

Report No. BC/MB/12.13.01.

Mining Risk Assessment: Land at 1 Park View House, Heolgerrig, Merthyr Tydfil.

Prepared on behalf of:

Mr J. Carter Evans.

By:



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Mining Risk Assessment: Land at 1 Park View House, Heolgerrig, Merthyr Tydfil.

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<i>BC/MB/12.13.01.01.</i>	<i>General Location Plan.</i>	<i>1:50,000.</i>
<i>BC/MB/12.13.01.02.</i>	<i>Geology Plan.</i>	<i>1:10,560.</i>
<i>BC/MB/12.13.01.03.</i>	<i>Detailed Location Plan.</i>	<i>1:1,250.</i>
<i>BC/MB/12.13.01.04.</i>	<i>Extract from Mine Records Plan. Six Feet Seam.</i>	<i>1:2,500.</i>
<i>BC/MB/12.13.01.05.</i>	<i>Extract from Mine Records Plan. Nine Feet Seam.</i>	<i>1:2,500.</i>

Appendix

Copy of The Coal Authority's Report, reference no. 51000351268001.

Mining Risk Assessment: Land at 1 Park View House, Heolgerrig, Merthyr Tydfil.

1 Introduction

This report has been prepared on behalf of our client:

*Mr J. Carter Evans,
1 Park View House,
Heolgerrig,
Merthyr Tydfil,
CF48 1SY*

and relates to a parcel of land in Heolgerrig, Merthyr Tydfil where planning application has been made to erect a detached dwelling on the land. 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 dwelling and thereby assesses the mining risk to the proposed development. The report provides the Coal Mining Risk Assessment required by the Local Planning Authority. Recommendations are made for exploratory boreholes to examine in greater detail and, where appropriate, stabilise any shallow mine workings that may underlie the Site.

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) The findings of The Coal Authority's report, reference no. 51000351268001;*
- iv) 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.

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2 Brief Description of the Site

The plot of land that is the subject of this report, 'the Site' is located in the village of Heolgerrig, approximately 2 kilometres west of the centre of Merthyr Tydfil (see *General Location Plan, drawing no. BC/MB/12.13.01.01*); it is irregular in outline and has maximum dimensions of 42m by 20m and is at an approximate elevation of 292m aod (see *Detailed Location Plan, drawing no. BC/MB/12.13.01.03*). The Site is located in a residential area on the fringes of Heolgerrig amongst a mixture of detached, semi-detached and terraced dwellings; it fronts onto the road known as 'Heolgerrig', the former parish road linking Merthyr Tydfil to Aberdare. The Site is on north-easterly facing slopes of the Taff Valley on the side of Mynydd Aberdâr.

3 Geology of the Site

The Site is situated near the northern margin of the South Wales Coalfield and is underlain at shallow depths by strata assigned to the Middle Coal Measures, a sub-division of the Upper Carboniferous Period. The most recently published geological sheet at 1:10,560 scale (SO 00 NW) shows the inferred positions of the outcrop of the Four Feet Seam to be present approximately 100m south-west of the Site (see *Geology Plan, drawing no. BC/MB/12.13.01.02*). It can be inferred from the geological sheet that the outcrop of the Six Feet Seam will be present close to the Site. Mining records show the Six Feet Seam's outcrop to be present immediately to the south of the Site (see *Extract from Mine Records Plan: Six Feet Seam, drawing no. BC/MB/12.13.01.04*). The published geological sheet shows the outcrop of the Nine Feet Seam to be present approximately 300m north of the Site; mining records indicate it may be a little further north than this. The average dip of the strata in the region is 1 in 13 towards the south-west.

