

Report No. BC/MB/12.19.04.

**Coal Mining Risk Assessment:
Land to the Rear of Brackendale,
Heolgerrig, Merthyr Tydfil.**

Prepared on behalf of:

Mr R Williams

By:



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Coal Mining Risk Assessment: Land to the Rear of Brackendale, Heolgerrig, Merthyr Tydfil.

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<i>BC/MB/12.19.04.02.</i>	<i>Geology Plan.</i>	<i>1:10,560</i>
<i>BC/MB/12.19.04.03.</i>	<i>Detailed Location Plan.</i>	<i>1:2,500</i>
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Coal Mining Risk Assessment: Land to the Rear of Brackendale, Heolgerrig, Merthyr Tydfil.

1 Introduction

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

***Mr Ross Williams,
C/o George and Co.,
Woodfired Studios,
62 High Street,
Merthyr Tydfil,
CF37 8DE.***

The report reviews the geology and mining history of the property and the immediately surrounding area as they may affect a proposal to develop an office and a garage on the land. Recommendations are made for exploratory boreholes to determine the details of shallow mine workings in the Six Feet Seam in order to assess the risk 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) *Review of the Coal Authority's interactive map, accessed on the 11th December 2019;*
- iv) *Review of Public Health England's interactive Radon gas map, accessed on the 11th December 2019 and*
- v) *Research of Blandford Consulting's archives.*

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 parcel of land which is the subject of this report ('the Site') is situated on the upper slopes of Mynydd Aberdâr, approximately 2km west of the centre of the town of Merthyr Tydfil (see Figure 1 and *General Location Plan, drawing no. BC/MB/12.19.04.01*). The Site is on the south-western fringes of Heolgerrig and is located within a semi-rural landscape bounded on the east and south by detached dwellings and on the north and west by agricultural enclosures and open hillside. The Site is irregular in outline and has approximate maximum dimensions of 44m by 27m; it slopes eastwards at elevations of between 320m and 314m above ordnance datum.

