

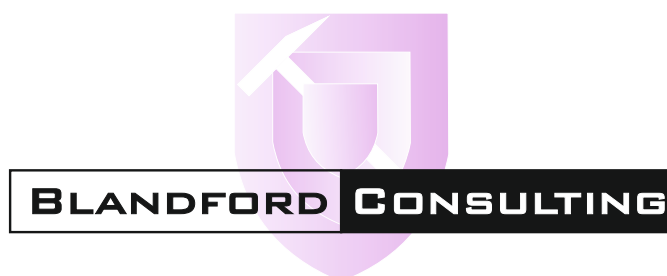
Report No. BC/MB/10.20.04.

Mining Risk Assessment Report: Land at Laymak Yard, Abercanaid, Merthyr Tydfil.

Prepared on behalf of:

Mr Jamie Jones

By:



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Mining Risk Assessment: Land at Laymak Yard, Abercanaid, Merthyr Tydfil.

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List of Drawings

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<i>BC/MB/10.20.04.01.</i>	<i>General Location Plan.</i>	<i>1:50,000</i>
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Appendix II: Copy of British Geological Survey's Radon Gas Report.

Mining Risk Assessment: Land at Laymak Yard, Abercanaid, Merthyr Tydfil.

1 Introduction

This geological and mining report has been prepared on behalf of our client:

***Mr Jamie Jones,
Laymak Yard,
Abercanaid Industrial Estate,
Merthyr Tydfil,
CF48 1YF.***

The report reviews the geology and mining history of the land and the immediately surrounding area as they may affect proposals to develop light industrial units on the Site. Recommendations are made for exploratory boreholes to determine the risk from shallow mine workings in greater detail.

The following sources of data have been used in the compilation of this report,

- i) Research of published geological data;*
- ii) Research of mining records;*
- iii) The findings of The Coal Authority report, no. 51002326605001;*
- iv) Review of the Coal Authority's interactive map, accessed on the 28th October 2020;*
- v) The findings of Public Health England's Radon gas report and*
- vi) Research of Blandford Consulting's archives.*

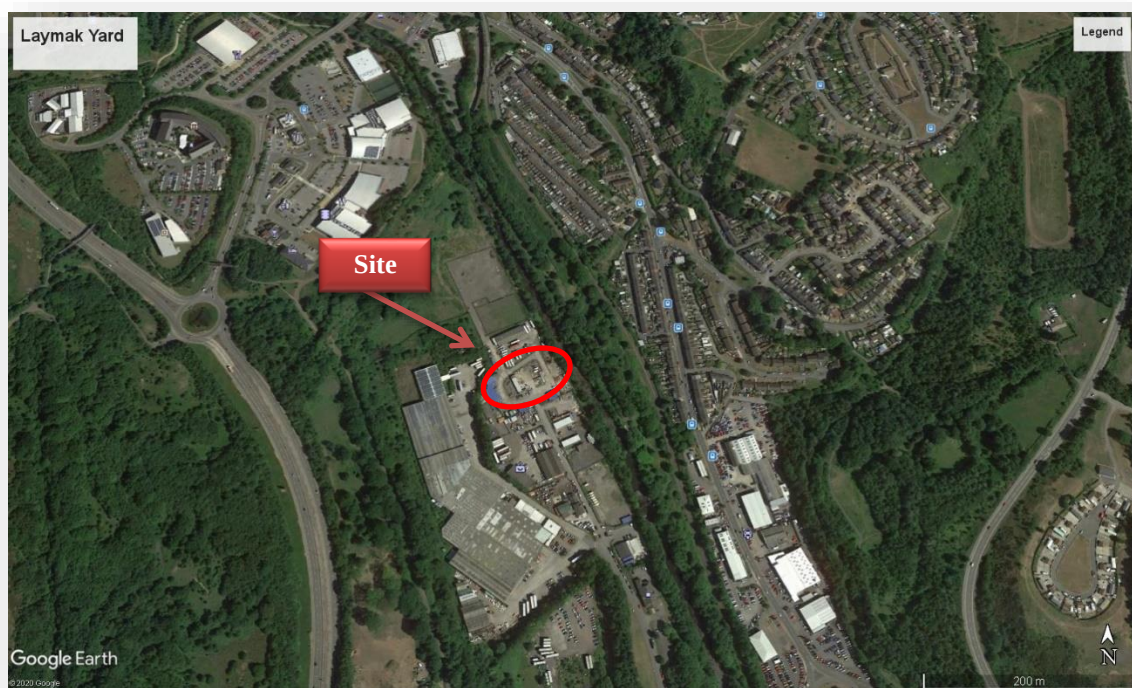
This report is a desk study, no physical testing of the site conditions has been carried out during the preparation of this report. The findings of the report are necessarily based upon the information used in its compilation and may be amended in the future in the light of additional material information. The report should only be used in its entirety for its stated purpose.

