Report No. BC/MB/10.21.05.

Coal Mining Risk Assessment: Land at Fairview Garage, Pengam.

Prepared on behalf of:

H C Capel and Sons Ltd.

By:

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THE ENTERPRISE CENTRE, MERTHYR INDUSTRIAL PARK,
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Coal Mining Risk Assessment: Land at Fairview Garage, Pengam.

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Coal Mining Risk Assessment: Land at Fairview Garage, Pengam.

1 Introduction

This report has been prepared on behalf of our client:

H C Capel and Sons Ltd,
Fairview Garage,
Pengam,
Blackwood, NP12 3QX.

and relates to land at Fairview Garage, where it is proposed to erect light industrial units. This report discusses the geology and mining history of the Site and the immediately surrounding area as they may affect the construction of the proposed industrial units and thereby assesses the mining risk to the proposed development. Recommendations are made for further site investigation to assess the risk from shallow mine workings in greater detail.

The following sources of data were used in the compilation of this report:

i) Research of published geological records;

ii) Research of mining records held at The Coal Authority's archive in Mansfield;

iii) Research of The Coal Authority's interactive map, accessed on the 19th October 2021;

iv) The findings of The Coal Authority's mining report reference no. 51002679621001;

v) The findings of Public Health England's Radon report and

vi) the archive records of Blandford Consulting.

The findings of this report are necessarily based upon the data used in its compilation and may be amended in the future in the light of additional material information. The report must only be used in its entirety for its stated purpose.

/Cont....

2 Brief Description of the Site

The parcel of land that is the subject of this report ('the Site') is situated on the north-eastern fringes of Pengam on westerly facing slopes above the Rhymney River (see Figure 1 and *General Location Plan, drawing no. BC/MB/10.21.05.01)*. The Site is roughly rectangular in outline with maximum dimensions of approximately 38m by 134m, it is fairly level at an approximate elevation of 166m aod (see *Detailed Location Plan, drawing no. BC/MB/10.21.05.03*). The Site fronts onto the A4049 and lies within a commercial development of garages and retail outlets at the edge of a mixed residential area. There is an area of woodland to the east, immediately beyond the A4049.

