LYONS CMC
COAL MINING & GEOTECHNICAL CONSULTANCY
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AgroSmart Ltd
Unit 1C Victoria Court
Colliers Way
Clayton West
Huddersfield
West Yorkshire HD8 9TR

Date: 11th October 2024
Your ref: (HD2 1YF).
My Ref: CMRA 00372

FOR THE ATTENTION OF GRAHAM HAIGH & TONY STEAD

Dear Sirs,

COAL MINING RISK ASSESSMENT (CMRA) - FOR PROPOSED NEW STORAGE UNIT AT LAND AT RED DOLES LANE, LEEDS ROAD, HUDDERSFIELD HD2 1YF

Introduction

Planning permission is being considered for a new industrial storage unit at the above named site, the location of which can be seen on the attached plan No. 00372/A in Appendix 1. The site is centred around national grid reference 415339E / 418137N. 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 Huddersfield Council.

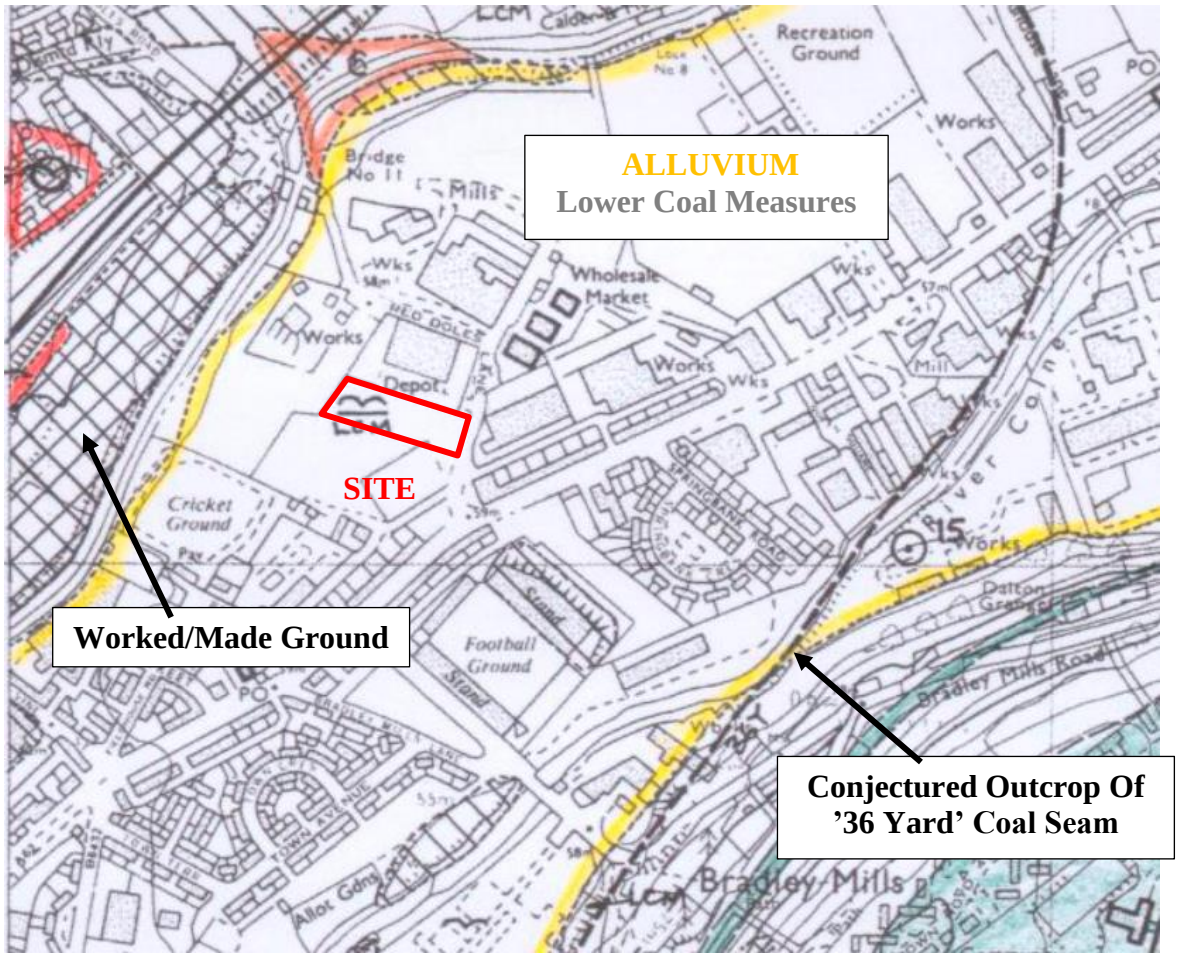
Scope of the Coal Mining Risk Assessment

