which are shown to encroach very close to the boundary of this site.

Mine Entries

No mine entries are known within 20m of the site, however given the probable presence of shallow workable coal the likelihood of uncharted mine entries being present of which there is no record should not be ruled out; however if any were present then the opencast site would have very likely removed them to the base of the operations in this case.

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 opencast backfill material, and nearby shallow coal where the seam remains. The risk of gasses would be somewhat higher should unrecorded workings of the winter seam be proved in close proximity.

Historical Records

According to the historical OS sheets for this area no indications are apparent of any old mining operations in the vicinity of the site, other than the opencast site of 1949.

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)	**Low**
Geological faulting	**Low**
Geological fissures	**Low to Moderate**
Fugitive gas emissions	**Moderate**
Surface mining (opencast workings)	**Very High**
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) **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*	**30m** **(Note - one hole to 30m may prove the Beamshaw seam/workings as out of range of affecting the surface)**

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

Note: permission is not usually required for 'incidental' coal that is encountered in excavations for foundations for example.

Information sources:

- *British Geological Survey Map Sheets*
- *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) Give the shallow coal mining and opencast information an intrusive site investigation would be required to ensure a safe foundation design solution for the development. Two or three boreholes would be recommended to determine the extent of the fill material, the location of the highwall (if encountered) and/or the depth/nature of the Winter coal seam if the limit of opencast is further to the south-west. One hole on the north-eastern side would be recommended to 20m or so beneath the fill material (to an overall depth of around 30m) to check the condition of the Top Beamshaw seam; namely whether any voided old workings have the potential to cause instability to the fill and therefore the surface *(as detailed in the industry guidance – CIRIA 32).* As with all site investigations the specification may need to be revised on the day, and more holes may be deemed necessary to fully appreciate the geotechnical aspects – the annexed system chart illustrates a competent procedure.

3) Depending on the outcome of the intrusive investigation, suitable foundation designs are likely to be either strengthened raft, piles or a combination of both particularly if it is determined that the property spans the highwall which would make for a possibility of differential settlement. Although felt an unlikely scenario, grouting of shallow mining voids may be thought necessary.

4) Although a relatively low risk, any uncharted mine entries encountered should be reported to the Coal Authority (as owners) for their comments on what further operations may be necessary to safeguard the development. *Note: prior permission from the Coal Authority would be required to investigate or treat a coal mine entry.*

5) Considering the opencast backfill material, relatively shallow coal and/or coal workings, all 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 period of monitoring could be utilised to determine this, although it may be more economically feasible to adopt the preventative measures in any case.

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.

