

Report No. BC/MB/05.23.04.

**Coal Mining Risk Assessment:
Land Adjacent to 1 Mansfield Terrace,
Mountain Hare, Merthyr Tydfil.**

Prepared on behalf of:

Monarch Architectural Services.

By:



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Coal Mining Risk Assessment: Land Adjacent to 1 Mansfield Terrace, Mountain Hare, Merthyr Tydfil.

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Drawing No:		Scale:
<i>BC/MB/05.23.04.01.</i>	<i>General Location Plan.</i>	<i>1:50,000.</i>
<i>BC/MB/05.23.04.02.</i>	<i>Geology Plan.</i>	<i>1:10,560.</i>
<i>BC/MB/05.23.04.03.</i>	<i>Detailed Location Plan.</i>	<i>1:1,250.</i>

Appendix

Copy of The Coal Authority's mining report, reference no. 51002143722001.

Coal Mining Risk Assessment: Land Adjacent to 1 Mansfield Terrace, Mountain Hare, Merthyr Tydfil.

1 Introduction

This report has been prepared on behalf of our client:

***Monarch Architectural Services,
1 Glanynys Cottages,
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Aberdare,
CF44 0NN.***

and relates to land adjacent to 1 Mansfield Terrace (Grid ref 306160, 20624), where it is proposed to develop the land with a pair of semi-detached dwellings. This report discusses the geology and mining history of the Site and the immediately surrounding area as they may affect the proposed development and thereby assesses the risk from the mining heritage and from the geology.

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) Inspection of The Coal Authority's interactive map, accessed on the 30th October 2023;*
- iv) The findings of The Coal Authority's report, reference no. 51002143722001, and*
- v) 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 parcel of land that is the subject of this report ('the Site') is located at the north-eastern margins of Merthyr Tydfil in the district of Mountain Hare and is approximately 1.5 km south-east of the centre of the town (see Figure 1 and *General Location Plan, drawing no. BC/MB/05.23.04.01*). The Site is located on south-westerly facing slopes at an approximate elevation of 270m aod: it is rectangular in outline with approximate maximum dimensions of 16m and 24m (see *Detailed Location Plan, drawing no. BC/MB/05.23.04.03*). The Site lies on the fringes of a mixed residential area where houses and bungalows are a mixture of terraced, semi-detached and detached. There are sports fields to the south-west of the Site.

