

COAL MINING RISK ASSESSMENT (CMRA)

PROPOSED REPLACEMENT DWELLING

Land at 81 Swallow Hill Road, Low Barugh, Barugh Green, Barnsley, S75 1LY

Report Ref: TH/Swallow/CMRA/02/Sep2024

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CONTENTS

- 1.0 INTRODUCTION
 - 1.1 Terms of Reference
 - 1.2 Site Location & Description
 - 1.3 Proposed Development
 - 1.4 Scope of this Coal Mining Risk Assessment
 - 1.5 Limitations and Exceptions of this Report
- 2.0 SOURCES OF INFORMATION
 - 2.1 Geology
 - 2.2 Coal Mining Reports
 - 2.3 Historical Mapping
- 3.0 IDENTIFICATION OF SITE-SPECIFIC COAL MINING RISKS
 - 3.1 Discussion of Potential Risks
- 4.0 PROPOSED MITIGATION STRATEGY
 - 4.1 Mitigation Strategy
 - 4.2 Coal Authority Permitting
- 5.0 REFERENCES

Appendices

Appendix A Coal Authority Consultants Report Ref: 51003452028001

1.0 INTRODUCTION

1.1 Terms of Reference

In early September 2022, on the instructions of the Planning Consultant (Mr Tom Warren, Prism Agriculture Ltd) acting for the owner (Mr Needham), Earth-Tech Consulting Ltd were asked to prepare a **Coal Mining Risk Assessment (CMRA)** on land to the side of 81 Swallow Hill Road, Low Barugh, Barugh Green, Barnsley, S75 1LY, which is the subject of a proposal to replace the existing with a new build dwelling.

The parties involved in the proposed development are:

Property	81 Swallow Hill Road, Low Barugh, Barugh Green, Barnsley, S75 1LY
Client/Owner	Mr Needham
Planning Consultant	Prism Agriculture Ltd Mr Tom Warren
Mining Consultants	Earth-Tech Consulting Ltd Mr T. M. Hyett MSc BSc CGeol FGS, MCIOB Chartered Geologist & Building Consultant

1.2 Site Location & Description

The site is situated in a semi-rural position off Swallow Hill Road, in Low Barugh Green, also referred to locally as part of the village of Mapplewell - a former mining village in the metropolitan borough of Barnsley in South Yorkshire, that historically was part of the West Riding of Yorkshire.

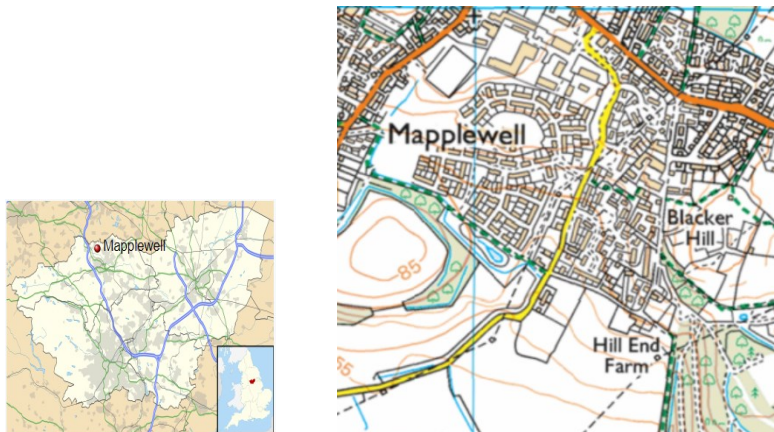


Fig 1 – General Location in South Yorkshire: 81 Swallow Hill Road, S75 1LY.

Mapplewell is a medium sized village conurbation situated approximately 3 miles north of Barnsley, and 8 miles south of Wakefield at approximately 53°35'11"N - 1°30'9"W at an elevation of around 328 feet (100 m) above sea level. Barugh Green was historically a hamlet in the ancient *Wapentake of Staincross*. As it grew in size it began to merge with the neighbouring hamlets (Mapplewell and Staincross) and ever since the histories of the villages have been linked together.

As in Staincross, nail making was an important industry in locality in the 17th century. From then onward the village and its environs were traditionally associated with coal mining, and by the late 19th Century coal mining was the predominant source of employment, after the sinking of a deep mine in North Gawber.