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,

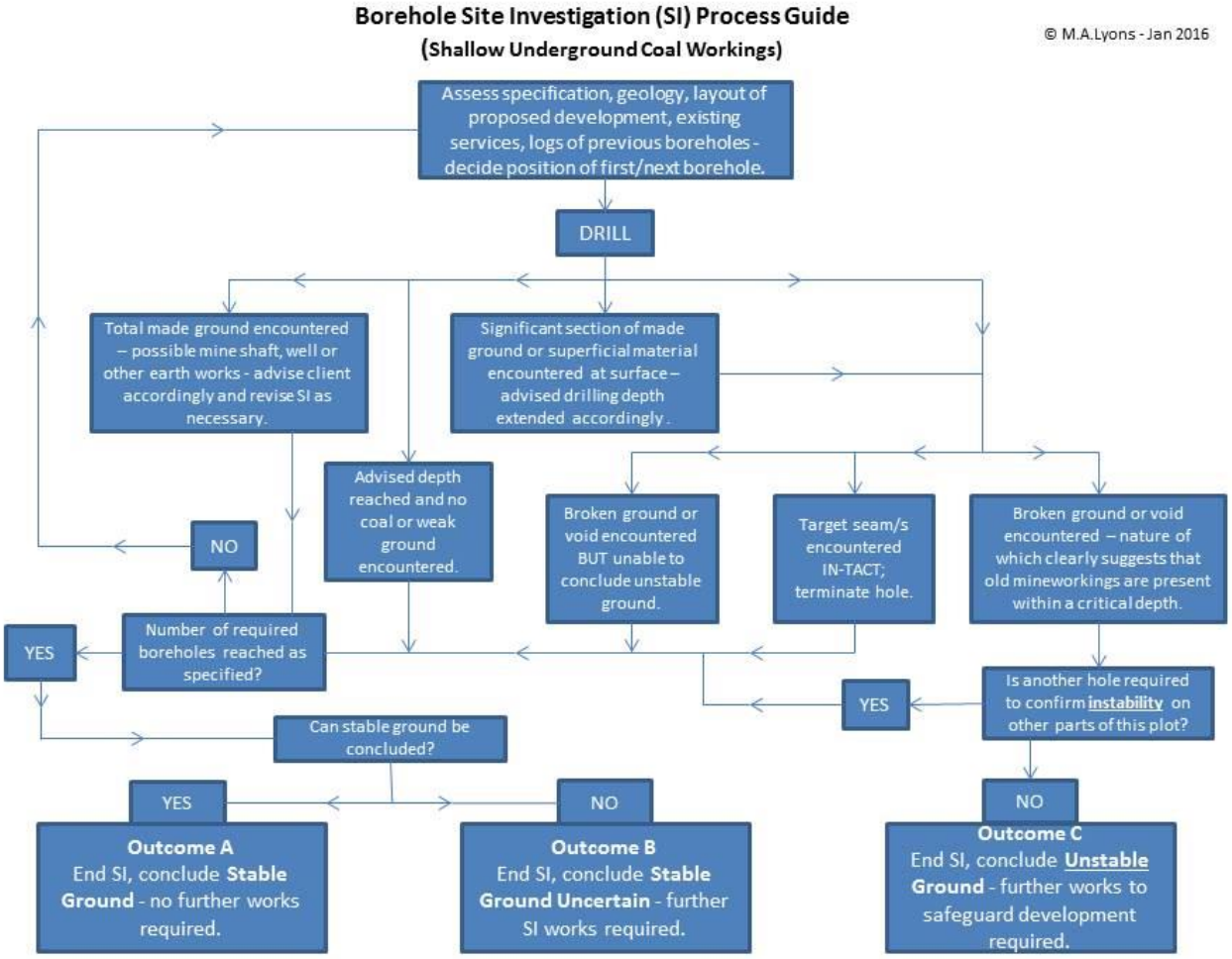
M Lyons

M. Lyons
Consultant Mining Engineer
BSc CSci MIMMM

Enc.

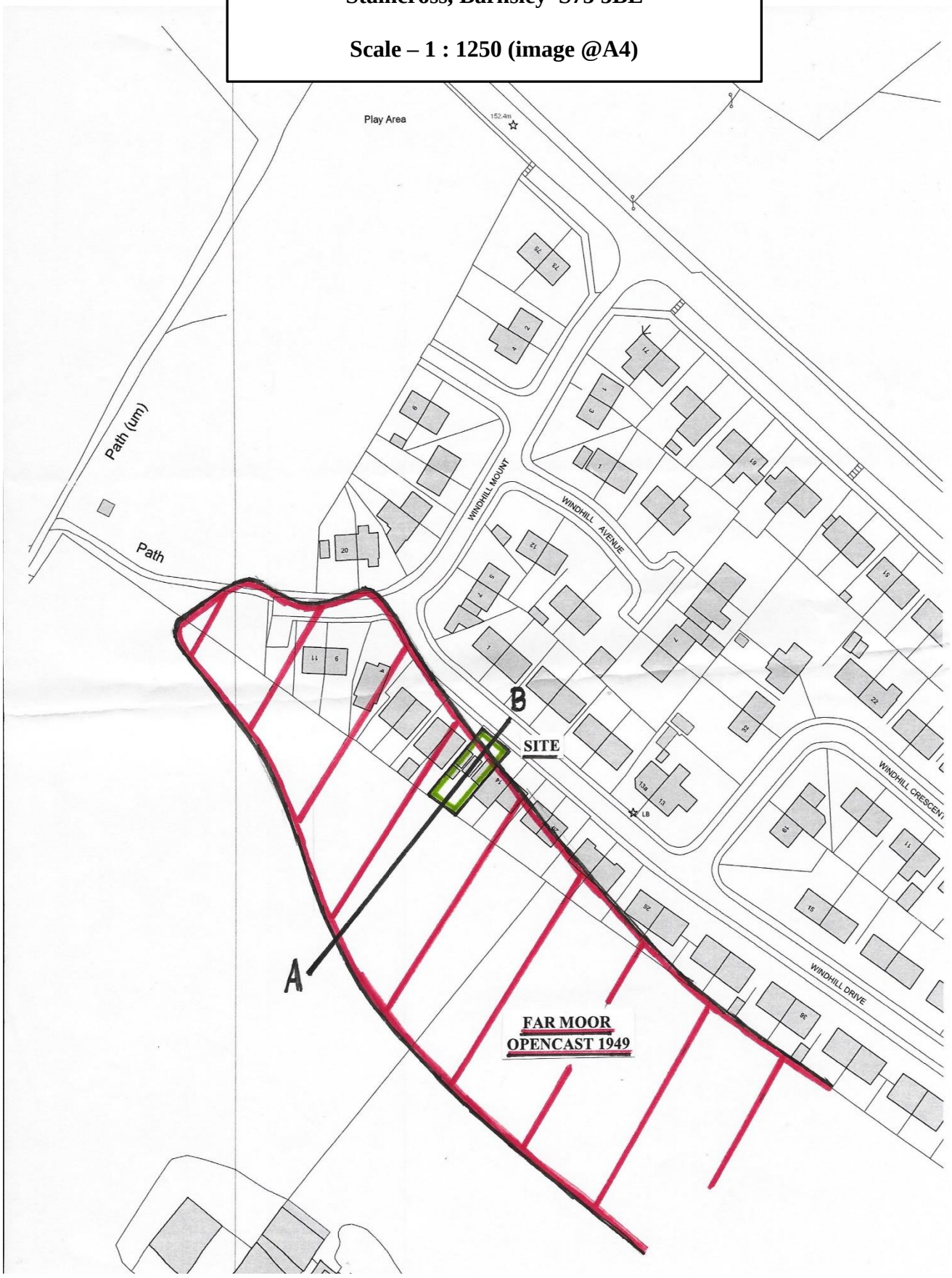
THIS COAL MINING RISK ASSESSMENT IS BASED ON AND LIMITED TO THE INFORMATION IN MY RECORD AT THE TIME THE ENQUIRY IS ANSWERED. It is based on my professional opinion in line with the guidelines set out in CIRIA Special Publication 32 - "Construction Over Abandoned Mine Workings." The opinion may be overruled 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.

Annex:


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.

Plan No. 00221.A
CMRA – Land Adjacent 14 Windhill Drive, Staincross, Barnsley S75 5BL

Scale – 1 : 1250 (image @A4)



Dia. No. 00221.B
Section 'A'to'B'
CMRA – Land Adjacent 14 Windhill Drive, Staincross, Barnsley S75 5BL

Scale (approx) – 1 : 500 (image @A4)