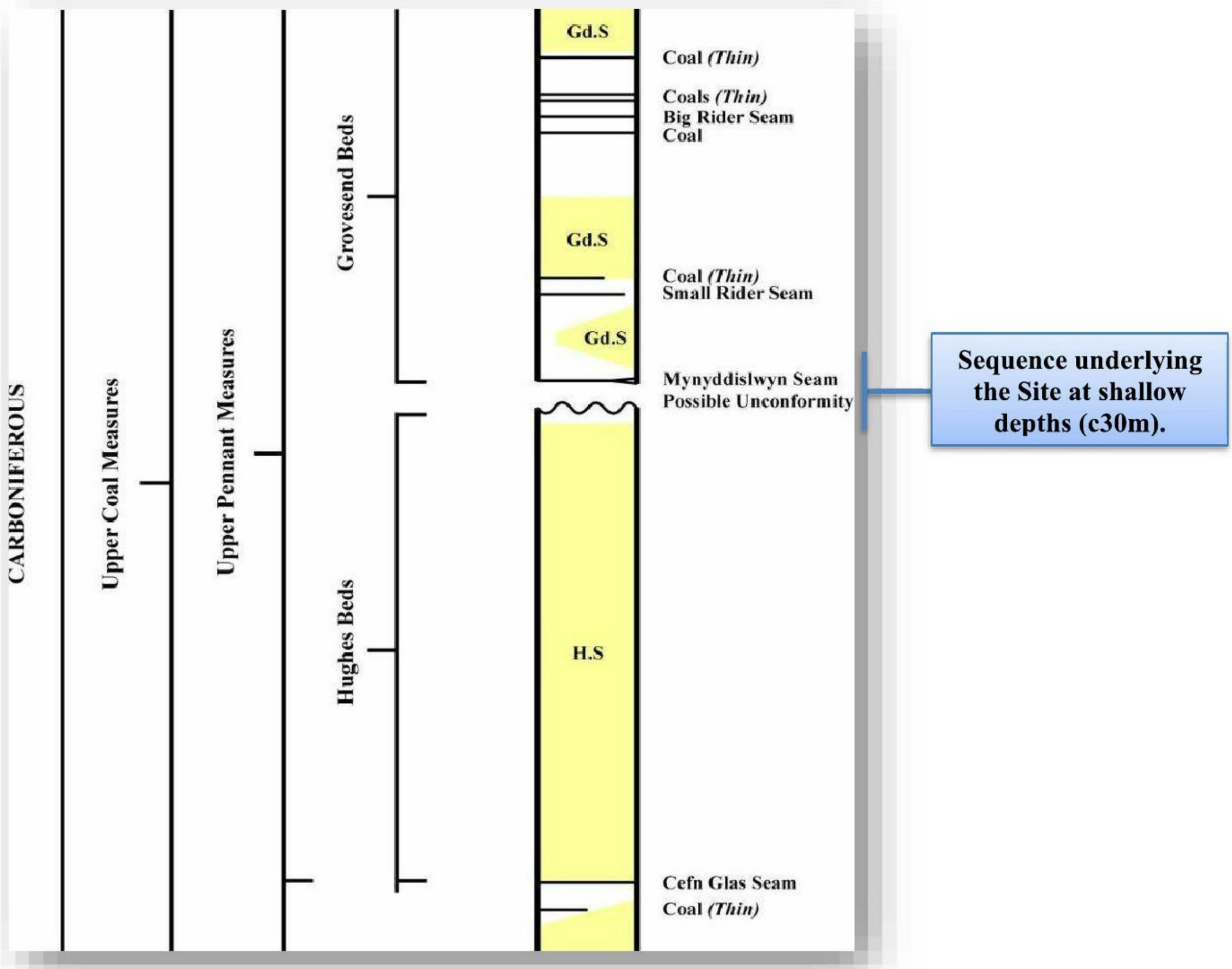
Figure 1
Aerial View of Site

3 Geology of the Site

The Site is situated fairly centrally towards the eastern end of the South Wales Coalfield so that it is underlain at shallow depths by strata assigned to the Grovesend Beds, a sub-division of the Upper Coal Measures. The most recently published geological sheet (BGS sheet ST 19 NE at 1:10,560 scale) shows the inferred position of the outcrop of the Mynyddislwyn Seam to be present approximately 90m west of the Site.

/Cont....

Figure 1
Part of the Stratigraphic Column.
(BGS ST 19 NE)



The Grovesend Beds are dominated by sandstones with subordinate mudstones and siltstones. A few metres of soft black mudstone usually immediately overlie the Mynyddislwyn Seam, which is itself characteristically split in this area into two leaves of coal separated by a bed of mudstone that is typically 1m thick.

The measures of the South Wales Coalfield have been affected by large normal faults often referred to as "cross-faults". In the Pengam area such faults typically have two trends, towards the north-west and towards the north-east. The published geological sheet shows the nearest such fault to the Site is the Pengam Fault, it is approximately 80m south-west of the Site.

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The published geological sheet shows the measures beneath the Site to be overlain with deposits of Boulder Clay. We have no detailed information on the thickness and nature of the Boulder Clay in the vicinity of the Site.

The published geological sheet indicates that the Site is not affected by landslip conditions.

4 Mining History

The district has had a long history of mining activities for coal over the greater part of the two centuries. Mining records show that the Mynyddislwyn Coal Seam has been extensively worked in the locality from a number of collieries, manly drift mines. The Coal Authority's interactive online resource shows the Site to be located where there is an extensive area of recorded shallow mine workings together with an extensive area of probable workings, *i.e.* workings for which The Coal Authority does not hold plan records (see Figure 3). The recorded and probable workings are in the Mynyddislwyn Seam. The Coal Authority's mining report makes reference to the Site being in an area that could be affected by underground mining in six coal seams at shallow to 710m depths and last mined in 1969.