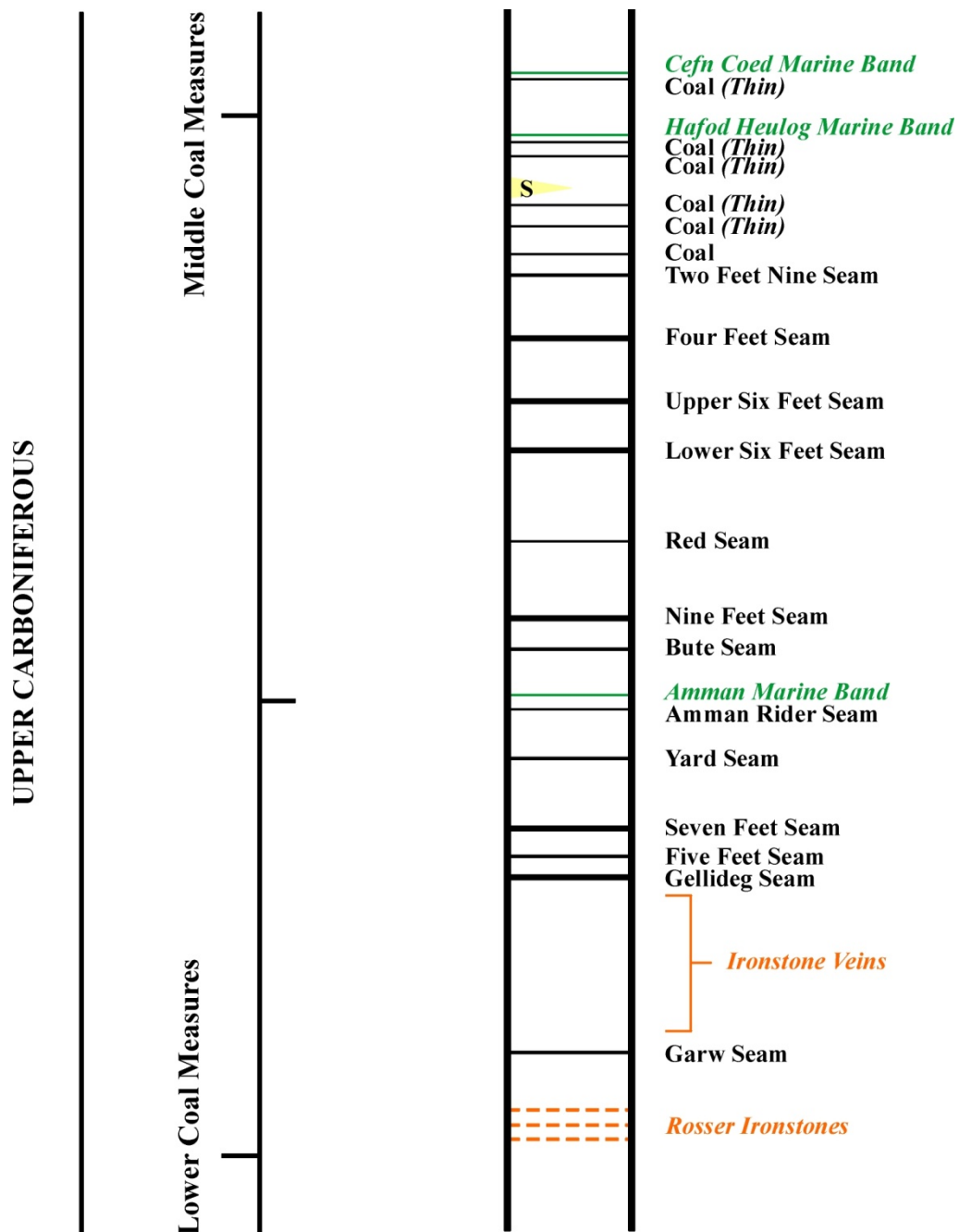
When both sets of records are taken together it is apparent that the Six Feet Seam does not underlie the Site and the Nine Feet Seam underlies the Site at relatively shallow depths. A thin coal seam, the Red Seam, is sometimes present between the above two seams, but its presence has not been confirmed in this area. Exploratory drilling carried out in the surrounding area indicates that the Upper and Lower Six Feet Seams are two separate seams in some areas of

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Heolgerrig and elsewhere combine to form one, thick, composite seam. Exploratory drilling immediately to the west of this Site suggests that the Six Feet Seam is represented by one, thick seam in the vicinity of the Site.

Part of the Stratigraphic Column.

Scale: Not to Scale.



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Other coal seams underlie the Site at increasing depths, the principal ones, in descending order, are the Bute, Yard, Seven Feet, Five Feet/Gellideg and the Garw Seams (see *Part of the Stratigraphic Column*, above); there are also a number of ironstone veins below the Five Feet/Gellideg Seam.