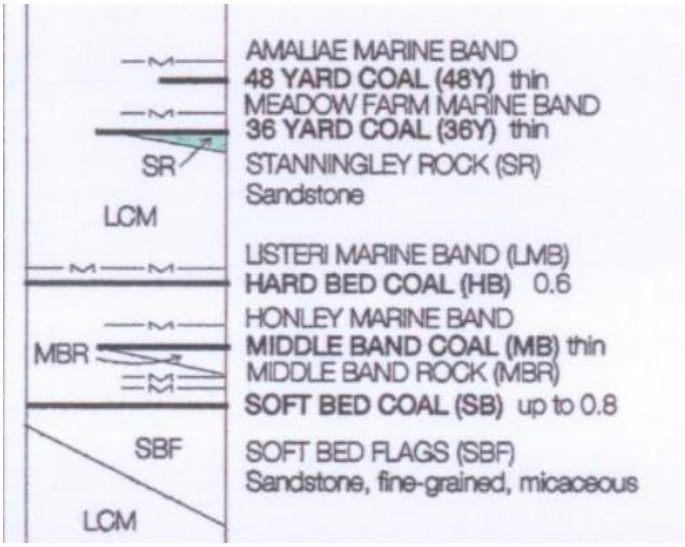
The purpose of this Coal Mining Risk Assessment Report is to:

- 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.
- The report will not consider other geotechnical or geo-environmental issues.

Surface Geology (inc. any superficial deposits)

Records indicate the site to be located on alluvium above mudstones/siltstones/sandstones of the Lower Coal Measure series from the Carboniferous formation. A summary of the surface geology is illustrated on the image below which is an extract from the BGS Sheet SE11NE 1999 Edition:





BGS Stratum Section SE11NE

Fault Planes or Fissures

No geological faulting is known or conjectured within 100m of the site and given the anticipated geology the likelihood of fissures within sandstone bedrock is considered low in this instance.

Coal Seam Outcrops

As outlined on the extract image above from the BGS Onshore Interactive Viewer, the '36 Yard' coal seam is conjectured to outcrop some 375m away to the south-east, dipping away clear of the site. This site will therefore lie on strata beneath the 36 Yard coal seam horizon and as illustrated on the BGS stratum section extract above, the next workable coal seam below is the 'Hard Bed' coal seam; indicated as up to 0.6m thickness. The 'Soft Bed' coal seam, of up to 0.8m thickness, will lie beneath the Hard Bed by around 15m to 20m or so.

Made Ground

The closest area of known made ground is indicated over 150m away to the west as shown above.

Opencast Coal Workings.

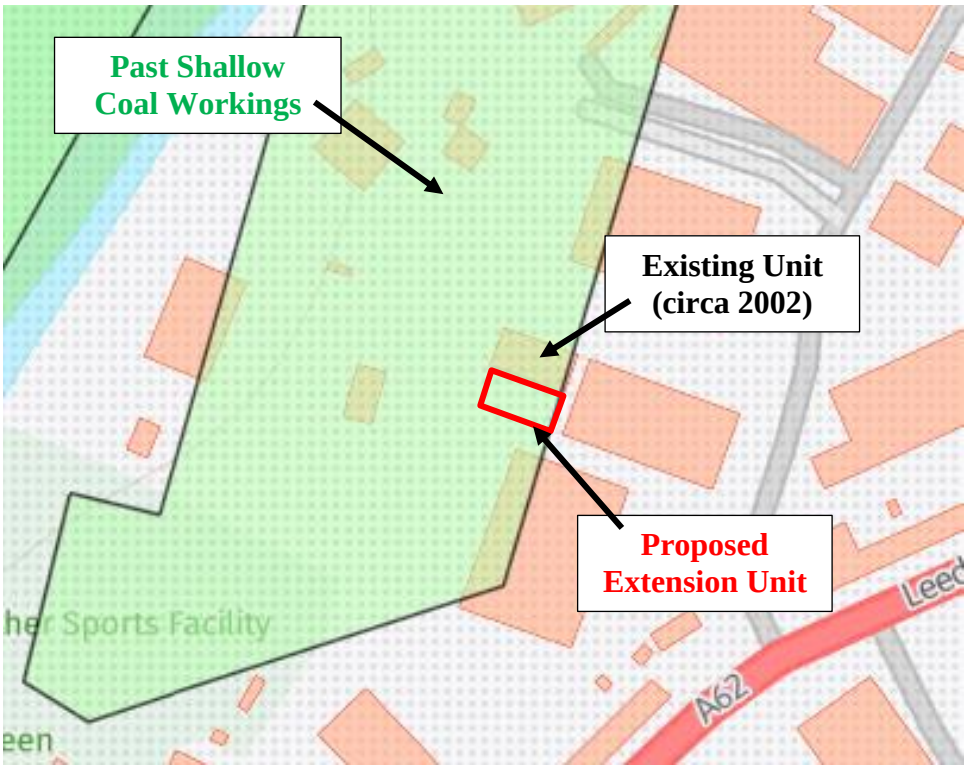
No opencast coal operations are known within 250m of the site.

