



RHONDDA
GEOTECHNICAL
SERVICES

COAL MINING RISK ASSESSMENT
M.T.C.B.C. OUTLINE PLANNING APPLICATION

PROPOSED RESIDENTIAL DEVELOPMENT

14 SALISBURY CLOSE

HEOLGERRIG

MERTHYR TYDFIL

CF48 1SD

12/06/2024

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COAL MINING RISK ASSESSMENT

1. INTRODUCTION

This Coal Mining Risk Assessment (henceforth C.M.R.A.) has been produced for Mr Denis Canney to support an outline planning application to Merthyr Tydfil County Borough Council. The application is for either two semi-detached residential properties or two detached properties on land at 14 Salisbury Road, Heolgerrig Merthyr Tydfil. No plans have been lodged at this stage, but two possible building footprints are included in Appendix 1 of this report. Whichever is chosen will have no bearing on the conclusions of this report which treats the plot as a whole. The site falls within a Coal Authority Development High Risk Area. With such a classification the C.A. would become statutory consultees for any future planning application and M.T.C.B.C. have stated that the application cannot progress until a C.M.R.A. is produced to support the application.

Richard Davies BSc. (Hons), MSc., F.G.S. of Rhondda Geotechnical Services has been commissioned as the competent person to prepare a C.M.R.A. of the proposed development site. The purpose of this is to provide the L.P.A. with information on probable underground mining and an assessment of its impact on the ground stability of the site. The purpose of this C.M.R.A. is to gather all the available information and use it to identify any mining risks and then to quantify them. It will then suggest, if necessary, any mitigation measures to ensure that the site is, or can be made safe and stable in line with national guidelines. This will be done in line with the template and recommendations of the C.A. document Guidance for Welsh L.P.A.s (version 4, 2017).

The site is centred on grid reference 302800, 206320 and is at an elevation of 292m A.O.D. The plot is rectangular, measuring approximately 23m x 20m (0.46 Ha). There are no surface watercourses. The site location and site boundary can be seen overleaf in Figures 1 and 2.