The coal measures of the South Wales Coalfield have been affected by large faults. In the Heolgerrig area these large faults have a slightly sinuous trace at the surface and an average trend towards the north-west. The published geological sheet indicates that the Site is not affected by large scale faulting.

The published geological sheet indicates that locally the coal measures are overlain with deposits of glacial boulder clay. We have no detailed information relating to the nature and thickness of the Boulder Clay at the Site. Published geological records indicate that the Site is not affected by landslip.

4 Mining History

The area has been subject to extensive mining operations for both coal and ironstone dating back to the earliest part of the nineteenth century. Coal seams and ironstone veins were accessed by adits driven into the mining horizons near their outcrops and by shafts sunk into the deeper coal seams and ironstone veins and there are a large number of disused shafts and adits in the locality. Air shafts were also sunk in order to provide ventilation to the underground mining operations. Our search of mining records found the Site to be underlain by old workings in a number of coal seams and ironstone veins, many of which are at considerable depths beneath the Site.

The shallowest seam underlying the Site that is thick enough to have supported underground mining operations is the Nine Feet Seam, which underlies the Site at relatively shallow depths; it is a thick coal seam of variable thickness and structure that has been mined extensively across a large area of the district in underground mining operations. Mining records show that the Seam was mined fairly intensively both to the north and south of the Site, the

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former workings were prosecuted from Peter's Nine Feet Level (see *Extract from Mining Records Plan: Nine Feet Seam, drawing no. BC/MB/03.13.02.05*). The mine plan suggests that no workings took place in this seam beneath the Site, however, the mine plan does not necessarily show all the underground workings that have taken place and the possibility of further, unrecorded workings being present beneath the Site cannot be entirely discounted. Other studies in the Heolgerrig area have identified unrecorded old workings in the Six Feet and Nine Feet Seams. Other workings are present in coal seams and ironstones lower in the geological sequence and at greater depths beneath the Site. Underground mining operations in the area ceased in the late 1930s.

Otherwise, there are no active coal mines in the locality, either deep mines or opencast, that would affect the structural integrity of the proposed dwellings and the Site has not previously 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. A number of studies of the old workings around Heolgerrig and dating back to the mid to late nineteenth 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.

6 Risk Assessment: Discussion and Recommendations

6.1 Solid Geology

There are no features associated with the solid geology of the Site that would require any particular measures to be included in the design and construction of the foundations for

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the proposed dwellings. It is recommended that no further action is required in this respect.

6.2 Mining History

6.2.1 *Shallow Mine Workings*

The area has been subject to extensive underground mining operations since at least the earliest part of the nineteenth century. The Nine Feet Seam is the shallowest coal seam underlying the Site that is thick enough to have supported underground mining operations. Whilst mining records suggest that the Seam has not been mined beneath the Site the possibility of unrecorded workings being present cannot be entirely discounted. In the Heolgerrig area the thickness of the Nine Feet Seam varies between 2.0m and 3.5m and voids of similar height have been encountered in exploration boreholes in the locality. With such large voids present in the Seam the risk of the voids collapsing to the surface and inducing subsidence is significant. The mine plan for the Seam does not include information that would permit the depth of the Seam beneath the Site to be determined nor does it indicate the thickness of the Seam beneath the Site. Consequently, the risk of surface subsidence occurring at the Site cannot be determined from the mine plans. If such subsidence were to occur it could result in structural distress to the proposed dwelling. Other old workings in coal seams and ironstone veins further down in the geological sequence are all too deep and/or are of an age such that they will not affect the structural integrity of the proposed dwelling.

6.2.2 *Mine Entries*

Our searches found no record of disused mine entries within the bounds of the Site or 20m of its boundaries. The location of the Site relative to the outcrop of the Nine Feet Seam means that it is highly unlikely that a disused adit is present within or near the Site. The pattern of mine workings in the Nine Feet Seam strongly suggests that it is unlikely that a disused air shaft is present within or near

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the Site, although the presence of an unrecorded air shaft cannot be entirely dismissed.

