

Coal Mining Risk Assessment

For development at: 8 Clarel Street, Penistone, Barnsley, S36 6AU

For proposal: Construction of detached two storey residential dwelling

Assessment Summary

Assessment Result	MEDIUM RISK
Recommended Further Work	INTRUSIVE GROUND INVESTIGATION

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It manages the effects of past coal mining, including subsidence damage claims which are not the responsibility of licensed coal mine operators and is an executive non-departmental public body, sponsored by the Department of Business, Energy and Industrial Strategy. This report is valid for 90 days.

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Version	Compiled	Checked	Date
1.1	PB	SH	20/04/2023

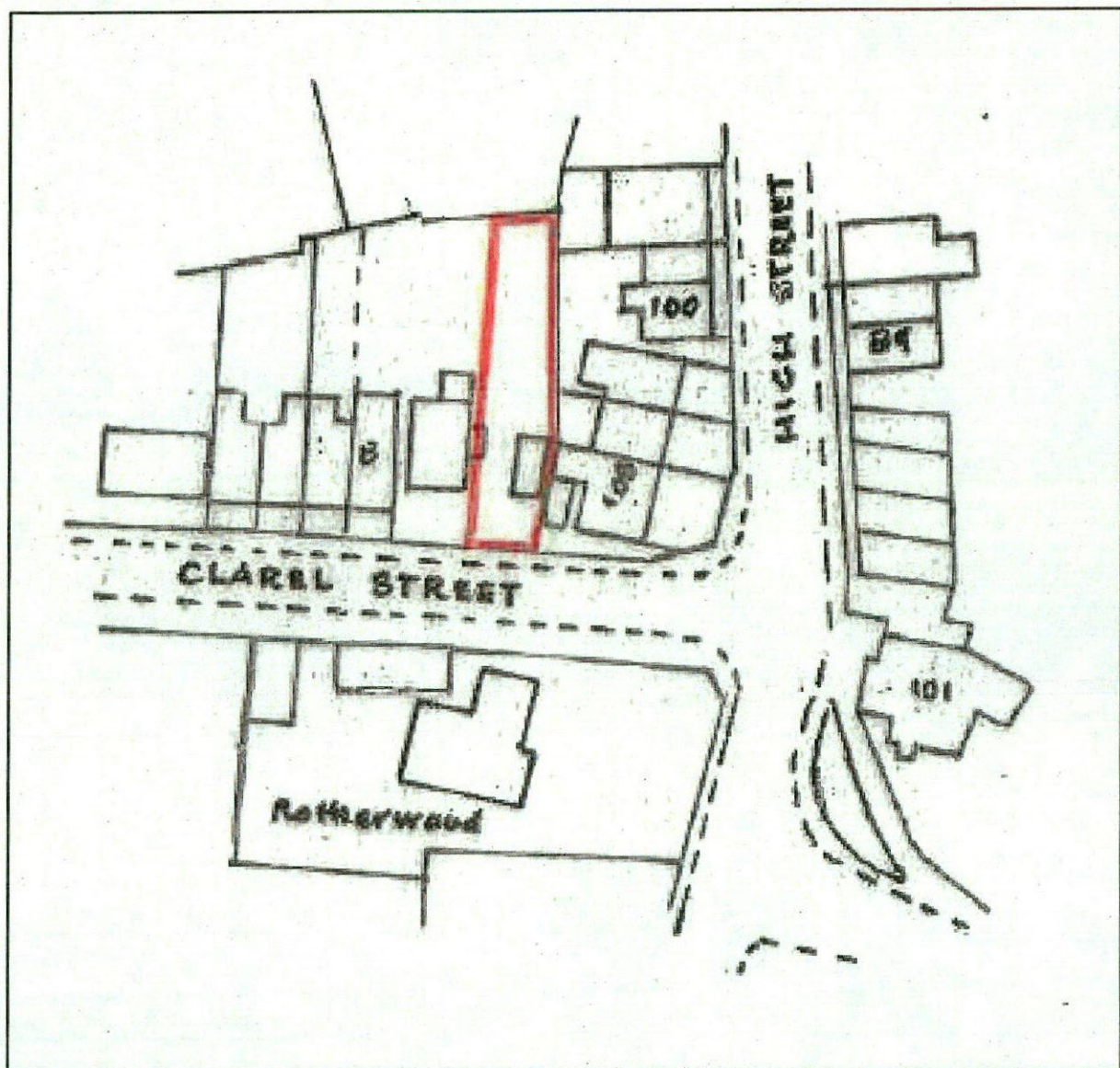
Section 1 – Description of site and proposed development