Figure 1
Aerial View of Property



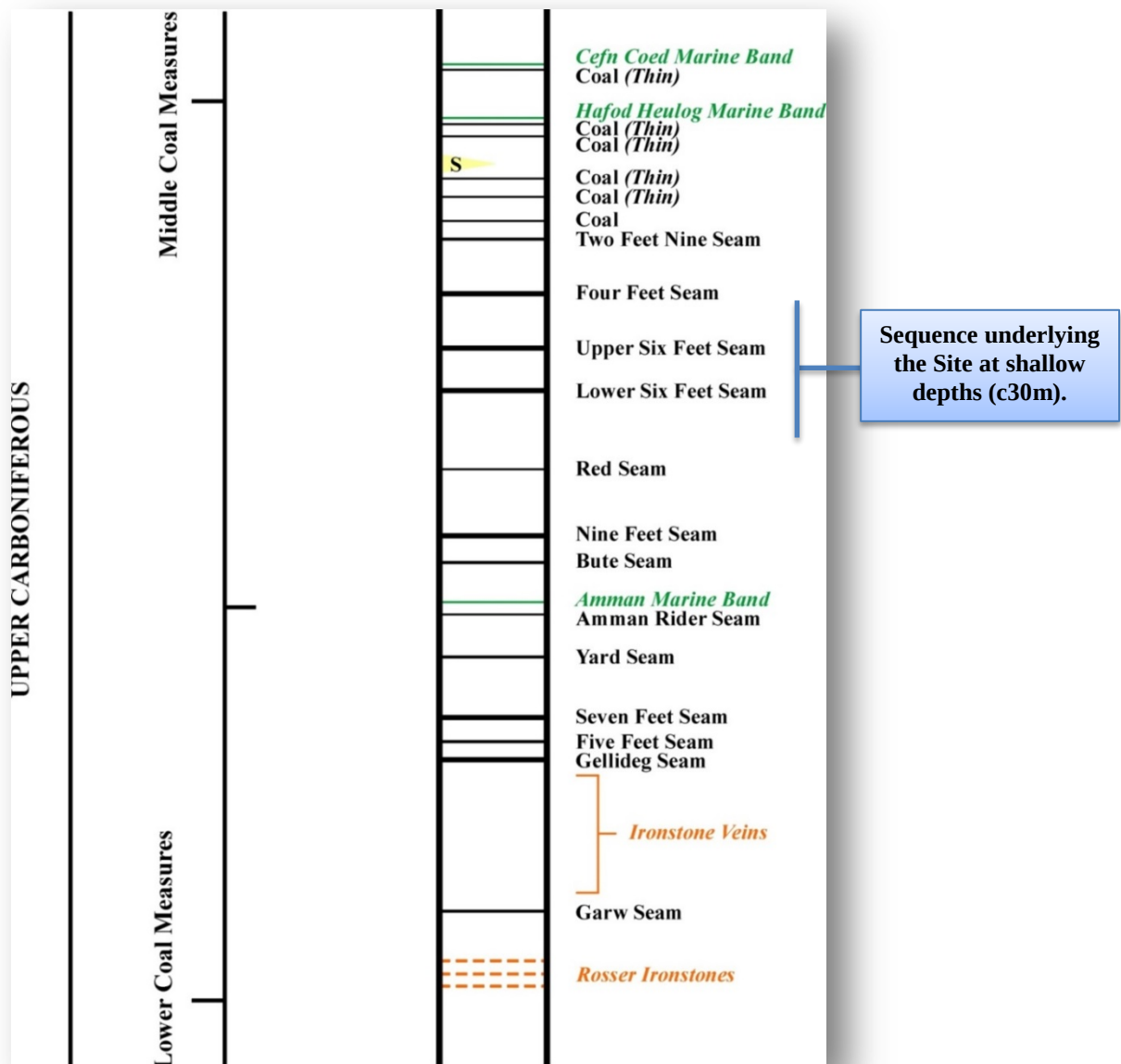
3 Geology of the Site

The Site is situated near the northern margins of the former South Wales Coalfield and is underlain by strata assigned to the Middle Coal Measures. The most recently published geological sheet (SO 00 NW at 1:10,560 scale) shows the outcrops of several coal seams crossing the district with a generally north-westerly trend. The inferred positions of the outcrop

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of the Upper Six Feet is shown to be present approximately 10m north-east of the Site and downslope from it. The Upper and Lower Six Feet Seams converge to form a thick Six Feet Seam at the top of Heolgerrig, near the Site. The inferred positions of the outcrop of the Four Feet and Two Feet Nine Seams are shown immediately and a short distance beyond the southern corner of the Site (see *Geology Plan, drawing no. BC/MB/12.19.04.02*). The regional dip of the coal measures is towards the south-west such that the Six Feet Seam underlies the Site at shallow depths and the Four Feet and Two Feet Nine Seams do not underlie the Site.

Figure 2
Part of the Stratigraphic Column.
 Scale: Not to Scale.



/Cont....

The measures of the South Wales Coalfield are affected by large faults, often referred to as 'cross faults'. In the Heolgerrig area such faults have a slightly sinuous trace at the surface and an average trend towards the north-west. The published geological sheet shows that the Site is not affected by any such faults.

The published geological sheet for this area shows the coal measures to be covered with glacial till, Boulder Clay. Published information also indicates that the Site is not affected by landslip.

4 Mining History

The general area has experienced extensive underground operations for both coal and ironstone dating back to the early nineteenth century. Our searches identified old coal workings in the vicinity of the Site in a number of seams at depths ranging from shallow (less than 30m) to 120m. The Coal Authority's interactive map shows no shallow mine workings to be present beneath the Site and also no 'probable workings' (shallow unrecorded old workings) beneath the Site (see Figure 3). However, exploratory drilling in the immediate locality encountered old workings in the Six Feet Seam at shallow depths.