Figure 1
Aerial View of Site



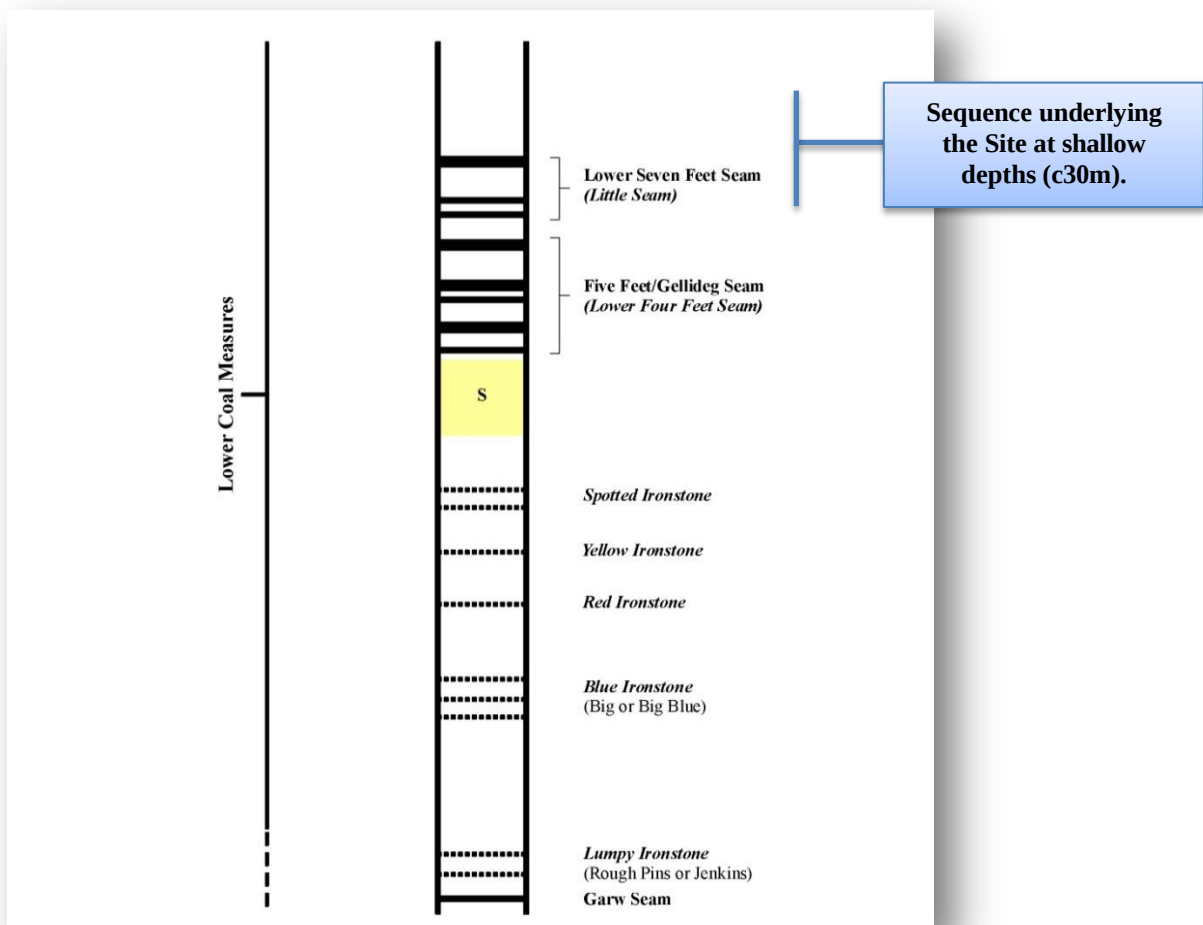
3 Geology of the Site

The Site is situated at the northern margin of the South Wales Coalfield and is underlain at shallow depths with strata assigned to the Lower Coal Measures, a sub-division of the Upper Carboniferous Period. The published geological sheet for the area at a 1:10,560 scale, SO 00

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NE, shows the inferred position of the outcrop of the Five Feet/Gellideg Seam to be present approximately 350m west of the Site (see *Geology Plan, drawing no. BC/MB/05.23.04.02*). The extrapolated position of the inferred outcrop of the Lower Seven Feet Seam would be approximately 150m west of the Site; the inferred outcrops of the coal seams follow a northerly trend along the slopes of the upper valley side. The regional dip of the coal measures in this area is 1 in 12 towards the south-west such that the Five Feet/Gellideg and Lower Seven Feet Seams underlie the Site at shallow depths. Beneath the Gellideg Seam in the geological sequence are a series of five ironstone veins, the Garw Coal Seam and then the Rosser Ironstones (see Figure 2, Part of the Stratigraphic Column).

Figure 2
Indicative Stratigraphic Column.



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The measures of the South Wales Coalfield have been affected by large normal faults, frequently referred to as 'cross faults'. In the Mountain Hare area these faults have a sinuous trace at the surface and an average trend towards the north-west. Published geological information shows that no such large fault affects the Site.

The published geological sheet shows the Site to be covered with glacial deposits of Boulder Clay and that the north-eastern section of the Site has on it Made Ground, almost certainly colliery spoil. We have no details of the thickness or engineering properties of the Boulder Clay or Made Ground present on the Site.

