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Date: 3rd August 2021
Your ref: (S70 4ST).
My Ref: CMRA 00269

FOR THE ATTENTION OF MR PETER THOMPSON

Dear Sir,

**COAL MINING RISK ASSESSMENT (CMRA) - FOR PROPOSED DEVELOPMENT AT
ONPAR HEALTH GYM, STATION ROAD, WORSBROUGH DALE, BARNSELEY S70 4ST.**

Introduction

Planning permission is being sought for the development of a gym extension, the location of which can be seen on the attached plan No. 00269/A in Appendix 1. The site is centred around national grid reference E: 436173 / N: 403828. 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 Barnsley MBC planning application.

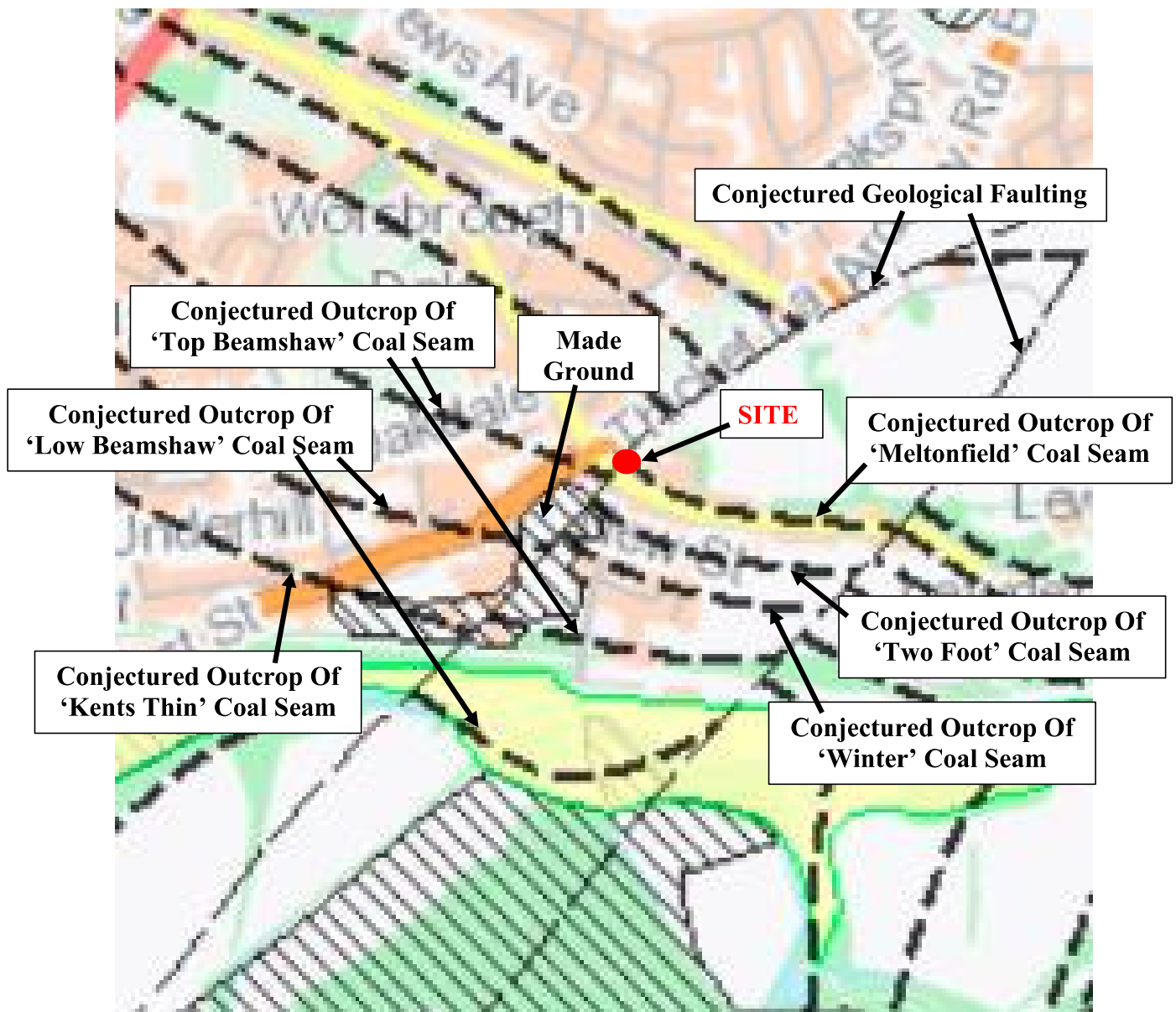
Scope of the Coal Mining Risk Assessment

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 the vicinity of the site itself. Strata is shown to dip towards the north-east at a rate of around 1 in 12 (5°) in this vicinity. A summary of the surface geology is illustrated on the image below which is an extract from the BGS Onshore Interactive Viewer:



Fault Planes or Fissures

As shown on the above image a geological fault is conjectured through the site in a south-west to north-easterly direction, which displaces the strata down to the south-east by around 24m. This fault may comprise a single plane of weakness or a 'zone' of various such planes in the same direction. As it is based on conjecture the actual position on site will be uncertain. Although no fissuring is known in the area, sandstone bedrock may contain such features that could have been opened out by the past deep coal mining in the area.

