

REF: 2534/PMB/MiningRep/mjs

Katy Davies
Katydj2015@gmail.com

22nd June 2021

Dear Katy,

RE: PLAS MOSTYN-BACH: MINING INVESTIGATION

Introduction

Katy Davies (KD) proposes to buy and refurbish an old barn building known as Plas Mostyn-Bach in Minera, near Wrexham.

However, as part of the planning application the Coal Authority (CA) raised concerns regarding the prescence of old shallow mine workings beneath the property. Therefore, KD appointed the CA to undertake a Coal Mining Risk Assessment (CMRA), which concluded there was a possibility of shallow unrecorded mine workings beneath the site, and recommended the depth to the workings be proved by drilling.

Consequently, KD has appointed GroundSolve Ltd (GSL) to undertake a coal mining site investigation prior to purchase of the property and update the CMRA.

This letter report presents the findings of a desk study and site investigation at the site, and gives recommendations to address the mining risk at the site.

Site Location and Description

The site is located in Minera, near Wrexham, at National Grid Reference SJ 280 528, see Figure 1.

It is located in open fields, with existing properties to the east and south and farm buildings to the north of the site.

The site comprises two adjoining buildings, an old masonry, single storey structure that is in poor repair, which used to form the milking parlour for the farm, and an associated farm building immediately north of the barn.

The site is some 20m by 23m in size, and is flat, although immediately west of the site the land slopes off gently in a westerly direction. An aerial photograph of the site is presented below, with photographs of the site presented in Appendix A.



Aerial Photograph

The site is accessed off a narrow lane off the B5102 Minera to Brymbo Road.

Geology

The geology of the site has been researched on the BGS planning study at a scale of 1:25,000, and the 1:10,000 scale geology plan, Sheet SJ 25 SE.

These show bedrock close to surface, with no superficial deposits recorded. The Main and Lower Bench coal seams are shown to have been worked in an opencast to the immediate east of the site. The coal seams below the Main are shown outcropping to the west of the site.

A major fault trending north to south defines the eastern boundary of the opencast site, with its downthrow to the west.

A shaft and an adit were recorded to the west of the site.

History

Examination of the history plans for the site have confirmed the barn had been constructed by 1873.

In addition, no evidence of past mining around the site was identified on the plans.

Shallow Mining

A CMRA by the Coal Authority was obtained by KD. The report is summarised below and presented in full in Appendix B.

- No recorded shallow mining beneath the site,
- Medium risk of possible workings in all seams between the Black Bed and the Premier Coal,
- One mine shaft recorded within 100m,
- No recorded coal mining surface hazard,
- Opencast mine adjacent to the site.

It also records the Quaker coal seam to outcrop within the site boundary and the Main coal to outcrop 2.6m west of the development site boundary.

The report concluded that it would be prudent to prove the depth to the coal seams beneath the site.

KD obtained the opencast mine plan for the site immediately east of Plas Mostyn Bach, which is presented in Appendix C.

The coal seams worked in the opencast, included the following seams in descending order.

- Bottom Droughty,
- Two Yard,
- Two Yard Bench,
- Crank,
- Brassey,
- Black Bed,
- Main,
- Pin (Lower Bench).

However, the seams worked adjacent to the site were the Main and Pin seams.

A section on the plan adjacent to Plas Mostyn Bach was for workings in the Black Bed down to the Pin seam, with a section close to the site recording the following sequence.

Thickness (m)	Strata
0 – 2.60	Soil clay and boulders,
2.60 – 3.81	Black shale,
3.81 – 4.80	Dark Fireclay,
4.80 – 7.74	Grey Sandy Shale,
7.74 – 8.19	Coal (Black Bed),
8.19 – 13.67	Sandy Clay,
13.67 – 16.72	Grey Shale
16.72 – 19.92	Coal (Main),
19.92 – 23.94	Grey Shale,
23.94 – 24.78	Coal (Pin).

The opencast had been completed by 1958, and workings were encountered in the Main and Pin seams, although no workings were encountered in the Black Bed. The Main seam encountered numerous small pillars of coal.

However, at the closest point to the site the base of the excavation was recorded at a depth of 10.36m. It is assumed that this represents the base of the Pin coal seam.

Given the sequence presented above, this would mean that the base of the Main seam was at a depth of 4.86m, with the top of the seam being at 1.66m below ground level.

The location of the outcrop was some 40m from the property, with a Dip of 1 on 7 (8.1°) in an easterly direction recorded on the Main seam. Therefore, the seam would rise some 5.70m between the edge of the opencast and Plas Mostyn Bach, meaning that the Main and Pin seams would have outcropped before reaching the property.

Proposed Development

The only proposal for the site is to refurbish the barn and convert it into a home.

Site Investigation

Three rotary percussive boreholes were drilled to a maximum depth of 30m on the 8th June 2021. The holes were drilled with water flush, and gas was monitored at the drill head, none being recorded.

The boreholes were drilled by Rotary drilling under the full-time supervision of an engineer from GSL.

Prior to drilling permission to investigate was obtained from the Coal Authority, see Appendix D.

The location of the boreholes is presented on Figure 2 with their logs in Appendix E.