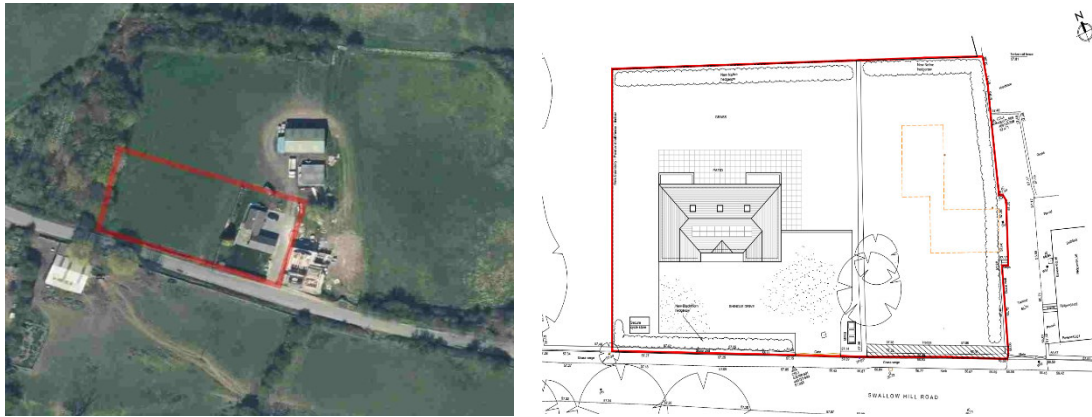


Fig 2 - Aerial photograph of existing site & schematic of proposed development - 81 Swallow Hill Road, S75 1LY.

For the proposed replacement dwelling (new build) the Planning Consultant required a site-specific Coal Mining Risk Assessment (CMRA) including, if applicable, preliminary recommendations to investigate and quantify shallow coal mining risk. In this location, like many others in the district, the Coal Measures were originally built up within a changing coastal environment on the margins of a sea to the east. Forests grew and then subsided under deposits of mud and sand. This resulted in the layers of coal seam, shale and sandstone that feature within the geology of the region today. The western area of the South Yorkshire consists of the *Lower Coal Measures* that outcrop at the surface and dip eastwards. The eastern area contains *Middle Coal Measures* underlain by the deeper *Lower Coal Measures*. The Coal Measures eventually disappear under younger Permian rocks to the east of the region.

The **Middle Coal Measures** are understood to underlie the site, and this formation has numerous coal seams that were exploited for many years, where later, during the 19th Century deeper mines gradually replaced old outcrop workings. The town of Barnsley, to the south-east developed near the thickest parts of the *Barnsley Coal Seam*, and nearer to the subject site, the North Gawber colliery in Mapplewell sunk in the 1850s reputedly employed 1200 miners underground and 300 surface workers in c.1949 before merging with nearby Woolley colliery after the miners' strike in 1984/5.

1.3 Proposed Development

The new build site lies within the curtilage of the former/existing 81 Swallow Hill Road and appears to have been predominantly agricultural/ gardens in the past. From inquiries with the planning consultant the existing dwelling house (No.81) is to be demolished to make way for the replacement dwelling in the grounds/gardens:



Fig 3 – Proposed new build replacement dwelling - 81 Swallow Hill Road, S75 1LY.

1.4 Scope of this Coal Mining Risk Assessment

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

- Present a desk-based review of all readily available information on 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 cumulative impact of issues;
- Set out appropriate mitigation measures to address coal mining legacy issues affecting the site, including any necessary remedial works and/or demonstrate how coal mining issues have influenced the proposed development; and
- Demonstrate to the Local Planning Authority that the application site is or can be made safe and stable by appropriate mitigation measures to meet the requirements of national planning policy (and the Coal Authority where required) with respect to development on unstable land.

All information, comments and opinions given in this coal mining risk assessment are based on the information obtained. The information search cannot be exhaustive and there may be records that have not come to light. There may also be circumstances at the site that are not documented.

1.5 Limitations and Exceptions of this Report

This CMRA report was undertaken for the site owner (Mr Needham) and as such should not be entrusted to any third party without written permission. This report has been compiled from a variety of sources, within the time constraints of the program, which we believe to be trustworthy.

The findings and opinions provided in this document are made in good faith and are based on data provided by third parties (*Groundsure, Environment Agency, The Coal Authority, and Regulatory Bodies*). The accuracy of map extracts cannot be guaranteed, and it should be recognised that different conditions on /adjacent to the site may have existed between and subsequent to the various mapsurveys.

This report is prepared and written in the context of the purposes stated above and should not be used in a different context. Furthermore, new information, improved practices and legislation may necessitate an alteration to this report in whole or in part after its submission. The report should be read in its entirety, including all associated drawings and appendices. *Earth-Tech Consulting Ltd* cannot be held responsible for any misinterpretations arising from the use of extracts that are taken out of context.

2.0 SOURCES OF INFORMATION

2.1 Geology

Information on the geology of the site was obtained from the following sources published by the British Geological Survey (BGS) and others:

- Coal Mining Consultants Report Ref: 51003452028001 (see Appendix A)
- Abandonment plans – NE1037 ‘Woolley/Redbrook Colliery’, NE158 (6 of 11) ‘Woolley Barnsley and North Gawber’ Rationalised plans – 44 3210 and 44 3209.
- County Geological Sheet Yorkshire 262SE (1932), British Geological Survey England and Wales Sheet 87 Barnsley (2008)
- The BGS digital geology map, which utilises the most up to date names for geological units (www.bgs.ac.uk/data).

