

Coal Mining Risk Assessment

**BUTLERS AUTOMOTIVE LTD, THOMAS STREET,
BARNSELY, S70 1LH**

Project Ref: GUK-0421-06

For: Hallamshire Projects Limited



GROUNDSMITHS
GEOTECHNICAL ENGINEERS



PROJECT:

Commercial Development (Small Warehouse Extension)

REPORT REFERENCE:

GUK-0421-06-Rp-001

CLIENT:

**Hallamshire Projects Limited
736 Barnsley Road
Sheffield
S5 6SY**

SITE REFERENCE:

**Butlers Automotive Ltd
Thomas Street
Barnsley
S70 1LH**



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1 INTRODUCTION

1.1 Appointment

Groundsmiths (UK) Ltd ('Groundsmiths') were appointed by Hallamshire Projects Limited (the 'Client') % Space Studio (the 'Agent') to undertake a Coal Mining Risk Assessment ('CMRA') for proposed development land located at Butlers Automotive Ltd, Thomas Street, Barnsley, S70 1LH (the 'Site').

It is understood that there are plans to redevelop part of the Site, with this comprising the addition of a narrow extension to the rear yard and parking areas of the existing warehouse. Given that ground levels change within the area of development, the extension is indicated to be at the level of the existing internal mezzanine (upper floor storage), rather than it being full height. For information, the existing layout and proposed scheme is indicated on the appended drawings provided by the Agent.

1.2 Report Context and Status

Groundsmiths are aware of recent correspondence between the Local Planning Authority ('LPA') and The Coal Authority ('CA'), principally:

- The Coal Authority. *'Single storey rear extension to rear and associated works at Butlers Automotive Ltd, Thomas Street, Barnsley, S70 1LH.'* Dated 31st March 2021.

As is the usual process, the CA were consulted by the LPA (on the 23rd March 2021) in relation to the planning application submitted for the scheme. In summary, correspondence issued by the CA on the 31st March 2021 recorded their objection to the application on the grounds that the Site falls within a Development High Risk ('DHR') area and that no CMRA or equivalent documentation had been issued to support the application.

It is the intention for this CMRA to present salient available data with respect to any potential and/or proven mining legacy at, and within the locale of the Site. The assessment given herein therefore follows a review of currently available geological, CA data and (publicly available) third party information.

Groundsmiths have prepared this report for the sole use of the Client that commissioned it in accordance with the agreement under which our services are performed. No other warranty, expressed or implied, is made as to the professional advice included in this report. Any unauthorised third parties using the information presented in this report do so entirely at their own risk and are duly excluded from any warranty, duty of care or skill.

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1.3 Development High Risk?

The CA ^[1] is a statutory consultee on planning applications for development within defined coal mining areas in England, Scotland and Wales. They have specific statutory responsibilities associated with, for example, the licensing of coal mining operations, the handling of subsidence claims, providing information on coal mining and in managing the environmental legacy of coal mining activities. The risk-based approach to development management adopted by the CA ^[2], with respect to planning applications, is centred around two spatial areas. These are referred to as 'Development High Risk' and 'Development Low Risk' and are defined in the following way:

- **Development High Risk** areas cover approximately 15% of the coalfield and refer to those areas where specific recorded coal mining legacy is present or suspected which poses a risk to public safety and/or ground stability (e.g. mine entries, shallow recorded or probable workings, coal opencast sites etc)
- **Development Low Risk** areas cover approximately 85% of the coalfield and refer to those areas where historic coal mining activity has taken place at sufficient depth that it poses only a low risk to new development

Where a development lies within a low risk area, guidance indicates that there is no requirement to submit coal mining information as part of any planning submission. However, where development lies within a high risk area, new development proposals (notwithstanding any exemptions as may apply) are required to assess potential coal mining legacy issues. In these instances, assessment is prepared in accordance with the general requirements of preliminary risk assessment as defined by the CA ^[3] in order to:

- Determine the possible ground related hazards and risks associated with historic coal mining legacy, and that associated with other minerals, based on available information, and
- Demonstrate to the Local Planning Authority that the application Site is, or can be made, safe to meet the requirements of the National Planning Policy Framework ^[4], notably Paragraphs 178 and 179, which refer to the provision of adequate investigation information, prepared by competent persons, and the responsibility that is placed on the developer/landowner should a site be found to be affected by unstable land.

Available information for the Site, and as identified by the CA in their recent correspondence to the LPA, indicates that it lies within a Development High Risk area. This determination is based upon CA records, such as that presented on their interactive (planning data) database, following review of the LPA District Development Risk, Specific Risk and Surface Coal Resource plans for Barnsley ^[5], and other sources.