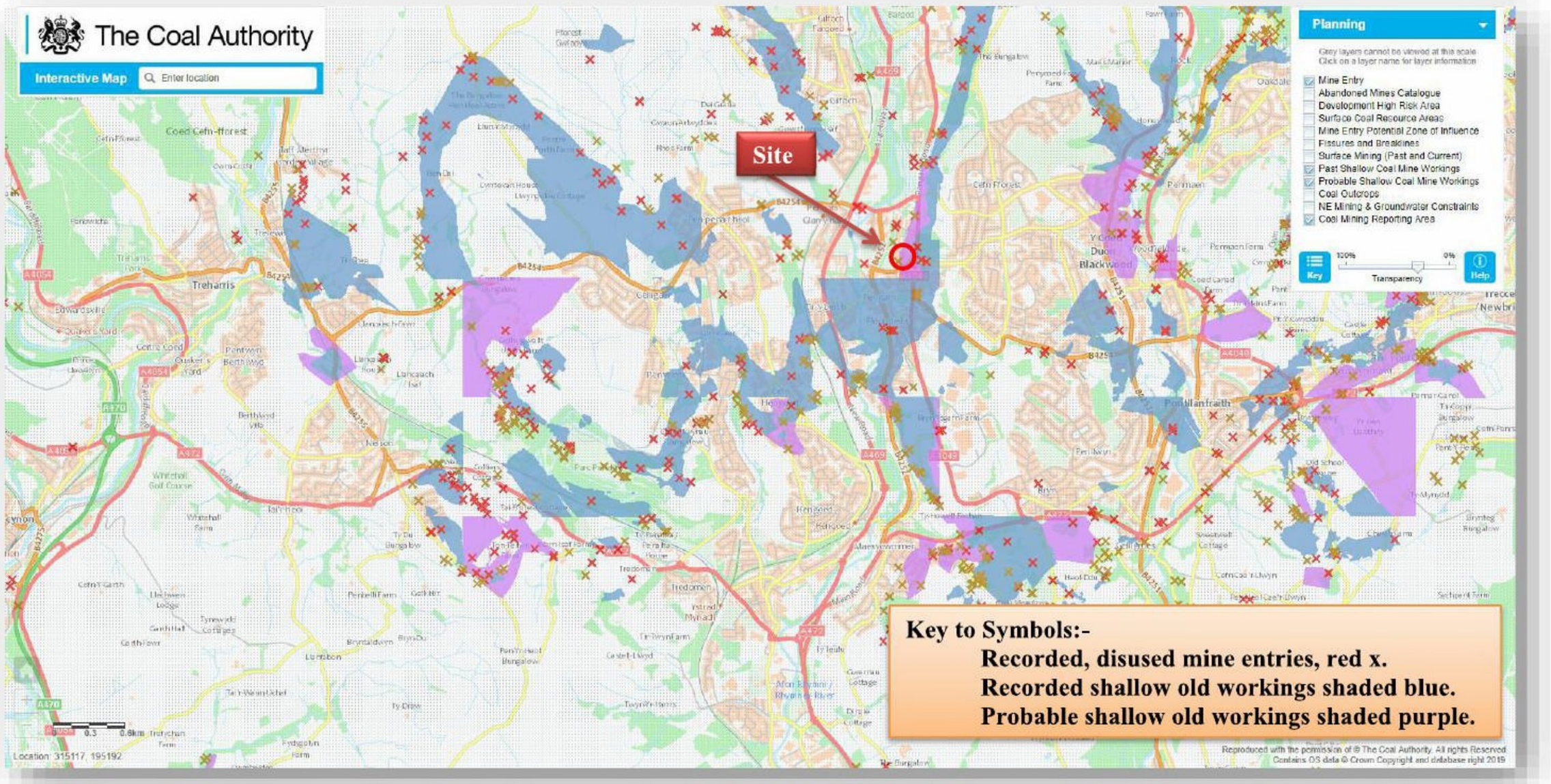
The abandoned old workings in the five deeper lying coal seams are of an age and/or are at depths such that any movement associated with them would have ceased long ago. These workings will have no effect upon the stability of the proposed light industrial units.

The Coal Authority's mining report identifies the presence of only a single, disused mine entry, a shaft, within the confines of the Site or 20m of its boundary. The shaft is shown to be approximately 12m east of the north-east corner of the Site, immediately beyond the A4049. The Coal Authority has no record of what steps, if any, have been taken to stabilise the shaft.

There are no active mines, underground or opencast, in the locality that might affect the structural integrity of the proposed development and the Site has not been part of an opencast coal site.

/Cont....

Figure 3
Print-out of The Coal Authority's Interactive Map
(Accessed 19th October 2021)



/Cont....

5 Mine Gases

When coal seams are disturbed during mining operations methane can be released and can collect with other mine gases in the mining voids left by the operations. In certain circumstances mine gases can accumulate within buildings and cause fire or explosion or can result in asphyxiation. 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. The probable shallow mine workings beneath the Site could act as a source of mine gases, although collieries operating in the Mynyddislwyn Seam were naked light because the Seam produces little or no methane when cut. The Coal Authority has no record of an emission of mine gas at the Site that has required action. However, mine gases could potentially be venting from the nearby shaft.

6 Radon Gas

A Radon gas report obtained from the British Geological Survey identified that the Site is not in an area affected by Radon as defined by Public Health England (see Appendix II).

7 Discussion and Recommendations

7.1 Solid Geology

There is no risk to a residential development from the solid geology of the locality. The nearby Pengam Fault is sufficiently distant from the Site to pose no risk to the development.

7.2 Mining History

There is a risk of unrecorded shallow mine workings being present beneath the Site in the Mynyddislwyn Seam. The proximity of the Seam's outcrop to the Site results in a

/Cont....

situation where the Seam will be at very shallow depths beneath the Site and any old workings that are present in the Seam will pose a high risk of them collapsing to the surface. It is recommended that the risk from shallow mine workings is assessed in greater detail by means of exploratory boreholes; the boreholes and any remediation of old workings will require a permit from The Coal Authority; the work should be supervised by a Chartered Geologist or other competent person. The boreholes should be monitored for the presence of mine gases.

The nearby shaft is on third party land and so cannot be physically examined. The above recommended boreholes will provide information on the depth to rockhead that would be useful in informing an assessment of the risk from the shaft.

The risk of an unrecorded mine entry being present on the Site cannot be entirely discounted given the mining history of the area. Excavations during the development should be monitored for any unusual features that might indicate the presence of a mine entry. If anything unusual is noted then the excavation work must stop immediately and advice sought from The Coal Authority or from a Chartered Geologist.

7.3 Radon Gas

There is no risk from Radon gas and the appropriate response for building control purposes is NONE.

