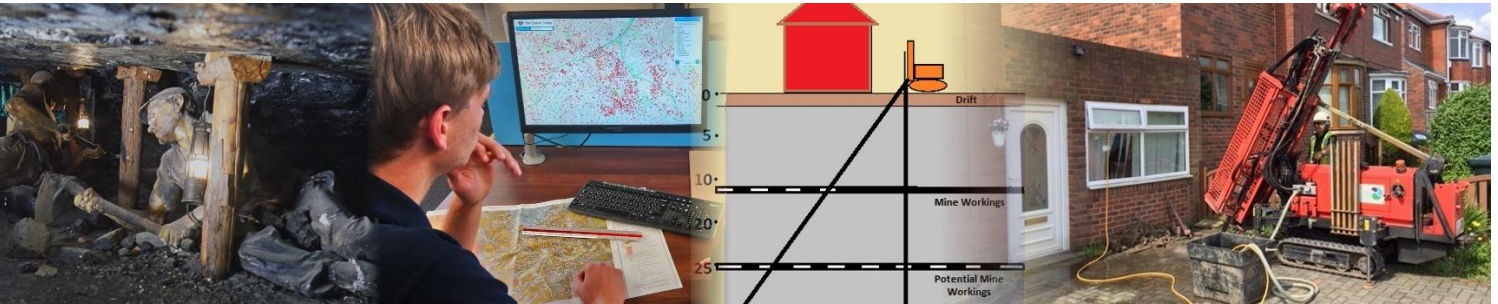




GEOLOGICAL
 GEOTECHNICAL
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 CONSULTANCY
 DRILLING & DATA ACQUISITION



GEOINVESTIGATE LIMITED

Coal Mining Risk Assessment (CMRA)

LOCATION	Land to the rear of 4a Cliff Lane Brierley, Barnsley, S72 9HR
ISSUE DATE	31 January 2022
FOR	Dave Connor
CLIENT REF.	
OUR REF.	G22016

Prepared by

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 Geo-environmental Engineer

Checked by

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 Senior Geo-environmental Engineer

SUMMARY FINDINGS

OUTCOME MITIGATION REQUIRED

Yes. This CMRA has indicated that owing to historical coal opencast activity the area within the site of the proposed residential conversion of the existing barn is not impacted by shallow mine working in the Brierly Coal (BY) seam.

In our opinion the client needs to purchase opencast mining plans from the CA confirming that the site has been subject to opencast activity and the depth of coal extraction.

It is our recommendation that intrusive site investigation is carried out to establish the strength of the made-up ground below the proposed residential development and that hazardous ground gases are absent within this deposit.

In this instance longer term gas monitoring may be required in specially installed gas wells to establish the characteristic gas situation at the property and to assess what (if any) level of gas mitigation is required.

Limited soil contamination testing is likely to be required also.

Deeper drilling investigation will be required if doubt remains about whether coal seam and shallow mine working remains below the western end of the site and the residential development.

A CA permit may be required ahead of the intrusive site investigation works.

Notwithstanding, on the basis of the CMRA work to date, we are of the opinion that the mining stability and mine gas risks posed by the strata beneath this site from coal mining legacy can be mitigated by routinely adopted measures and should not preclude planning permission being registered with regard to coal mining legacy issues.

In conclusion we see no reason why Planning Permission should not be granted in the interim with respect to coal mining legacy issues and that these works form a condition on the planning approval.

WHAT TO DO NEXT

Obtain quotes for the intrusive site investigation works. The cost of the SI works should be a **"lump sum" fixed price**. Geoinvestigate can provide advice and assistance with helping you find suitable site investigation & drilling contractors. Call us on 01642 713779 or email enquiries@geoinvestigate.co.uk.

1. CMRA INTRODUCTION

Site Location and Description:

The approximate centre of this site is at National Grid Reference E440669, N411100 with elevation about 107m AOD. The boundary shown RED on the Coal Authority (CA) report provided in Appendix A corresponds with the planning application area. The site is located within an area of residential housing to the rear of 4a Cliff Lane, Brierley, Barnsley.

A site image is presented in Appendix B.

Google Satellite and Street View imagery shows the site is currently a plot of agricultural land with access from Cliff Lane to the east. The site sits on a gradual slope falling to the west and rising to the east. The site currently contains a large agricultural shed, which is anticipated to be converted into 2 residential dwellings (Plots 1 & 2). Site location and layout plans are provided in Appendix B.