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

4 Mining History

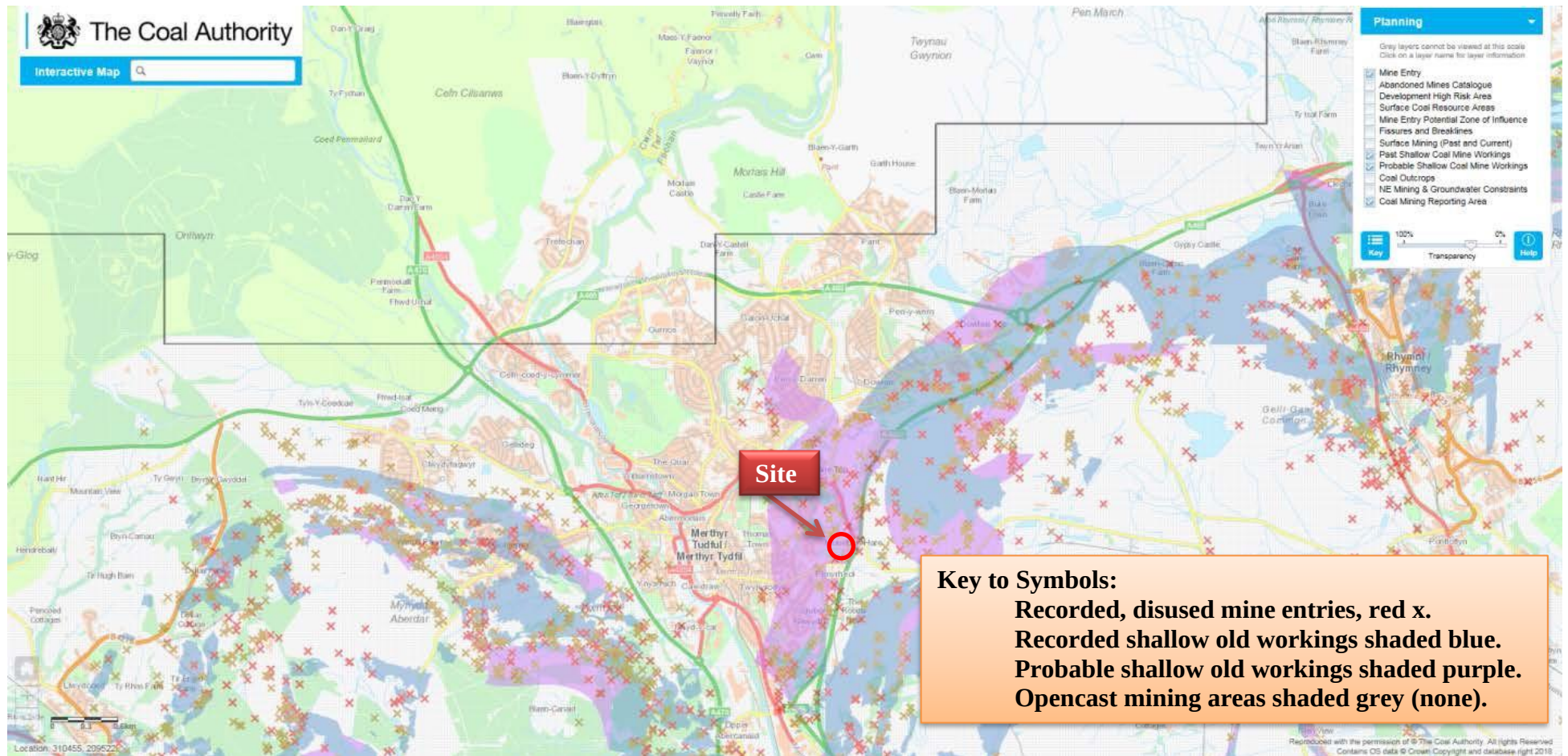
The general area has experienced extensive underground mining operations for coal and for ironstone dating back at least to the very earliest part of the nineteenth century. The workings were prosecuted from a number of adits driven into the valley sides at or near the outcrops of coal seams and ironstone veins and were supplemented with many shafts, principally to act as a source of air. Our searches identified that there are no records of underground mine workings within influencing distance of the Site. The mining records held by The Coal Authority are known to be incomplete, particularly in respect of older mining operations. There is a risk of shallow, unrecorded old workings underlying the Site and The Coal Authority's interactive map shows 'probable' mine workings underlying the Site i.e. unrecorded shallow mine workings.

Any ironstone workings that might be present beneath the Site will be at too great a depth to affect the proposed development.