a) Site location and Description

The Coal Authority has been commissioned to prepare a Coal Mining Risk Assessment Report for a proposed development at 8 Clarel Street, Penistone, Barnsley, S36 6AU (see Figure 1), in order to provide the Local Planning Authority with information on coal mining and an assessment of its impact on land stability.

The approximate site centre co-ordinates are E424512, N402882. The proposed development area requires access via Clarel Street. The site has an approximate elevation of between 232-234m AOD.

Figure 1: Site location plan



b) Description and layout of proposed development

The Coal Authority understands that the developer plans to construct a detached two storey residential dwelling (see Appendix A).

c) Scope of 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 necessary remedial works and/or demonstrate how coal mining issues have influenced the proposed development.
- 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.

Any works that intersect coal mine workings, mine entries or coal seams may have implications for mine gas, spontaneous combustion and surface collapse. Coal Authority permission is required prior to any such works taking place. Further detailed advice can be provided upon request.

The Coal Authority's adopted policies regarding building over or close to mine entries and managing gas risks can be viewed at:

www.gov.uk/government/publications/building-on-or-within-the-influencing-distance-of-mine-entries

www.gov.uk/government/publications/guidance-on-managing-the-risk-of-hazardous-gases

Section 2 – Sources of information used to inform this report

Source reviewed	Yes	No	Remarks
Coal mining report	X		Consultants Coal Mining Report (Appendix B)
Other mining records		X	
Geological plans	X		Geological Survey of England and Wales 1:63,360/1:50,000 geological map series, New Series sheet 86 – Glossop (2012), County geological sheet Yorkshire 273SE (1932)
BGS Boreholes	X		SE20SW31
Other	X		BGS GeoIndex

The above information sources have been used to provide an assessment of the potential mining risk within the remainder of the report.

Section 3 – Identification and assessment of site specific coal mining related risks

The Coal Authority's search of its detailed coal mining information identifies the following site specific coal mining legacy risks to the site.

Coal mining issue	Reported		Risk assessment	
	Yes	No	Rating	Comment
a) Underground coal mining (recorded at shallow depths)		X	Low risk	None recorded
b) Underground coal mining (probable at shallow depths)	X		Medium risk	Possible unrecorded mining in the Lower Penistone and Penistone Green coal seams
c) Mine entries (shafts and adits)	X		Low risk	Two recorded not considered to influence the proposed development
d) Coal mining geology (faults and fissures)		X	Low risk	None recorded
e) Record of past mine gas emissions or potential		X	Medium risk	All mine workings pose a potential gas risk which should be considered in any future investigations and development
f) Recorded coal mining surface hazard		X	Low risk	None recorded
g) Surface mining (opencast workings)		X	Low risk	None recorded

A desk based study of the coal mining information has been used to risk assess the coal mining features above. A summary of the risk posed by these features is summarised after thorough analysis of the information sources. Comment on each specific coal mining issue follows below:

a) Underground Coal Mining (recorded at shallow depths)

Coal mining at depths shallower than 30m beneath ground level can typically pose challenges to ground stability at the surface. The magnitude of this effect depends upon the exact depth of any workings, the thickness of competent rock cover and the extraction thickness of any coal mine workings.