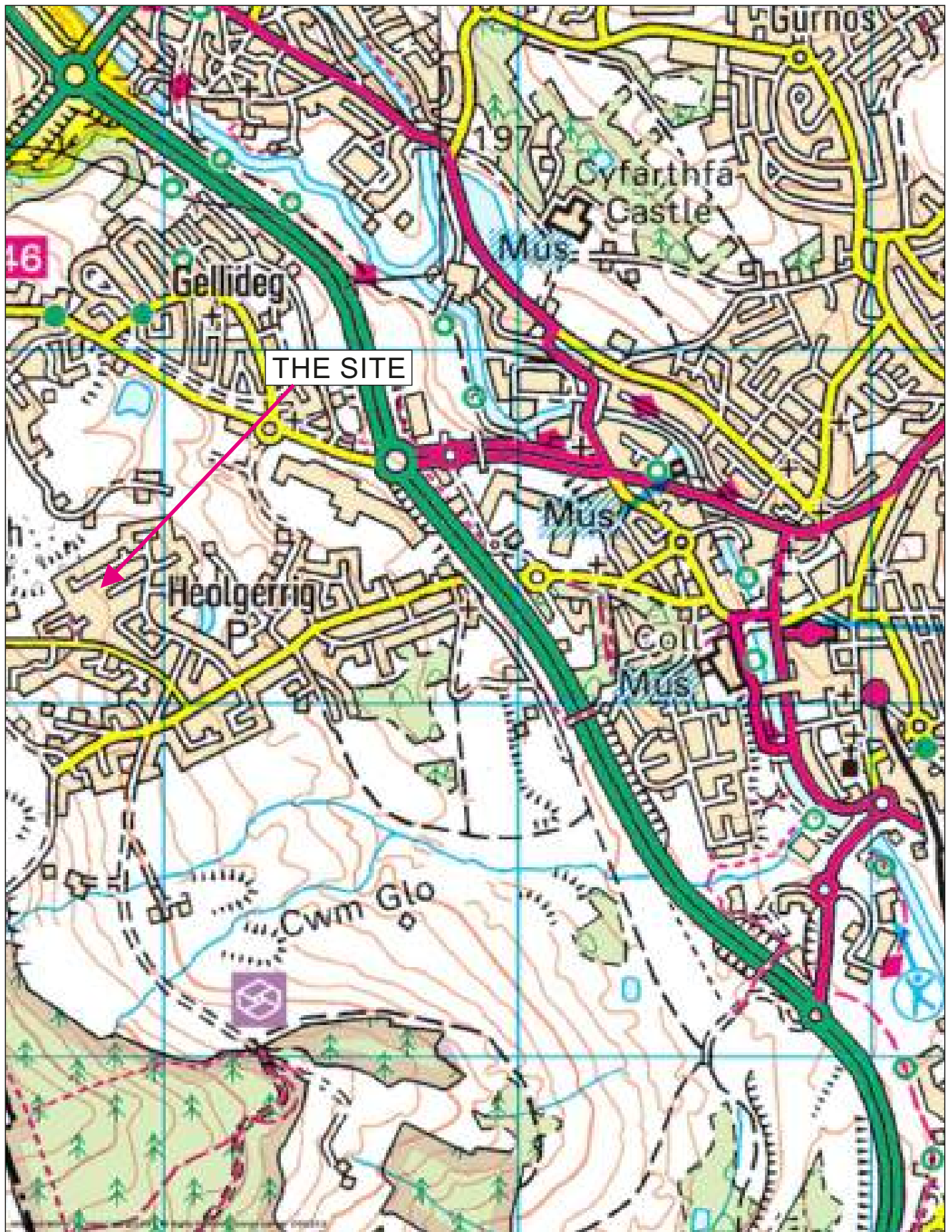


FIGURE 1
SITE LOCATION PLAN



FIGURE 2
PLANNING APPLICATION BOUNDARY IN RED.

2. SOURCES OF INFORMATION

- a) Coal Authority Consultants Report ref MR-51003420797001.
 - b) The C.A. interactive viewer.
 - c) The 6" to the mile Geological Survey sheet SO 00NW (1957 revision) and GLAM 11NE (1921 revision).
 - d) The Memoirs of the Geological Survey of The South Wales Coalfield, Part V, The Country around Merthyr Tydfil (1st, 2nd and 3rd editions of 1904, 1932 and 1988) and other mining archive sources.
 - e) British Coal Development Plan 07/D/SO/00NW.
 - f) Mine abandonment plans 8695/7 and 8695/10
- 2a) The Consultants Report states that there is recorded underground mining of coal in three seams beneath the site. These are at 13m, 21m and 27m depth. The deepest workings are in the Lower Seven Foot Bottom Leaf with an extraction thickness of 1.60m and last worked in 1896. Next up are workings in the Yard Seam with an extraction thickness of 1.2m and last worked in 1858. The shallowest workings are in the No.3 Clay with an extraction thickness of 1.2m and last worked in 1860. The report goes on to say the C.A. believe there are no shallow unrecorded workings and no shallow spine roadways beneath the site. The report then states that there are three recorded mine entries within 100m of the site boundary. One is an adit and two are shafts. These are marked on the Summary of Findings Map in Figure 3. The three are in a cluster approximately 40m north of the site boundary. The reference numbers are 302206-094 and -064 (shafts) and adit 302206-019 which is orientated west away from the site. The report contains the reference numbers of seven abandonment plans which may supposedly be of relevance to the risk assessment. These were examined and many consisted of multiple sheets. It was decided to pay for a search to investigate the source of the mining history above, in particular the depth to workings. Two coal seam outcrops are marked running east-west north of the site in Figure 3. The report names the northernmost as the Yard and the nearer of the two as the Yard (Meadow). There are no faults fissures or breaklines recorded. There is no recorded opencast mining within 500m of the site boundary

In Section 2 the report states there have been no site investigations and there are no recorded surface hazards that have required remedial action within 50m.

The C.A. have not received any damage notices or subsidence claims for any property within 50m since October 1994 (i.e. since the formation of the C.A. to take liability for legacy mining issues). There are no records of gas emissions requiring action within 500m. Section 3 states there is no planned future underground mining or licensing for any. There are no Section 46 notices or withdrawal of support notices. An extract of the Summary of Findings map is reproduced in Figure 3. All these facts will feed into the later quantitative risk assessment. Section 4 recommends technical advice on further site investigation should be obtained as part of the risk assessment. It also recommends a detailed Mine Gas Risk Assessment is carried out. The Consultants Report is attached as Appendix 2.

2b) The C.A. interactive viewer contains a vast amount of information from various sources, particularly on the mining data window. This often includes material not contained in the Consultants Report, but which can be important to a fuller understanding of the geology and mining. An extract from the planning window can be seen in Figure 4. The entire site lies within a huge block of Development High Risk close to a boundary between blue (recorded shallow mining) and violet (suspected shallow mining) coloured areas. To the west, the grey colouring represents opencast mining. The small circular areas are 20m exclusion zones around mine entrances. The three north of the site can be readily distinguished.