The OS map record dating back to 1854 shows the site as an area of undeveloped land/farmland at this early. Brierley Sandstone Quarry and Shafton Colliery are present to the west. The map of 1947 records Brierly Pit/Colliery to the southeast of the development area becoming disused by the 1950s.

The limited OS map review carried out for this CMRA provides no evidence that the site itself has been subject to sand, clay or gravel pitting, stone quarrying or surface mining activity though quarrying, and mining activity has occurred in the surrounding area.

No reference to opencast/surface open pit coal mining extraction was found in the OS map record though the CA report identifies the presence of unlicensed opencast site within the property.

Description & Layout of Proposed Development: It is proposed to convert an existing barn/shed within the property into 2 residential dwellings. Site location and layout plans are provided in Appendix C.

Risk Methodology Applied: This document and the risk assessment methodology adopted herein is based on CA publication RISK BASED APPROACH TO DEVELOPMENT MANAGEMENT - GUIDANCE FOR DEVELOPERS Version 3, 2014 and Version 4 - 2017. The template contained therein is adopted with minor amendments made by Geoinvestigate Limited.

2. ASSESSMENT OF SITE SPECIFIC COAL MINING ISSUES

The table below summarises the potential risks associated with coal mining legacy for the proposed development site, identified from list sources of information.

Note: For those coal mining issues above identified as "Yes" or highlighted "YELLOW" a more detailed discussion and assessment are made of the risks to the application site and the proposed development.

Coal Mining Issues	Yes	No	Risk Assessment/Remarks
Past underground coal mining	Yes		2.1.1
Probable unrecorded shallow workings	Yes		2.1.2
Spine roadways at shallow depth		No	
Mine entries		No	
Outcrop	Yes		2.2.3
Geological faults, fissures and breaklines		No	
Opencast Mines	Yes		2.1.3
Coal Mining Subsidence		No	
Mine Gas		No	
Site investigations		No	

2.1 DETAILED DISCUSSION & ASSESSMENT RESPONSE

2.1.1 Past Underground Mining

According to the Coal Authority report in Appendix A, 2 levels of past underground mining occur beneath the site at depths of 174m and 646m exhibiting dip of 4.3° and 3.6° NE.

In our opinion, such workings lie too deep to impact surface ground stability within the site.

2.1.2 Probable Unrecorded Shallow Workings

According to the CA report the site falls within an area of probable unrecorded shallow workings. The CA define Probable Unrecorded Shallow Workings as "Areas where the Coal Authority believes there to be unrecorded coal working that exists at or close to the surface" (i.e. less than 30m).

It is our opinion the probable occurrence of unrecorded shallow mine working beneath the site could pose a significant surface ground stability risk to this development and therefore requires further investigation.

2.1.3 Coal Outcrop & Unlicensed Opencast

The location of the site is shown on the extract of BGS geology map included in Appendix C. The tentative elevation of the site relative to the vertical geology column is shown below the map. According to the BGS geology map the site is underlain by the 'Brierley Rock' comprising sandstone of the Pennine Upper Coal Measures Formation including interbedded grey mudstone, siltstone, pale grey sandstone and coal seams.

The CA report identifies outcrop of the Brierley Coal (BY) 48.9m to the west of the site. Projecting this NE towards the site perhaps places this coal and any unrecorded mine working within it at very shallow depth below the property ie < 10m.

On the other hand, the BGS geology map indicates that the BY outcrop pattern has been modified by opencast activity and this coal horizon is absent/extracted beneath the western end of the site where the existing barn is located but remains within shallow depth below the eastern end. Correspondingly restored opencast comprising deep infilled/made-up ground may exist beneath the western end of the property with undisturbed ground below the east.

Therefore, were unrecorded mine working to occur in the BY Coal they would be expected below the eastern end of the site and not below the existing building/proposed residential development at the western end.

The BY Coal has thickness up to 1.30m.

BGS log SE41SW/12 located some 500m to the SE of the site records drift/bedrock depth of 3.20m and similar bedrock depth may be expected below the undisturbed eastern end of the site.

In our opinion the eastern end of the site could be underlain by very shallow unrecorded workings in the Brierley Coal seam (BY) which could pose a significant risk to surface ground stability in this area.

However, the western end of the site where the proposed residential development is located is safe with regard to instability arising from underground mine working because the BY Coal is likely to have been removed from this area by historical open cast activity and replaced with made-up ground/infill.