- The BGS Lexicon of Named Rock Units, which provides typical descriptions for most geological units (www.bgs.ac.uk/lexicon).
- BGS National Geoscience Data Centre collection of onshore scanned boreholes, shafts and well records – specifically boreholes: SE30NW547, SE30NW9/C and SE30NW9/A.

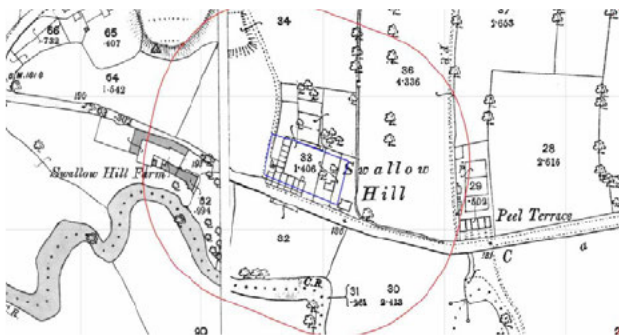
The published geological information shows superficial strata present at the site and the solid geology is shown to be of the Pennine Middle Coal Measures Formation. This formation is sedimentary in origin and comprises an interbedded sequence of sandstones, siltstones, and mudstones, with subordinate beds of ironstone, coal and seat-earths.

Superficial: Medium sandy loam TOPSOILS over intermittent layers of ‘*brown, soft to firm, sandy, silty CLAY*’ (GLACIOLACUSTRINE DEPOSITS). No *Made Ground* is identified beneath the study area by research and/or observation.

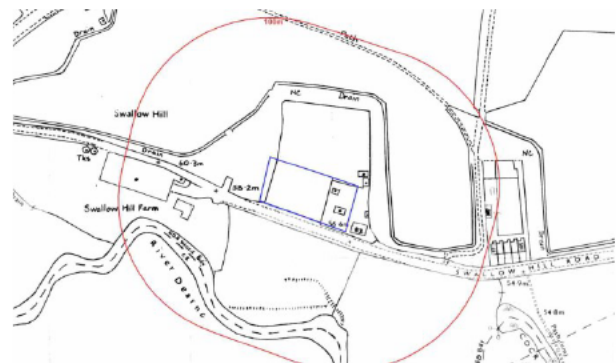
Solid geology: Predominantly a rough sandstone and millstone grit formation, and the *Pennine Middle Coal Measures Formation (PMCM-MDSS)* of the Langsettian Sub-age, which is a mixture of mudstone, siltstone and sandstone containing coal measures and marine fossils. The sandstone within the area may have historically been quarried in locations off-site, and the location is well known to be dominated by historic coal mining activity in all directions. Possible presence of Rough Stone Sandstone and Millstone Grit, Mudstone, Siltstone and Sandstone.

2.2 Historical Mapping

A full suite of historical maps is provided in the appendices to the *Phase I Preliminary Contaminated Land* risk assessment (Ref: TH/Swallow/PHASE1/01/Sep2024) dated 25th September 2024. The historical maps show that the overall development site is rural and vacant land, but there were other structures (terraced cottages) present on the field site in the past, which were subsequently demolished in or around 1962:



County Series: 1892-1893 Map (1:2,500 scale)



National Grid Series: 1963 Map (1:2,500 scale)

Summary of ON-SITE Features

Dates	Features (within 250m)	Distance	Direction
1892-1962	Terraced Cottages present	On site	All
1962-present	Agricultural Land / Fields in all directions		

Summary of OFF-SITE Features

Dates	Features (within 250m)	Distance	Direction
1892-present	Swallow Hill Farm	<500m	West
1892-present	River Dearne	>500m	South

Originally, the villages of Staincross and Mapplewell were known for nail making, but the surrounding area has also experienced a considerable amount of coal mining: numerous former collieries are located in the wider district, the most notable being the North Gawber Colliery which emerged at a time coalmining was fast developing, and when the nail making industry was on the decline. This created an almost continuous flow of incomers to work in the coal industry arriving from places such as Staffordshire, Wales, Lancashire and Derbyshire.

North Gawber Colliery was the biggest privately owned mine in the district, after it was sunk into the Barnsley Coal Seam from 1850 to 1852 by the *Thorp Family* of Gawber Hall. Some years later it was taken over by *Fountain & Burnley* (who also owned Woolley Colliery) and by 1882, with its associated coke ovens, this site dominated the eastern side of the village. There was a notable mine disaster in 1935 when 19 men were killed following an explosion in the *Lidgett Coal Seam*, and during heroic rescue operations an anxious crowd of 4,000 assembled at the pithead. After a short association with Woolley, North Gawber Colliery closed at the end of 1987.