Ground Conditions

The ground conditions encountered are summarised in the table below:

BH No	Made Ground (m)	Glacial Till (m)	Sandstone (m)	Mudstone (m)	Comments
1	0.0 – 0.45	0.45 – 3.90	3.90 – 7.00	7.0 – 20.00	No coal, voids or loss of flush
2	0.0 – 0.50	0.50 – 2.60	2.60 – 7.50	7.50 – 20.0	No coal, voids or loss of flush
3	0.0 – 0.55	0.55 – 2.70	2.70 – 7.50	7.50 - 30.0	No coal, voids or loss of flush

The boreholes confirmed the made ground to be a maximum of 0.55m thick.

The underlying glacial till, proved to be 2.60m thick in the opencast, was between 2.60 and 3.90m thick in the boreholes. It was described as, grey, mottled brown, slightly gravelly, slightly sandy clay.

The underlying bedrock comprised sandstone to a depth between 7.0 and 7.50m, which was described as brown, fine to coarse sandstone. This then overlay mudstone to a maximum proven depth of 30m, described as grey mudstone, with bands of sandstone. No groundwater was encountered in the boreholes.

Updated CMRA

The desk study confirmed that the Main and Pin coal seams outcrop to the east of the site.

This was confirmed by the three boreholes drilled around the property, which failed to record any coal seams, voids or loss of flush.

In addition, the boreholes confirmed a maximum rock cover above any seams below the Pin seam of at least 27.30m, including a strong sandstone band. This sandstone band was not recorded on the opencast plans confirming this is part of a sequence below the Pin coal seam.

It can therefore be concluded that there aren't any unrecorded shallow mine workings beneath the development site, and no further investigation or treatment is considered to be necessary.

This report forms part of the licence agreement to satisfy the Coal Authority Permit, and will be provided to the Coal Authority, with the Closure Form presented in Appendix F.

Should you have any queries on this report, please call Mike Scott on 01244 661361.

Yours Sincerely



M J Scott

FIGURES



OS LICENSE No. 100030802

SCALE 1:50,000 @ A4

Figure Title

SITE LOCATION

FIGURE 1



SCALE 1:500 @ A3

Figure Title

Exploratory Hole Locations

FIGURE 2

APPENDIX A

Site Photographs



Photograph 1: Access Road leading to Plas Mostyn Bach



Photograph 2: Main Road passing site



Photograph 3: Access off main road



Photograph 4: Showing access road leading to Plas Mostyn Bach



Photograph 5: Showing access road to north of site and farm building



Photograph 6: Showing north east corner of site



Photograph 7: Southern side of barn



Photograph 8: North east corner of site

APPENDIX B

Coal Mining Risk Assessment

Coal Mining Risk Assessment

For development at: The Old Barn, Plas Mostyn Bach, Minera Road,
Minera, Wrexham, LL11 3AJ

For proposal: Conversion of redundant farm building into residential
dwelling, demolition of structures and landscaping

Assessment Summary

Assessment Result	MEDIUM RISK
Recommended Further Work	INTRUSIVE GROUND INVESTIGATION

The Coal Authority works to resolve the impacts of mining by growing its expertise, innovation, organisational capability and efficiency.

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.

Limit of liability

This report is provided for the applicant and is in respect of the property identified on its face. Any conclusions or recommendations made are those based on information obtained for the report and our current knowledge and practices. The information and data set out in this report is based on information provided by or obtained from third parties which is held by the Coal Authority. Any limitations of the data are identified within the report. The Coal Authority does not accept liability for the accuracy of third party data. Should new data or information become available these results, conclusions and recommendations may require amending. The Authority is not and cannot be liable for any harm, loss or damage of whatever nature, including consequential loss, occasioned to any third party by the inaccuracy of the information set out in this report and any person seeking to rely upon it should if necessary undertake their own investigations and professional advice. The report should only be used in the stated context.

Copyright

Copyright in materials supplied reviewed by the Coal Authority. You may not copy or adapt this publication, or provide it to a third party, without first obtaining the Coal Authority's permission. © Coal Authority 2017. All rights reserved.

Maps and diagrams that use topography based on Ordnance Survey mapping contains Ordnance Survey data. © Crown copyright and database right 2011.

Any advice provided in this report does not prejudice our position as a statutory consultee.

Version	Compiled	Checked	Date
1.1	CB	HLB	07 April 2021



b) Description and layout of proposed development

The Coal Authority understands that the developer plans to convert a redundant farm building into residential dwelling including demolition of structures and landscaping (see Appendix A). Whilst a paddock of approximately 1 acre to the east of the site is included within the boundary of this Coal Mining Risk Assessment, it is understood no development is taking place in this area.

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		Abandonment plans – NW350 (Gwern-Y-Gaseg opencast site), 12225 'Plas Mostyn New'
Geological plans	X		OS geological sheet SJ25SE (1996)
BGS Boreholes		X	
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 workings in all seams between the Black Bed and Premier coal
c) Mine entries (shafts and adits)	X		Low risk	One recorded within 100m 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	Spontaneous combustion possible where roof coal has been left. 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	Opencast site recorded adjacent to site boundary, considered unlikely to be of influence

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 and 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 and records the Quaker coal to outcrop within the site boundary and the Main coal to outcrop 2.6m west of the development site boundary, both shown to be orientated approximately N-S with the Consultants Coal Mining Report recording the outcrops to be of a locally workable thickness.

The OS geological sheet SJ25SE (1996) records the following section in the area:

Seam	Thickness	Separation to seam above
Quaker coal	1.75m	NA
Black Bed coal	0.7m	12m
Main coal	3.0m	10.2m
Lower Bench coal	1.0m	9.0m
Crown coal	0.9m	8.7m
Red coal	0.75m	21.0m
Fireclay group coals (in 2/3 leaves)	1.3m	9.4m
Nant coal	Thin	8.0m
Premier coal (in 2 leaves)	0.9m	40.0m

It must be considered that any roadways within these seams may be greater than the height of the seam to facilitate underground access, nominally to a height of 1.5m.