/Cont....

2 Brief Description of the Site

The Site of the proposed development is situated at the southern margins of Merthyr Tydfil (see Figure 1 and *General Location Plan, drawing no. BC/MB/10.20.04.01*). The Site is approximately 1km south of the commercial centre of Merthyr Tydfil and approximately 1.9km north-west of the centre of Pentrebach. The Site is located on an industrial area adjacent to the River Taff; it is irregular in outline and occupies an area of approximately 0.61 hectares. The Site is fairly level and it is at an approximate elevation of 159m aod.

Figure 1
Aerial View of Site



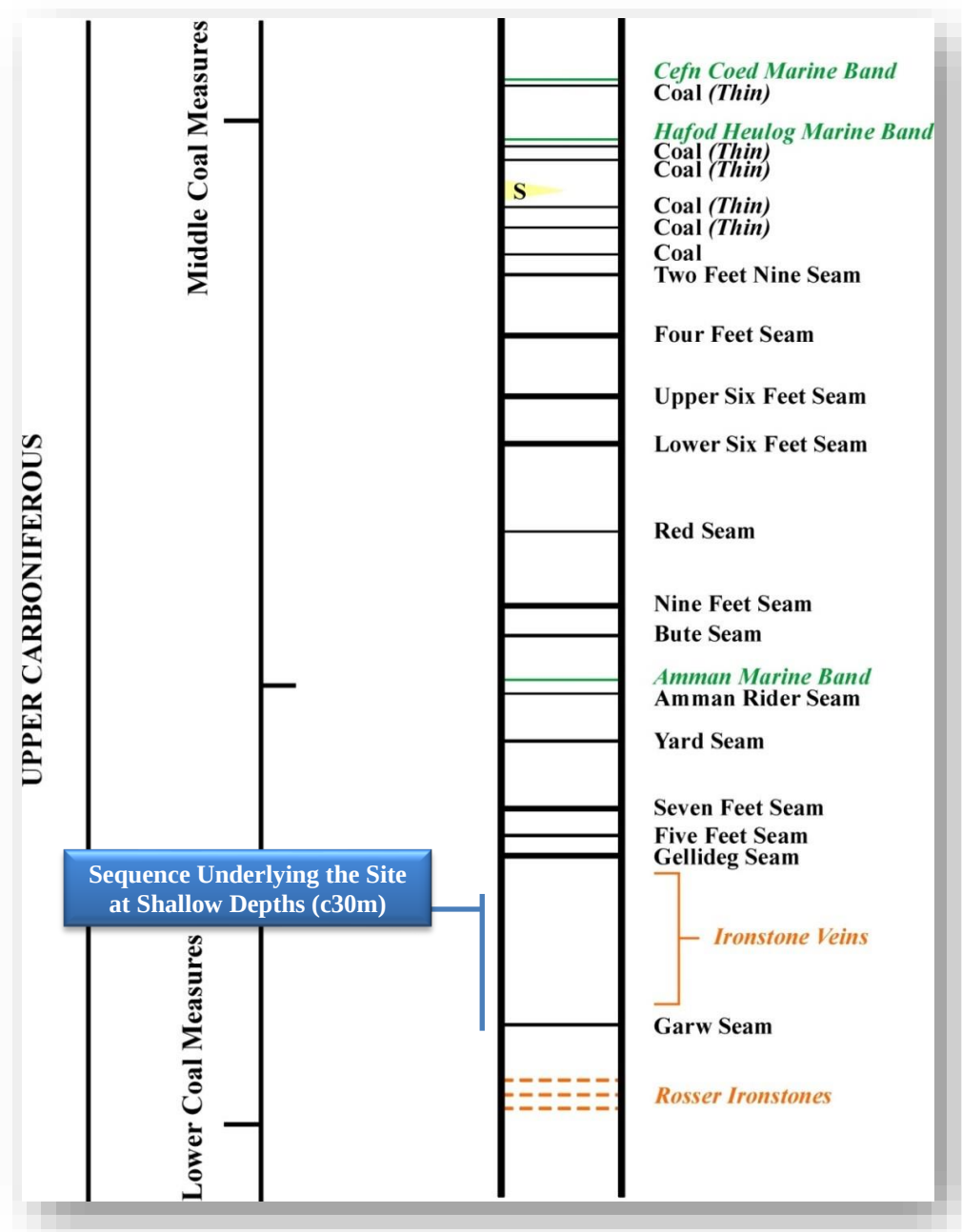
3 Geology of the Site

The Site is situated fairly centrally towards the northern margin of the South Wales Coalfield so that it is underlain at shallow depths by strata assigned to the Middle Coal Measures (see *Geology Plan, drawing no. BC/MB/10.20.04.02*). The most recently published geological sheets (SO 00 SE and SO 00 NE at 1:10,560 scale) shows the inferred position of the outcrop of the Gellideg Seam to be present approximately 100m south of the Site. The outcrops in the

/Cont....

locality follow an open “V- shape” as they cross the valley floor (see *Geology Plan*, drawing no. BC/MB/10.20.04.02).

