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**LYONS CMC  
COAL MINING & GEOTECHNICAL  
CONSULTANCY**

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Date: 13<sup>th</sup> June 2025  
Your ref: (HD2 1YF)  
My Ref: SI 00324

**FOR THE ATTENTION OF MR GRAHAM HAIGH & TONY STEAD**

Dear Sir,

**COAL MINING RISK INTERPRETATION REPORT – FOLLOWING THE SITE  
INVESTIGATION FOR PROPOSED NEW STORAGE UNIT AT LAND AT RED DOLES LANE,  
LEEDS ROAD, HUDDERSFIELD HD2 1YF**

I am pleased to supply the following report for the above named project and trust that this satisfies your requirements. Please do not hesitate to contact myself at any time for further clarification or advice.

Yours Sincerely,

*M Lyons*

M. Lyons  
Consultant Mining Engineer  
BSci CSci MIMMM

*THIS REPORT 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". Copyright in this report 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.*

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## **1. Introduction**

Planning permission has been granted for a new industrial unit at the above location, subject to the mining legacy risks been fully realised and mitigated from on site, if necessary. Cape Site Services has now undertaken this work via an intrusive site investigation of 3 boreholes, the location of which is outlined on plan no. 00372/B – as attached and illustrated in appendix 5.2. The site is centred at OS NGR: 415339E / 418137N. of which is outlined on plan no. 00372B – as attached and illustrated in appendix 5.2.

## **2. Scope of the Report**

The mining legacy risks to the development are as follows:

- Instability from shallow underground coal workings in the Hard Bed coal seam
- Uncharted Mine Entries

As such, these risks need to be properly determined to ensure sound stability for the development. A borehole investigation consisting of between 3 to 5 boreholes was deemed a reasonable level of investigation in the outset regarding potential void migration given the scale and nature of development combined with the available geological and mining information. A watching brief would also be implemented for any signs of mine entries.

It should be noted that this investigation is focused mainly on determining stability from potential shallow historic coal workings and will only provide limited information regarding the risks of uncharted mine entries.

## **3. Site Investigation**

### **3.1 Methodology**

Prior to the intrusive site investigation, a search for utilities was undertaken both via online data providers and physically on site using a Cable Avoidance Tool (CAT). Boreholes were marked out with tape measure from boundary lines as illustrated on plan no. 00372/B outlined in appendix 5.2.

An investigation utilising a tracked Beretta Rotary Drill Rig equipped with 2m long 75mm diameter drill rods was deemed appropriate in this instance along with water flush techniques to analyse returns and minimise any risks associated with mine gas emissions and spontaneous combustion. Gas monitoring equipment would be employed during works for risks associated with Methane, Carbon Monoxide, Oxygen, Carbon Dioxide and Hydrogen Sulphide. Prior agreement had been secured for these works from the Coal Authority -permit ref: 29724 – as attached for reference in appendix 5.4.

Considering the detail (our CMRA ref: 00372 dated 11<sup>th</sup> October 2024) boreholes were decided to be taken to the base of the Hard Bed coal seam/workings horizon.

The works were to be supervised by the Drilling Engineers Mr. S. Fish and Mr I. Wiles, and overseen by the Consultant Mining Engineer Mr. M. Lyons.

### 3.2 Interpretation of Findings

Beneath 100mm of tarmacadam, all boreholes proved made ground to between 1m to 2.2m deep; followed by superficial deposits of sand, gravels, soft clays and boulder clay/till to between 4.5m to 5.8m deep. Firm rock strata of sandstone, mudstone and then black shale with sandstone bands were then proved beneath the superficial in all holes to:

BH1 - an in-tact coal seam (Hard Bed seam) of 0.9m section at 13.5m to 14.4m, followed by light brown sandstone to 20m;

BH2 – voided workings between 13.5m to 15m deep; with total loss of flush;

BH3 – partially voided workings between 14.8m to 16.2m deep; with total loss of flush;

The voided sections, recorded as circa 1.4m thickness, coincides with the anticipated detail of the strata as per our previous Coal Mining Risk Assessment; although from this investigation it was unclear as to the extent of the fireclay deposits which appear to have been worked either above or below the coal seam from the voided sections encountered.