PLANS

THE ENTERPRISE CENTRE,
MERTHYR INDUSTRIAL PARK,
PENTREBACH,
MERTHYR TYDFIL,
SOUTH WALES,
CF48 4DR.

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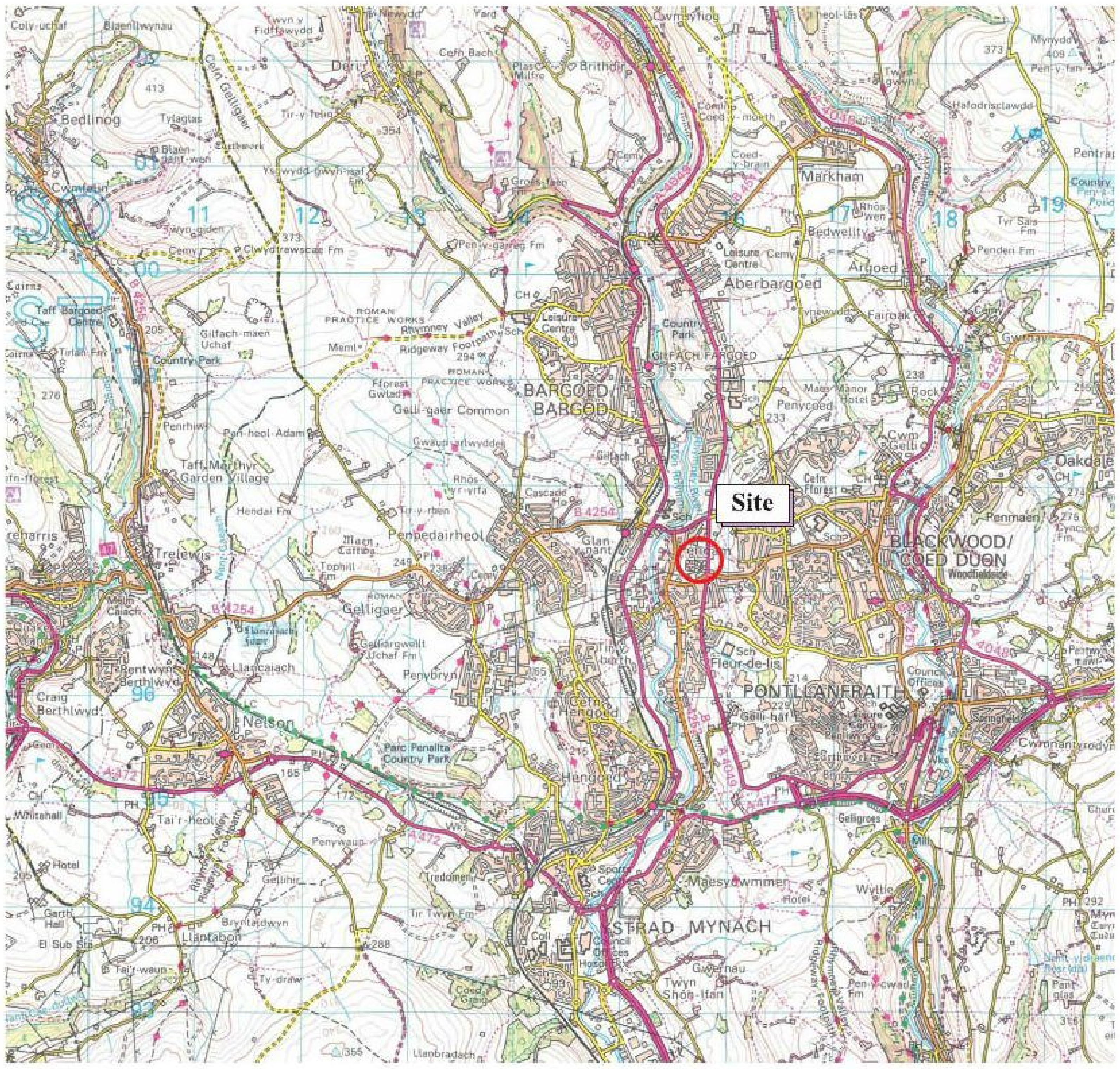
Geologists Working With The Environment....



Study on Land at Fairview Garage, Pengam.

General Location Plan.

Plan Scale: 1:50,000.

Key to Symbols:

○ **Approximate Position of Site.**

Note:
North is at top of plan.

The Enterprise Centre,
Merthyr Industrial Park,
Pentrebach,
Merthyr Tydfil,
South Wales,
CF48 4DR.