2.3 Coal Mining Reports

The following information has been obtained from the Coal Authority (CA).

- As part of the preparation of this report a Consultant Coal Mining Report (Ref: 51003452028001) was obtained which gives more detail than the Con29 residential report.
- The Coal Authority online interactive map was also reviewed.
<http://mapapps2.bgs.ac.uk/coalauthority/home.html>

The Coal Authority report is appended and should be read in conjunction with this Risk Assessment. The pertinent points of the Coal Authority reports are summarised below:

Coal Authority Interactive Map

The Coal Authority interactive map shows the site to lie in a Development High Risk Area and an area of historical coal mining activity.

Consultant Coal Mining Report

The mining report indicates that there are known workings present beneath the property itself:

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
DARTON	BARNSELY	Coal	64PO	35	Beneath Property	1.8	South-East	270	1898
WOOLLEY	FENTON	Coal	64PU	227	North-East	5.3	South-East	195	1984
WOOLLEY	FENTON	Coal	64OV	227	West	5.6	South-East	176	1978

Probable Unrecorded Shallow Workings

- The Consultant Coal Mining Report indicates that there are no probable unrecorded shallow workings beneath the site.
- The report indicates that there are no recorded spine roadways present at shallow depth beneath the site.

Mine Entries

- There are mine entries recorded within 100m of the site.

Entry type	Reference	Grid reference	Treatment description	Mineral	Conveyancing details
Shaft	432409-024	432508 409122		Coal	
Shaft	432409-042	432500 409135	was found filled and subsequently drilled and grouted to full depth and capped with a 250mm thick reinforced concrete cap at 1.0m below ground level by the Coal Authority in July 2006. The cap incorporates a 225mm diameter monitoring pipe covered with a heavy duty manhole cover.	Coal	

Outcrops

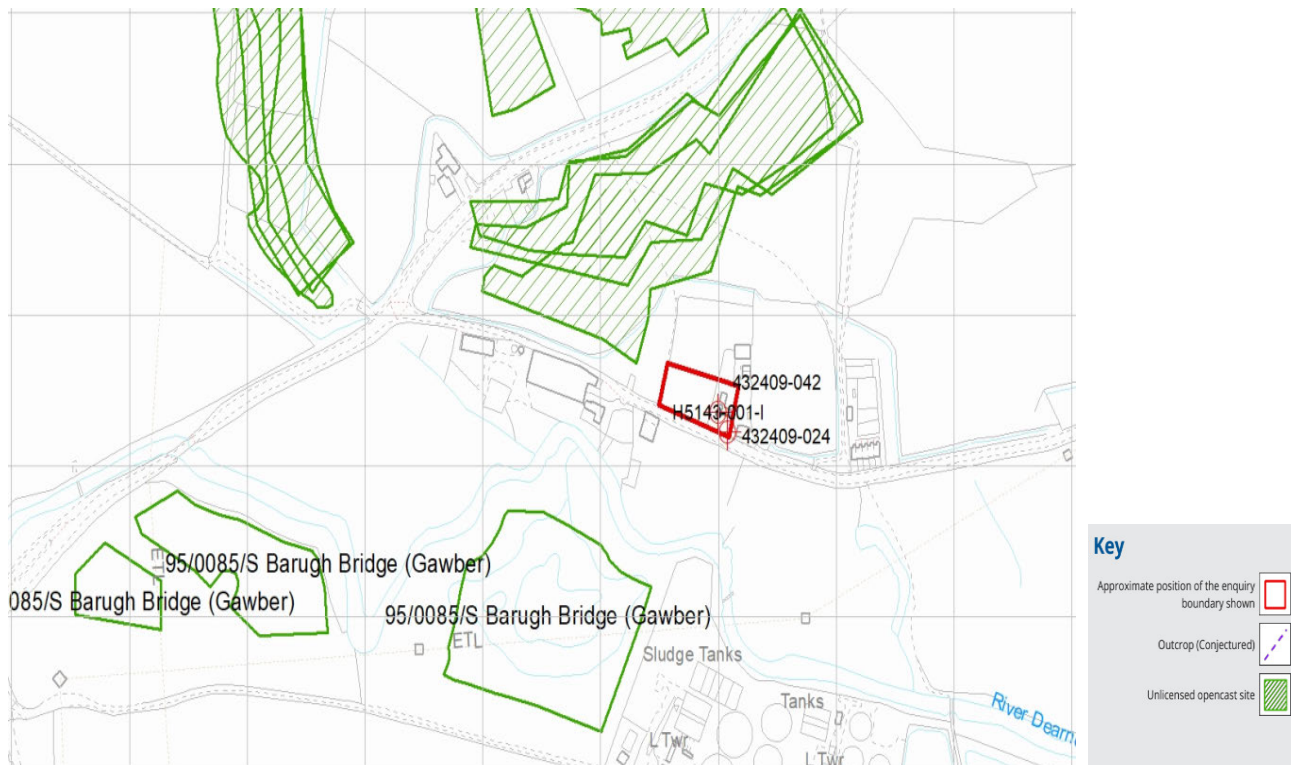
- The report indicates no outcrops recorded.