Figure 2
Part of the Stratigraphic Column.



Below the Gellideg Seam in the geological sequence there are a series of ironstone veins and below them the Garw Seam, a relatively thin coal seam (see Figure 2, Part of the Stratigraphic Column). The dip of the strata in the area is of the order of 1 in 13 towards the

/Cont....

south-south-east, so that the sequence containing the ironstone veins and the Garw Seam underlie the Site at very shallow depths.

The measures of the South Wales Coalfield have been affected by large normal faults often referred to as “cross-faults”. In the Abercanaid area such faults tend to have a slightly sinuous trace at the surface and typically trend towards the north-west. The published geological sheet shows the nearest such fault to be the Merthyr Church Fault; the inferred surface position of which is shown to be present approximately 30m north-east of the Site, passing through the opposite bank of the River Taff.

The published geological sheet shows the measures beneath the Site to be overlain with River Alluvium. An area of Made Ground, almost certainly colliery spoil, occupies the northern part of the Site and extends northwards beyond the Site. The published geological sheet also indicates that the Site is not affected by landslip.

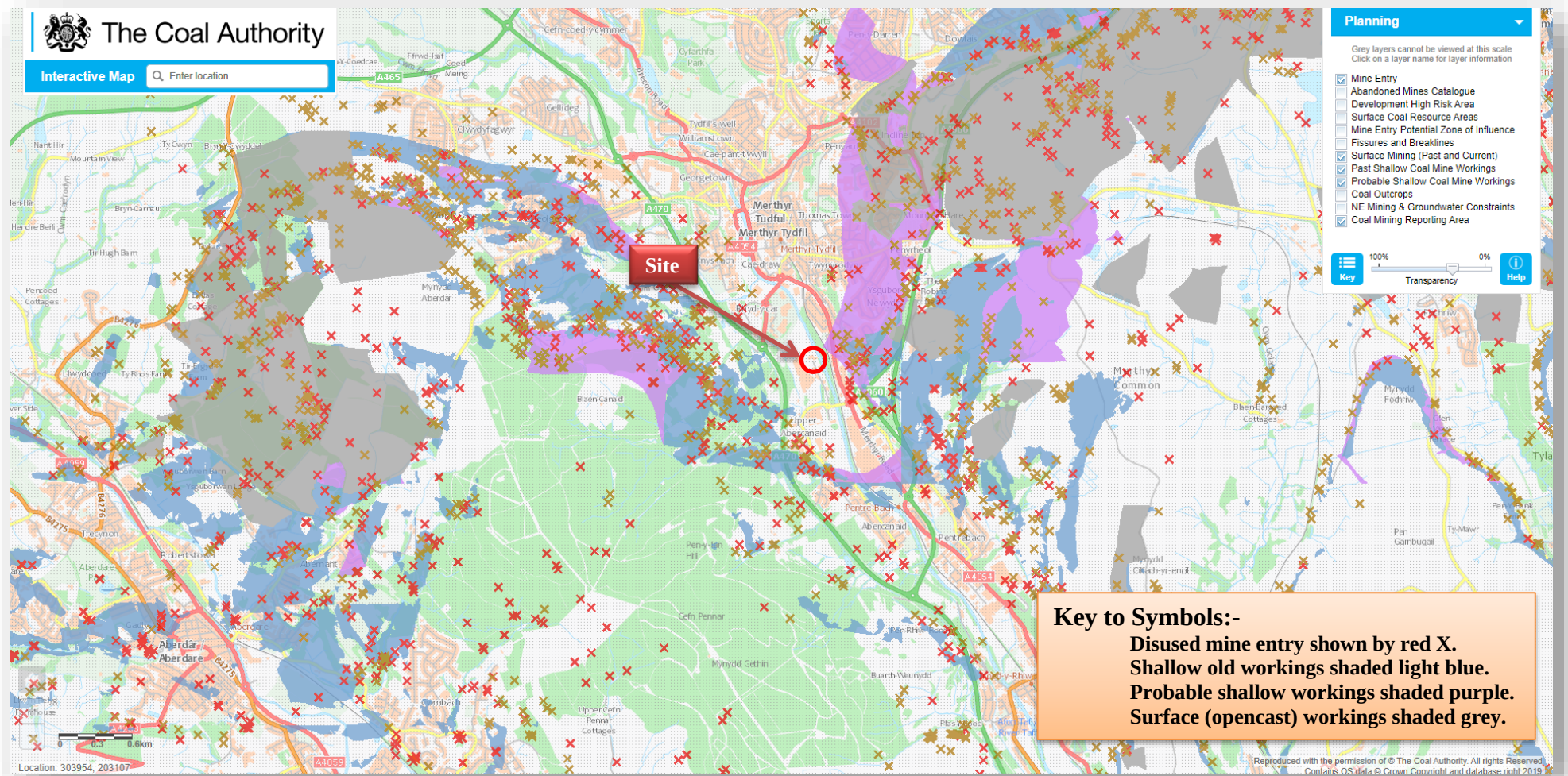
4 Mining History

The district has had a long history of mining activities for coal and for ironstone over the greater part of the two centuries. Mining records show that a number of coal seams and ironstone veins have been extensively worked in the locality, including the ironstone veins that underlie the Site at very shallow depths. Our searches identified that there are no recorded old coal workings underlying the Site, a finding confirmed by The Coal Authority’s mining report and its interactive map. The Coal Authority’s mining report and interactive map relate to coal workings and do not include ironstone workings. The ironstone veins underlying the Gellideg Seam have been widely worked across the district and old workings may be present beneath the Site at one or more horizons at very shallow to shallow depths. The risk of ironstone workings being present beneath the Site cannot be discounted; any such workings that might be present would be at very shallow depths.

Our searches found no record of a shaft or adit within the confines of the Site or within 20m of it. The mining records held by The Coal Authority are known to be incomplete and the risk of an unrecorded mine entry being present on the Site cannot be entirely dismissed.

/Cont....

Figure 3
Copy of The Coal Authority's Interactive Map
 (accessed 28th October 2020)



/Cont....

There are no active deep mines in the area that might affect the stability of the proposed development.

The Ffos-y-Fran Opencast Coal Site is mining an area lying to the east of the Site; at its closest it is approximately 1.4km from the Site and too distant to affect the structural integrity of the proposed development. Otherwise, the Site has not been part of an opencast coal site.

5 Mine Gases

When coal is mined methane is released and may accumulate, sometimes with other mine gases, in the voids left by the mining operation. The gases may vent to atmosphere or be pushed out of the mining voids as they flood with mine water and in certain circumstances the gases can accumulate in voids and result in asphyxiation, fire or explosion. A number of studies of the old workings across South Wales and dating back to the mid to late twentieth century have shown that there is little risk from mine gases. This may be as a result of the nature of the coal seams or because the shallow old workings have vented most of the mine gases to atmosphere or is as a result of the combination of the two. There are no recorded shallow coal mine workings underlying the Site that could act as a source of mine gases and The Coal Authority has no record of an emission of mine gas at the Site that has required action.