A section located 100m east of the site shown on abandonment plan NW350 (Gwern-Y-Gaseg opencast site) records the Black Bed coal to be 1ft 6in (0.46m) in thickness, the Main coal to be 10ft 6in (3.20m) and the Pin coal 2ft 9in (0.84m) in thickness. It is unclear as to whether the Pin coal is an alternate name for the Lower Bench coal. The plan records extensive workings in both the Main and Pin coal seams to the immediate east of the development site boundary. The plan shows the development site boundary to sit outside of the area requisitioned to be worked by opencast and it is therefore considered likely that these workings may extend beneath the development site boundary. The plan records a separation of 28ft (8.53m) between the Black Bed and Main coal and 13ft 2 in (4.01m) between the Main and Pin coal. The plan also records a depth to the Main coal of approximately 27.9ft (8.5m) adjacent to the sites eastern boundary.

Sheet SJ25SE records the Main coal to outcrop approximately 96m east of the development site boundary with this position thought to be representative of the Main coals position within highwall on the eastern boundary of the Gwern-Y-Gaseg opencast site. The sheet records the Crown coal to outcrop within the site boundary, the Fireclay Group of coals 32m west and the Premier coal seam 89m west.

Abandonment plan 12225 'Plas Mostyn New' records workings in an unspecified coal seam approximately 30m southwest of the property with the plan recording headings in a coal seam shown to be 2ft (0.61m) in thickness. The plan records an easterly direction of seam dip at a rate of 1 in 5.2 (10.88°). A section included on the plan includes a section of strata at a borehole approximately 81m south of the development site, summarised below:

Seam	Thickness	Approximate depth
Coal (deads)	7ft in (2.13m)	18ft (5.49m)
Coal	1ft in (0.30m)	80ft (24.38m)
Coal	2ft in (0.61m)	110ft (33.53m)
Coal	1.5ft in (0.46m)	140ft (42.67m)
Coal	1.5ft in (0.46m)	160ft (48.77m)

It is unclear as to which seams were encountered within this borehole.

Given the recorded outcrop positions it is considered likely that all seams between the Quaker coal and Premier coals may be present beneath the site boundary, with it being possible that the Quaker, Black Bed, Main, Lower Bench and Crown coals may all be at shallow depth beneath the site boundary. Given the recorded dip and the distance to the Fireclay Group coals and Premier coals outcrops these seams may be at 6.2m and 17m below rockhead, respectively, significantly shallower than expected based on the separations seen within the generalised vertical section on the geological sheet.

As the Quaker coal outcrops to the east of the development site within the paddock area not proposed to be developed, it is considered this seam will not influence the development. If the development site boundary is amended then it may be necessary to review the risk posed by this outcrop.

Given the recorded separation between the Main and Crown coal it is unclear as to why both seams are shown to outcrop within/adjacent to the site boundary, although as the Main seam has been extracted to the immediate east of the site boundary it is likely that this seam does outcrop within the development site boundary.

It is therefore considered prudent to prove the sequence of seams beneath the development site boundary, proving the condition and separation between seams and ensuring the presence of sufficient competent cover above coal seams found.

Numerous BGS boreholes are recorded to be present in the vicinity of the site for which the British Geological Survey should hold records. Unfortunately at time of writing it is not possible to access these records due to the Coronavirus pandemic. It is not considered likely that these records will remove the need for intrusive ground investigations to be undertaken, however it may be prudent to review these records, if available, prior to further site works commencing. The site also falls within the boundary of the Plas Mostyn Back opencast prospecting site. These records are also held by the British Geological Survey and may also help inform any intrusive activities at the site.

c) Mine entries (shafts and adits)

The Coal Authority Consultants Coal Mining Report in Appendix B shows one mine entry is recorded within 100m of the development site, with mine shaft 327352-246 being recorded 68.6m southwest of the site.

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 2.64m), plus the entry radius (nominally assumed to be 1.25m unless proven otherwise). On the basis of the above the zone of influence for this entry can be assumed to be a distance of 13.89m from the recorded position detailed above. Based on the distance of

this entry 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, consisting of coal, sandstones, siltstones and mudstones. Section 4 located 100m east of the site shown on abandonment plan NW350 (Gwern-Y-Gaseg opencast site) records surficial deposits consisting of soil clay and boulders with a thickness of 8ft 8in (2.64m) in the local area. As the paddock area has been subject to opencast extraction the depth to rockhead in this area may be significantly deeper.

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

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.

Coal seams in the area are known to be liable to spontaneous combustion where roof coal has been left and precautions should be taken in case of such an incident during all ground works at the site.

f) Recorded coal mining surface hazard

None recorded.

g) Surface mining (opencast workings)

The Coal Authority Consultants Coal Mining Report in Appendix B shows an opencast site to be worked beneath the development site. The area worked is below the paddock area with it being understood no development is taking place in this area. The area being developed is shown to have been worked by opencast to the immediate east, south and north of the site. This site is discussed in section 3b with abandonment plan NW350 (Gwern-Y-Gaseg opencast site) recording the boundary shown within the Consultants Coal Mining Report to represent the site requisitioned boundary. As no workings from this site encroach within the development site boundary it is considered unlikely made

ground/opencast highwall will be present within the site boundary. It is therefore considered that the risk to this development from surface mining is low.