6.2.3 Mine Gases

Various studies of the shallow old workings in the Heolgerrig area have found no particular risk from mine gases. However, it would be prudent to monitor any exploratory boreholes for evidence of mine gases.

6.3 Risk Assessment

There is a significant risk of unrecorded mine workings being present beneath the Site in the Nine Feet Seam with the workings at relatively shallow depths. The lack of detailed information in available mining records means that the risk of any workings present in the Seam collapsing to the surface and resulting in structural distress to the proposed dwelling cannot be determined with any precision. Old mine workings in other coal seams and ironstone veins lower in the geological sequence are of an age and are too deep beneath the Site to pose a risk and may be excluded from any further study. There is only a low risk of a disused mine entry being present on or near the Site.

There are no active collieries or opencast coal sites in the locality that would affect the structural integrity of the proposed dwelling and the Site has not been part of an opencast site.

The risk from mine gases is considered to be very low.

6.4 Recommendations

The risk resulting from the mining heritage at the Site should be further explored with exploratory boreholes. It would be prudent to include monitoring in any exploration programme to assess the presence or otherwise of mine gases.

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If shallow old workings are found to be present the risk from those mining relics should be reduced by means of drilling and grouting.

The recommended further site investigation and any subsequent works should be designed and supervised by a Chartered Geologist or other competent person.



**Dr Malcolm Blandford,
Chartered Geologist.**

Report Date: 13th December 2013.

***Blandford Consulting,
Consultant Geologists and Geotechnical Engineers,
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Tel. No. (01443) 693353. Fax. No. (01443) 693351.***

PLANS



THE ENTERPRISE CENTRE,
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MERTHYR TYDFIL,
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CF48 4DR.

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Geologists Working With The Environment....

Study on Land at 1 Park View House,
Heolgerrig, Merthyr Tydfil.

General Location Plan.

Plan Scale: 1:50,000.

Key to Symbols:



Approximate Position of Site.

Note:

North is at top of plan.

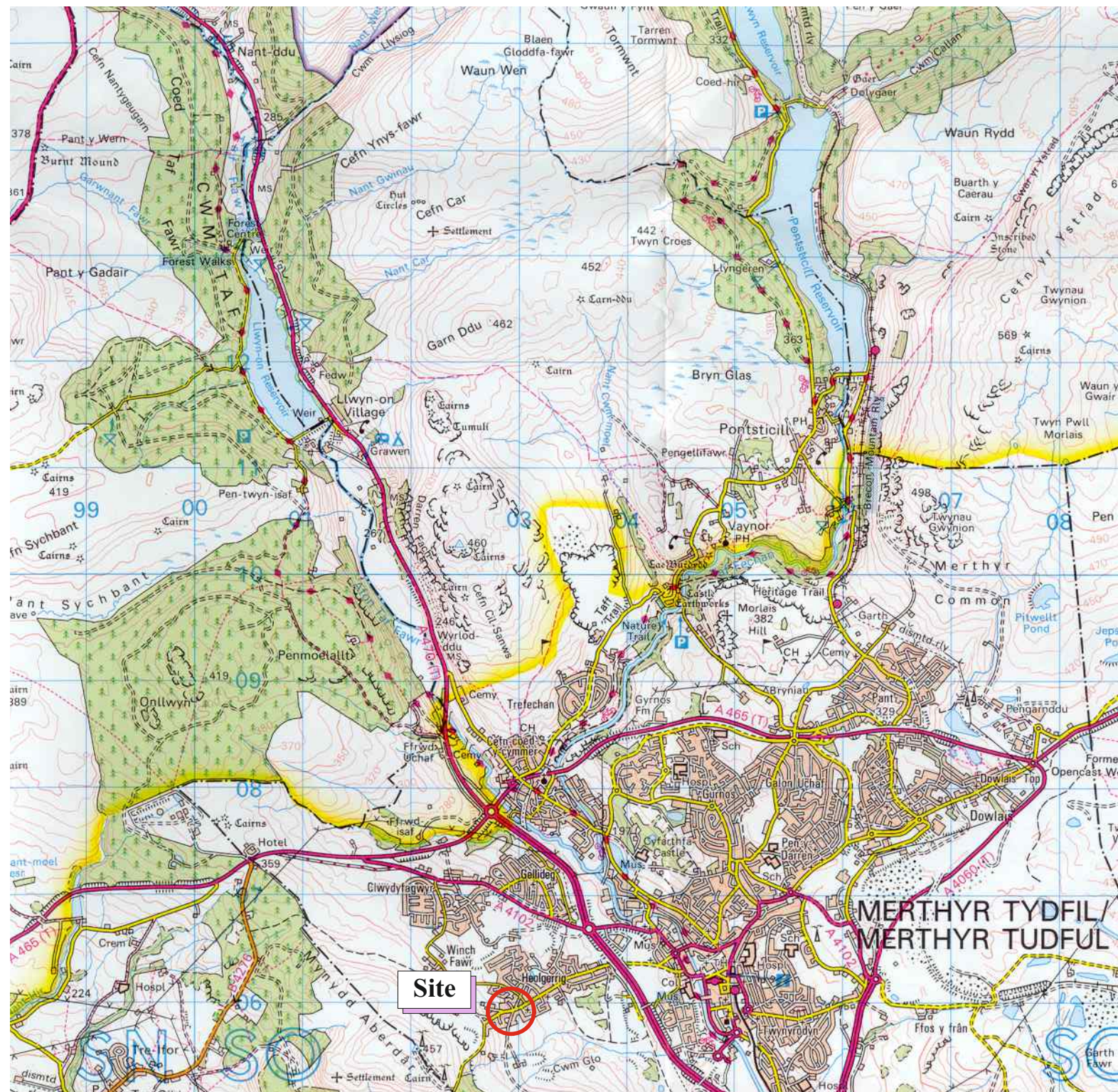
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Drawing No: BC/MB/12.13.01.01.