The Coal Authority Consultants Coal Mining Report in Appendix B states that the development site is not in an area of recorded shallow coal mine workings. Consequently the risk to this development from underground coal mining (recorded at shallow depths) is low.

b) Underground coal mining (probable at shallow depths)

Areas of probable shallow coal mine workings are identified as part of the Development High Risk Area for which no recorded plan exists, but where it is likely that workable coal at shallow depths has been mined before records were kept. The data has been estimated from available mining records by qualified mining surveyors. Since 1872 there has been a law that requires all coal mine operators to deposit working plans of the mine with the government following the cessation of operations. Prior to this date the plans were often destroyed or kept in private ownership.

Where the extraction of coal has occurred there is the potential for voids to remain long after mining has ceased. The depth of workings generally dictates the length of time that significant voids may remain, but other factors including the size of mine roof supports and the competency of overlying strata can influence the time for natural consolidation to occur. Waste material produced during mining was sometimes used to backfill abandoned sections of mine workings, therefore reducing the volume of open cavities or voids that remain. The method of backfilling workings is typically not recorded and cannot be relied upon as a satisfactory form of remediation.

The Coal Authority Consultants Coal Mining Report in Appendix B states that the development site is in an area of probable shallow coal mine workings with the report recording the Black Bed coal seam to outcrop within the development site boundary with the outcrop shown to be curvilinear (approximately circular) and of workable thickness. The outcrop of the Black Bed seam is shown on the county geological sheet Yorkshire 273SE (1932) with the seam shown to be locally known as the Penistone Green Coal. An annotation on mine entry 424402-002 shown 32m west of the site shows the seam to have been encountered at 24ft (7.32m) depth with the seam shown to be 9in (0.23m) in thickness. The Geological Survey of England and Wales 1:63,360/1:50,000 geological map series, New Series sheet 86 – Glossop (2012) records the seam to be 0-0.1m in thickness. Whilst it is considered that a seam 0.1-0.23m in thickness is likely to thin to work by underground methods, it is considered possible that extraction of an associated mineral such as ironstone or fireclay may have made this seam economical for extraction. It must therefore be considered that any roadways within this seam may be greater than the height of the seam to facilitate underground access, nominally to a height of 1.5m.

The generalised vertical section (GVS) on the county geological sheet records the Penistone Green seam to be underlain by the Lower Penistone coal with a vertical separation of approximately 11m recorded between the seams. Sheet 86 records the Lower Penistone seam to be 0-0.3m in thickness with the seam thinning to the north. As with the Penistone Green seam, if worked, it must be considered that any roadways

within this seams may be greater than the height of the seam to facilitate underground access, nominally to a height of 1.5m.

Consequently the risk to this development from underground coal mining (probable at shallow depths) is medium.

c) Mine entries (shafts and adits)

The Coal Authority Consultants Coal Mining Report in Appendix B shows two mine entries are recorded within 100m of the development site, detailed in the table below:

Reference	Easting	Northing	Plot distance from site boundary	Source
424402-002	424505	402952	32m W	2 nd Edition Geological
424402-001	424475	402901	53m N	1 st Edition Geological

The Coal Authority seeks to ensure that development is avoided above, or within the zone of influence of, all mine entries where possible. The zone of influence can be calculated as the sum of the departure value (up to 10m to account for discrepancies in source material), plus the local depth to rockhead (discussed in 3d below as likely to be up to 1.98m), plus the entry radius (nominally assumed to be 1.25m unless proven otherwise). On the basis of the above the zone of influence for these entries can be assumed to be a distance of 13.23m from the recorded positions detailed above. Based on the distance of these entries from the site boundary, the risk to the development from recorded mine entries is considered to be low.

The development site sits within a historical mining area and therefore there is a residual risk of unrecorded mine entries to be present on site. All site operatives should be made aware of this potential risk and a watching brief should be maintained during site works.

d) Coal mining geology (Faults and fissures)

The development site sits upon the Pennine Lower Coal Measures Formation. The closest BGS borehole to the site, SE20SW31 located 210m west of the site records surficial deposits to consist of topsoil and clay with a typical thickness of 6ft 6in (1.98m) in the local area.