RISK LEVEL DETERMINATION: DEVELOPMENT HIGH RISK

This is because the Site lies within an area where there may be mining legacy features which could include recorded past shallow mining at <30m, probable unrecorded shallow working, coal crops, areas of surface mining and/or mine entries which may have a negative impact upon ground stability.



1.4 Objectives

Notwithstanding the above risk determination and the potential for mining legacy to be present, the objectives of the assessment presented herein were also to:

- Obtain information about the likely underlying soil and groundwater conditions within the area of development
- Identify and assess the potential for where any ground gas regime may represent constraints to the proposed development
- Provide recommendations for any investigative works as may be required, and
- Provide preliminary recommendations for any remedial works that may be required

1.5 Scope of Works

The assessment undertaken within the context of this report comprised a review of the following sources of information:

- British Geological Survey ('BGS') 1:50,000 scale series (solid & drift edition) geological mapsheet ^[6]
- GeolInsight Report (Appendix A) ^[7]
- BGS Onshore GeoIndex records database ^[8]
- Coal Authority Consultants Coal Mining Report (Appendix B) ^[9]

1.6 Limitations of Study

The assessment presented herein has been undertaken subject to the limitations detailed in Section 6 and any other limitations stated separately in the report.

No intrusive ground investigation works have been undertaken as part of this commission.

2 SITE SETTING

2.1 Site Location

The Site is located within an established commercial area on the edge of a large housing estate at a distance of about 0.5km to the south of Barnsley town centre. The National Grid Reference (NGR) for the Site is approximately 434540mE 405890mN.

2.2 Details & Description

A summary of the current Site overview is given in Table 2.1, below.

Table 2.1 - General Site Details

Area of Development	The Site (edged red below) is indicated to be 0.01ha in size and to be rectangular in plan area. The dimensions are estimated to be about 18m (l) x 4m (w).
Current Land Use	Available information indicates that the Site area is partly in use as a service yard (concrete surfaced with bunded oil storage tank) and partly for staff parking.
Ground Elevations	The Site is flat and lies at an elevation consistent with that of Joseph Street (~121m AOD), falling down towards the north-west. The Site marks the highest part of the overall land ownership at the property. 
Boundary Development	To the immediate north-east is the principal building associated with Butlers Automotive Ltd, with this comprising a brick and metal-clad warehouse with associated works. Land to the east and south appears to be largely in use for car parking, whilst to the far north is a drive-thru fast food outlet. Other commercial warehousing lies to the north-west, with this having undeveloped external grounds.



2.3 Anticipated Geology & Hydrogeology

A summary of salient geological and hydrogeological data is given in Table 2.2, below and overleaf.