6 Radon Gas

Government guidelines recommend that the potential for Radon gas should be assessed for all new dwellings, it is prudent to extend the advice to any building that may be occupied; the advice has been implemented by obtaining from the British Geological Survey a Radon gas report for Site. The report identifies that the Site is within an intermediate area where the estimated probability of a property being above the action level is between 1% and 3%. The advice for Radon protection measures new buildings in England and Wales is 'NONE'.

/Cont....

7 Discussion and Recommendations

7.1 Solid Geology

A detailed assessment of the main faults in the vicinity of the Site indicates that the nearest fault, the Merthyr Church Fault, is too remote from the Site to influence the proposed development. There is no evidence of landslip in the vicinity of the Site. Consequently, as far as the solid geology of the locality is concerned, there is no requirement for any particular features to be included in the design and construction of the foundations for the proposed buildings.

7.2 Mining History of the Site

7.2.1 Mine Workings

The Coal Authority holds no records of any underground mine workings that extend beneath the Site. The Coal Authority's records are primarily of coal workings and do not include a comprehensive record of mine workings in other minerals, including ironstone. Beneath the Gellideg Seam there are a series of five ironstone veins that have been mined extensively across the district, including across Abercanaid. There may be old workings beneath the Site in one or more of the ironstone veins, some of which may be at the shallow depths that pose a risk of surface subsidence. The mine workings that took place in the Taff Valley around Merthyr Tydfil date back to the early part of the nineteenth century and are not everywhere recorded. There is a risk of shallow old workings underlying the Site at one or more ironstone horizon that could collapse to the surface and induce subsidence that could lead to structural distress.

There are no active mines or opencast sites in the locality that could influence the structural stability of the proposed development and the Site has not been part of an opencast site.

It is recommended that a series of exploratory boreholes are drilled on the Site to determine in greater detail the shallow geology underlying the Site and to further

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assess the risk from shallow mine workings. The exploratory boreholes should be designed to identify how many of the mining horizons, if any, have been mined at the critically shallow depths that pose a risk to the proposed development. They should also assess the potential for interaction between individual horizons that may have been mined. The exploratory boreholes should be designed and supervised by a Chartered Geologist or other competent person.

7.2.2 Mining History: Disused Mine Entries

Our searches found no record of a disused shaft or adit within the confines of the Site or 20m of it. The risk of a disused mine entry being present is extremely low to negligible but cannot be entirely dismissed given the mining history of the district. If any unusual features are encountered during excavation works on the Site, then the works must be stopped immediately, and advice sought from a Chartered Geologist or other competent person or from The Coal Authority.