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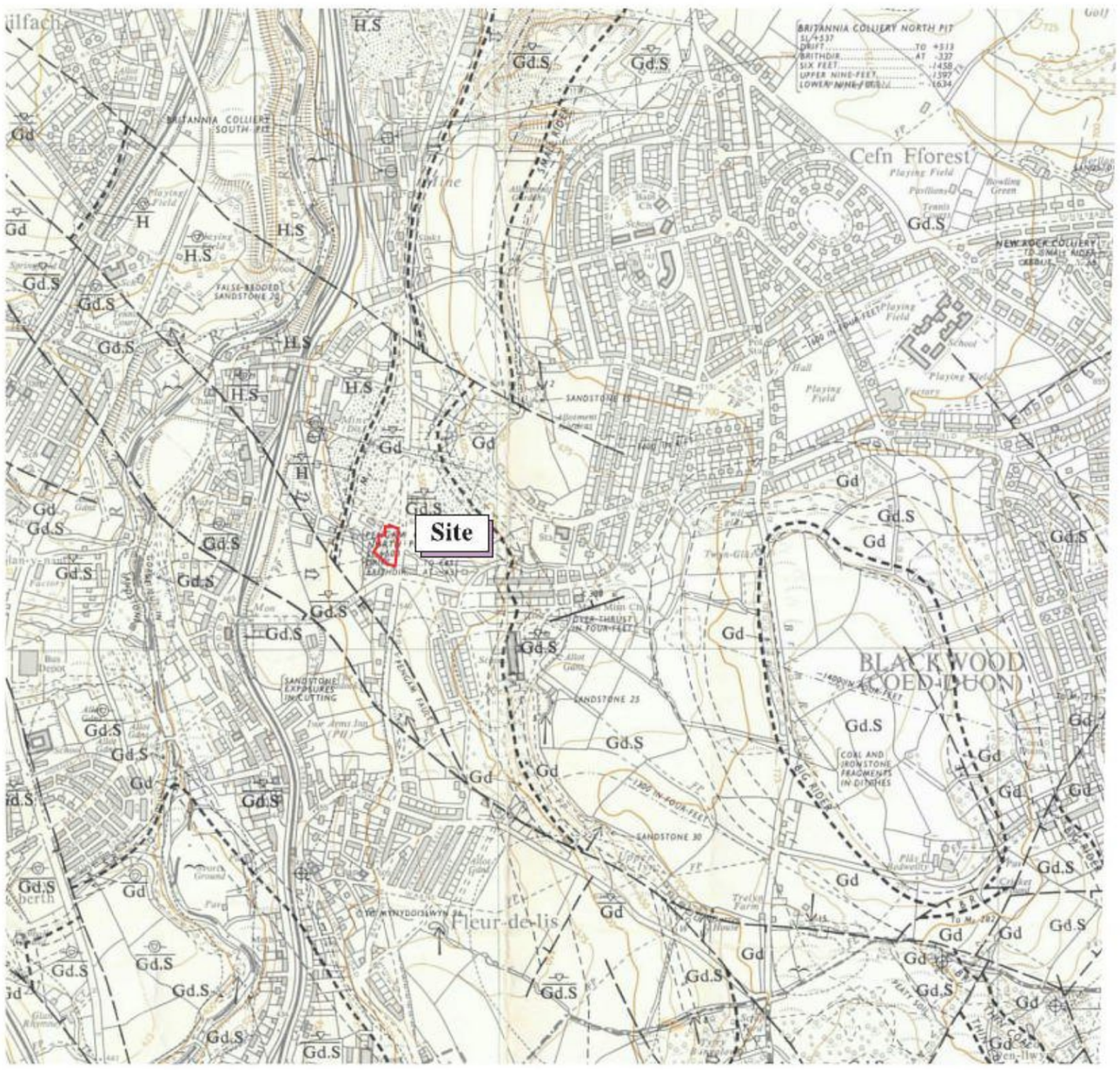
Drawing No: BC/MB/10.21.05.01.

Study on Land at Fairview Garage, Pengam.

Geology Plan.

Plan Scale: 1:10,560.



Key to Symbols:

Approximate Site Boundary.

Note:

North is at top of plan.

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Merthyr Industrial Park,
Pentrebach,
Merthyr Tydfil,
South Wales,
CF48 4DR.