Study on Land at 1 Park View House,
Heolgerrig, 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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Drawing No: BC/MB/12.13.01.02.



Detailed Location Plan.

Key to Symbols:

Note:
North is at top of plan.



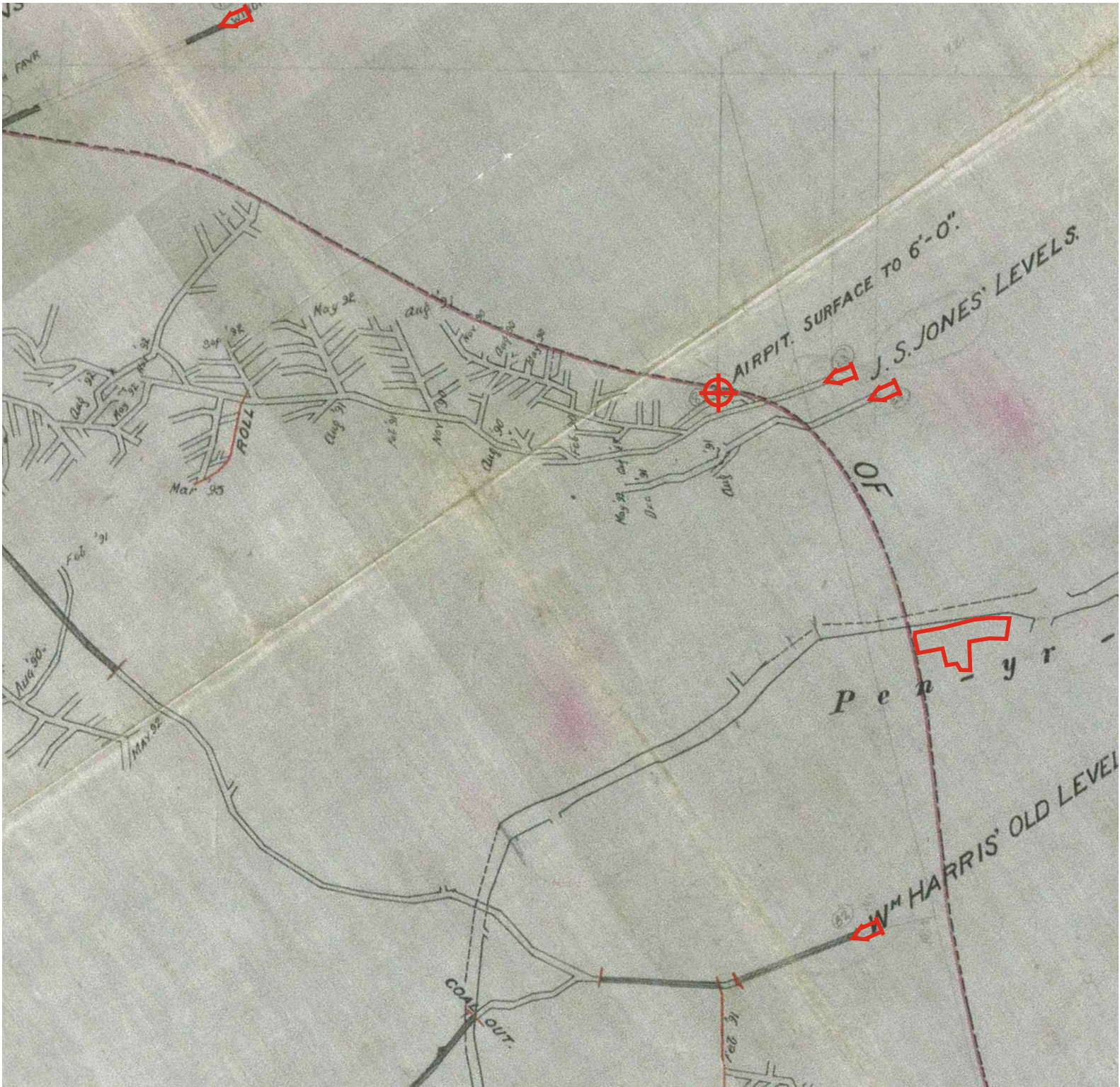
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Study on Land at 1 Park View House,
Heolgerrig, Merthyr Tydfil.