7.2.3 Mining Gases

There are no recorded shallow mine workings beneath the Site that might act as a source of mine gases and The Coal Authority has no record of a gas incident at the Site that has required action. It would be prudent to monitor the recommended exploratory boreholes for mine gases in order to assess the risk to the proposed storage units.

7.3 Radon Gas

The British Geological Society's Radon gas report identified that the Site is within an intermediate area where the estimated probability of a property being above the action level is between 1% and 3%. The appropriate response for building control purposes is NONE.

/Cont....

7.4 Buried Services

A search of underground services is outside the scope of this desk study report. It is recommended that before any excavation or exploration work is carried out on the Site that the main service providers are contacted with a view to determining what buried services might underlie the Site.

7.5 Foundation Options

The findings of the recommended boreholes will be required to inform the choice of the appropriate foundation options.



**Dr Malcolm Blandford,
Chartered Geologist.**

Report Date: 28th October 2020.

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PLANS



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Geologists Working With The Environment....

Study on Land at Laymak Yard, Abercanaid,
Merthyr Tydfil.

General Location Plan.

Plan Scale: 1:50,000.

Key to Symbols:



Approximate Position of Site.

Note:
North is at top of plan.

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Drawing No: BC/MB/10.20.04.01.

Geologists Working With The Environment...



Study on Land at Laymak Yard, Abercanaid, Merthyr Tydfil.

Geology Plan.

Plan Scale: 1:10,560.

Key to Symbols:



Approximate Position of Site.

Note:

North is at top of plan.

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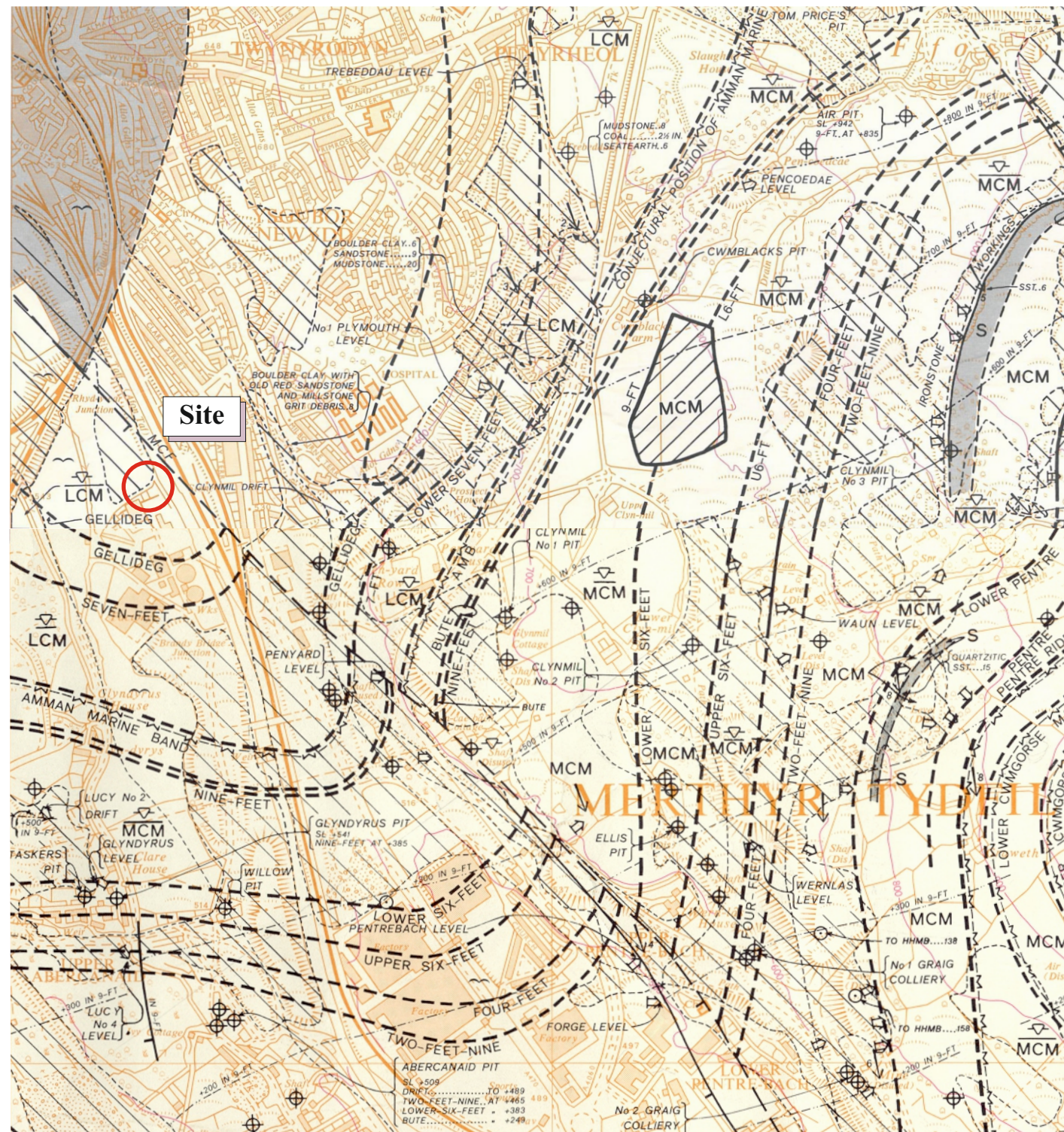