Table 2.2 - Geological & Hydrogeological Conditions

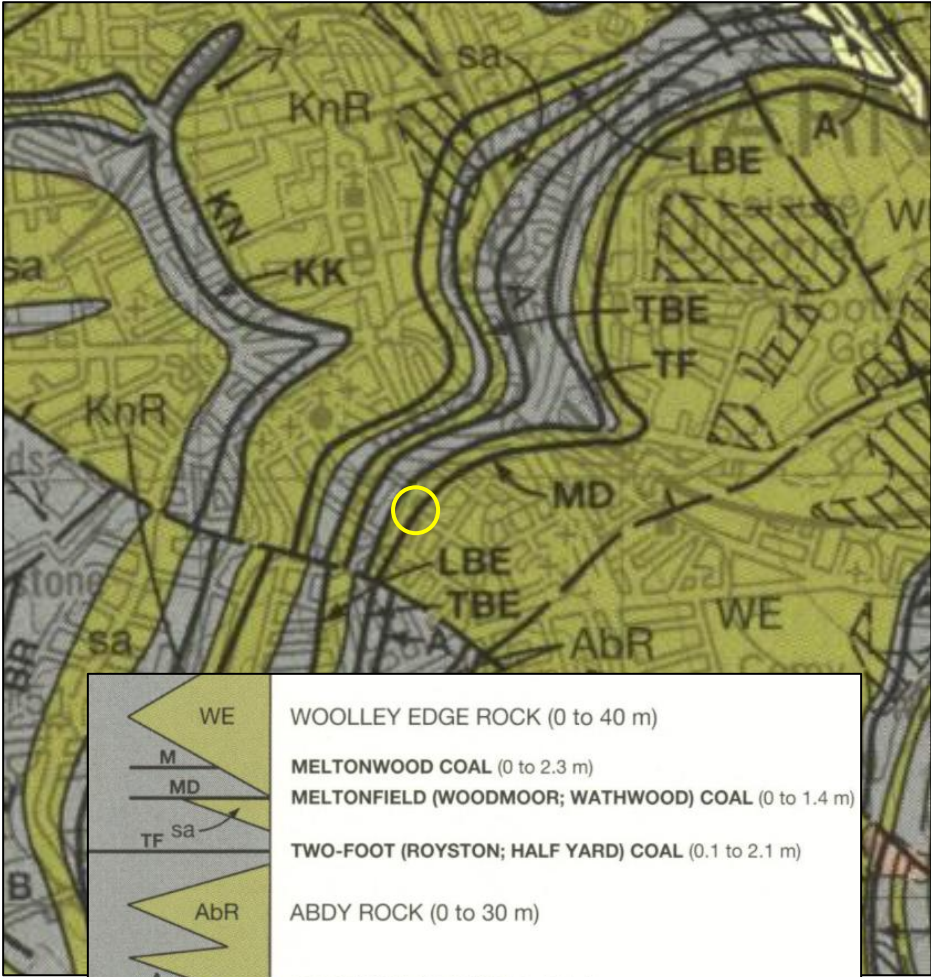
Superficial Geology	There are no records relating to superficial deposits within or near to the boundary of the Site. No drift geology is expected.																
Solid Geology	The solid geology underlying the Site is indicated to comprise mudstone and sandstone of the Pennine Middle Coal Measures ('PMCM'). The PMCM comprise a cyclic sequence of deposition consisting of interbedded horizons of mudstone, siltstone and named sandstones (e.g. the Woolley Edge Rock) with numerous coal seams.  <table><tr><td>WE</td><td>WOOLLEY EDGE ROCK (0 to 40 m)</td></tr><tr><td>M</td><td>MELTONWOOD COAL (0 to 2.3 m)</td></tr><tr><td>MD</td><td>MELTONFIELD (WOODMOOR; WATHWOOD) COAL (0 to 1.4 m)</td></tr><tr><td>TF sa</td><td>TWO-FOOT (ROYSTON; HALF YARD) COAL (0.1 to 2.1 m)</td></tr><tr><td>AbR</td><td>ABDY ROCK (0 to 30 m)</td></tr><tr><td>A</td><td>ABDY (WINTER) COAL (0 to 1.9 m)</td></tr><tr><td>PMCM</td><td></td></tr><tr><td>TBE sa</td><td>TOP BEAMSHAW (KILNHURST) COAL (0 to 2.9 m)</td></tr></table> Source: BGS Mapsheet 87 (Barnsley) 1:50,000 scale (2008)	WE	WOOLLEY EDGE ROCK (0 to 40 m)	M	MELTONWOOD COAL (0 to 2.3 m)	MD	MELTONFIELD (WOODMOOR; WATHWOOD) COAL (0 to 1.4 m)	TF sa	TWO-FOOT (ROYSTON; HALF YARD) COAL (0.1 to 2.1 m)	AbR	ABDY ROCK (0 to 30 m)	A	ABDY (WINTER) COAL (0 to 1.9 m)	PMCM		TBE sa	TOP BEAMSHAW (KILNHURST) COAL (0 to 2.9 m)
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Table Contd./