*Extract from Mine Records Plan.
- Six Feet Seam -*

Plan Scale: 1:2,500.



Key to Symbols:

-  **Approximate Site Boundary.**
-  **Approximate Location of Disused Adit.**
-  **Approximate Location of Disused Shaft.**

Note:
North is at top of plan.

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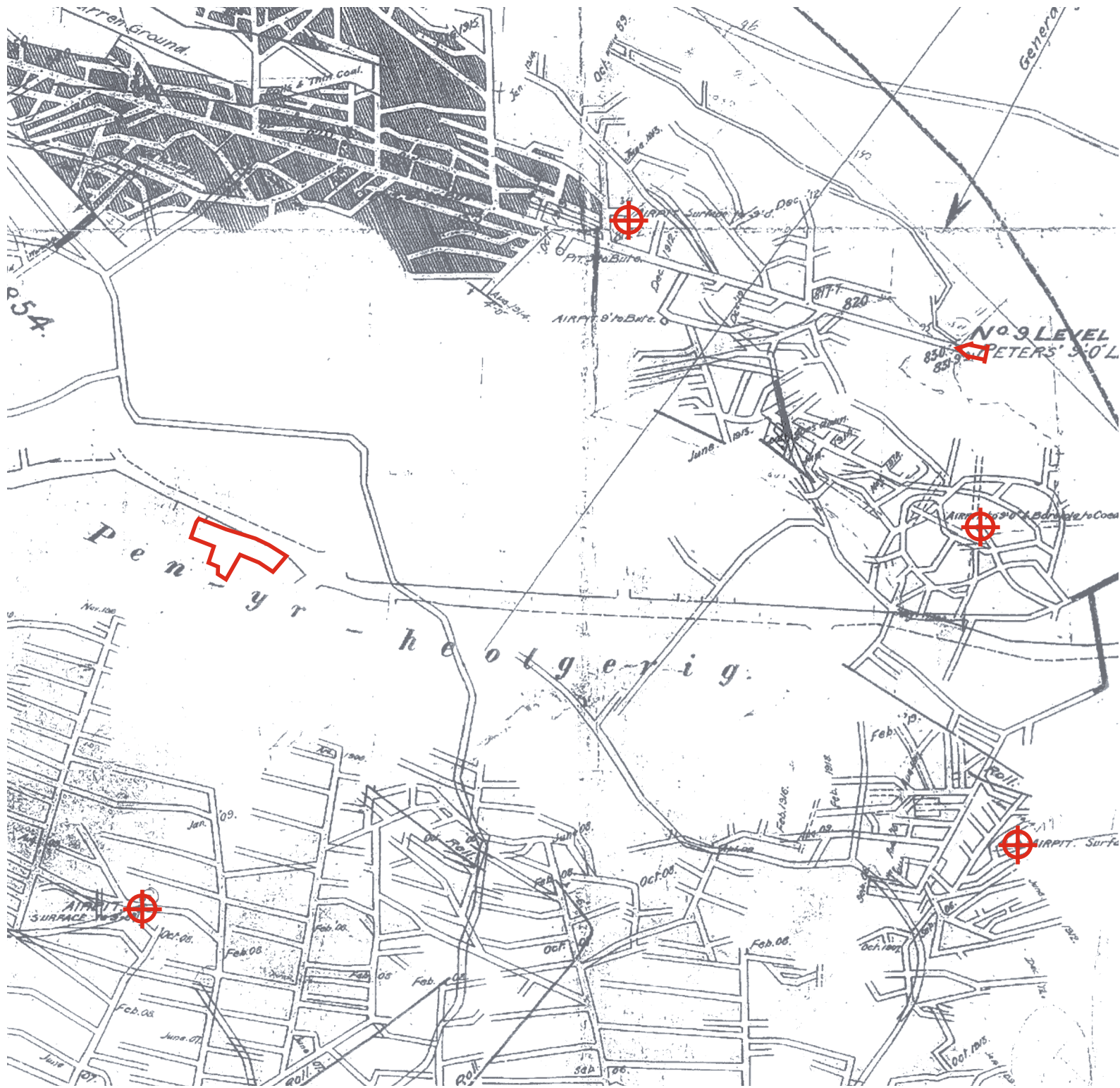
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Study on Land at 1 Park View House,
Heolgerrig, Merthyr Tydfil.