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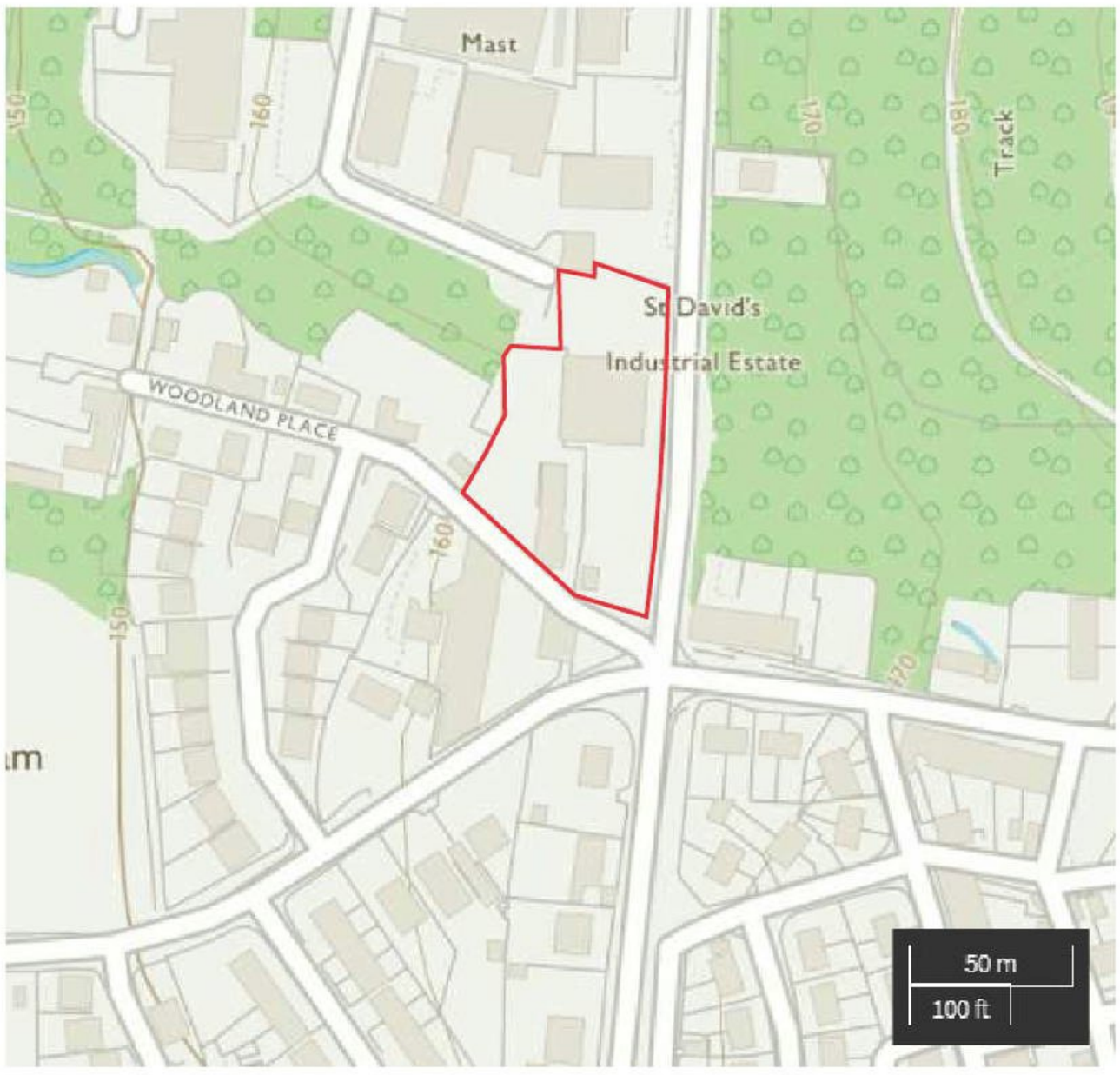
Drawing No: BC/MB/10.21.05.02.

Study on Land at Fairview Garage, Pengam.

Detailed Location Plan.

Plan Scale: See Plan.



Key to Symbols:

Approximate Site Boundary.

Note:
North is at top of plan.

THE ENTERPRISE CENTRE,
MERTHYR INDUSTRIAL PARK,
PENTREBACH,
MERTHYR TYDFIL,
SOUTH WALES,
CF48 4DR.

BLANDFORD CONSULTING

Geologists Working With The Environment....

Drawing No: BC/MB/10.21.05.03.

Appendix I

Copy of The Coal Authority's Mining Report, reference no. 510026796210 01

The Enterprise Centre,
Merthyr Industrial Park,
Pentrebach,
Merthyr Tydfil,
South Wales,
CF48 4DR.

Blandford Consulting

Geologists Working With The Environment....

The Coal Authority

CON29M
coal mining report

FAIR VIEW FILLING STATION, LAND AT NEW ROAD, PENGAM, CAERPHILLY COUNTY BOROUGH, NP12 3QY

Known or potential coal mining risks

Further action

These additional reports can give further detail on the risks identified:

- Mine entry interpretive report
- Mine entry plan and data sheets
- Subsidence claims 50m buffer report

For more information please see our **Further action reports on page 10**

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. In view of the coal mining circumstances we would recommend that any planned or future development should follow detailed technical advice before beginning work on site. Please see **page 3** for further details on **Future development**.

Your reference: **BC/MB/10.21.05**
Our reference: **51002679621001**
Date: **20 October 2021**