Geological Faults, Fissures and Break-lines

- No faults, fissures or break-lines are recorded beneath the site.

Opencast Mines

There are no recorded opencast mines on site. Local knowledge indicates there are historical unlicensed opencast sites located in all directions of the site, and the Consultant Coal Report also shows in the summary of findings map that the surrounding area has been heavily mined by opencast processes, the nearest lies immediately adjacent and to the north and north-west of the site.



3.0 IDENTIFICATION OF SITE-SPECIFIC COAL MINING RISKS

3.1 Risk Assessment Methodology

Hazard (H) is something with a potential to cause *harm*.
Severity (S) is the *magnitude* of the harm the hazard could cause.
Probability (P) is the *likelihood* the hazard will occur.
Risk (R) is the likelihood of the hazard (x) the severity of the harm it could cause.

$$\text{Risk Rating (RR)} = \text{Severity (S)} \times \text{Probability (P)}$$

Probability (P)

Probability of Risk	1. Remote 2. Possible 3. Probable	Unlikely but conceivable May occur, could well occur May occur several times, occurs frequently
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Severity (S)

1. Negligible	Human Health: no chance of injury Environment: no chance of harm to the environment Project: no impact on construction works
2. Minor	Human Health: minor harm with short term effects Environment: nuisance and minor disturbance to flora and fauna Project: minor changes required to achieve construction objectives with low costs and/or delivery implications
3. Moderate	Human Health: major injury or disability or ill-health with long term effects Environment: potentially fatal to flora and fauna for days / weeks Project: major changes required to achieve construction objectives with significant costs and/or delivery implications
4. Severe	Human Health: permanent disability / death Environment: detrimental to local eco-systems for months / years Project: catastrophic impact on construction objectives

Risk Rating (RR)

PROBABILITY	MINOR	SEVERE	EXTREME
Remote	1	2	3
Possible	2	4	6
Probable	3	6	9

1	VERY LOW	Risk is negligible – no action required
1-2	LOW	Risk is controlled as far as is reasonably practicable, no further control measures necessary
3-4	MODERATE	Risk should be evaluated and controlled as far as is reasonably practicable
6-9	HIGH	Hazard should be avoided – Ground remedial measures required

3.2 Discussion of Potential Risks

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:

3.2.1 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 CA Coal Mining Consultants report in Appendix A shows that the development site is **NOT** in an area of **recorded** shallow coal mine workings.
- The report indicates that the site is underlain by, or is in proximity to, workings in three seams of coal at between 35m and 227m b.g.l.

The shallowest of these is the **Barnsley Coal Seam** (also referred to as the *Gawber Seam*) recorded to have been worked beneath the development area at c.35m b.g.l with an extraction thickness of 270cm and last worked in 1898. This accords generally with other archive records [Earth Tech] that show the *Barnsley Seam* at a depth of c.77m b.g.l with an extraction thickness of 332cm situated approx. 1km to the east of the subject site, towards the former Gawber Colliery, understood to have been last worked in 1861. Further, rationalised sheet **44 3210 NY210K** (*Barnsley Seam*) indicates workings across the wider locality and the date is consistent with the CA Consultant's report, along with the estimates of the section thickness ranging from 270cm to 332cm, as indicated for the majority of the plan.

A review of abandonment plans (and from our own knowledge) the workings in proximity to the site are likely to have been pillar and stall workings, but levels are not recorded accurately. This is supported in the CA report, which confirms that the site is within an area where **a notice to withdraw support was issued in 1979**. We are also aware that, in this location, there are often two sections shown for the *Barnsley Seam* - an upper (softs) and lower (hards) set of coal horizons - separated in both sections by a clay/dirt horizon, with total seam thickness (including clay/dirt bands) of 299cm to 332cm, corresponding broadly with the thickness indicated in the CA Consultants' Report.

Rationalised sheet **44 3209 NY210K** (*Barnsley Seam*) captures the extent of workings up towards workings in Mapplewell Colliery/North Gawber Colliery at a depth of c.77m b.g.l. At a dip rate of 1.8° in a south-east direction, based on seam contours, the *Barnsley Seam* can be estimated to be present at approximately 50m depth beneath the subject site.