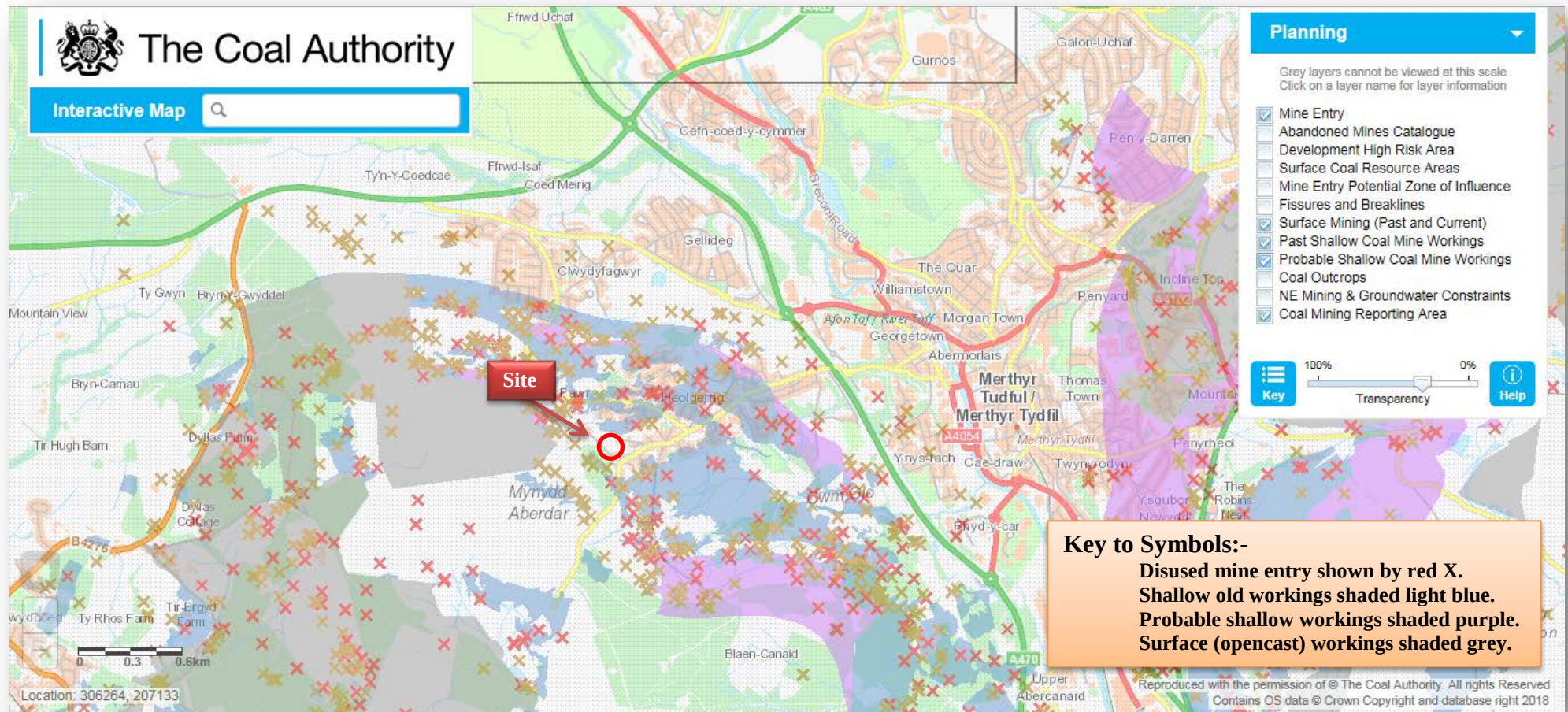
The published geological sheet shows the presence of open pit workings in the area immediately to the west and south-west of the Site; these are believed to be ironstone workings and pre-date 1881. These workings are upslope of the Site.

There are several disused shafts and adits in the vicinity of the Site; their locations have been derived from the several editions of the Ordnance Survey Sheets and shown on the Extracts from the Ordnance Survey Sheets, drawing nos. BC/MB/12.19.04.04 to BC/MB/12.19.04.07. The nearest disused mine entry to the Site is a disused adit approximately 80m south of the Site.

There are no working collieries in the locality that could affect the proposed dwelling. The Site has not been part of an opencast coal site (OCCS), and there have been no opencast mining operations close enough to the Site to affect the structural integrity of the proposed dwelling.

/Cont....