If the development site boundary is amended then it may be necessary to review the risk posed by this site.

Section 4 – Proposed mitigation strategy

a) Site investigation and/or remediation

Due to the potential for unrecorded shallow mine workings in all seams between the Black Bed coal and the Premier coal, an intrusive site investigation will be required.

Local borehole and opencast prospecting records are recorded to be held by the British Geological Survey and it may be prudent to attempt to obtain their findings for review as part of the further site investigations for this proposed development.

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 may have been subject to past coal mining activity, namely the potential presence of unrecorded shallow mine workings in all seams between the Black Bed coal and the Premier coal. 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: 01623 646 333 (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



The Coal
Authority

Consultants Coal Mining Report

The Old Barn
Plas Mostyn Bach
Minera Road
Minera
Wrexham
LL11 3AJ

Date of enquiry: 7 April 2021

Date enquiry received: 7 April 2021

Issue date: 7 April 2021

Our reference: 71007730787001

Your reference:



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

THE COAL AUTHORITY

Enquiry address

The Old Barn
Plas Mostyn Bach
Minera Road
Minera
Wrexham
LL11 3AJ

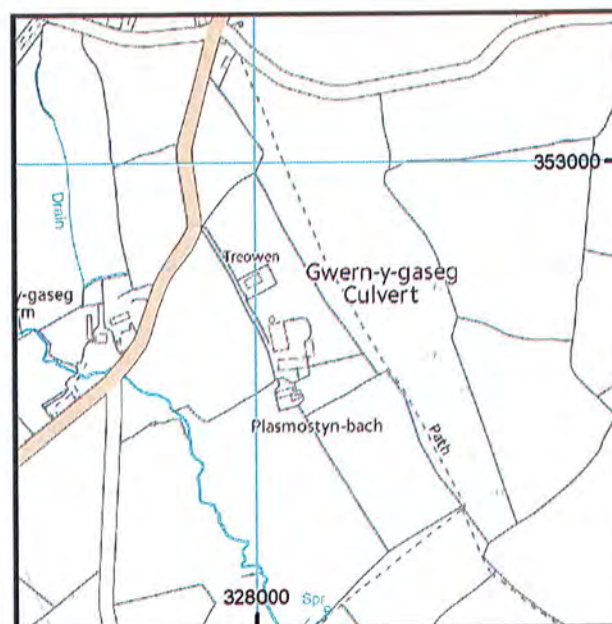
How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

 @coalauthority
 /company/the-coal-authority
 /thecoalauthority
 /thecoalauthority



Approximate position of property



Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2018. All rights reserved.

Ordnance Survey Licence number: 100020315

Section 1 – Mining activity and geology

Past underground mining

No past mining recorded.

Probable unrecorded shallow workings

Yes.

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	327352-246	327975 352726		Coal	

Abandoned mine plan catalogue numbers

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

NW1485	NW1483	NW1425
NW1414	NW1481	NW1439
NW1417	NW1415	NW1416

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
MAIN	Coal	Yes	2.6	West	171
QUAKER	Coal	Yes	Within	N/A	170

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 not in an area where a notice to withdraw support has been given.

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

Based on the responses in this report, no further information has been highlighted.

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.