	The Woolley Edge Rock is indicated to be one of the most important beds of sandstone in the PMCM. It is generally present as a massive unit of rock, sometimes coarse grained and more often having a close resemblance to the Millstone Grit Formation of the Lower Coal Measures than the other sandstone beds encountered across the Barnsley area. Its thickness has been proven to about 40m, particularly in the north of the district, whilst beneath the sandstone are undifferentiated mudstone deposits, other sandstone units and numerous coal seams. The Woolley Edge Rock is reported to lie either directly above the Meltonfield Coal (also referred to as the Woodmoor Coal, or Wathwood Coal) or to be separated from it by shale ^[10] or mudstone deposits of variable thickness; in downwards succession the coals underlying the Site are indicated to comprise the Meltonfield, the Two Foot, the Abdy, the Top Beamshaw.... The general dip of the bedrock across the wider area and beneath the Site is not indicated on plans available at this time, although on the basis of deeper coal-related information it is assumed to be about 5° towards the east/south-east.
Infilled or Made Ground Deposits	There are no records associated with any artificial or made ground deposits within a radius of at least 381m.
BGS Borehole Records	The BGS borehole records database includes those relating to the 1989 investigation of land to the north (now redeveloped as a fast food outlet). Borehole references SE30NW608 to SE30NW611 have been reviewed (see further detail in Section 3, below) to provide background data.
Linear Features & Bedrock Faults	The nearest recorded linear feature is associated with the Meltonfield Coal, with this being from a distance of 6-7m to the north-west. It is noted that the position of the seam is inferred.
Natural Cavities	Risk associated with natural cavities within 500m is not expected.
Mining Cavities	There are no records of any mining cavities (e.g. crown holes) within at least 1km.
Non-coal Mining Cavities	Risk associated with non-coal mining cavities is not expected. The GeoInsight report indicates that localised small scale underground ore mining may have occurred, although this will be at a depth where it need not be considered further and the potential for difficult ground conditions are unlikely.
Surface Ground Workings	There are no records of any surface ground workings within at least 100m.
Radon	Between 1% and 3% of properties are estimated to exceed the Radon Action Level. No radon protective measures are indicated to be required in construction.
Natural Ground Subsidence Hazards within 50m	<u>Shrink swell clay soils</u>: Negligible. <u>Running sands</u>: Negligible. <u>Compressible deposits</u>: Negligible. <u>Ground dissolution of soluble rocks</u>: Negligible. <u>Collapsible deposits</u>: Very low. <u>Landslides</u>: Very low.

Table Contd./



Bedrock Permeability	Bedrock permeability is indicated to be moderate to high and via secondary porosity.
Landslip	In providing a preliminary assessment of risk associated with potential landslip, consultation was made with the data presented by GroundSure at the 1:10,000 and 1:50,000 scales. Information presented in the report indicates that there are no records of landslip within 500m, whilst the hazard rating for slope instability (landslide potential) within 50m is very low. Slope instability problems are unlikely to exist. Further to the above, the GroundSure data indicates that there are no records of landslip permeability within 50m (i.e. the estimated rate of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposit).
Groundwater	Given the Site's position it would be expected for the PMCM deposits to be well drained and for groundwater to be at a depth where it would be unlikely to interact with the development.
Brine	Risk associated with brine pumping is not expected.



3 IDENTIFICATION AND ASSESSMENT OF SITE SPECIFIC COAL MINING & OTHER MINERAL WORKING RISKS

The PMCM occupy approximately three quarters of the area covered by Mapsheet 87 and pass in an easterly direction to lie beneath the Permian deposits, forming a concealed coalfield in the remaining part.

As indicated above, the PMCM consist of a succession of shales, mudstones, sandy shales and significant sandstone units with various coal seams and their seathearts. Furthermore, ironstone deposits have been recorded in some areas, with these being present as either bands or layers of nodules.

With respect to coal, records suggest that the observed seams have been of varying composition, with each consisting of a number of different layers (hard, soft, bright, cannel) and containing partings or bands of dirt; sometimes a complex split architecture is also reported. The principal economic coals of the district were the Barnsley, the Parkgate and the Silkstone, although other coals were subsequently worked (from crop initially, but then deeper underground) following the exhaustion of these. In the measures beneath the Woolley Edge Rock are the Abdy, the Two Foot and the Meltonfield coals. Those which may have a potential influence on development are the latter two of these, although little valuable information about them is recorded on available plans or in the memoir.

With respect to the subject Site, consideration has been given to historic mining legacy that relates to the proposed development and that of the surrounding area. Potential coal mining risks, which could have a negative impact on development, have been assessed, utilising the information sources cited herein. In summary, the following may be presented.

3.1 BGS Borehole Records

The area to the north of the Butlers Automotive building was the focus of relatively recent ground investigation works given that the former commercial premises that were once present is now operational as a fast food outlet. Groundsmiths are aware that some site-specific mining related drilling was carried out to facilitate that development, although the records for this are not apparent on the LPA planning portal, for some reason. Various other assessment reports are present however, which include for a review of the historic BGS boreholes cited above in Table 2.2. These include the following information about coal seams encountered in previous investigation works carried out in October 1989. A copy of the borehole records is presented in Appendix C for information:

- Borehole Ref. SE30NW608 – Intact coal from 4.1m bgl to 4.4m bgl (0.3m thick), with a deeper layer of 'loose clayey mudstone and coal' from 20.2m bgl to 21.4m bgl (1.2m thick). The deeper horizon was logged as probable backfilled workings;
- Borehole Ref. SE30NW609 – Intact coal from 8.0m bgl to 9.2m bgl (1.2m thick);
- Borehole Ref. SE30NW610 – Intact coal from 13.8m bgl to 14.95m bgl (1.15m thick), with a deeper layer of 'loose grey mudstone....' from 19.2m bgl to 20.3m bgl (1.1m thick). The deeper horizon was logged as probable backfilled working;



- Borehole Ref. SE30NW611 – Intact coal from 10.4m bgl to 11.6m bgl (1.2m thick).