No faults, fissures or break lines are known to affect the development site, however a fault is recorded to be present approximately 100m east of site, orientated approximately NE-SW, locally displacing coal seams.

Faults can act as pathways for gas and water, cause surface instability and result in dissimilar coal conditions/hazards due to their relative displacement of strata.

e) Record of past mine gas emissions or potential

There are no recorded past gas emissions recorded in the surrounding area, however, coal seams and coal mine workings pose a potential gas risk which should be considered in any future investigations and development. At development sites with shallow coal workings, probable shallow coal mine workings, or pathway features such as mine entries and geological disturbances on or nearby the site, the Coal Authority recommends that a more detailed gas risk assessment to be undertaken in accordance with relevant guidance.

No seam mentioned in this report is recorded as being prone to spontaneous combustion.

f) Recorded coal mining surface hazard

None recorded.

g) Surface mining (opencast workings)

None recorded.

Section 4 – Proposed mitigation strategy

a) Site investigation and/or remediation

Due to the presence of probable unrecorded shallow mine workings in the Lower Penistone and Penistone Green coal seams, an intrusive site investigation will be required.

The site investigations will need to be carried out by a competent contractor, taking into account the findings of this report. The results should be interpreted by a qualified and competent person so that an appropriate remedial strategy can be developed.

Guidance on drilling or piling through coal can be found at:

www.gov.uk/government/publications/guidance-on-managing-the-risk-of-hazardous-gases

Due to the difficulties in identifying coal related gas hazards, it may be prudent to consider completing a gas risk assessment for the development site. This may recommend basic gas protection measures within the foundation design, which are resistant to permanent gases (carbon dioxide, methane, carbon monoxide) and comparable to that suggested in BR211, as commonly used to protect against radon in residential properties.

Where development is proposed over areas of coal or past coal workings at shallow depth, developers should consider wherever possible removing any remnant shallow coal. This will enable the ground to be stabilised and remove a hazard prior to construction of any foundations associated with the development. Prior extraction of surface coal requires an Incidental Coal Agreement from the Coal Authority. Further information can be found at:

www.gov.uk/get-a-licence-for-coal-mining

Should coal seams be found, at or near the depth of the development's foundations, they may pose a risk of spontaneous combustion if exposed to air or may act as pathways for ground gases to reach the development. A competent engineer should be consulted if coal is encountered in, or adjacent to, the foundations of the proposed development.

Concrete, cements and renders may be susceptible to attack from elevated levels of sulfates in the ground. The Building Research Establishment reports that most cases of sulfate attack occur in and adjacent to coal field areas and related industrial centres. It would be prudent for the issue of sulfate attack to be considered during the foundation design to ensure they comply with the Building Regulations 2010.

You may also wish to refer to the Construction Industry Research and Information Association (CIRIA) publication Special Publication 32 "Construction over Abandoned

Mine Workings”.

b) Coal Authority permit

Any intrusive activities, including initial site investigation boreholes and any subsequent treatment of coal mine workings/coal mine entries for ground stability purposes require the prior written permission of the Coal Authority. Application forms for Coal Authority permission and further guidance on this matter can be obtained from the Coal Authority's website at:

www.gov.uk/get-a-permit-to-deal-with-a-coal-mine-on-your-property

Follow on services can be requested using the details in the contacts section.

Section 5 – Conclusions

This report has identified that the proposed development site has been subject to past coal mining activity, namely the presence of possible unrecorded workings in the Lower Penistone and Penistone Green coal seams. The risk to the site from legacy mining features is medium.

Nevertheless, subject to the undertaking of appropriate site investigations and any potential necessary remedial measures as outlined in Section 4a of this report, the Coal Authority considers that the site may be made safe and stable for future development and the risk to the development reduced to low. The recorded coal mining legacy issues present within the site do not pose any particular implications for the layout of the proposed development.

The Coal Authority advises the developer undertake a detailed Gas Risk Assessment where proposed development occurs over shallow coal reserves as is the case here.