*Extract from Mine Records Plan.
- Nine Feet Seam -*

Plan Scale: 1:2,500.



Key to Symbols:

- Approximate Site Boundary.
- ➞ Approximate Location of Disused Adit.
- ⊕ Approximate Location of Disused Shaft.

Note:
North is at top of plan.

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APPENDIX



THE ENTERPRISE CENTRE,
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Geologists Working With The Environment....

The COAL AUTHORITY

Issued by:

The Coal Authority, Property Search Services, 200 Lichfield Lane, Berry Hill, Mansfield, Nottinghamshire, NG18 4RG

Website: www.groundstability.com Phone: 0845 762 6848 DX 716176 MANSFIELD 5

**JOHN CARTER-EVANS
PARK VIEW HOUSES
HEOLGERRIG
MERTHYR TYDFIL
MID GLAMORGAN
CF48 1SY**

Our reference:	51000351268001
Your reference:	JCE
Date of your enquiry:	12 August 2013
Date we received your enquiry:	12 August 2013
Date of issue:	13 August 2013

This report is for the property described in the address below and the attached plan.

Residential Enviro All-in-One - On Coalfield

1, PARK VIEW HOUSES, HEOLGERRIG, MERTHYR TYDFIL, MID GLAMORGAN, CF48 1SY

This report is based on and limited to the records held by, the Coal Authority, and the Cheshire Brine Subsidence Compensation Board's records, at the time we answer the search.

Coal mining	See comments below
Brine Compensation District	No

Information from the Coal Authority

Underground coal mining

Past

The property is in the likely zone of influence from workings in 2 seams of coal at 60m to 70m depth, and last worked in 1939.

Any ground movement from these coal workings should have stopped by now.

In addition the property is in an area where the Coal Authority believe there is coal at or close to the surface. This coal may have been worked at some time in the past.

Present

The property is not in the likely zone of influence of any present underground coal workings.

Future

The property is not in an area for which the Coal Authority is determining whether to grant a licence to remove coal using underground methods.

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

The property is not in an area that is likely to be affected at the surface from any planned future workings.

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

No notice of the risk of the land being affected by subsidence has been given under section 46 of the Coal Mining Subsidence Act 1991.