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

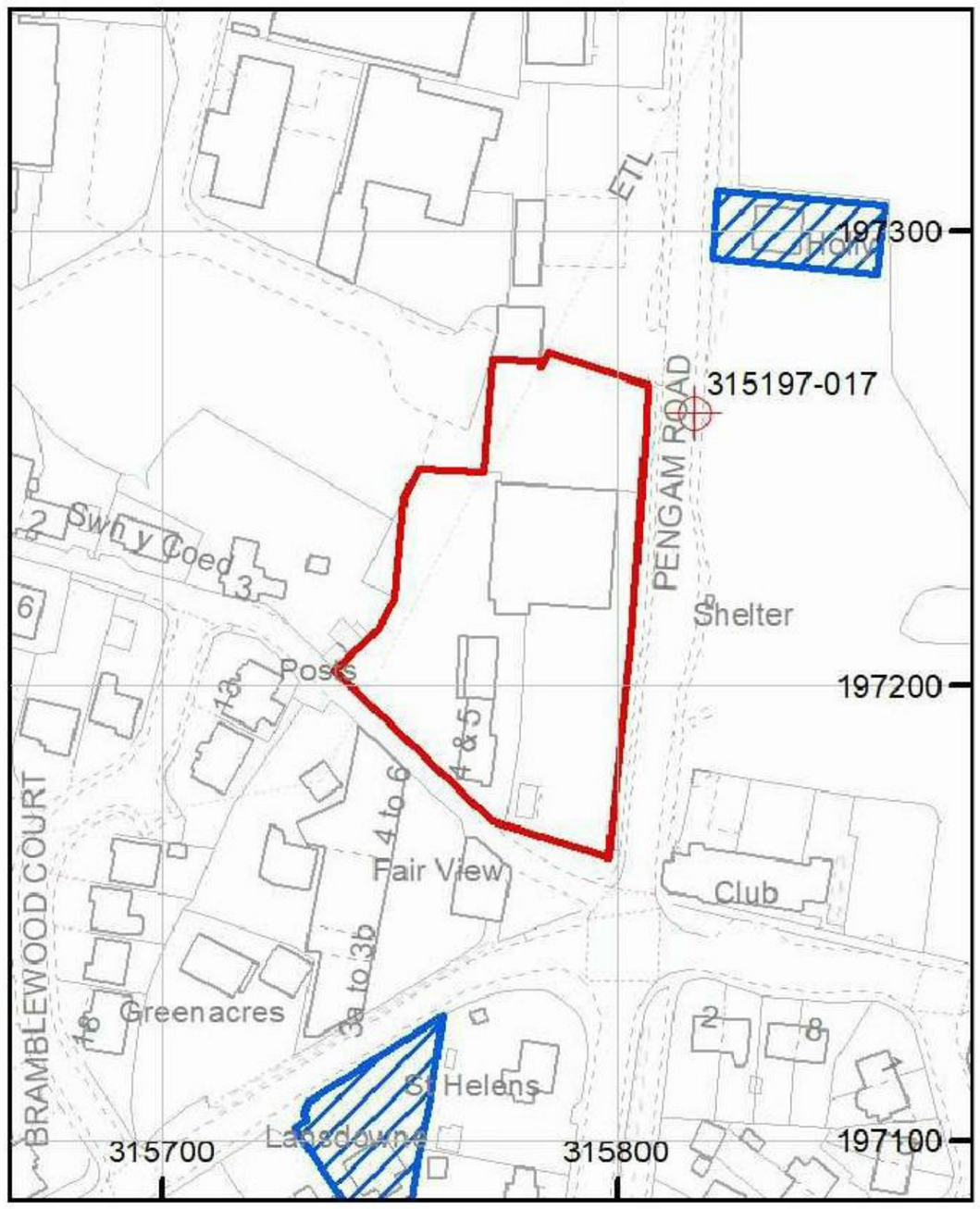
Enquiry boundary

Key

Approximate position of enquiry boundary shown

Disused mineshaft

Coal claims



We can confirm that the location is **on the coalfield**

Map data

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

If you would like this information in an alternative format, please contact our communications team on **0345 762 6848** or email **communications@coal.gov.uk**.

Professional opinion

Mine entries

The enquiry boundary shows the approximate location of the disused mine entry/entries referred to in this report. Property owners have the benefit of statutory protection (under the Coal Mining Subsidence Act 1991). This contains provision for the making good, to the reasonable satisfaction of the owner, of physical damage caused by disused coal mine workings including disused coal mine entries. A leaflet setting out the rights and obligations of either the Coal Authority or other responsible persons under the 1991 Act can be obtained by visiting www.coal.gov.uk. Please note this Act is not valid where coal was worked or extracted 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 wish to discuss the relevance of any of the information contained in this report, you should seek the advice of a qualified mining engineer or surveyor. If you or your advisor wishes to examine the source plans from which the information has been taken, these are available to view, at our Coal Authority head office in Mansfield. To book an appointment please call **01623 637 225**. Should you or your advisor wish to carry out a physical investigation that may enter, disturb or interfere with any disused mine entry, prior permission must be sought from the owner. For coal mine entries, the owner will normally be the Coal Authority.

The Coal Authority, regardless of responsibility and in conjunction with other public bodies, provide an emergency, 24 hour call out facility in coalfield areas to assess the public safety implications of mining features (including disused mine entries). To report an emergency you can call 01623 646 333.

Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed.

If you are looking to develop, or undertake works, within a coal mining development high risk area your Local Authority planning department may require a Coal Mining Risk Assessment to be undertaken by a qualified mining geologist or engineer. Should you require any additional information then please contact the Coal Authority on **0345 762 6848** or email **cmra@coal.gov.uk**.