In order to fully understand why sites have a high risk status it is informative to study the Coal Mining Data window. This window is far superior to the planning window as it is at a larger scale. There are multiple datasets which can be turned on and off. An extract from the Mining Data Window is reproduced as Figure 5 overleaf. For clarity only two sets of data are turned on in Figure 5- seam outcrops and mine entries. The outcrop pattern north and south of the site is regular and tightly spaced. The contour lines are rising to the west. The closest outcrops to the site have been labelled with their seam codes by the author. The seam codes are ascending to the south. This would indicate the strata is dipping to the south. Two seam outcrops are close to the northern site boundary as in Figure 3. There is also a third outcrop very close to the southern site boundary. It is unclear why this is not shown on the S.o.F map in Figure 3. The seam codes from north to south are named as follows in the C.A. Seam Code Directory:-

SW0181 Lower Seven Foot Bottom Leaf

SW0221 Seven Foot

SW0241 Yard

SW0251 Yard (Meadow)

SW0271 Bute

The Interactive Viewer often contains useful information on mine entries that is not included in the Consultants Report. No further information on the two shafts (302206-064 and-094) is contained in the database. The adit 302206-019 sitting between the two shafts is the No.2 Level. Level is the South Wales Term for a sub-horizontal mine entrance and will be used from this point on as the term adit is usually reserved for metalliferous mines and all archive material uses the term level. The level has an orientation of 270°. A second mine entrance with possible relevance to the site is circled in Figure 5. Reference 302206-076, this is the No.9 Level and has an orientation of 190°. This is on the outcrop of the Lower Seven Foot Bottom Leaf and is orientated toward the site. This would indicate it is likely to be associated with the recorded workings in that seam that the Consultants Report states are at 27m beneath the site.