Mine entries

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

Coal mining geology

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

Opencast coal mining

Past

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

Present

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

Future

The property is not within 800 metres of the boundary of an opencast site for which the Coal Authority is determining whether to grant a licence to remove coal by opencast methods.

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.

Coal mining subsidence

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

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

The 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

There is no record of a mine gas emission requiring action by the Coal Authority within the boundary of the property.

Hazards related to coal mining

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

Comments on Coal Authority information

In view of the mining circumstances a prudent developer would seek appropriate technical advice before any works are undertaken.

Therefore 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 good engineering practice developed for mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or mines of coal without the permission of the Coal Authority. Developers should be aware that the investigation of coal seams/former mines of coal may have the potential to generate and/or displace underground gases and these risks both under and adjacent to the development should be fully considered in developing any proposals. The need for effective measures to prevent gases entering into public properties either during investigation or after development also needs to be assessed and properly addressed. This is necessary due to the public safety implications of any development in these circumstances.

Information from the Cheshire Brine Subsidence Compensation Board

The property lies outside the Cheshire Brine Compensation District.

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Additional Remarks

This report is prepared in accordance with the Law Society's Guidance Notes 2006, the User Guide 2006 and the Coal Authority and Cheshire Brine Board's Terms and Conditions 2006.

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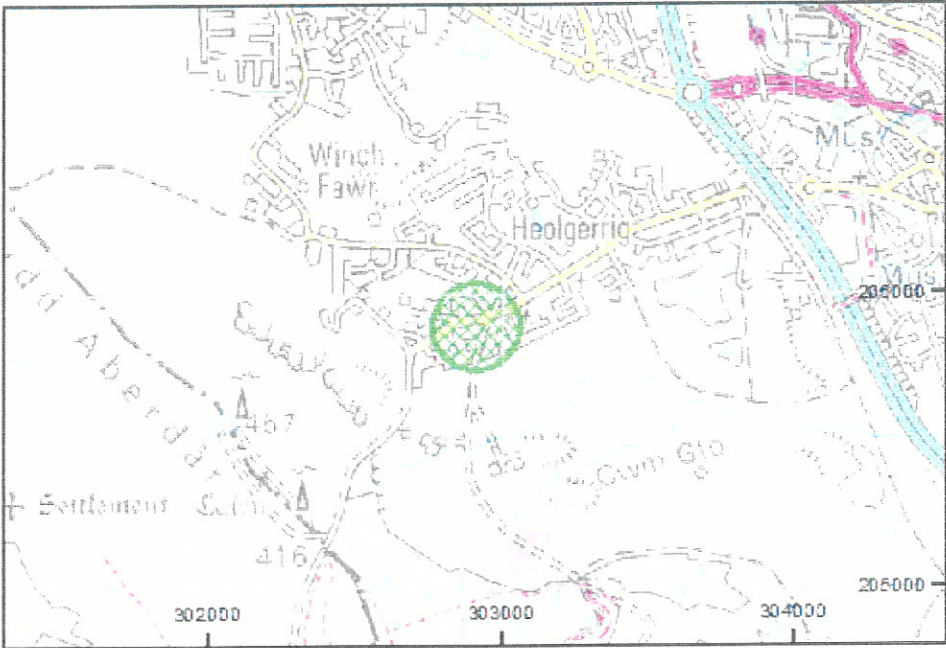
Where this Report is for a residential property, insurance is included to cover any loss in property value caused by any changes in the information contained in this report. Please see the attached certificate of insurance for the terms and conditions of this insurance. The insurance does not cover non-residential property or interpretive reports.

Issued by:	The Coal Authority, 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG
Tax Point Date:	12 August 2013
Issued to:	JOHN CARTER-EVANS PARK VIEW HOUSES HEOLGERRIG MERTHYR TYDFIL MID GLAMORGAN CF48 1SY
Property Search for:	1 , PARK VIEW HOUSES, HEOLGERRIG, MERTHYR TYDFIL, MID GLAMORGAN, CF48 1SY
Reference Number:	51000351268001
Date of Issue:	13 August 2013
Cost:	£66.00
VAT @ 20%:	£13.20
Total Received:	£79.20
VAT Registration	598 5850 68

Location map



Approximate position
of property



Enquiry boundary

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Key

Approximate position of enquiry
boundary shown