In our opinion the client needs to purchase opencast mining plans from the CA confirming that the site has been subject to opencast activity and the depth of coal extraction.

The changes in slope shading and contour spacing shown in the LiDAR and BGS mapping information provided in Appendix E indicates that the site has indeed been subject to opencast activity and restoration.

Typically, made-up ground in a restored opencast has been subjected to a degree of compaction and is a lower-level ground gas risk. However, because this is yet to be proven in this instance it is our recommendation that intrusive site investigation is carried out to establish the strength of the ground below the proposed residential development and that hazardous ground gases are absent.

Longer term gas monitoring may be required in specially installed gas wells to establish the characteristic gas situation at the property and to assess what (if any) level of gas mitigation is required.

Intrusive drilling investigation will be required if doubt remains about whether coal seam and shallow mine working exists below the western end of the site and the residential development.

3. SUMMARY AND OUTCOME

This CMRA has indicated that owing to historical opencast activity the proposed residential conversion of the existing barn is not impacted by shallow mine working in the Brierly Coal (BY) seam.

In our opinion the client needs to purchase opencast mining plans from the CA confirming that the site has been subject to opencast activity and the depth of coal extraction.

It is our recommendation that intrusive site investigation is carried out to establish the strength of the made-up ground below the proposed residential development and that hazardous ground gases are absent within this deposit.

In this instance longer term gas monitoring may be required in specially installed gas wells to establish the characteristic gas situation at the property and to assess what (if any) level of gas mitigation is required.

Limited soil contamination testing is likely to be required also.

Intrusive drilling investigation will be required if doubt remains about whether coal seam and shallow mine working remains below the western end of the site and the residential development.

4. MITIGATION STRATEGY PROPOSED AND CONCLUSION

This CMRA has indicated that owing to historical opencast activity the proposed residential conversion of the existing barn is not impacted by shallow mine working in the Brierly Coal (BY) seam.

In our opinion the client needs to purchase opencast mining plans from the CA confirming that the site has been subject to opencast activity and the depth of coal extraction.

It is our recommendation that intrusive site investigation is carried out to establish the strength of the made-up ground below the proposed residential development at the western end of the property and that hazardous ground gases are absent within this deposit.

In this instance longer term gas monitoring may be required in specially installed gas wells to establish the characteristic gas situation at the property and to assess what (if any) level of gas mitigation is required.

Limited soil contamination testing is likely to be required also.

Further deeper drilling investigation will be required if doubt remains about whether coal seam and shallow mine working remains below the western end of the site and the residential development.

A CA permit may be required ahead of the intrusive site investigation works.

Notwithstanding on the basis of the CMRA work to date, we are of the opinion that the mining stability and mine gas risks posed by the strata beneath this site from coal mining legacy can be mitigated by routinely adopted measures and should not preclude planning permission being registered with regard to coal mining legacy issues.

In conclusion we see no reason why Planning Permission should not be granted in the interim with respect to coal mining legacy issues and that these works form a condition on the planning approval.

Appendices:

- A. CA Consultants Coal Mining Report issued 24 January 2022 ref. 51002943677001
- B. Site image
- C. Extracts of BGS Geology Map, Sheet 87-Barnsley at 1:50000 scale
- D. LiDAR and BGS geology mapping information.