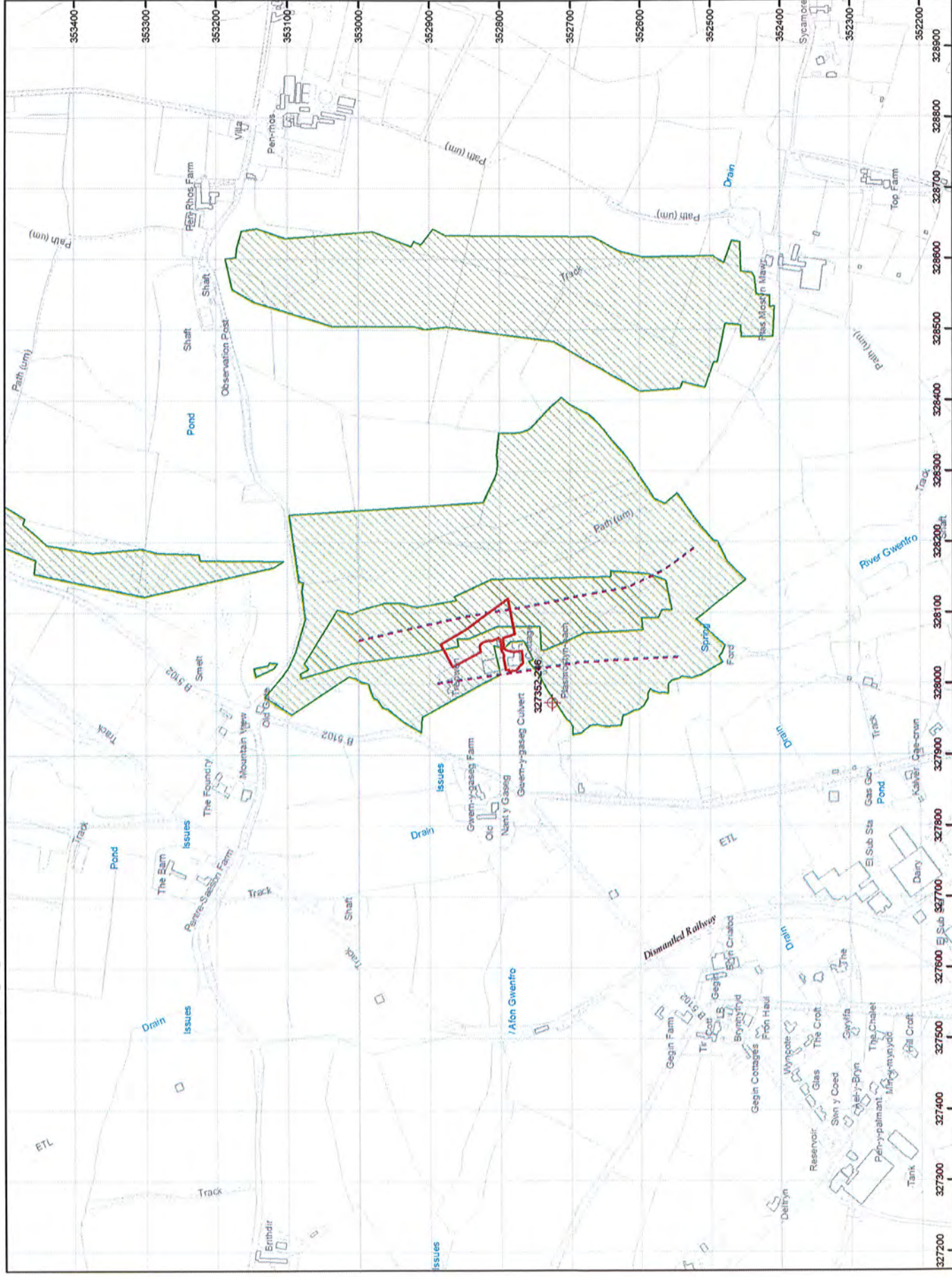
Withdrawal of support notices

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.



APPENDIX C

Opencast mine Plan

NW 350

LEGEND

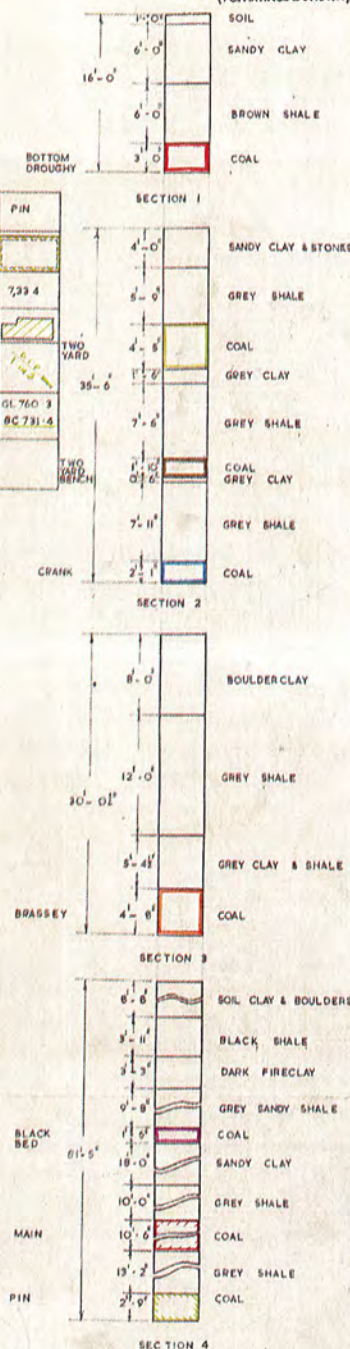
LOCATION

1:2500 SCALE ORDNANCE SHEET REFERENCE XXVIII.1 XXVIII.2
 DATE OF ORDNANCE SHEET 1912
 NAME OF SITE GWERN-Y-GASEG
 LOCATION OF SITE 1/2 MILES S.W. OF RYMBOLD
 COUNTY DENBIGHSHIRE
 PARISH WREXHAM U. & R.O.

VERTICAL SECTION THROUGH ALL SEAMS

VERTICAL SCALE 8 FT TO 1 INCH

SPECIAL REMARKS (PARTINGS & STRATA)



QUANTITIES WORKED

TOTAL AREA REQUISITIONED 61.224 ACRES, SHEWN
 TOTAL AREA WORKED EXCLUDING BATTERS 13.34 ACRES
 TOTAL COAL RECOVERED FROM ABOVE 65,089 TONS

NAMES OF SEAMS WORKED FOR ABOVE TONNAGE (SEAMS NAMED FROM LEFT TO RIGHT IN GEOLOGICAL DESCENDING ORDER)

AREA OF COAL SEAM WORKED COLOUR EDGED (SEAMS COLOURED FROM LEFT TO RIGHT IN GEOLOGICAL DESCENDING ORDER)
 TOTAL OLD WORKING VOIDS IN COAL SEAM IN CUBIC YDS.