Figure 3
Copy of The Coal Authority's Interactive Map
 (accessed 11th December 2019)



/Cont....

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. Previous exploratory boreholes drilled in the immediate vicinity of the Site encountered shallow old mine workings but did not encounter mine gases.

6 Radon Gas

Government guidelines recommend that the potential for Radon gas should be assessed for all new dwellings, including extensions; the advice has been implemented by accessing Public Health England's interactive Radon gas map. The map identifies that the property is not in a Radon gas affected area and the appropriate response for building control purposes is NONE.

7 Discussion and Recommendations

7.1 Solid Geology

There are no large faults present in the locality that are close enough to the Site to have an impact upon the proposed development and published geological information indicates that the Site is not affected by landslip. In so far as the solid geology of the Site is concerned there is no requirement to include any particular precaution in the design and construction of the foundations and no further study is required.

/Cont....

7.2 Mining History of the Site

The locality has experienced extensive mining operations for both coal and ironstone, most of which are of an age and/or are at depths such that they will not affect the structural integrity of the proposed office and garage. The Six Feet Seam has been mined across the area and exploratory drilling in close proximity to the Site encountered shallow mine workings in the Seam. It is recommended that exploratory boreholes are drilled on the Site in order to determine the details of any old workings that may be found to be present in order to assess in greater detail the risk from shallow mine workings.

The above recommended site investigation should be designed and supervised by a Chartered Geologist and will require a permit from The Coal Authority.

Our searches identified several recorded, disused shafts and adits in the area around the Site, none are within 20m of the Site's boundary or within the curtilage of the Site. Given the mining history of the locality the possibility of an unrecorded mine entry being present cannot be dismissed. If any unusual features are noted during excavation work on the new dwelling then the excavating must be stopped immediately and advice sought from a suitably experienced Chartered Geologist or from The Coal Authority.

Otherwise, there are no working collieries in the locality that would affect the proposed dwelling. The Site has not been part of an opencast coal site (OCCS), and there have been no opencast mining operations close enough to the Site to affect the structural integrity of the proposed dwelling.

7.3 Radon Gas

An inspection of Public Health England's interactive Radon gas map identified that there is no risk from Radon gas and the appropriate response for building control purposes is NONE.

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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.



**Dr Malcolm Blandford,
Chartered Geologist.**

Report Date: 13th December 2019.

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PLANS



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Geologists Working With The Environment....

Study on Land at the Rear of
Brackendale, 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/12.19.04.01.



Study on Land at the Rear of
Brackendale, Heolgerrig, Merthyr Tydfil.

Geology Plan.

Plan Scale: 1:10,560.

Key to Symbols:

- Approximate Site Boundary.
- ➡ Approximate Position of Disused Adit.
- ⊕ Approximate Position of Disused Shaft.

Note:
North is at top of plan.

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Study on Land at the Rear of
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Detailed Location Plan.

Plan Scale: 1:2,500.

Key to Symbols:

- Site Boundary.
- Other Land in Client’s Control.