APPENDIX A
COAL AUTHORITY REPORT



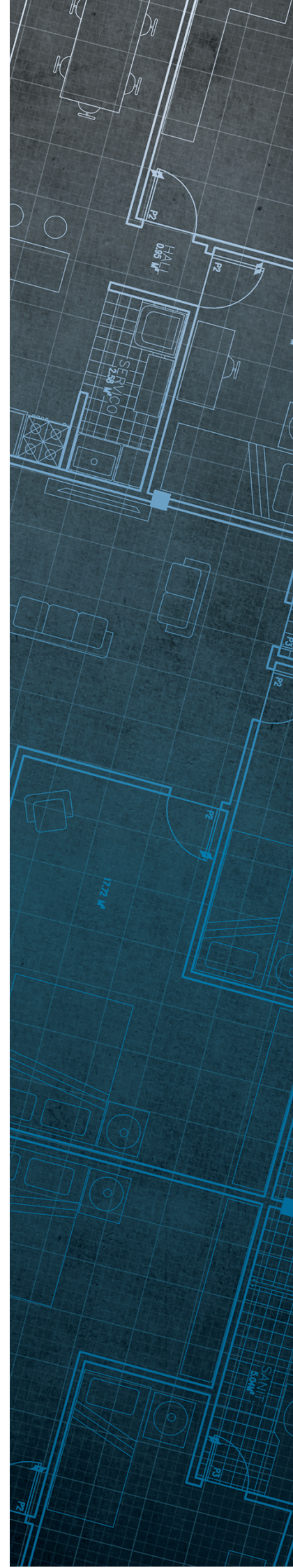
The Coal
Authority

Consultants Coal Mining Report

Land To The Rear Of
4a Cliff Lane
Brierley
Barnsley
S72 9HR

Date of enquiry: 24 January 2022
Date enquiry received: 24 January 2022
Issue date: 24 January 2022

Our reference: 51002943677001
Your reference: G22016



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
unnamed	SHAFTON	Coal	6JH4	174	Beneath Property	4.3	North-East	145	1919
unnamed	SHAFTON	Coal	6JGI	174	South	2.3	East	168	1944
unnamed	BARNSLEY	Coal	6JGX	644	South	3.5	North-East	210	1929
unnamed	LOW BARNSLEY	Coal	6JH8	646	Beneath Property	3.6	North-East	168	1937
unnamed	LOW BARNSLEY	Coal	6JH7	674	North-East	1.5	North-East	168	1932
unnamed	PARKGATE	Coal	6JGY	871	South	3.1	East	102	1954

Probable unrecorded shallow workings

Yes.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers

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

NE411	NE11	M135
16053	NE172	M138
M136	PO0	NE473

Our records show we have more plans than those shown above which could affect the enquiry boundary.

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

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
BRIERLEY COAL	Coal	Yes	48.9	West	344

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

None recorded within 50 metres of the enquiry boundary.

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

None recorded within 200 metres of the enquiry boundary.

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 1983.

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.

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.

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.

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

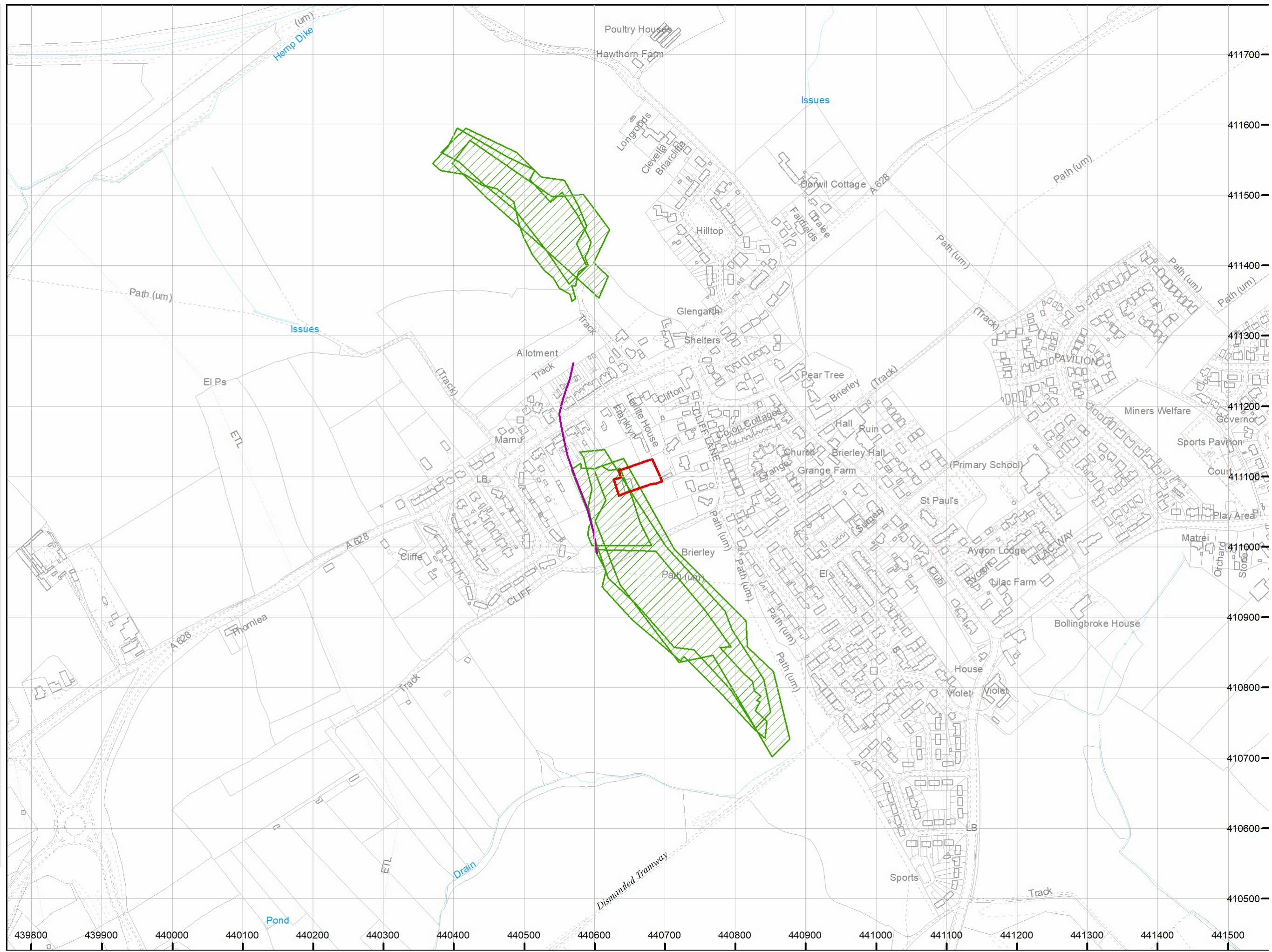
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