- **Based on the likely depth of workings in the Barnsley Seam the risk to the proposed development of RECORDED WORKINGS is assessed as being LOW.**
- **Any subsidence associated with the notice to withdraw support in 1979 is likely to have ceased.**

3.2.2 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 Coal Mining Consultants report in Appendix A shows that the development site is in **NOT** in an area of probable shallow coal mine workings. However, from local knowledge [and from CA records] several other coal seams

are known to be present in proximity to the site. These are identified by virtue of the opencast sites located immediately to the north and north-west of the subject site - being coal seams sufficiently close to the surface to warrant extraction - and dipping at approx. 1.8° in a south-east direction. The British Geological Survey (BGS) England and *Wales Sheet 87 Barnsley (2008)* sheet includes a *Generalised Vertical Section (GVS)*, and identifies the following coal seams and gives the indicative seam thicknesses for coal located between the *Kent's Thin* coal and *Barnsley Coal*:

- Kent's Thin (0-1.9m),
- Kent's Thick/Mapplewell (0.3-2.6m),
- Thin unnamed coal [Barnsley Rider Coal] (0-0.7m),
- Thin unnamed coal [Warren House Coal] (0-0.1m),
- Barnsley Coal (0-3.9m).

BGS borehole records SE30NW9/C and SE30NW9/A located approximately 1000m north-east of site, towards the North Gawber shafts, indicate local seam separations between the *Kent's Thin*, *Kent's Thick/Mapplewell*, *Barnsley Rider* and *Barnsley* seams of 21.54m, 40.38m and 25.7m, respectively. These separations are significantly greater than those estimated from the indicative dip rates referenced above, but these separations can reduce considerably in transition. Abandonment plan NE1037 for local workings in the *Kent's Thick* seam records a 23.3m separation between *Kent's Thin* and *Kent's Thick* from borehole BH-U1, however it is not clear where this borehole is located. A section of the *Kent's Thick* seam on this plan shows coal 0.15m, seat earth 0.46m, coal 1.07m and seat earth of unknown thickness (total thickness of 1.68m excluding a lower seat earth horizon).

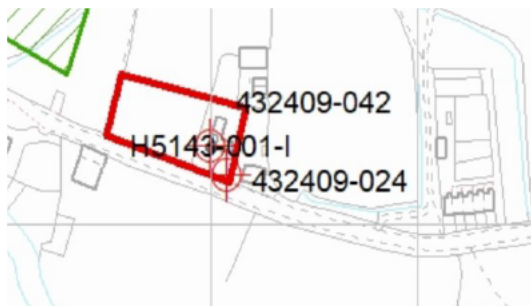
The rationalised plans NY190K and NY180K indicate the *Kent's Thick* and *Kent's Thin* coal seams to have local extraction thicknesses of 89cm and 61cm respectively and the BGS records for the North Gawber shafts mentioned above indicate the *Kent's Thin*, *Kent's Thick* and *Barnsley Rider* seams to have thicknesses of 0.61m-0.76m, 0.99m-2.38m and 0.46m, respectively - all of which are workable, if present beneath the subject site.

Based on the indicative seam separations mentioned above and projections through the landscape towards the site, it is likely the *Kent's Thin* and *Kent's Thick* coal seams are not present, but it is possible the **BARNSELY RIDER COAL** lies within 30m depth beneath the site, and it is feasible that insufficient competent cover may exist above the seam, if the seam extraction thickness is at the greater end of the figures indicated and if the seam separation(s) noted above are at the lesser end of the figures indicated.

- Based on the likely depth of workings in the Barnsley Rider Seam (and other unnamed coal) the risk to the proposed development of UNRECORDED WORKINGS is assessed as being MEDIUM.
- The competency of overlying seams should therefore be proven through intrusive ground investigation (boreholes to min. 30m depth).

3.2.3 Mine entries (shafts and adits)

The Coal Authority Coal Mining Consultants report in Appendix A shows mine entries are recorded within 150m of the development site:



No records are available for **Mine Shaft 432409-024** [E432508 N409122]. **Mine Shaft 432409-042** [E432500 N409135] is filled and was drilled and grouted to full depth and capped with a 250mm thick reinforced concrete cap at 1.0m b.g.l. by the Coal Authority in July 2006.

- Based on the recorded position of the shafts, the risk to the proposed development of Mine Entries is assessed as being **LOW to MEDIUM**.
- 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 the potential risk and a watching brief should be maintained during site works.

3.2.4 Coal mining geology (Faults and fissures)

The development site sits upon the Pennine Middle Coal Measures Formation. The closest BGS borehole to the site, SE30NW547, located approximately 500m north of the site, records 10ft 8in (3.25m) of topsoil and clay; however local ground deposits may vary.

- No faults, fissures or break lines are known to affect the development site.

3.2.5 Record of past mine gas emissions or potential

There are no recorded past gas emissions noted 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. **The Barnsley seam is known to be liable to spontaneous combustion.**

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.

- The risk to the proposed development of Mine Gas Emission is assessed as being **LOW**.
- Nonetheless, based on the information collated in this CMRA the intrusive site investigation should be accompanied by a proportionate phase of **GROUND GAS MONITORING**

3.2.6 Recorded coal mining surface hazard

- None recorded.