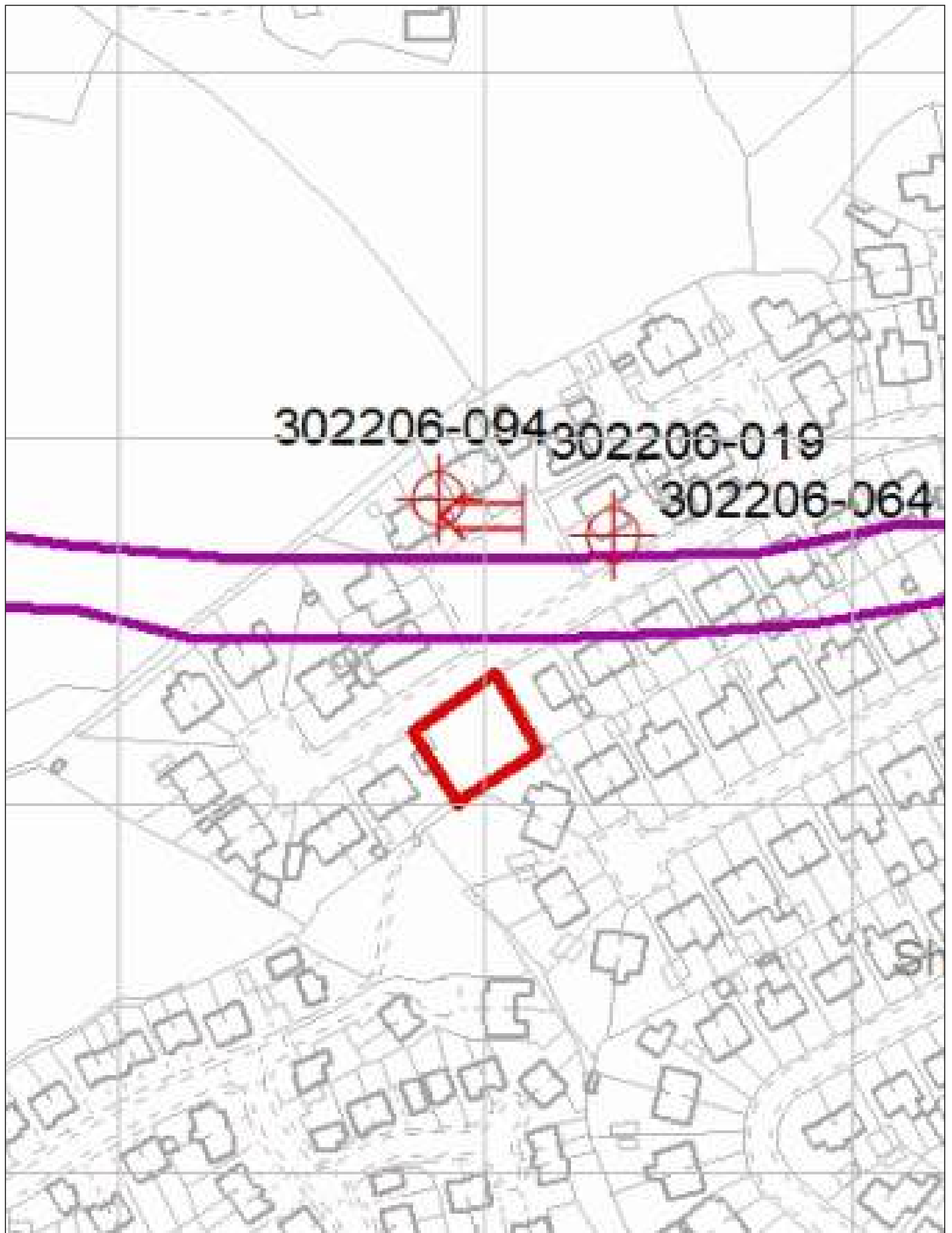


FIGURE 3.

SUMMARY OF FINDINGS MAP FROM THE CONSULTANTS REPORT.