AREA OF SEAM WHERE OLD WORKING VOIDS WERE LOCATED

DIP AND DIRECTION OF EACH SEAM SHEWN

REDUCED LEVELS TO ORDNANCE DATUM SHEWN (GROUND LEVEL, BOTTOM OF COAL)

FAULTS SHEWN WITH THROW IN FEET ON DOWNTROW SIDE
 EXCAVATION ONLY SHOWN

GENERAL DESCRIPTION

TYPE OF LAND AGRICULTURAL & WOODLAND

NATURE OF OVERBURDEN

NATURE OF COAL BOTTOM DROUGHTY - MEDIUM QUALITY, ASH CONTENT MEDIUM

SPECIAL REMARKS

OPERATIONAL DATA

DATE REQUISITIONED 17.10.55
 COMMENCEMENT OF COALING 24.2.56
 COMPLETION OF COALING 17.5.57
 COMPLETION OF RESOILING 30.5.58
 SITE HANDED BACK TO AGRICULTURE 30.5.58
 FINAL DEREQUISITION OF SITE

COPIES TO	DATE	INITIALS
Mining Records (2)		
M.A. Surveyor (1)		
Geol. Survey (1)		



N.W.350

BOTTOM DROUGHTY SEAM & CRANK SEAM

TWO YARD SEAM

BLACK BED SEAM & MAIN SEAM

NATIONAL COAL BOARD
 OPENCAST EXECUTIVE
 85/87 JERMYN STREET
 LONDON SW1

LAND SURVEY BRANCH
 DRAWN BY: 25.4.62
 DATE: 15.1.60
 CHECKED BY: H.H.
 DATE: 2.2.60

NAME OF ZONE
 OR CONTRACT

GWERN-Y-GASEG

NAME OF SITE

GWERN - Y - GASEG

SITE REFERENCE NUMBER
 040188C
 OPERATIONAL CONTRACT NUMBER
 OC/CON/4096

DRAWING NUMBER
 OE/COMP/04/158.

N.W.350

Catalogue No.: NW350 Sheet Info:

Date: 26/04/2021

Scale: 1 TO 2500

Database Right and Copyright, The Coal Authority 2003, Unauthorised Use Prohibited

Andrea Holmes - The Coal Authority, 200 Lichfield Lane, Mansfield, Notts, NG18 4RG, England

All rights reserved. No part of any image supplied may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the Authority. By accepting and using this image you agree bound, without limitation or qualification, by the terms and conditions for the use of the Coal Authority Scanning Services which can be viewed at www.coal.gov.uk/services/history



The Coal Authority

Authority, 200 Lichfield Lane, Berry Hill, Mansfield, Nottinghamshire NG18 4RG www.coal.gov.uk

APPENDIX D

Permission to Enter or Disturb Coal Authority Interests.



The Coal
Authority

Permit to Enter or Disturb Coal Authority Interests

Permit 22123

Name and Address of Permit Holder:

*Katy Davies
Plas Mostyn Bach
Minera Road
Minera
Wrexham
LL11 3AJ*

Site Location:

*Land at
Plas Mostyn Bach
Minera Road
Minera
Wrexham
LL11 3AJ*

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

Investigation by three boreholes to 20m to determine presence of shallow mine workings

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

Conditions:

- *Water flush*
- *Gas Monitoring CO, CH₄, CO₂, O₂, H₂S at borehole and rig*
- *Operators undertaking the work must be in possession of this certificate and the Permit boundary plan at the time of works*
- *Appropriate borehole sealing without delay and to withstand site level changes*

Signed: Paul Hobson Granted Date: 07 June 2021

For and on behalf of The Coal Authority

Nominated Representative: Paul Hobson, Permitting Manager;

The Coal Authority, Permitting Office, 200 Lichfield Lane, Mansfield, Notts, NG18 4RG

Tel: 01623 637450; E-Mail: permissions@coal.gov.uk



The Coal
Authority

Granted Permit Boundary

Permit Ref: 22123

Permit Boundary:



These maps are reproduced from Ordnance Survey material with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationary Office. © Crown Copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. The Coal Authority. Licence No: 100020315. [216]

APPENDIX E

Borehole Logs

Rotary Core Log

Project Name: Minera			Client: Katy Davies			Date: 08/06/2021		
Location: Plas Mostyn Bach			Contractor: Rotary Drilling Ltd			Co-ords: E328041.00 N352786.00		
Project No. : 2534			Crew Name: Rotary Drilling Ltd			Drilling Equipment:		
Borehole Number BH01		Hole Type RO		Level 233.00m AoD		Logged By AB		Page Number Sheet 1 of 4

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
								0.45	232.55		Dark brown gravelly slightly silty SAND. Gravel is angular to subangular fine to coarse with fragments of brick and concrete. (MADE GROUND)	1
											Grey mottled brown slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to coarse. (GLACIAL TILL)	2
												3
								3.90	229.10		Brown angular to subangular fine to coarse SANDSTONE.	4
												5

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
1.00	200											0.00	20.00				
20.00	150																

Remarks

Depth reached no coal or voids found / No groundwater hit



Rotary Core Log

Project Name: Minera				Client: Katy Davies				Date: 08/06/2021			
Location: Plas Mostyn Bach				Contractor: Rotary Drilling Ltd				Co-ords: E328041.00 N352786.00			
Project No. : 2534				Crew Name: Rotary Drilling Ltd				Drilling Equipment:			
Borehole Number BH01		Hole Type RO		Level 233.00m AoD		Logged By AB		Scale 1:25		Page Number Sheet 2 of 4	

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	ROD						
											Brown angular to subangular fine to coarse SANDSTONE.	6
								7.00	226.00		Grey angular to subangular fine to coarse of MUDSTONE with bands of sandstone.	7
												10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
1.00	200											0.00	20.00				
20.00	150																

Remarks
Depth reached no coal or voids found / No groundwater hit



Rotary Core Log

Project Name: Minera				Client: Katy Davies				Date: 08/06/2021			
Location: Plas Mostyn Bach				Contractor: Rotary Drilling Ltd				Co-ords: E328041.00 N352786.00			
Project No. : 2534				Crew Name: Rotary Drilling Ltd				Drilling Equipment:			
Borehole Number BH01		Hole Type RO		Level 233.00m AoD		Logged By AB		Scale 1:25		Page Number Sheet 3 of 4	