Detailed findings

1 Past underground coal mining

The property is in a surface area that could be affected by underground mining in 6 seams of coal at shallow to 710m depth, and last worked in 1969.

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

Within, or within 20 metres of, the boundary of the property there is 1 mine entry, the approximate position of which is shown on the enquiry boundary plot. For reasons of clarity, mine entry symbols may not be drawn to the same scale as the plan.

There is no record of what steps, if any, have been taken to treat the mine entry.

This information is based on the information that the Coal Authority has at the time of this enquiry.

Based on the Coal Authority's knowledge of the mining circumstances at the time of this enquiry, there may be unrecorded mine entries in the local area that do not appear on Coal Authority records.

For an additional fee, the Coal Authority can provide a Mine Entry Interpretive Report. The report will provide a separate assessment for the mine entry/entries referred to in this report. It gives an opinion on the likelihood of mining subsidence damage caused from ground movement as a consequence of the mine entry/entries. It also gives details of the remedies available for subsidence damage where the mine entry was sunk in connection with coal mining.

Please note that it may not be possible to produce a report if the main building to the property cannot be identified from Coal Authority plans (ie for development sites and new build).

For further advice on how to order this additional information please visit www.groundstability.com.

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

There are 2 claims within 50 metres of the property boundary that do not match the property address. These are shown on the enquiry boundary plot.

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.

If further subsidence damage claims information is required, please visit www.groundstability.com.

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 in an area where a notice to withdraw support was given in 1975.

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

Further action reports

Mine entry interpretive report - assesses the risk of ground movement from mine entries in, or within 20 metres of, the property boundary. To order this report, use the same boundary as the CON29M report, then draw the building on the additional map screen.

For more information and to order this report please visit:
https://www2.groundstability.com/interpretive-report

Mine entry plan and data sheets - give additional information on mine entries recorded on a piece of land. To order this report use the same boundary as the CON29M report and a member of our team will contact you to confirm the mine entries to include in this bespoke report.

For more information and to order this report please visit:
https://www2.groundstability.com/plan-and-data-sheets

Subsidence claims 50m buffer report - gives information on coal mining subsidence claims within 50 metres of the property boundary. To order this report, use the same boundary as the CON29M mining report.

For more information and to order this report please visit:
https://www2.groundstability.com/subsidence-50m-buffer

Appendix II

Copy of The British Geological Survey's Radon Gas Report

The Enterprise Centre,
Merthyr Industrial Park,
Pentrebach,
Merthyr Tydfil,
South Wales,
CF48 4DR.

Blandford Consulting

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.

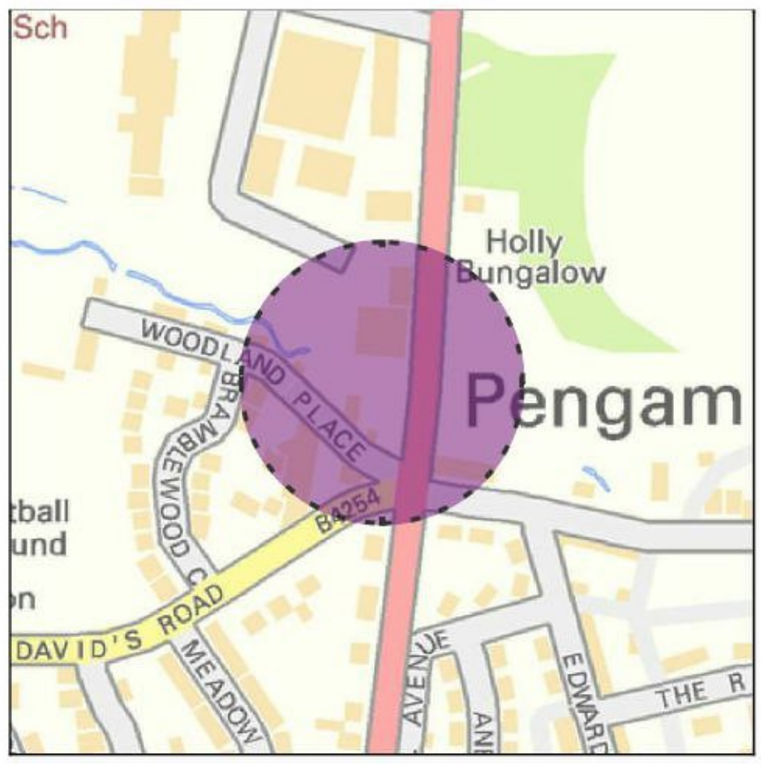
The determination below follows advice in *BR211 Radon: Guidance on protective measures for new buildings (2007 edition)*, which also provides guidance on what to do if the result indicates that protective measures are required.

Location

315787, 197205 (British National Grid)

20/10/2021 11:10:58 GMT

Location Map



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

No

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

The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). The property is not 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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