In reviewing the available historical borehole data it would appear that the Meltonfield Coal was encountered on the eastern side of its crop from between 4.1m bgl and 8.0m bgl (this being indicative of the change in elevation between the two positions), with an underlying coal (the Two Foot?) being recorded at depth from between 10.4m bgl and 20.2m bgl. On the whole, the borehole data indicates that (suspected) workings were present in some of the deeper seam, whilst the nearer surface coal was intact. A summary of the findings of the 1989 investigation is given below in Figure 1.

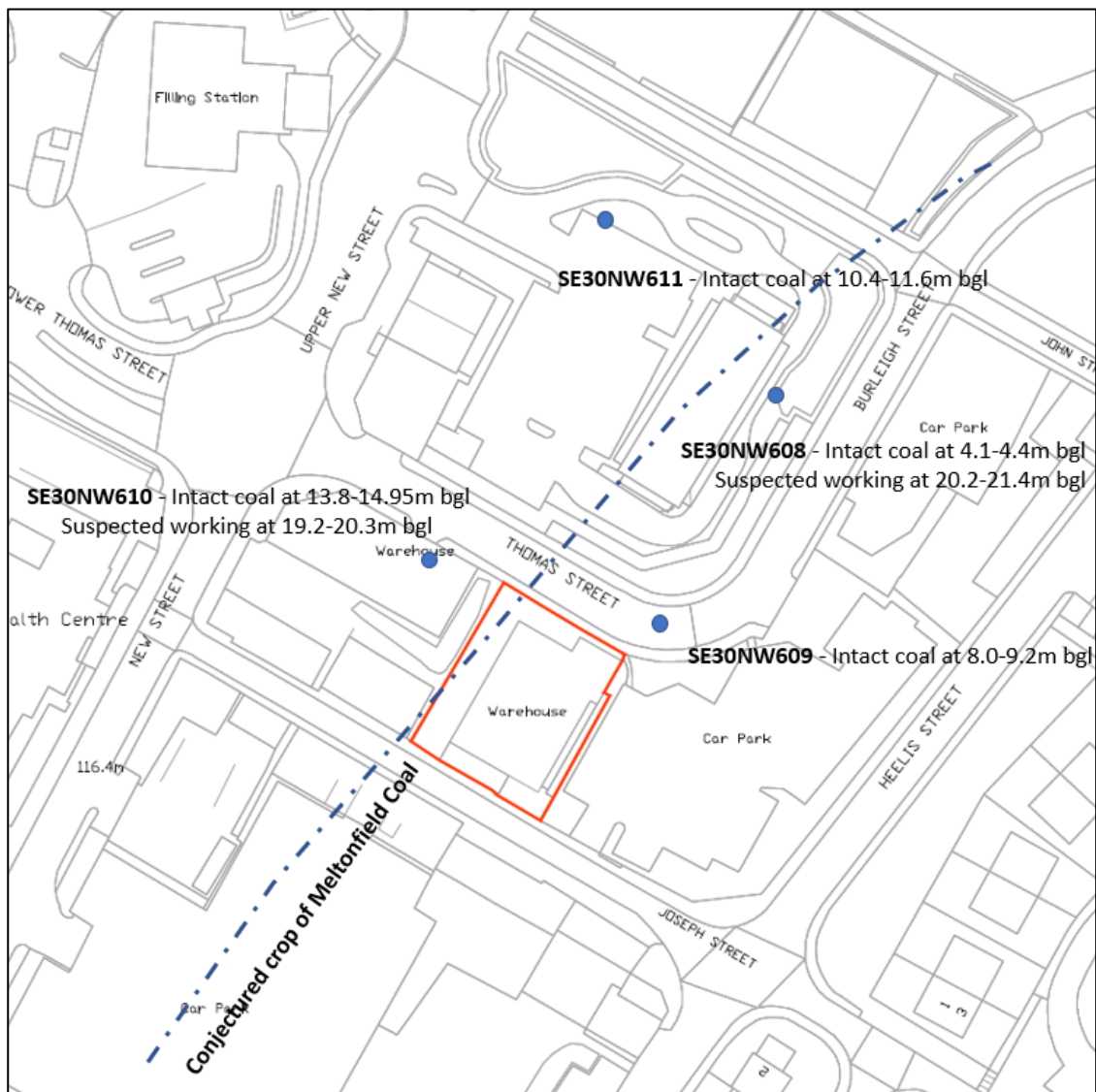


Figure 1 – Summary of BGS Borehole Investigation Records



3.2 Coal Authority Consultants Coal Mining Report

Information given in the CA Consultants Report for the Site, and on its accompanying large plot, have been summarised as follows:

- Past underground mining is recorded in the Barnsley Coal at a depth of 143-144m bgl, with this having been worked up until c1852-53. The extraction thickness of the coal varies from 1.88m to 2.74m.
- Probable unrecorded shallow workings are identified.
- There are no recorded shallow depth spine roads.
- There are no recorded mine entries within 100m of the Site.
- There are no recorded coal crops on Site, although the Meltonfield seam is indicated from a distance of 7.6m to the north-west.
- There are no geological faults, fissures or breaklines recorded beneath or within the vicinity to the Site.
- There are no records in relation to coal mining subsidence.
- There are no records of mine gas or mine water treatment schemes within 500m of the Site, and
- There are no records relating to treatment/stabilisation works having been carried out nearby.

3.3 Other Mineral Workings

There are no records relating to gypsum, tin and/or clay mining in the area of development. Risk associated with this mining is not expected.

3.4 Summary of Mining Legacy

Potential mining legacy which could impact on any proposed development have been assessed. These are summarised in Table 3.1, below and overleaf.

Table 3.1 - Summary of Mining Legacy

Coal Mining Feature	Yes	No	Comment
On-site coal crop		x	The Meltonfield Coal crops to the north-west from a distance of ~7.5m.

Table Contd./



Coal Mining Feature	Yes	No	Comment
Recorded underground coal mine workings at <30m bgl		x	The shallowest recorded workings are at 143-144m bgl.
Probable unrecorded underground coal mine workings at <30m bgl	x		The CA indicate the potential for unrecorded workings.
Recorded underground ore mining at <30m bgl		x	None recorded.
Probable unrecorded underground ore mining at <30m bgl		x	None recorded.
Mine entries (shafts and adits) on, or within 100m of the Site		x	None recorded.
Recorded Coal Authority mining surface hazards beneath the Site, including opencast workings		x	None recorded.
Records of coal mining related subsidence		x	None recorded.
Spontaneous combustion ('sponcom') of coal seams	x		The Two Foot seam is indicated to be susceptible to sponcom.
Records of mine gas emissions requiring action by the Coal Authority		x	None recorded.
Geological weakness		x	None recorded.
Remediated sites or mine entries		x	None recorded.

3.5 Preliminary Risk Assessment

Potential mining legacy features which could impact upon the proposed development at the Site have been assessed. These are summarised in Table 3.2, overleaf, and are based on information provided by the CA, ground investigation records for nearby sites, and that obtained from other geological sources.

Where a 'low' or 'very low' risk outcome is postulated, it is considered that no further assessment would be required.



Table 3.2 - Qualitative Mining Risk Evaluation

Coal Mining Feature	Risk Level	Comment
On-site coal crop	Low	Shallow coal within founding depths would likely not be encountered.
Recorded underground coal mine workings at <30m bgl	Very Low	There are no recorded shallow coal mine workings at a depth <30m bgl.
Probable unrecorded underground coal mine workings at <30m bgl	Low	Probable unrecorded workings are indicated by the CA, although historical ground investigation data would likely suggest that the potential for workings at <30m bgl is low. Although not definitive, the BGS records give a very good indication that workings (if they are workings) in the local area are at depth, with these being outside the zone of influence based on the recorded thicknesses.
Recorded or probable underground ore mining at <30m bgl	Very Low	None anticipated. There's no evidence to suggest that ironstone has been extracted locally.
Recorded Coal Authority mining surface hazards beneath the Site, including opencast workings	Very Low	None indicated to be present within the central Barnsley area.
Coal mining related subsidence	Very Low	None recorded. Sandstone of the Woolley Edge Road would afford a very good level of protection from any movement.
Mine entries (shafts and adits) on, or within influencing distance of the Site	Very Low	Unrecorded mine entries are unlikely to be encountered, particularly within a very small development area.
Spontaneous combustion ('sponcom') of coal seams	Very Low	Not expected given that the Two Foot coal would not be exposed.
Records of mine gas emissions requiring action by the Coal Authority	Very Low	None recorded or expected. PMCM deposits are not naturally gassing to high concentrations. CS1 conditions indicated for the adjacent fast food development.