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Drawing No: BC/MB/10.20.04.02.

Geologists Working With The Environment.....





Study on Land at Laymak Yard, Abercanaid,
Merthyr Tydfil.

Detailed Location Plan.

Plan Scale: 1:500.

Key to Symbols:

 **Approximate Site Boundary.**

Note:

North is at top of plan.

*Drawing prepared from documents
provided by the client.*

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Drawing No: BC/MB/10.20.04.03.

APPENDIX I

**THE COAL AUTHORITY'S
MINING REPORT REF, NO.
51002326605001**



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Geologists Working With The Environment....



The Coal
Authority

CON29M

coal mining report

LAYMAK YARD, ABERCANAID INDUSTRIAL ESTATE, ABERCANAID, MERTHYR
TYDFIL, CF48 1YF



Known or potential coal mining risks

Future underground coal mining

Page 3



Further action

No further reports from the Coal Authority are required. Further information on any next steps can be found in our Professional opinion.

For more information on our reports please visit
www.groundstability.com



Professional opinion

According to the official mining information records held by the Coal Authority at the time of this search, evidence of, or the potential for, coal mining related features have been identified. It is unlikely that these features will impact on the stability of the enquiry boundary.

Your reference: **BC/MB/10.20.04**
Our reference: **51002326605001**
Date: **28 October 2020**

Client name:
BLANDFORD CONSULTING

If you require any further assistance please
contact our experts on:
0345 762 6848
groundstability@coal.gov.uk



The Law
Society

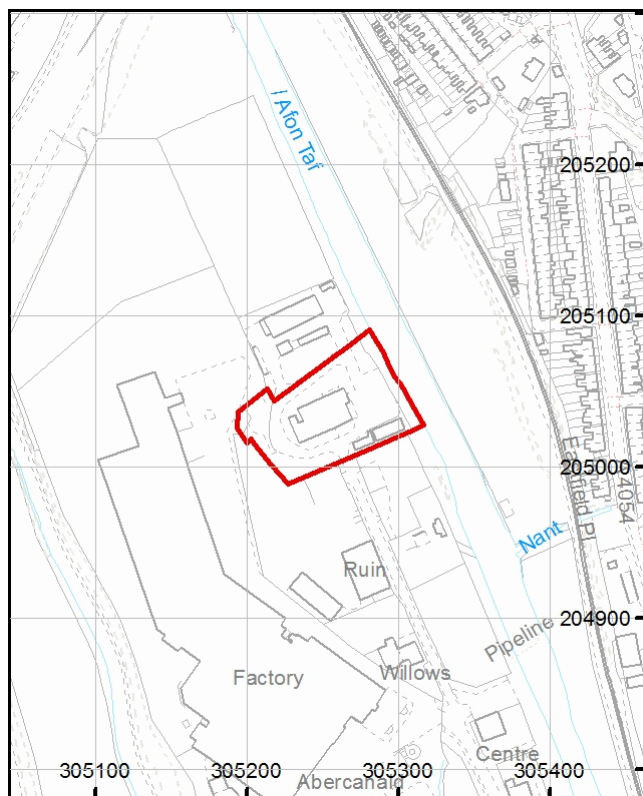
Enquiry boundary

Key

Approximate position of enquiry boundary shown



We can confirm that the location is
on the coalfield



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This report is prepared in accordance with the latest Law Society's Guidance Notes 2018, the User Guide 2018 and the Coal Authority's Terms and Conditions applicable at the time the report was produced.



Accessibility

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Detailed findings

Information provided by the Coal Authority in this report is compiled in response to the Law Society's CON29M Coal Mining enquiries. The said enquiries are protected by copyright owned by the Law Society of 113 Chancery Lane, London WC2A 1PL.

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1 Past underground coal mining

The property is not within a surface area that could be affected by any past recorded underground coal mining.

2 Present underground coal mining

The property is not within a surface area that could be affected by present underground mining.

3 Future underground coal mining

The property is not in an area where the Coal Authority has received an application for, and is currently considering whether to grant a licence to remove or work coal by underground methods.