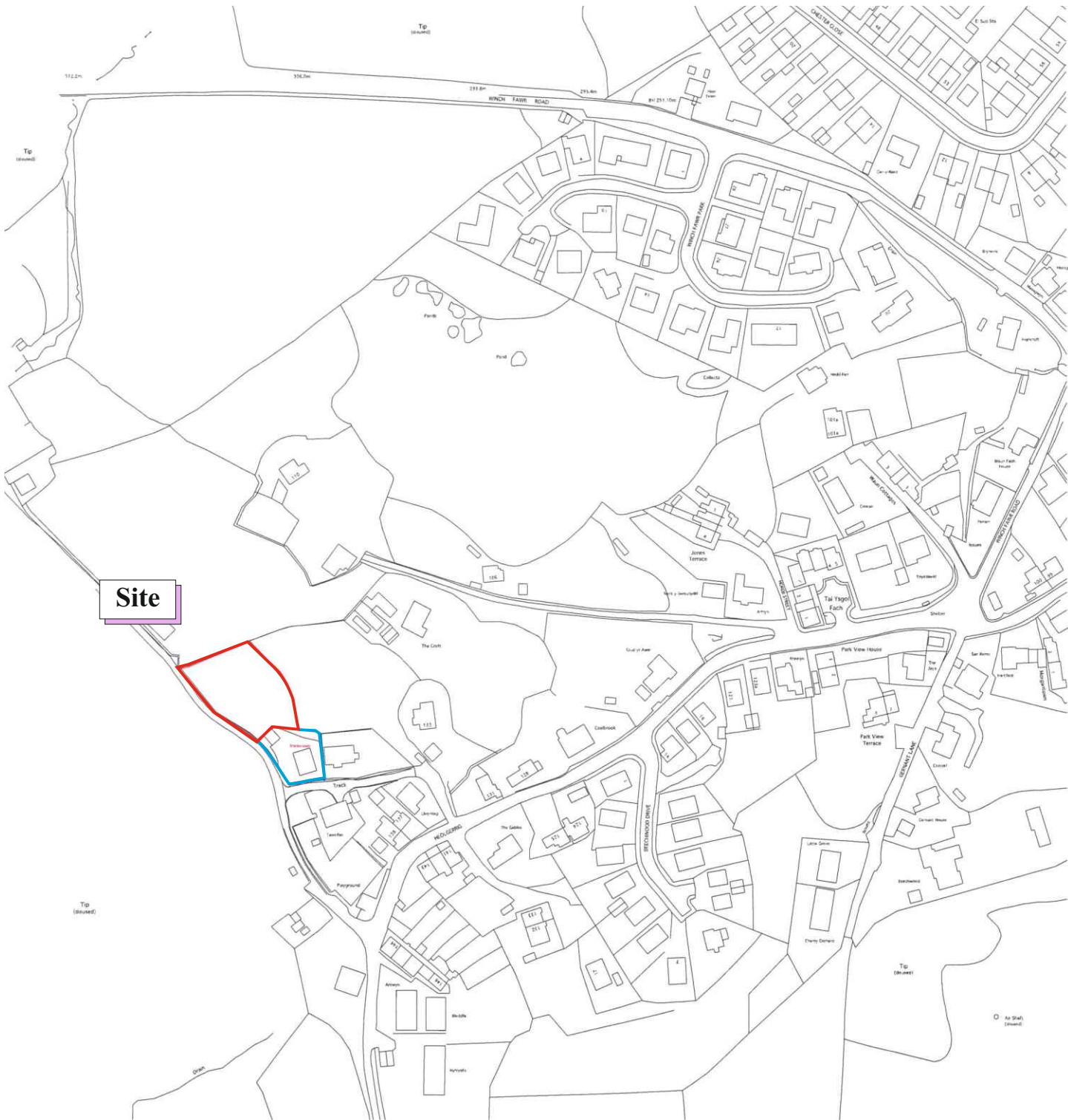
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Study on Land at the Rear of
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Extract from Ordnance Survey Sheet 1881.

Plan Scale: 1:2,500.

Key to Symbols:

- Approximate Site Boundary.
- Other Land in Client's Control.
- ➡ Approximate Position of Disused Adit.
- ⊕ Approximate Position of Disused Shaft.

Notes:

North is at top of plan.