Section 6 – Contacts

Planning and Local Authority Liaison Service

Tel: 01623 637 119

Email: planningconsultation@coal.gov.uk

Website: www.gov.uk/planning-applications-coal-mining-risk-assessments

Surface Hazards Emergency Service

Tel: 0800 288 4242 (open 24 hours a day, 7 days a week)

24-hour number for reporting public safety hazards and incidents associated with coal mining

Mining Reports Service

To purchase site specific coal mining information go to our website;

www.groundstability.com

Licensing and Permitting Service

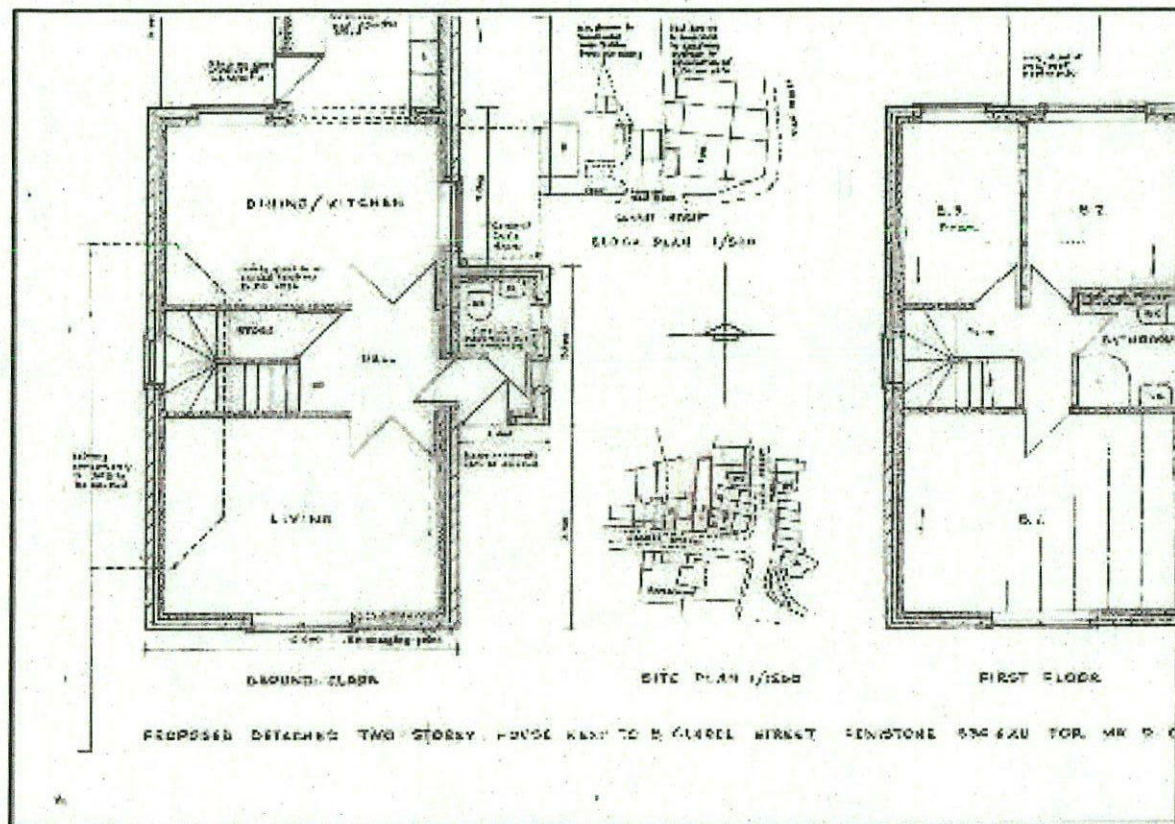
Email: permissions@coal.gov.uk

Tel: 01623 637 320

For permission to enter or disturb coal mine entries and coal seams.

Section 7 – Appendices

Appendix A – Plan showing proposed development layout



Appendix B – Non-Residential Coal Mining Consultants Report