No fugitive gases were detected at any point during the drilling operations and no adjacent water break outs were experienced.

## 4. CONCLUSIONS AND RECOMMENDATIONS

- 1) Given best practice guidance for development above abandoned mine workings (CIRIA C758D) it is clear that a stability issue is present for this site by way of the shallow coal workings in what appears to be the Hard Bed coal seam at this location, which is consistent with past historic findings and treatment works which have apparently been carried out for the existing adjacent building. **Note: informatives 1 & 2 in appendix 5.6.** In this case, the aggregate measured height of the mine workings is proved at circa 1.4m which would include the 0.9m of coal along with underlying/overlying fireclay (ganister); and given the 4.5m to 5.8m of superficial material at the surface there will be in the region of between 7.5m to 10m of competent rock cover above the workings – i.e. less than the required 10 times the workings section (which would equate to 14m minimum).

Considering the above, a drilling and grouting regime to stabilise the shallow voids would be recommended, for example on a 3m x 3m grid across and outside of the proposed development footprint; with a 1.5m spaced grout curtain down-dip (towards the south-east) in order to hold the grout to beneath the proposed footprint alone. An appropriately qualified grouting contractor should be sourced to carry out these works; and it should be noted that a further permit from the Mining Remediation Authority would be required.

- 2) It is recommended that this information, and any subsequent drilling and grouting details, are presented to a suitably qualified structural engineer in order to arrive at an appropriate foundation solution - with prior Coal Authority and Local Authority agreement of such.
- 3) No signs of any mine entries were observed during the investigation, however slight risks are always present within the exposed coalfield for discovering such features. Watching briefs would be prudent during future ground works for any associated signs - grey circular areas of fill material within natural bedrock would be an indication of an old mine shaft for example. The Mining Remediation Authority should be notified where any such feature is encountered or suspected.
- 4) No fugitive gases were encountered during this investigation; however, some associated risks will exist given the shallow coal workings within the Hard Bed coal seam along with overlying sandstones and superficial material. It would therefore 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 for example) 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.***

This report and future development proposals should be submitted to the regulators for their approval prior to any works taking place.

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 SITE INVESTIGATION INTERPRETATIVE REPORT 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 Working Manual." The opinion may be overruled by Government Authorities based on other information not in my record. Further site investigations may be undertaken which would supersede the factual findings of this investigation. Copyright in this report 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.*