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	ROD						
											Grey angular to subangular fine to coarse of MUDSTONE with bands of sandstone.	11
												12
												13
												14
												15

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
1.00	200											0.00	20.00				
20.00	150																

Remarks															
Depth reached no coal or voids found / No groundwater hit															



Rotary Core Log

Project Name: Minera				Client: Katy Davies				Date: 08/06/2021			
Location: Plas Mostyn Bach				Contractor: Rotary Drilling Ltd				Co-ords: E328041.00 N352786.00			
Project No. : 2534				Crew Name: Rotary Drilling Ltd				Drilling Equipment:			
Borehole Number BH01		Hole Type RO		Level 233.00m AoD		Logged By AB		Scale 1:25		Page Number Sheet 4 of 4	

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPL)	Depth (m)	Level (m)	Legend	Stratum Description													
				TCR	SCR	ROD																		
											Grey angular to subangular fine to coarse of MUDSTONE with bands of sandstone.	16												
												17												
												18												
												19												
												20												
												21												
												22												
												23												
												24												
												25												
												26												
												27												
												28												
												29												
												30												
												31												
												32												
																				20.00	213.00		End of Borehole at 20.000m	20

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
1.00	200											0.00	20.00				
20.00	150																

Remarks															
Depth reached no coal or voids found / No groundwater hit															

Rotary Core Log

Project Name: Minera			Client: Katy Davies			Date: 07/06/2021		
Location: Plas Mostyn Bach			Contractor: Rotary Drilling Ltd			Co-ords: E328035.00 N352771.00		
Project No. : 2534			Crew Name: Rotary Drilling Ltd			Drilling Equipment:		
Borehole Number BH02		Hole Type RO		Level 233.00m AoD		Logged By AB		Page Number Sheet 1 of 4

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	ROD						
								0.50	232.50		Concrete over dark brown gravelly slightly silty SAND. Gravel is angular to subangular fine to coarse with fragments of brick and concrete (MADE GROUND)	1
											Grey mottled yellow slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded. (GLACIAL TILL)	2
								2.60	230.40		Brown subangular to subrounded fine to coarse SANDSTONE.	3
												4
												5

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
1.00	200											0.00	20.00				
20.00	150																

Remarks

Depth reached no coal or voids found / No groundwater hit



Rotary Core Log

Project Name: Minera				Client: Katy Davies				Date: 07/06/2021			
Location: Plas Mostyn Bach				Contractor: Rotary Drilling Ltd				Co-ords: E328035.00 N352771.00			
Project No. : 2534				Crew Name: Rotary Drilling Ltd				Drilling Equipment:			
Borehole Number BH02		Hole Type RO		Level 233.00m AoD		Logged By AB		Scale 1:25		Page Number Sheet 2 of 4	

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	ROD						
								7.50	225.50		Brown subangular to subrounded fine to coarse SANDSTONE.	6
												7
												8
												9
												10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
1.00	200											0.00	20.00				
20.00	150																

Remarks															
Depth reached no coal or voids found / No groundwater hit															

Rotary Core Log

Project Name: Minera			Client: Katy Davies			Date: 07/06/2021		
Location: Plas Mostyn Bach			Contractor: Rotary Drilling Ltd			Co-ords: E328035.00 N352771.00		
Project No. : 2534			Crew Name: Rotary Drilling Ltd			Drilling Equipment:		
Borehole Number BH02		Hole Type RO		Level 233.00m AoD		Logged By AB		Page Number Sheet 3 of 4

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPL)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
											Grey angular to subangular fine to coarse MUDSTONE with thin bands of sandstone.	11
												12
												13
												14
												15

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
1.00 20.00	200 150											0.00	20.00				

Remarks

Depth reached no coal or voids found / No groundwater hit



Rotary Core Log

Project Name: Minera				Client: Katy Davies				Date: 07/06/2021			
Location: Plas Mostyn Bach				Contractor: Rotary Drilling Ltd				Co-ords: E328035.00 N352771.00			
Project No. : 2534				Crew Name: Rotary Drilling Ltd				Drilling Equipment:			
Borehole Number BH02		Hole Type RO		Level 233.00m AoD		Logged By AB		Scale 1:25		Page Number Sheet 4 of 4	

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
											Grey angular to subangular fine to coarse MUDSTONE with thin bands of sandstone.	16
												17
												18
												19
												20
								20.00	213.00		End of Borehole at 20.000m	20

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
1.00	200											0.00	20.00				
20.00	150																

Remarks
Depth reached no coal or voids found / No groundwater hit



Rotary Core Log

Project Name: Minera				Client: Katy Davies				Date: 07/06/2021			
Location: Plas Mostyn Bach				Contractor: Rotary Drilling Ltd				Co-ords: E328024.00 N352786.00			
Project No. : 2534				Crew Name: Rotary Drilling Ltd				Drilling Equipment:			
Borehole Number BH03		Hole Type RO		Level 233.00m AoD		Logged By AB		Scale 1:25		Page Number Sheet 1 of 6	

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
								0.55	232.45		Concrete over dark brown gravelly slightly silty SAND. Gravel is angular to subangular fine to coarse with fragments of brick and concrete. (MADE GROUND)	1
								2.70	230.30		Grey mottled brown slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to coarse. (GLACIAL TILL)	2
												3
												4
												5