The property is not in an area where a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area likely to be affected from any planned future underground coal mining.

However, reserves of coal exist in the local area which could be worked at some time in the future.

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

4 Mine entries

There are no recorded coal mine entries known to the Coal Authority within, or within 20 metres, of the boundary of the property.

5 Coal mining geology

The Coal Authority is not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining.

6 Past opencast coal mining

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

7 Present opencast coal mining

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

8 Future opencast coal mining

There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

9 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.

10 Mine gas

The Coal Authority has no record of a mine gas emission requiring action.

11 Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Coal Authority, under its Emergency Surface Hazard Call Out procedures.

12 Withdrawal of support

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.

13 Working facilities order

The property is not in an area where an order has been made, under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

14 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.

Statutory cover



Coal mining subsidence

In the unlikely event of any coal mining related subsidence damage, the Coal Authority or the mine operator has a duty to take remedial action in respect of subsidence caused by the withdrawal of support from land or property in connection with lawful coal mining operations.

When the works are the responsibility of the Coal Authority, our dedicated public safety and subsidence team will manage the claim. The house or land owner ("the owner") is covered for these works under the terms of the Coal Mining Subsidence Act 1991 (as amended by the Coal Industry Act 1994). Please note, this Act does not apply where coal was worked or gotten by virtue of the grant of a gale in the Forest of Dean, or any other part of the Hundred of St. Briavels in the county of Gloucester.

If you believe your land or property is suffering from coal mining subsidence damage and you need more information on what to do next, please use the following link to our website which sets out what your rights are and what you need to consider before making a claim.

www.gov.uk/government/publications/coal-mining-subsidence-damage-notice-form



Coal mining hazards

Our public safety and subsidence team provide a 24 hour a day, 7 days a week hazard reporting service, to help protect the public from hazards caused by past coal workings, such as a mine shaft or shallow working collapse. To report any hazards please call **01623 646 333**. Further information can be found on our website: www.gov.uk/coalauthority.

Glossary



Key terms

adit - horizontal or sloped entrance to a mine

coal mining subsidence - ground movement caused by the removal of coal by underground mining

Coal Mining Subsidence Act 1991 - the Act setting out the duties of the Coal Authority to repair damage caused by coal mining subsidence

coal mining subsidence damage - damage to land, buildings or structures caused by the removal of coal by underground mining

coal seams - bed of coal of varying thickness

future opencast coal mining - a licence granted, or licence application received, by the Coal Authority to excavate coal from the surface

future underground coal mining - a licence granted, or licence application received, by the Coal Authority to excavate coal underground. Although it is unlikely, remaining coal reserves could create a possibility for future mining, which would be licensed by the Coal Authority

mine entries - collective name for shafts and adits

payments to owners of former copyhold land - historically, copyhold land gave rights to coal to the copyholder. Legislation was set up to allow others to work this coal, but they had to issue a notice and pay compensation if a copyholder came forward

shaft - vertical entry into a mine

site investigation - investigations of coal mining risks carried out with the Coal Authority's permission

stop notice - a delay to repairs because further coal mining subsidence damage may occur and it would be unwise to carry out permanent repairs

subsidence claim - a formal notice of subsidence damage to the Coal Authority since it was established on 31 October 1994

withdrawal of support - a historic notice informing landowners that the coal beneath their property was going to be worked

working facilities orders - a court order which gave permission, restricted or prevented coal mine workings

APPENDIX II

THE BRITISH GEOLOGICAL SURVEY'S RADON REPORT REF No, 162034



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Geologists Working With The Environment....

Radon Risk Report: England and Wales

Introduction

This is an advisory report on the requirement for radon protective measures in new buildings, conversions and extensions to existing buildings. The report also indicates whether a site is located within a radon affected area. It is based on the joint British Geological Survey (BGS) - Public Health England (PHE) [radon potential data](#).

Requirement for radon protective measures

The BGS is not able to provide advice on the technical specifications of 'basic' and 'full' radon protective measures. This information is detailed in *BRE Report BR211 Radon: guidance on protective measures for new buildings* which may be purchased from www.brebookshop.com. This report offers guidance on the technical solutions that are required to satisfy Building Regulations requirements.

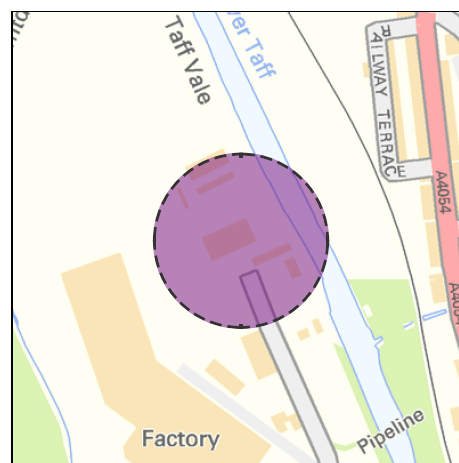
The determination below follows advice in *BR211 Radon: Guidance on protective measures for new buildings (2007 edition)*, which also provides guidance on what to do if the result indicates that protective measures are required.