CA information, which is based on ancient coal mining records, indicates that the development at Butlers Automotive Ltd lies within a DHR area. This is based on data that indicates the Meltonfield Coal and Two Foot Coal to lie at shallow depth, cropping to the north-west, and for there to be possible unrecorded workings in them.



As indicated herein, there is some local ground investigation data that provides a level of background information for the two underlying coal seams and where potential mining related features have possibly been recorded. It is noted that where coal was recorded at shallow depth (so from between 4.1m bgl and 8.0m bgl on the dip side to the Meltonfield, and from 10.4m to 13.8m bgl to the west of the Meltonfield) this has been intact in all instances. Only workings were recorded from a depth of about 20m bgl, on both sides of the Meltonfield's conjectured position, with this thickness being between 1.1m and 1.2m.

In accordance with current guidance ^[11], the stated thicknesses would not result in an exceedance of the empirical or 'rule of thumb' guide for 10x mine workings height. The thickness of the seams and the areas of working appear to be generally consistent between each of the historical boreholes, other than for a thinning of the shallowest seam in Borehole SE30NW608 at 4.1-4.4m bgl (only 0.3m thick), so there would be no particular reason to expect either more significant coal thicknesses or extraction rates on this basis.

Notwithstanding the presence of either shallow depth or deeper coals, it should be noted that the proposals for the Site are such that only a narrow strip of land is to be developed (at or around current ground levels) with an extension to the existing structure and the internal storage bays that occupy the upper floor to the warehouse. Although lying within a DHR, it is considered that the available information does not allude to there being any significant risk to this proposed development, and it does not suggest that the completion of perhaps 'disproportionate investigative works' are needed in this instance. If shallow workings had been identified locally and the potential for problems was higher we'd likely be mindful to request the completion of some intrusive works to quantify further the level of risk, although even then a degree of pragmatism would likely be required given that it is unlikely that the principal building occupied by Butlers Automotive would have been investigated for mining legacy or remediated in the past. The efficacy of such works for a small 'bolt on' development would need to be questioned. As it appears, shallow depth coal is likely not to have been worked, whilst the deeper seam lies outside the zone of influence. On balance, it is considered better to ensure that a suitable and robust foundation solution is provided so that this mitigates any potential mining-related problems as may potentially arise, rather than spend large sums of money on investigating a potential problem that would be very difficult to treat effectively and practicably given the constraints imposed by the existing development, adjacent third party land and the highway.

On other development sites where existing commercial buildings have been repurposed and/or extended, or where access has been particularly difficult and/or where ground treatment has been constrained or would likely be ineffective, no formal works have been completed. As indicated above, the footprint of the newbuild development at the Site is very small in relation to the building that already exists, whilst the level of end-use risk to the newbuild from any potential mining legacy would be no different to that which exists for the existing building, or indeed adjacent older properties. Furthermore, it is considered that the level of risk to the extension will be no greater than for where private residential dwellings are extended (sometimes significantly) and these come under The Coal Authority's Householder Development Exemption.



3.6 Foundations

Foundation design for the extension will need to be in accordance with that routinely adopted for developing in former coal mining areas, with appropriate reinforcement being provided to the satisfaction of Building Control and/or your Warranty Provider. Where this is allowed for in construction, it would likely be considered that the Site would be safe and therefore meet the requirements of the National Planning Policy Framework.

It's usual for foundations to be kept shallow in mining areas so consultation should be made with a structural engineer in this regard. Reinforced traditional spread footings with suspended floors are often used, although it may be that a stiffened edged raft would be more practicable given the expectant loads it will need to carry. Whatever foundation and ground slab solution is adopted, any specific requirements of Building Control and/or your Warranty Provider would need to be accommodated accordingly.

3.7 Heave Precautions

The combination of shrinkable soils and trees, hedgerows and shrubs represent a potential hazard to foundations and supported structures due to the effects of volume change and ground movement.

Since the development area is indicated to be on Coal Measures mudstones (and/or sandstone that typically weathers to a gravelly clay within its upper horizons), all foundations would need to be provided in accordance with current heave precautionary guidelines if they lie within the zone of influence of removed, existing or proposed planting. Information with respect to the plasticity indices and worst-case volume change potential of any proven or suspected cohesive soils, including mudstone and siltstone, should be obtained across the anticipated founding depth range, as required.

The need for precautions in construction and how these interact with the foundation solution should be discussed further with the designing engineer once the ground has been inspected and any testing completed.