Underground Coal Workings - Deep

No deep coal mining (over 50m deep) has taken place beneath the site 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

As illustrated in the extract image below (from the Coal Authorities interactive viewer information), the site is located in an area of 'past shallow coal workings', presumably in the Hard Bed coal seam. This area correlates well with some historic information provided by the client of past site investigations and treatment works undertaken for the existing unit (circa 2002) for which this extension will adjoin; the past site investigation undertaken by West Yorkshire MCC in 1985 proved shallow coal workings at circa 15m deep; it is understood that subsequent grouting works were undertaken (for the existing unit) although the precise extent of those operations are uncertain; soft clay and/or fill was proved to circa 3m deep above granular sand and gravel before bedrock of 'grey & black shales'; precise depths of: rock head, coal seam thickness and mining void thickness are uncertain; it is noted that a section of fireclay was proved beneath the coal seam where it was encountered intact.
Note informatives nos. 1 & 2 in appendix 2.



Mine Entries

No mine entries are known within 200m of the site. Given the known shallow coal workings however, there will be some risk of discovering such features of which there are no records. Grey circular areas of fill material within natural ground would be an indication of an old back filled mine shaft for example; although considering the alluvial material in this instance it would be more likely that any old shafts would be brick/stone lined.

Fugitive Gases

As far as we are aware, no evidence of coal mining related fugitive gas emissions are known within 250m of the site. Given the information there will be some associated risks given the relatively shallow coal workings combined with the overlying porous alluvial material. These risks will increase if any old mine entries are discovered.

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)	**Very High**
Mine entries (shafts and adits)	**Low to Moderate**
Geological faulting	**Low**
Geological fissures	**Very Low**
Fugitive gas emissions	**Moderate**
Surface mining (opencast workings)	**Low**
Aggressive ground	**Low**
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/rock-head level to investigate considering geology and nature of the shallow coal/s*	**20m**

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 SE11NE 1999 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 Mining** position it is clear that there is potential for instability from old mining void migration to the surface given the shallow workings and limited firm overlying rock/strata above (not including the alluvial material). As the precise detail is somewhat uncertain (thicknesses of: firm overlying strata, coal seam/voids, fireclay) a limited site investigation of three or more water-flush boreholes to the base of the coal seam/workings across the extent of the proposed footprint from east to west should prove beneficial to better inform the likely further stabilisation works and foundation designs. The results of the investigation can then be presented to an appropriately qualified drilling and grouting specialist and structural engineer, in order to achieve a proposed solution to the agreement of the Coal Authority (as owners of the coal/workings). ***Note informatives 1 & 2 in Appendix 2***. It should be noted that a permit from the Coal Authority should be secured prior to any investigation or grouting works.

3) A watching brief should be employed during future grounds works for any signs of unrecorded mine entries. In this instance circular brick or stone lined features, possibly filled with grey spoil, through the alluvium from 1m to 2.5m diameter would be an indication of such. If suspected the Coal Authority (as owners) should be notified immediately for appropriate deliberations.

4) In terms of the fugitive gas risks from the shallow coal workings it would be prudent, in the absence of any further gas monitoring *(note informative no. 3 in appendix 2)*, to include gas protection measures (such as a methane membrane and/or positive ventilation layers) within future foundation designs; which could also protect from radon issues if required. All usual safety precautions should be employed regarding possible fugitive gases in any deep excavation work taking place.

Note: should there be any uncertainty of actual conditions during future ground works Lyons CMC or indeed the Coal Authority themselves can be further consulted for on site assessment if necessary.