3.2.7 Surface mining (opencast workings)

The Coal Authority Coal Mining Consultants report in Appendix A indicates extensive areas of opencast extraction immediately adjacent and surrounding the site.

These sites are recorded on rationalised plan 44 3209 (Opencast Workings) and are annotated as 'North Gawber Colliery Sites'. The rationalised plan indicates that these sites and others locally have been sourced from an Opencast Executive Consultation Plan.

This plan has been reviewed and whilst the site boundaries are recorded and coal is recorded to have been worked from them, no further information or source plans are given.

- Due to the nature of the application (i.e. a small-scale single dwelling house) the risk to the proposed development of Surface Mining is assessed as being LOW.

3.2.8 Groundwater

The Pennine Coal Measures rocks constitutes a multi-layered aquifer in which the thick, massive grit and sandstone horizons effectively act as separate aquifers with the intervening mudstones and mudstones acting as aquicludes or aquitards, although faulting may locally juxtapose them into hydraulic connection. Groundwater storage and movement in the well-cemented grits and sandstones is predominantly through fractures and joints with only minor contributions from the rock matrix.

Little or no water is normally obtainable from mudstone horizons although small quantities may be present in thin interbedded sandstones. Groundwater potential of the main water-bearing horizons is very variable, and some horizons may only be of local importance. Yields are in consequence highly variable even over short distances. Initial yields are not however always sustainable, sometimes declining with time as storage is depleted by pumping. Abundant springs are frequently located at junctions between sandstone and mudstone horizons.

3.2.9 Summary

The table below summarises the potential risks associated with coal mining legacy for the proposed development site, identified from the sources of information in Section 2 of this report. Other than coal mining legacy risk, a detailed check of the Geo-insight Report confirms that the site is unaffected by Natural Cavities; Gypsum Extraction; Tin Mining; Brine Extraction, and/or Clay Mining.

TABLE 3: SUMMARY OF POTENTIAL COAL MINING LEGACY RISKS				
Coal Mining Issues	Yes	No	Risk Assessment	
			Risk Rating	Comment
Underground coal mining (recorded at shallow depths)		✓	1-2 LOW	None recorded
Underground coal mining (possible shallow depths)	✓		3-4 MODERATE	Probable unrecorded shallow workings in the BARNSELY RIDER coal (and possibly Kent's Thin and Kent's Thick/Mapplewell seams)
Mine entries (shafts or adits)	✓		3-4 MODERATE	Shaft 432409-024 & Shaft 432409-042 within 150m of the subject site.
Coal mining geology (fissures)	✓		1-2 LOW	None recorded
Record of past mine gas emissions		✓	3-4 MODERATE	The Barnsley seam is known to be liable to spontaneous combustion. All mine workings pose a potential gas risk which should be considered in any future investigations and development
Record of coal mining surface hazard		✓	1-2 LOW	None recorded
Surface mining (opencast workings)		✓	1-2 LOW	Opencast extraction areas close to site boundaries but development proposals are small-scale for a single dwelling house

4.0 PROPOSED MITIGATION STRATEGY

4.1 Mitigation Strategy

It is recommended that the following measures be undertaken to mitigate against the risks posed to the site identified in Sections 2 and 3 of this report:

- a. It has been identified that there is a **MEDIUM** risk associated with the development from unrecorded shallow mine workings. Coal seams may underlie the site at a depth of <20m - the estimated depth is based on dips from coal seams at greater depth.
- b. The proposed development is a new build replacement dwelling house. It is therefore recommended that a suitable scheme of intrusive investigation involving a **minimum of 2No. rotary boreholes / probe holes** be undertaken to better quantify the risk, along with a series of trial holes to identify the near surface geology.
- c. Drilling of these boreholes /probe-holes would be to confirm the depth of the coal seams underlying the site. Assuming the coal is at a depth of approximately 20m it is recommended that at least **1No. borehole is drilled to 30m**, especially if coal is not encountered, to confirm the stratigraphy.
- d. In the unlikely event that a risk of instability is proved, then a suitable treatment solution involving the injection of cement/pfa grout into the shallow workings will be required to infill the potential voids and increase the stability of the ground.

Mine Entries [Shaft 432409-024 & Shaft 432409-042] are recorded within 150m of the subject site. Whilst the existence of potentially unstable unrecorded mine entries (shafts) is unlikely within the site boundary, this cannot entirely be discounted. **Construction works should proceed cautiously recognising that unstable mine entries could be present.**

Should any anomalous ground conditions be encountered during the course of the development works then further advice should be sought from **Earth-Tech Consulting** regarding further investigation and remedial works.

4.2 Coal Authority Permitting

Prior written permission 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: <https://www.gov.uk/get-a-permit-to-deal-with-a-coal-mine-on-your-property> . Any application for a Coal Authority Permit will require a **Method Statement** and **Risk Assessment** for the drilling works.