3.8 Ground Gas

Risk associated with elevated concentrations of carbon dioxide and methane are not expected given the recorded ground conditions across the local area, the depth at which coal has been proven and the general lack of mine workings. Furthermore, it is noted that ground gas monitoring completed to facilitate development of the adjacent fast food outlet did not identify elevated concentrations of carbon dioxide and/or methane above Characteristic Situation 1 of BS8485 ^[12].

No radon precautions are indicated to be needed in construction. This should be confirmed with Building Control and/or your Warranty Provider as required.



4 REGULATORY APPROVAL

This report has been compiled in accordance with good practice guidance for the investigation, assessment and management of land that may be affected by ground stability hazards and ground gas contamination.

The recommendations presented are considered reasonable on the basis of available information and the assessment of the site as carried out by Groundsmiths. However, it remains the responsibility of the developer to ensure that the Site poses no significant risk to any sensitive receptor(s) and that it remains aligned with the proposed end-use and assessment framework adopted in this report.

If at any time in the future, additional information comes to light that puts into doubt the accuracy of the professional opinion or third party information presented herein, then it would be necessary to revisit the assessment presented herein.

Works undertaken cannot be guaranteed to gain approval by the regulatory authorities and / or your warranty provider, so copies of this report should be made available to the relevant organisations for comment and approval, prior to undertaking any irrecoverable works associated with the Site.



5 INFORMATION SOURCES

The following references have been cited in the production of this report:

- 1 The Coal Authority (2021). <https://www2.groundstability.com>.
- 2 The Coal Authority (2017). <https://www.gov.uk/guidance/planning-applications-coal-mining-risk-assessments>.
- 3 The Coal Authority (2017). Risk Based Approach to Development Management, Guidance for Developers, Version 4.
- 4 Ministry of Housing, Communities & Local Government (2019). National Planning Policy Framework. CCS0219561600
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6 REPORTING LIMITS

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The opinions provided in this document are given in good faith and are subject to the limitations and constraints imposed by the methods and information sources described. Factual information, where stated, has been obtained from a variety of sources. Groundsmiths assumes that third party data is reliable but cannot independently confirm this as the validity and accuracy of this information is outside our control. No guarantee can therefore be given as to the completeness of the information gathered during the study and no responsibility is accepted for errors or omissions in the third party information used. Groundsmiths' professional judgement and experience is however used to ensure that uncertainties are reduced to a level appropriate to the Site, the purpose of the assessment and the resources devoted to it by the Client.

Whilst every effort has been made to carry out an assessment that enables a realistic preliminary characterisation of the geotechnical parameters to be identified, the possibility of significant variation in actual ground conditions existing cannot be discounted. The findings and opinions presented in this report are relevant to the time this assessment was undertaken but should not necessarily be relied upon to represent conditions at a substantially later date. Further information, ground investigation, construction activities or the passage of time may reveal conditions that were not indicated in the presented data and therefore could not have been considered in the preparation of this report. Where such information might impact upon stated opinions, Groundsmiths reserve the right to modify the opinions expressed in this report.

Where opinions expressed in this report are based on current available guidelines and legislation, no liability can be accepted for the effects of any future changes to such guidelines and legislation. New information or improved practices and changes in legislation may require reinterpretation of the report as a whole, or in part.

The conclusions and recommendations presented in this report are based on the site-specific assessment but utilising third party documentary information as appropriate. They are, however, limited to those that could be reasonably made at the time the assessment was undertaken. Where assessments of Site areas affected in particular ways are given, these are approximate.

This report does not constitute an archaeological, contamination, ecological or arboriculturalist / invasive plant species survey. Any comment given in relation to these is for information only. Further assessments to assess these may be required as part of any planning condition and should therefore be undertaken by suitably qualified experts as required.

Groundsmiths reserve the right to edit and / or retract any conclusion or recommendation made in this report should any further information, with respect to the Site, become available.

Groundsmiths disclaim any obligation to update the report for events taking place after the time during which the assessment was carried out.

Groundsmiths do not provide or purport to provide legal advice. Should the Clients require such advice then that of lawyers should be sought.

Groundsmiths accept no responsibility if any findings given in this report are not implemented by the Client or their agents.

Groundsmiths accept no responsibility if any further works, as requested by either the Local Planning Authority and/or The Coal Authority in the discharge of their duty of care, are not implemented by the Client or their agents.

This report could be reassigned to a third party if they require warranty in the event that the Site is sold at any time in the future. A fee would be applicable in this instance and should be discussed with Groundsmiths.



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