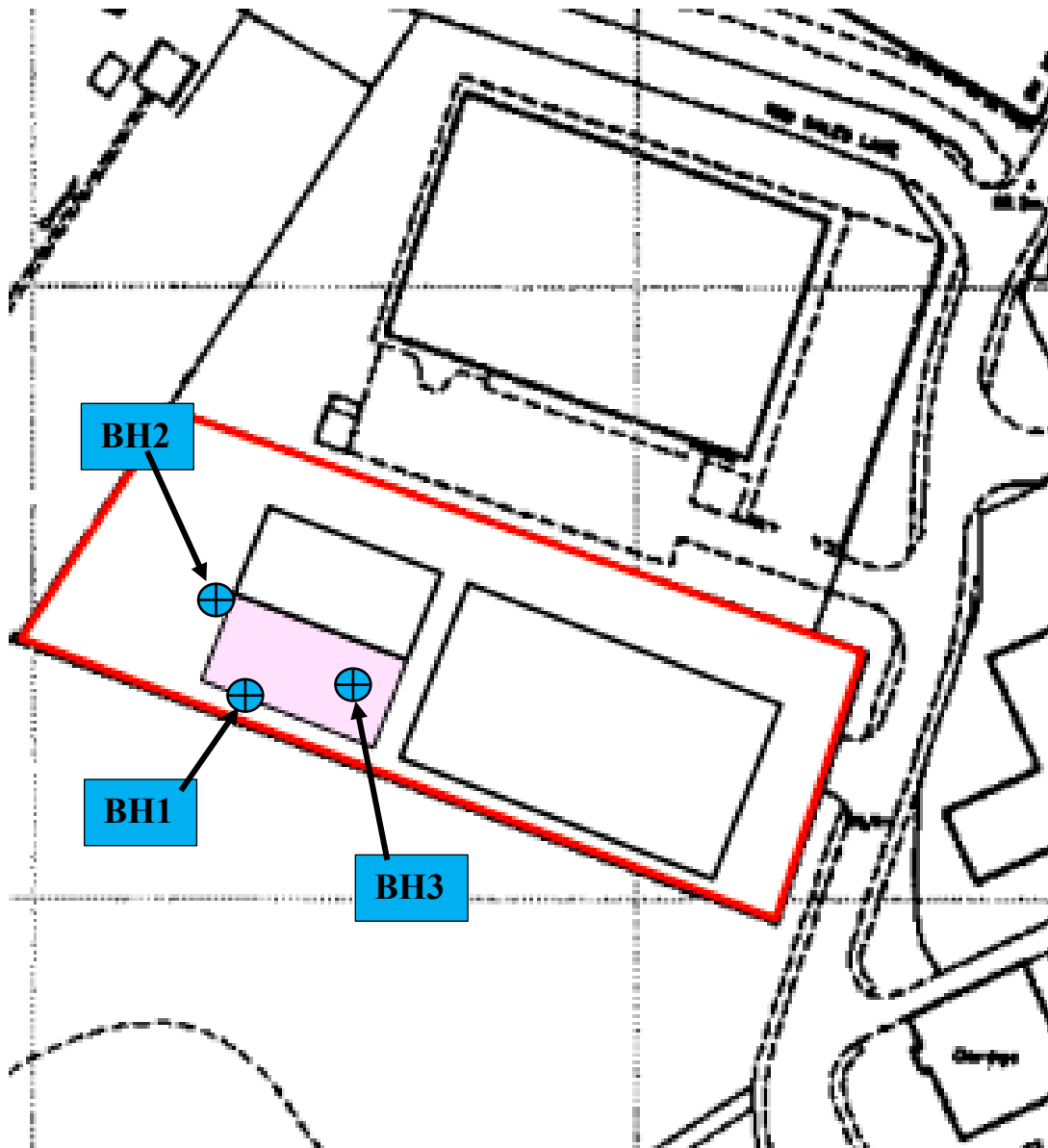
## 5 Appendix

### 5.1 References

- 5.1.1 CIRIA C758D 'Abandoned mine workings manual'.
- 5.1.2 British Standards Institution: BS 5930:2015 'Code of practice for ground investigations' BSI 2015.
- 5.1.3 British Standards Institution: BS EN ISO 14688-1: 2002 + A1 2013 'Geotechnical Investigation and Testing - Identification and Classification of Soil - Part 1 - Identification and Description. BSI 2013.
- 5.1.4 British Standards Institution: BS EN ISO 14689-1: 2003 'Geotechnical Investigation and Testing – Identification and Classification of Rock – Part 1 – Identification and Description. BSI 2003. Incorporating Corrigendum No. 1 February 2007.
- 5.1.5 British Standards Institution: BS 10175 'The Investigation of Potentially Contaminated Sites. Codes of Practice'. BSI 2011+A1 2013.
- 5.1.6 British Standards Institution: BS EN ISO 22476-3: 2005 + A1 2011 'Geological Investigating and Testing. Field Testing. Standard Penetration Test'.
- 5.1.7 British Standard 1377:1990 Parts 1-9 'Methods of Test for Soils for Civil Engineering Purposes'.

5.2 Borehole Location Plan No. 00372/B

**LAND AT RED DOLES LANE, LEEDS**  
**ROAD, HUDDERSFIELD HD2 1YF**  
**Site Investigation**  
**Borehole Location Plan**  
**(NTS)**



### 5.3 Drilling log sheet

|                                 |                                                  |                                           |                                                                                                        |                                                                                     |
|---------------------------------|--------------------------------------------------|-------------------------------------------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Client:</b><br>Agrosmart Ltd | <b>Site:</b><br>Red Doles Lane, Huddersfield     |                                           | <b>Cape Site Services</b><br>unit 2, rear of<br>Castle Buildings<br>Carlton Road,<br>Barnsley, S71 3HX |  |
| <b>Date:</b><br>5-6/6/25        | <b>Method:</b><br>Rotary water flush /<br>Coring | <b>Permit No:</b>                         |                                                                                                        |                                                                                     |
| <b>Driller:</b> Simon Fish      |                                                  | <b>Driller Assistant:</b> Richard Hawkins |                                                                                                        |                                                                                     |