Coal Seam Outcrops

As illustrated on the above image various coal seams outcrop in this vicinity and depths to these seams will vary either side of the fault line, summarised as follows:

North-West of the Fault line:		
Coal Seam	Thickness (circa)	Estimated depth (beneath site)
Meltonfield seam	1m	(not present)
Two Foot seam	0.8m	(not present)
Winter seam	0.9m	(not present)
Top Beamshaw seam	2x 0.3m (circa 1.3m apart)*	2m
Low Beamshaw seam	0.5m	11m
Kents Thin	0.6m	29m

*two leaves of 0.3m coal with a dirt band of around 1.3m in between.

South-East of the Fault line:		
Coal Seam	Thickness (circa)	Estimated depth (beneath site)
Meltonfield seam	1m	At the surface
Two Foot seam	0.8m	13m
Winter seam	0.9m	28m
Top Beamshaw seam	2x 0.3m (circa 1.3m apart)*	34m
Low Beamshaw seam	0.5m	43m

*two leaves of 0.3m coal with a dirt band of around 1.3m in between.

Made Ground

No made ground is indicated in the vicinity of the site – the closest is shown clear to the south-west as indicated on the above image.

Opencast Coal Workings.

No opencast coal operations are known within 250m of the site. A slight potential will exist for discovering in-filled ground from small scale historic ‘digging out’ of the likely shallow workable coal in this area.

Underground Coal Workings - Deep

Deep coal mining (over 50m deep) has taken place beneath the site in various coal seams, all settlement from which will be long complete. 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 there are no known underground workings in the shallow coal seams in this vicinity, a slight potential will be present for historic workings in relation to the Meltonfield and Two Foot coal seams to the south-east of the fault line, unless the faulting has rendered the coal unworkable/uneconomic. No such workings would be anticipated for the Beamshaw coal seams. The Winter coal seam is expected to be at a depth that should not cause a stability issue be it worked or otherwise.

Mine Entries

According to the Coal Authorities details no mine entries are known within 20m of the site. Given the anticipated geological faulting, only a low possibility would be considered for discovering unrecorded mine entries in relation to 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 and geological faulting which could create potential pathways.

Historical Records

According to the historical records, 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)	Low to Moderate
Mine entries (shafts and adits)	Low to Moderate
Geological faulting	Very High
Geological fissures	Moderate
Fugitive gas emissions	Moderate to Low
Surface mining (opencast workings)	Low
Aggressive ground	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) Much
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 :**

<i>Required</i>	<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>
<i>Recommended</i>	<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>
<i>Unnecessary</i>	<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 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** position, it would be recommended to undertake a limited borehole investigation to check the nature of the underlying strata so as to establish any faulted weak ground and the depths/nature of any shallow coal seams (within 25m below rockhead). This would establish any unrecorded historic underground workings, if present, that may need further stabilisation/foundation design considerations; although the likelihood of this is relatively remote considering the anticipated geological faulting. Considering that the proposed development is an extension, regulators (local authority and Coal Authority) may accept a strengthened foundation solution alone without any intrusive investigation – consultations should be undertaken to establish this. A guide to a recommended site investigation process is outlined in appendix 2 for the case of a borehole investigation; a prior permit from the Coal Authority should be secured to facilitate this
- 3) A strengthened foundation design to tie into the existing should be considered if any badly faulted/fractured or fissured bedrock is encountered.
- 4) Any coal exposed at the surface beneath surface soils will require appropriate considerations for removal and blinding off to help prevent chemical attack on foundations and reduce the risk of spontaneous combustion risks.
- 5) All suitable safety precautions should be employed in any future deep excavation work taking place with regard to possible fugitive gases in relation to the shallow coal and pathways along any faulted/fractured/fissured bedrock.
- 6) Although unlikely, 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.
- 7) Foundation design considerations may be required should any made ground be encountered that could be associated with the historic ‘digging out’ of shallow coal.

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. 00269/A
(Not To Scale)
Site centred at OS NGR 436173 / 403828



Appendix 2

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

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