Testimony of Independence

I confirm that under para. 2.E.2 of Appendix 2E of *Planning Policy Guidance Note 14 (PPG14) – Development on Unstable Land, DoE, 1990* I am suitably qualified to make these statements, and I understand that my overriding duty is to present independent and impartial expert analysis, and I believe I have complied with that duty. The facts I have stated in this report are true and the opinions I have expressed are correct and they are entirely my own, based upon the evidence I have been shown and my own observations.

Signed



.....
Tim Hyett LLM MSc CEng MIEI CGeol FGS MCIQB
Chartered Consultant Engineering Geologist
Earth-Tech Consulting Ltd
27th September 2024

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Appendix A Coal Authority Consultants Report



The Coal
Authority

Consultants Coal Mining Report

81, Swallow Hill Road, Low Barugh,
Barnsley, S75 1ly
South Yorkshire

Date of enquiry: 24 September 2024
Date enquiry received: 24 September 2024
Issue date: 24 September 2024

Our reference: 51003452028001
Your reference: GS-UO3-Z7E-2QK-K87



Consultants Coal Mining Report

This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

GROUNDSURE LIMITED

Enquiry address

81, Swallow Hill Road, Low Barugh, Barnsley, S75 1LY
South Yorkshire

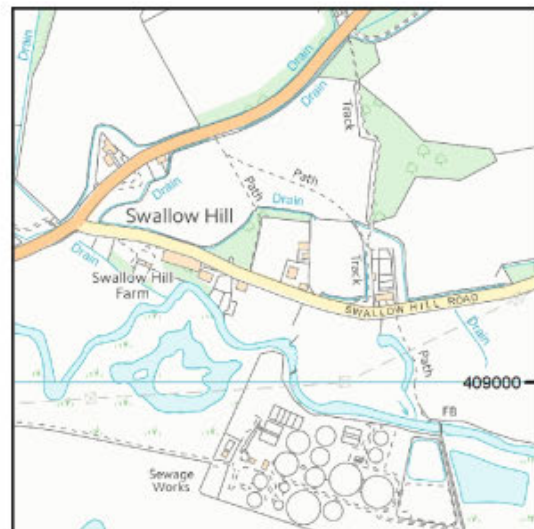
How to contact us

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Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

 @coalauthority
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 /thecoalauthority



Approximate position of property



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Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
DARTON	BARNSELEY	Coal	64PO	35	Beneath Property	1.8	South-East	270	1898
WOOLLEY	FENTON	Coal	64PU	227	North-East	5.3	South-East	195	1984
WOOLLEY	FENTON	Coal	64OV	227	West	5.6	South-East	176	1978

Probable unrecorded shallow workings

None.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

Entry type	Reference	Grid reference	Treatment description	Mineral	Conveyancing details
Shaft	432409-024	432508 409122		Coal	
Shaft	432409-042	432500 409135	was found filled and subsequently drilled and grouted to full depth and capped with a 250mm thick reinforced concrete cap at 1.0m below ground level by the Coal Authority in July 2006. The cap incorporates a 225mm diameter monitoring pipe covered with a heavy duty manhole cover.	Coal	

Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

M109	SY11	NE863
16345	BE28	18191
NE695	16485	5692

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

No outcrops recorded.

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

Please refer to the "Summary of findings" map (on separate sheet) for details of any opencast areas within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations

None recorded within 50 metres of the enquiry boundary.

Remediated sites

Distance to site remediation (m)	Direction
Within	N/A

See Section 4 for further information.

Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas

None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

Section 3 – Licensing and future mining activity

Future underground mining

None recorded.

Coal mining licensing

Status	Licence type	Distance (m)	Direction
Past	Opencast	104.9	South-West

See Section 4 for further information.

Court orders

None recorded.

Section 46 notices

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices

The property is in an area where a notice to withdraw support was given in 1979.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land

The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Section 4 – Further information

The following potential risks have been identified and as part of your risk assessment should be investigated further.

Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority.

MINE GAS: Please note, if there are no recorded instances of mine gas within 500m of the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

Remediated sites

The site is within an area of previous interest. It is close to where the Coal Authority has investigated and where necessary remediated mine entries and/or shallow coal mine workings following specific reported hazards.

The site requires further investigation and may influence your risk assessment. We recommend that you order the Coal Authority **Surface Hazards Incident Report**, which will include more information about the hazard.

Coal mining licensing

The report has highlighted that the site is close to a Coal Authority license area for coal mining operations. Please contact us if you require further information.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk**.

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

Opencast mines

Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips

Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations

Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites

Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence

Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas

Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission. Please note, if there are no recorded instances of mine gas reported, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded.

Mine water treatment schemes

Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining

Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing

Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders

Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices

Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices

Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land

Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

Summary of findings

The map highlights any specific surface or subsurface features within or near to the boundary of the site.

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