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
1.00	200											0.00	30.00				
30.00	150																

Remarks
Depth reached no coal or voids found / No groundwater hit



Rotary Core Log

Project Name: Minera			Client: Katy Davies			Date: 07/06/2021		
Location: Plas Mostyn Bach			Contractor: Rotary Drilling Ltd			Co-ords: E328024.00 N352786.00		
Project No. : 2534			Crew Name: Rotary Drilling Ltd			Drilling Equipment:		
Borehole Number BH03		Hole Type RO		Level 233.00m AoD		Logged By AB		Page Number Sheet 2 of 6

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
								7.50	225.50		Brown angular to subangular fine to coarse SANDSTONE.	6
											Grey angular to subangular fine to coarse MUDSTONE with thin bands of sandstone.	7
												8
												9
												10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
1.00	200											0.00	30.00				
30.00	150																

Remarks

Depth reached no coal or voids found / No groundwater hit



Rotary Core Log

Project Name: Minera			Client: Katy Davies			Date: 07/06/2021		
Location: Plas Mostyn Bach			Contractor: Rotary Drilling Ltd			Co-ords: E328024.00 N352786.00		
Project No. : 2534			Crew Name: Rotary Drilling Ltd			Drilling Equipment:		
Borehole Number BH03		Hole Type RO		Level 233.00m AoD		Logged By AB		Page Number Sheet 3 of 6

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
											Grey angular to subangular fine to coarse MUDSTONE with thin bands of sandstone.	11
												12
												13
												14
												15

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
1.00 30.00	200 150											0.00	30.00				

Remarks

Depth reached no coal or voids found / No groundwater hit



Rotary Core Log

Project Name: Minera				Client: Katy Davies				Date: 07/06/2021			
Location: Plas Mostyn Bach				Contractor: Rotary Drilling Ltd				Co-ords: E328024.00 N352786.00			
Project No. : 2534				Crew Name: Rotary Drilling Ltd				Drilling Equipment:			
Borehole Number BH03		Hole Type RO		Level 233.00m AoD		Logged By AB		Scale 1:25		Page Number Sheet 4 of 6	

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
											Grey angular to subangular fine to coarse MUDSTONE with thin bands of sandstone.	16
												17
												18
												19
												20

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
1.00	200											0.00	30.00				
30.00	150																

Remarks
Depth reached no coal or voids found / No groundwater hit



Rotary Core Log

Project Name: Minera			Client: Katy Davies			Date: 07/06/2021		
Location: Plas Mostyn Bach			Contractor: Rotary Drilling Ltd			Co-ords: E328024.00 N352786.00		
Project No. : 2534			Crew Name: Rotary Drilling Ltd			Drilling Equipment:		
Borehole Number BH03		Hole Type RO		Level 233.00m AoD		Logged By AB		Page Number Sheet 5 of 6

Well	Water	Depth (m)	Type /FI	Coring				Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD	Diameter Recovery (SPT)					
											Grey angular to subangular fine to coarse MUDSTONE with thin bands of sandstone.	21
												22
												23
												24
												25

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
1.00 30.00	200 150											0.00	30.00				

Remarks

Depth reached no coal or voids found / No groundwater hit



Rotary Core Log

Project Name: Minera			Client: Katy Davies			Date: 07/06/2021		
Location: Plas Mostyn Bach			Contractor: Rotary Drilling Ltd			Co-ords: E328024.00 N352786.00		
Project No. : 2534			Crew Name: Rotary Drilling Ltd			Drilling Equipment:		
Borehole Number BH03		Hole Type RO		Level 233.00m AoD		Logged By AB		Page Number Sheet 6 of 6

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
											Grey angular to subangular fine to coarse MUDSTONE with thin bands of sandstone.	26
												27
												28
												29
								30.00	203.00		End of Borehole at 30.000m	30

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
1.00 30.00	200 150											0.00	30.00				

Remarks

Depth reached no coal or voids found / No groundwater hit



APPENDIX F

Closure Form



Permit Ref.	22123	Project / Site Location	Land at, Plas Mostyn Bach, Minera Road, Minera, Wrexham, LL11 3AJ
-------------	-------	-------------------------	--

Please supply all relevant documents, including this completed form within 3 months of the permitted works being completed.

Where relevant the report should include; borehole logs and details of mine or mine entry treatment works carried out (incl. engineering drawings, grout takes etc.) and a scaled site layout plan (correlated to O.S N' Grid) showing all relevant mine entry positions, coal seams, voids and broken ground proved by the works.

Summary of works

Start date

8 June 2021

Finish date

8 June 2021

Have any variations occurred? ☒ No ☐ Yes If so was the Authority notified? ☐ No ☐ Yes

Please describe;

Did if any of the following incidents occur?

- ☐ Spontaneous combustion ☐ Water emission ☐ Gas emission (elevated or above action levels)
☐ Geotechnical instability ☐ Legal issues incl. damage or potential claims ☒ None

If yes, please detail each item;

Were any of the following encountered? Please give a brief summary of the works undertaken.

- ☐ Intact coal only ☐ Broken ground ☐ Backfilled ground ☐ Voids

Description;

No coal, voids or loss of flint.

Will further works be necessary that require a Permit? ☒ No ☐ Yes

If yes, please describe, including any recommendations;

Name: M. Scott	Email: mikescott@groundsolve.com
Company: Groundsolve Ltd	Tel: 01244 661 361