Our searches found no record of a disused shaft or adit within the confines of the Site, a situation confirmed by The Coal Authority report no. 51002143722001. The risk of an unrecorded mine entry being present cannot be entirely discounted. The Site has not been part of an opencast coal site. The Coal Authority's mining report states that the Site has been part of an

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Figure 3
Print-out of The Coal Authority's Interactive Map
(Accessed 30th October 2023)



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opencast coal site. This is not the case, the boundary of the former East Merthyr Land Reclamation Scheme, Phase 2 ran along the boundary of the Site; the opencast site did not extend onto this Site. The excavations within the former opencast site would not have extended up to the boundary of the site. There are no operating collieries within influencing distance of the Site.

There are no recorded mine entries within the confines of the Site or within 20m of it.

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

5 Mine Gases

When coal is mined gases, including methane, are released and may accumulate in the voids left by the mining operations. These gases may later vent to atmosphere or be displaced by mine water flooding the mining voids and the gases forced to the surface. Mine gases may, in certain circumstances, accumulate within buildings and pose a risk of 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 or probable shallow mine workings underlying the Site that could act as a source for mine gases and the coal measures are locally overlain with deposits of Boulder Clay. The Coal Authority has no record of an incident involving mine gases at the Site that has required action.

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6 Radon Gas

Recent government guidelines recommend that the potential for Radon gas should be assessed for all new developments; the advice has been implemented by accessing Public Health England's interactive Radon map. The map identifies that the Site lies within an area that is not affected by Radon gas. The appropriate response for Building Control purposes is NONE.

7 Discussion and Recommendations

7.1 Solid Geology

There are no issues relating to the solid geology of the Site that would affect the structural integrity of a residential development and no further action is required in this respect.

7.2 Mining History

7.2.1 Shallow Mine Workings

The locality has experienced extensive mining operations for both coal and ironstone. There are no recorded underground mine workings that could affect the structural integrity of a residential development, but there is a risk of unrecorded shallow mine workings being present beneath the Site. It is recommended that once full planning permission is obtained and the positions of the dwellings are finalised a programme of exploration boreholes are drilled beneath the footprints of the dwellings to determine the depth and nature of any shallow mine workings that may be present.

Otherwise, there are no active mines in the locality, deep mines or opencast mines, that would affect the structural integrity of the proposed development and the Site has not been part of an opencast coal site.

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7.2.2 Mine Entries

Our searches found no record of disused mine entries within the bounds of the Site or within 20m of its boundary. The potential for an unrecorded air shaft or adit to be present cannot be entirely dismissed as a result of the mining history of the area. If anything unusual is observed during construction works then the work should be stopped immediately and advice should be sought from a suitably experienced Chartered Geologist or from The Coal Authority.

7.2.3 Mine Gases

The risk to the development from mine gases is low but it would be prudent to monitor the recommended boreholes for the presence of mine gases.

7.2.4 Radon Gas

Public Health England's interactive Radon map identifies that the Site lies within an area that is not affected by Radon gas and the appropriate response for building control purposes is NONE.

7.3 Summary of Risk Assessment

There is no risk to a residential development from the solid geology of the locality and no further study is required in this respect.

There is a risk of shallow, unrecorded mine workings being present beneath the Site.

The presence of a disused mine entry is considered to be very low.

There is no risk from Radon gas.

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7.4 Summary of Recommendations

A programme of exploration boreholes should be drilled on the Site in order to examine in greater detail the risk from shallow, unrecorded mine workings; the boreholes should be monitored for the presence of mine gases. The boreholes should be designed and supervised by a Chartered Geologist and will require a permit from The Coal Authority.

If any unusual feature that might indicate the presence of a disused mine entry is encountered during excavation works on the Site the work must be stopped immediately and advice sought from a suitable experienced Chartered Geologist or from The Coal Authority.

The appropriate response for Building Control purposes in respect of Radon is NONE.

In so far as the solid geology of the Site is concerned no particular measures need be included in the design and construction of the foundations.

There is a risk from shallow mine workings; the findings of the recommended borehole investigation will be needed to inform the appropriate choice of foundation options.



**Dr Malcolm Blandford,
Consultant Geologist.**

Report Date 3rd November 2023.

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PLANS



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Geologists Working With The Environment....

Study on Land at 1 Mansfield Terrace,
Mountain Hare, 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/05.23.04.01.