Location

305260, 205034 (British National Grid)

28/10/2020 16:20:30 GMT

Location Map



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Is the property in a radon Affected Area as defined by Public Health England (PHE)?

Yes

What percentage of homes are estimated to be above the Action Level?

The property is in an Intermediate probability radon area (1 to 3% of homes are estimated to be at or above the Action Level). The property is in a radon Affected Area.

Guidance

PHE recommends a radon 'Action Level' of 200 becquerels per cubic metre for the annual average of the radon gas concentration in a home. Where 1% or more of homes are estimated to exceed the Action Level (i.e. are in an Intermediate or Higher probability radon area) the area should be regarded as a radon Affected Area.

This report informs you whether the property is in a radon Affected Area and the percentage of homes that are estimated to be at or above the radon Action Level. This does not necessarily mean there is a radon problem in the property; the only way to find out whether it is above or below the Action Level is to carry out a radon measurement in an existing property.

PHE advises that radon gas should be measured in all properties within radon Affected Areas and that homes with radon levels above the Action Level (200 Bq m⁻³) should be remediated, and when achievable to below the Target Level of 100 Bq m⁻³. Householders with levels between the Target Level and Action Level should seriously consider reducing their radon level, especially if they are at greater risk, such as if they are current or ex smokers. Whether or not a home is in fact above or below the Action Level or Target Level can only be established by having the building tested. PHE provides a radon testing service which can be accessed at www.ukradon.org.

The information in this report provides an answer to one of the standard legal enquiries on house purchase in England and Wales, known as CON29 Standard Enquiry of Local Authority (part 1); 3.13 Radon Gas: Location of the Property in a Radon Affected Area.

If you are buying a currently occupied property in a Radon Affected Area, you should ask the present owner whether radon levels have been measured in the property. If they have, ask whether the results were above the Radon Action Level and if so, whether remedial measures were installed, radon levels were re-tested, and the results of re-testing confirmed the effectiveness of the measures.

Further information on radon is available from PHE or www.ukradon.org

What level of radon protective measures are required for new buildings in England and Wales?

None

Guidance

When extensions are made to existing buildings in high radon areas, or new buildings are constructed in these areas, the Building Regulations for England, Wales and Scotland require that protective measures are taken against radon entering the building.

This report provides information on whether radon protective measures are required. Depending on the probability of buildings having high radon levels, the Regulations require either:

1. No protective measures
2. Basic protective measures
3. Full protective measures

More details of the protective measures are available in BR211 Radon: Guidance on protective measures for new buildings (2015 Edition). Additional information and guidance is available from the Building Research Establishment website (<http://www.bre.co.uk/radon/>)

The indicative maps showing where protective measures may be required in new buildings and extensions, conversions and refurbishments in existing buildings are available on the Building Research Establishment website at the following link: <http://www.bre.co.uk/radon/maps.html>

Whether or not a building is in fact above or below the radon Action Level can only be established by having the building tested. PHE provides a radon testing service which can be accessed at www.ukradon.org or by telephone.

Further Information

Risks of Radon

Radon is a radioactive gas which occurs naturally. It has no taste, smell or colour. Special devices are needed to measure it. Radon comes out of the ground. Outdoors, it is diluted to very low levels. However, in some cases the radon level indoors can build up to high concentrations. In such cases, it does pose a serious risk to health.

Action Level for Radon

Public Health England recommends that radon levels should be reduced in homes where the average is more than 200 becquerels per cubic metre of air (Bq m^{-3}). This recommendation has been endorsed by the Government. This Action Level refers to the annual average concentration in a home, so radon measurements are carried out with two detectors (in a bedroom and living room) over three months, to average out short-term fluctuations.

Radon Affected Areas

Public Health England defines radon Affected Areas as those with a 1% probability or more of a home having radon above the Action Level. Public Health England recommends that people in Affected Areas should test their homes for radon.

How to Reduce Radon Levels

Public Health England advises that radon gas should be measured in all properties within radon Affected Areas and that homes with radon levels above the Action Level (200 Bq m^{-3}) should be remediated, preferably to below the Target Level of 100 Bq m^{-3} . Householders with levels between the Target Level and Action Level should seriously consider reducing their radon level, especially if they are at greater risk, such as if they are current or ex smokers.

Indoor radon levels can usually be substantially reduced at a cost comparable to many home improvements, such as replacing carpets. Details of methods of reducing radon levels are given on the Building Research Establishment Website.

Radon in the Workplace

Information on radon measurement in the workplace and in the home is available at:

[Radon in the Workplace](#)

[Radon in the Home](#)

Additional advice on radon in the workplace can be found at:

[Health and Safety Executive](#)

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