*Locations are approximate
and should not be scaled.*

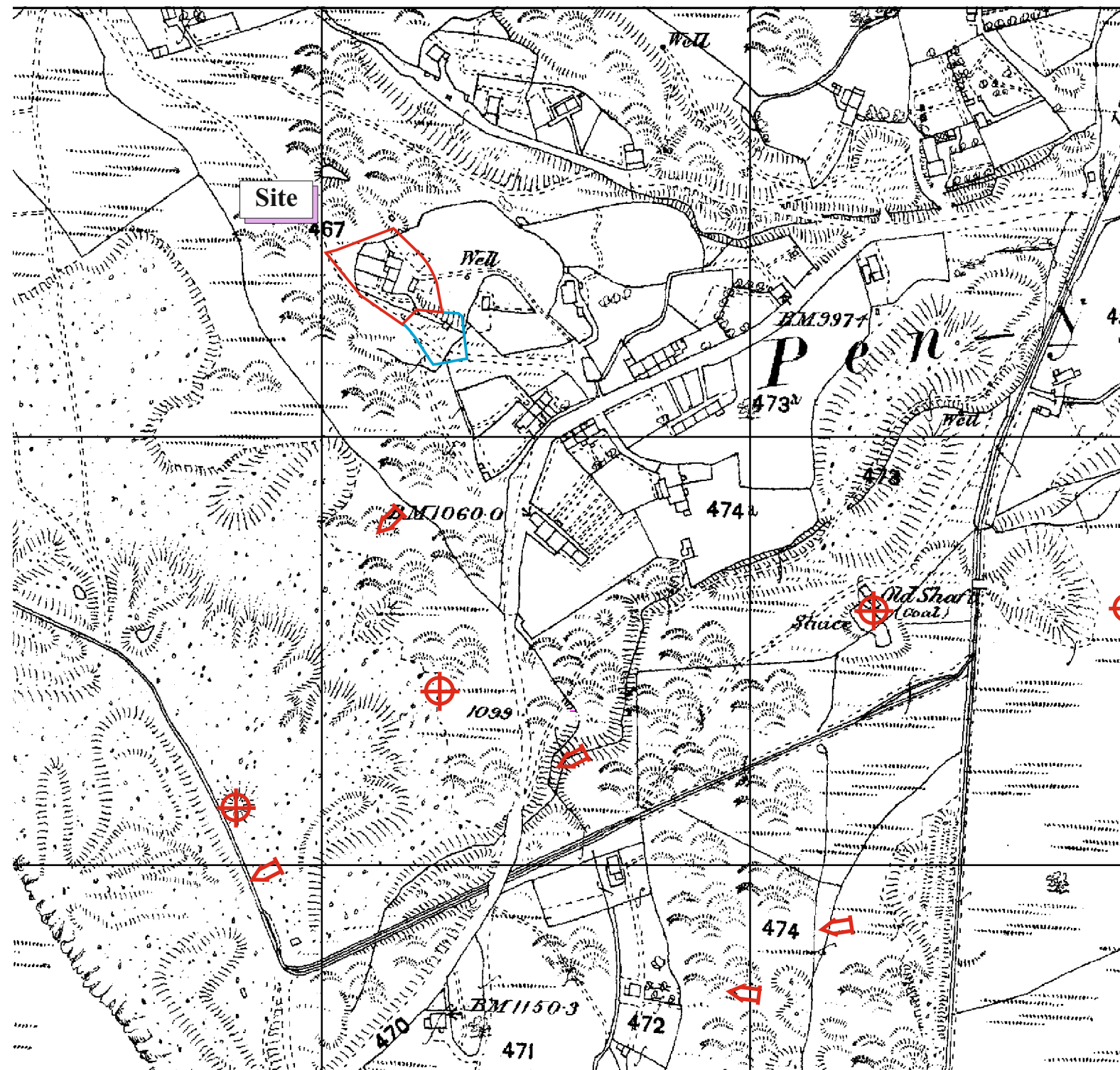
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Study on Land at the Rear of
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Extract from Ordnance Survey Sheet 1900.

Plan Scale: 1:2,500.

Key to Symbols:

- Approximate Site Boundary.
- Other Land in Client's Control.
- Approximate Position of Disused Adit.
- ⊕ Approximate Position of Disused Shaft.

Notes:

North is at top of plan.