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,

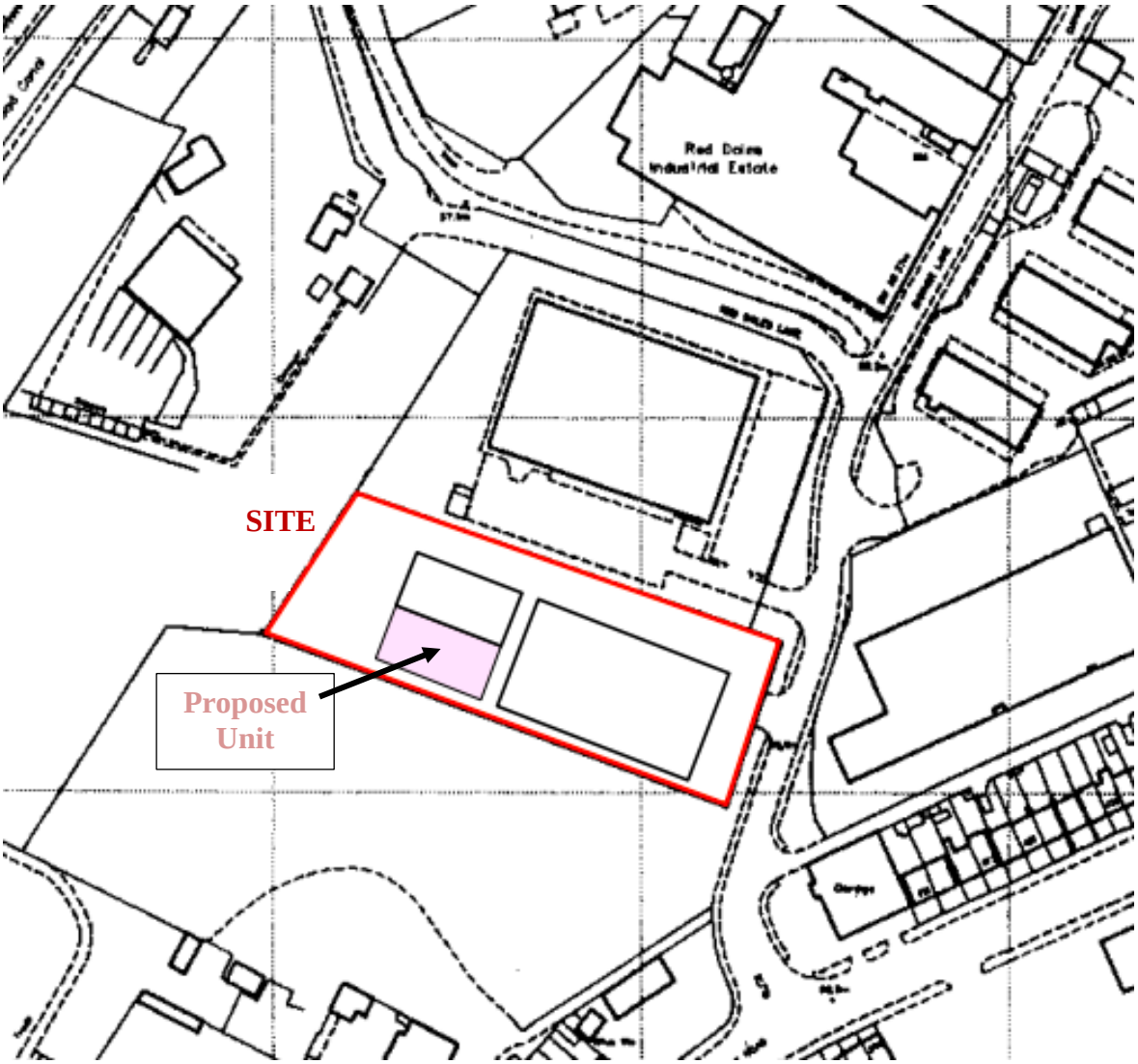
M Lyons

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. 00372/A
(Not To Scale)
Site centred at NGR: 415339E / 418137N



Appendix 2 - Informatives

1) The relatively recently revised CIRIA document titled 'Abandoned Mine Workings Manual', which replaced Special Publication 32 (1984), indicates that the use of empirical or 'rule of thumb' guides, as the design basis for treatment depth, has been successfully observed for many years for a wide range of abandoned mine workings and overlying rock/soil strata scenarios. As such, the guidance indicates that further design/ground stabilisation consideretions will be required if there is less than 10 times the aggregate measured height of mine workings as competent rock cover above the workings.

2) For information, should the grouting of any mine workings be required, a 10:1 PFA/cement mix or similar would need to be injected into the workings and any other disturbed strata above it under pressure on an OS coordinated treatment grid approved by the Coal Authority (and Building Control/third-party Warranty provider as required). Specific proposals to treat any mine workings would need to be submitted in the form of a standalone 'Specification', with a separate permit to treat being obtained from the Coal Authority. The method of consolidation is dependent on the nature of the bedrock strata and the underground mining conditions encountered, although fissile strata, such as shales and mudstone deposits, do permit mining voids to migrate upwards to quite high levels. All grouting works would need to be supervised by a competent engineer, with a final validation report being produced to confirm what works were undertaken and whether they were successful or not.

3) Ground gas monitoring can be undertaken to confirm or discount the presence of an elevated gassing regime within the underlying soils. Elevated concentrations of mine gases (e.g. CO2, CH4) may be present within the coal seams, voids in or above any shallow mine workings, areas of made ground/opencast backfill, and in any permeable bedrock strata (and any organic rich surficial soils). The period of monitoring to be undertaken should be broadly completed in accordance with current guidance [BS8485]. Piezometers would need to be installed (during drilling works for example) to facilitate this.