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

Key

- Approximate position of the enquiry boundary shown 
- Outcrop (Proven) 
- Unlicensed opencast site 

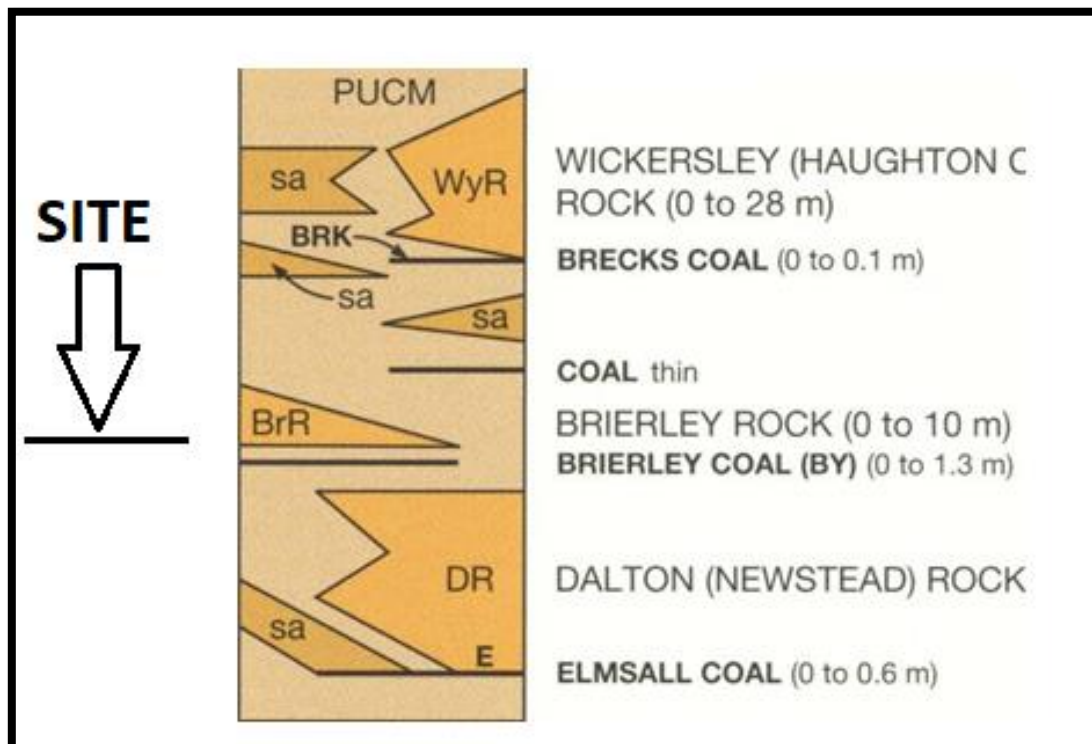
How to contact us
 0345 762 6848 (UK)
 +44 (0)1623 637 000 (International)
 www.groundstability.com



APPENDIX B
SITE IMAGE



APPENDIX D
EXTRACTS OF BGS GEOLOGY MAP



APPENDIX E
LiDAR & BGS GEOLOGY MAP INFORMATION