*Locations are approximate
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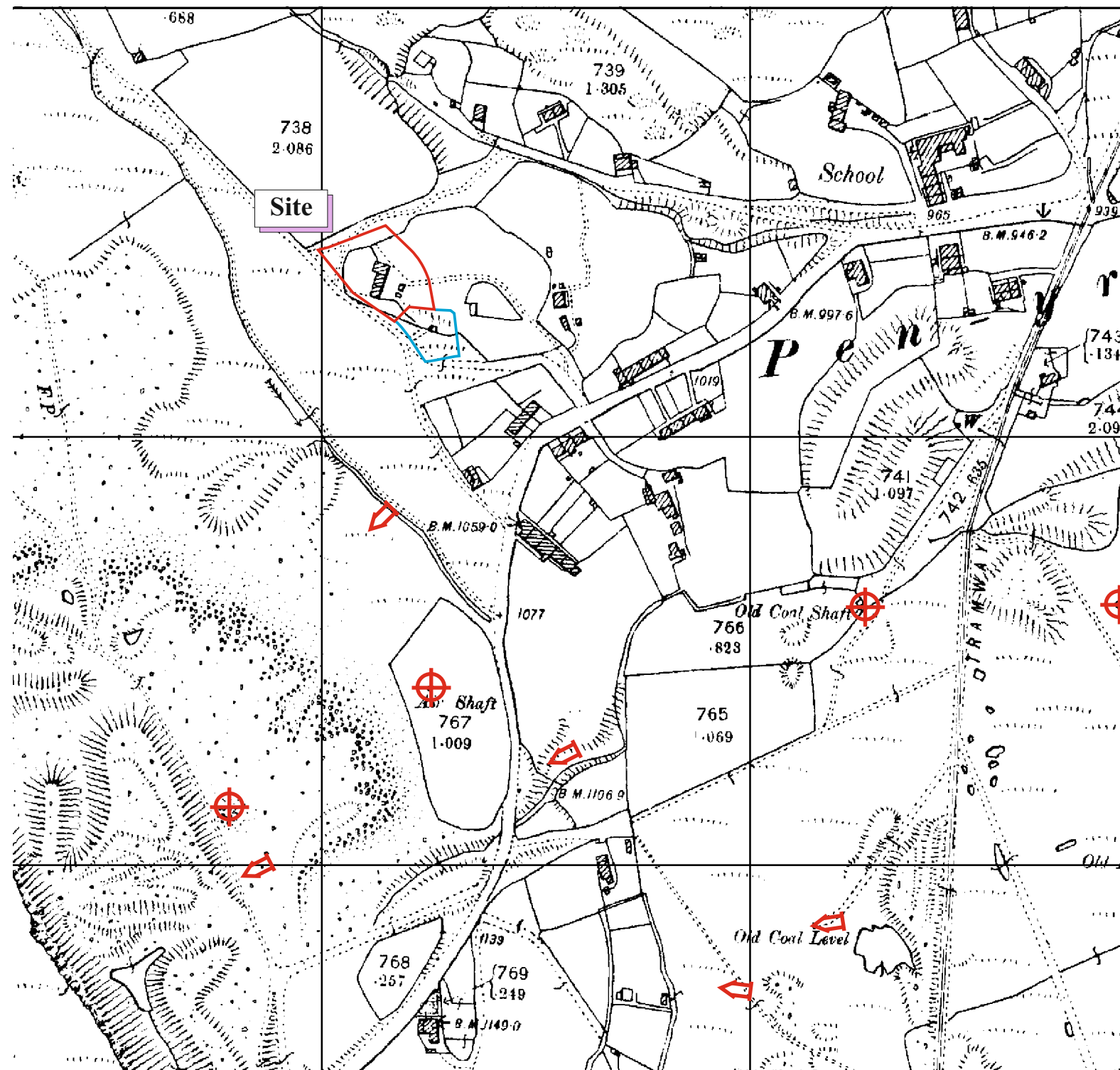
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Drawing No: BC/MB/12.19.04.05.



Study on Land at the Rear of
Brackendale, Heolgerrig, Merthyr Tydfil.

Extract from Ordnance Survey Sheet 1919.

Plan Scale: 1:2,500.

Key to Symbols:

- Approximate Site Boundary.
- Other Land in Client's Control.
- Approximate Position of Disused Adit.
- ⊕ Approximate Position of Disused Shaft.

Notes:

North is at top of plan.