#### Measurements In Meters

| BH No: | FROM | TO   | THICKNESS | Description                                          |
|--------|------|------|-----------|------------------------------------------------------|
| 1      | 0    | 0.1  | 0.1       | Tarmac                                               |
|        | 0.1  | 1    | 0.9       | Made ground                                          |
|        | 1    | 2.5  | 1.5       | Sand Dark grey wet                                   |
|        | 2.5  | 4    | 1.5       | sand and gravel clay bands                           |
|        | 4    | 4.5  | 0.5       | boulder clay                                         |
|        | 4.5  | 7.5  | 3         | sandstone light brown                                |
|        | 7.5  | 9.8  | 2.3       | sandstone light brown with soft black mudstone bands |
|        | 9.8  | 13.5 | 3.7       | black shale soft bands water loss                    |
|        | 13.5 | 14.4 | 0.9       | <b>coal</b>                                          |
|        | 14.4 | 20   | 5.6       | sandstone light brown                                |
| 2      | 0    | 0.1  | 0.1       | tarmac                                               |
|        | 0.1  | 1.5  | 1.4       | Made ground                                          |
|        | 1.5  | 2.2  | 0.7       | Made ground/black ash                                |
|        | 2.2  | 4.6  | 2.4       | clay brown soft                                      |
|        | 4.6  | 5.8  | 1.2       | Boulder clay/till                                    |
|        | 5.8  | 7.5  | 1.7       | sandstone light brown                                |
|        | 7.5  | 9.5  | 2         | sandstone light brown with black mudstone bands      |
|        | 9.5  | 13.5 | 4         | black shale with sandstone bands                     |
|        | 13.5 | 15   | 1.5       | coal old workings voided total water loss            |
| 3      | 0    | 0.1  | 0.1       | tarmac                                               |
|        | 0.1  | 1.2  | 1.1       | made ground/limestone fill                           |
|        | 1.2  | 1.7  | 0.5       | Black ash/fill                                       |
|        | 1.7  | 4    | 2.3       | sand and gravel soft clay bands                      |
|        | 4    | 5    | 1         | Boulder clay/till                                    |
|        | 5    | 10.2 | 5.2       | sandstone light brown with black mudstone bands      |
|        | 10.2 | 14.8 | 4.6       | black shale with sandstone bands                     |
|        | 14.8 | 16.2 | 1.4       | partially voided old workings total water loss       |
|        | 16.2 | 20   | 3.8       | solid drilling no returns                            |

## 5.4 Coal Authority Permit



Mining  
Remediation  
Authority

# Permit to Enter or Disturb Mining Remediation Authority Interests

## Permit 29724

### Name and Address of Permit Holder:

Agrosmart Ltd  
Unit 1C Victoria Court  
Colliers Way  
Clayton West  
Huddersfield  
HD8 9TR

### Site Location:

Land at Red Doles Lane  
Leeds Road  
Huddersfield  
HD2 1YF

This certificate hereby grants the above named Permit Holder a Permit to carry out:-

**Ground investigation by five boreholes to 20m to determine presence of shallow mine workings** within the Authority's interests at the identified site location above as shown on the Grant Permit Boundary (overleaf) for the period of **12 months** from the granted date shown below. *The granting of this Permit does not constitute advice given by the Authority in relation to the proposed operations. It is the Permit Holder's responsibility to obtain appropriate health, safety, environmental, technical and legal advice.*

### Conditions:

- Manned entry (i.e.) into mine entries/workings) is strictly prohibited.
- Water flush
- Gas Monitoring CO, CH<sub>4</sub>, CO<sub>2</sub>, O<sub>2</sub>, H<sub>2</sub>S at borehole and rig
- Operators undertaking the work must be in possession of this certificate and the Permit boundary plan at the time of works
- Appropriate borehole sealing without delay and to withstand site level changes

Signed: David Wilson Granted Date: 10<sup>th</sup> April 2025

For and on behalf of the Mining Remediation Authority

Nominated Representative: David Wilson, Permitting Manager;

## **Appendix 5.5 Informative(s):**

- 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 considerations 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. CO<sub>2</sub>, CH<sub>4</sub>) 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.