*Locations are approximate
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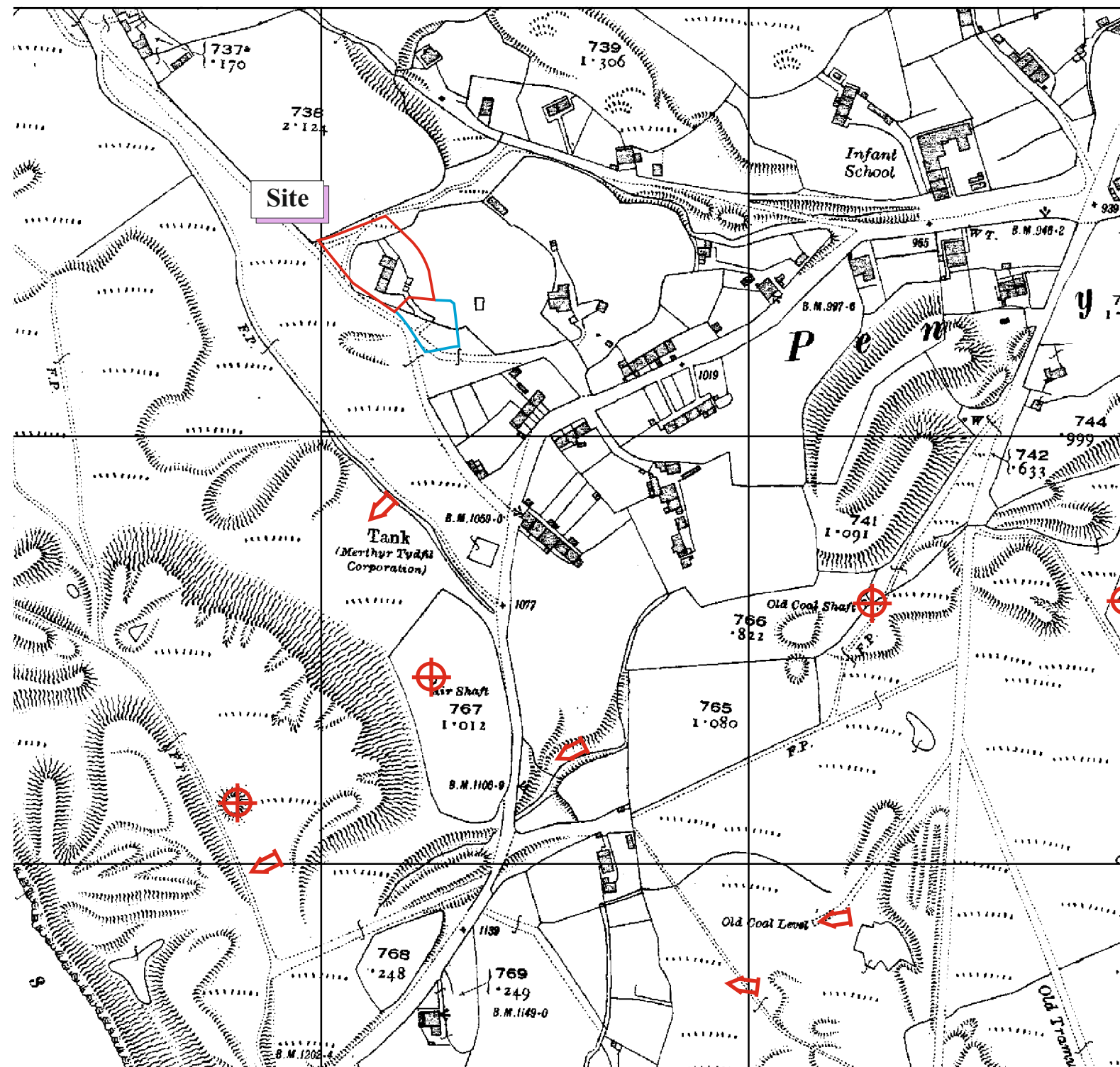
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Drawing No: BC/MB/12.19.04.06.



Study on Land at the Rear of
Brackendale, Heolgerrig, Merthyr Tydfil.

Extract from Ordnance Survey Sheet 1958 - 1964.

Plan Scale: 1:2,500.

Key to Symbols:

- Approximate Site Boundary.
- Other Land in Client's Control.
- Approximate Position of Disused Adit.
- ⊕ Approximate Position of Disused Shaft.

Notes:

North is at top of plan.

*Locations are approximate
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Drawing No: BC/MB/12.19.04.07.