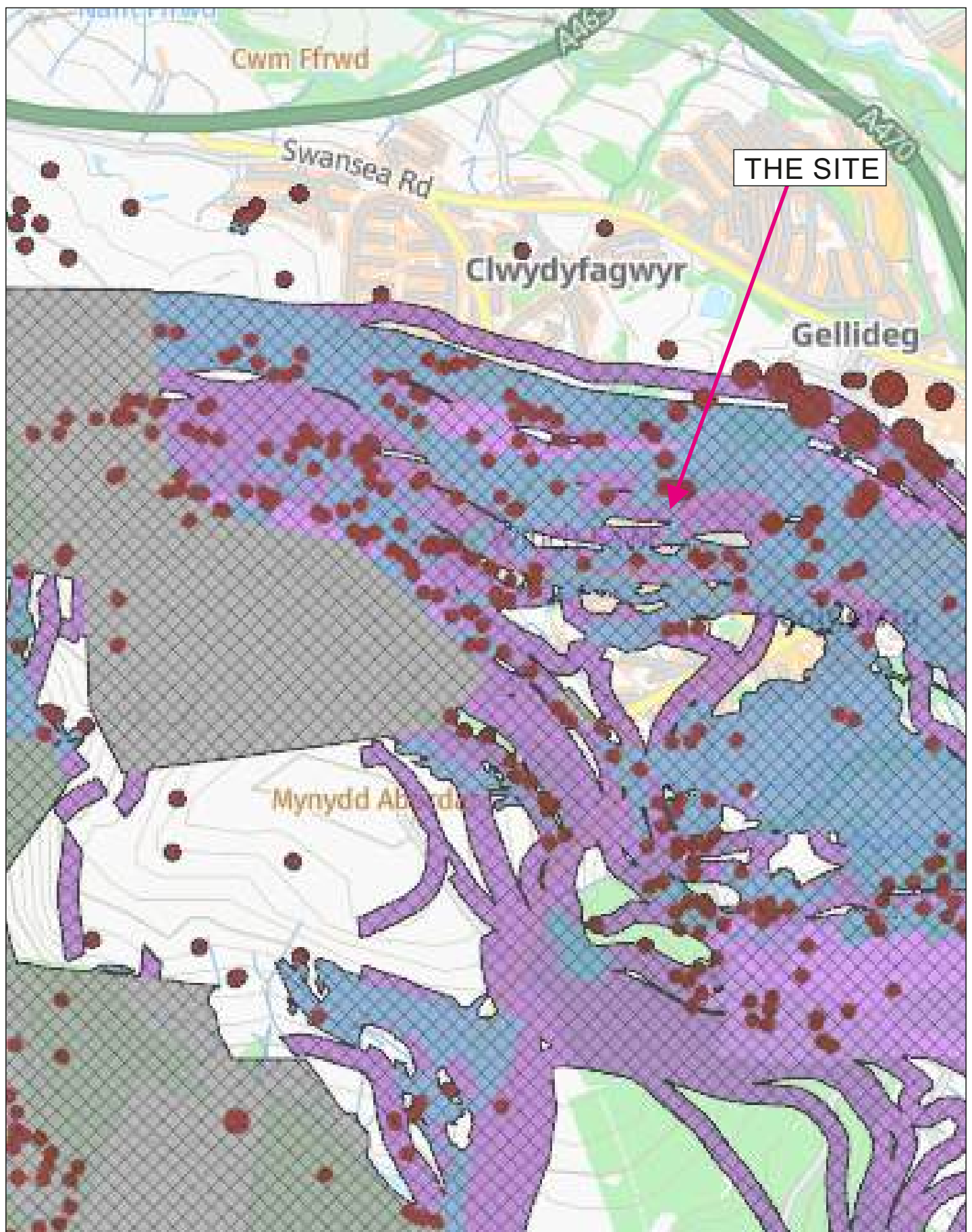


FIGURE 4
COAL AUTHORITY INTERACTIVE VIEWER, PLANNING WINDOW.
HATCHED AREAS ARE DEVELOPMENT HIGH RISK

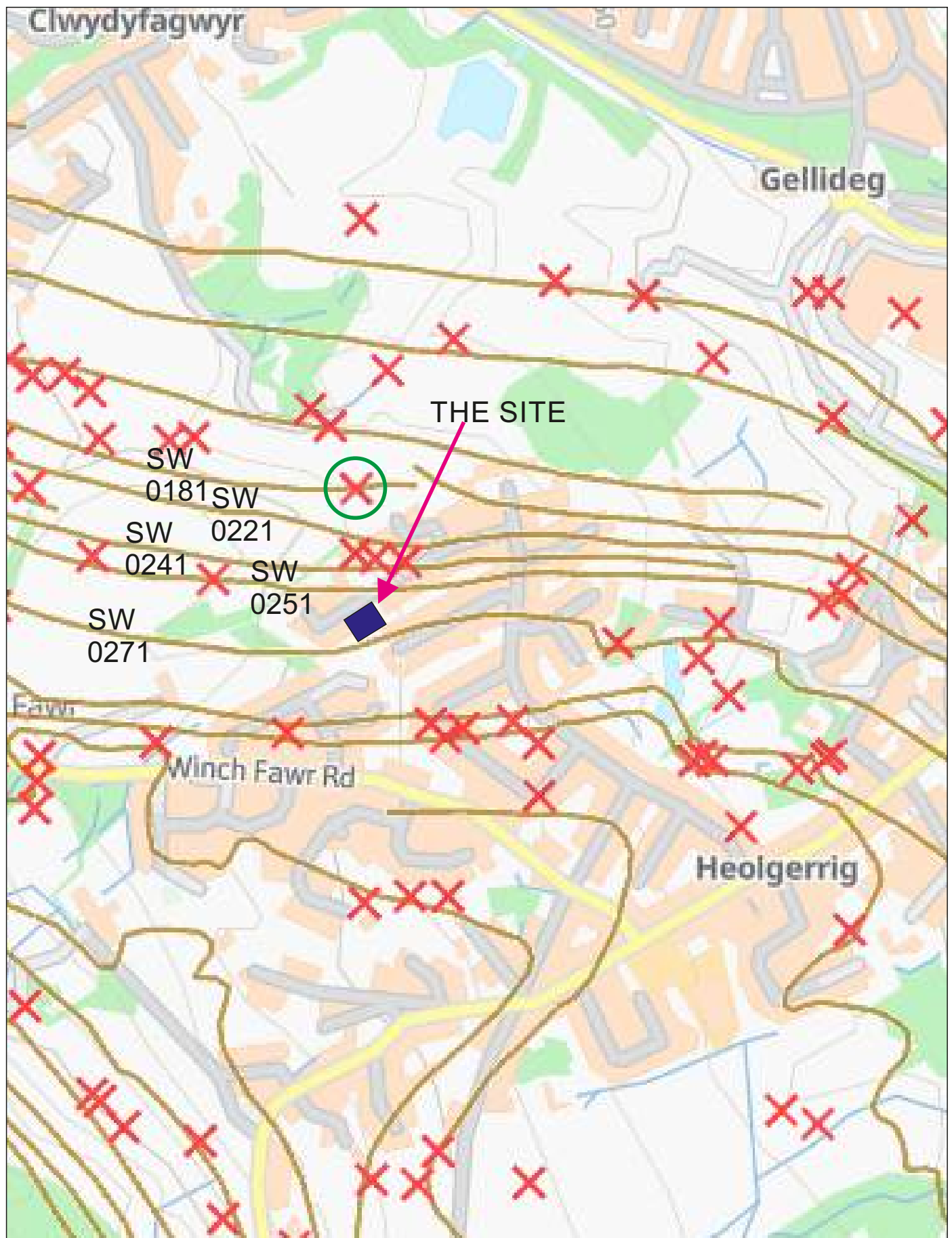


FIGURE 5
C.A. VIEWER, MINING DATA WINDOW. RED CROSSES ARE
MINE ENTRIES, BROWN LINES ARE COAL SEAM OUTCROPS.

2c,d and e) The six inch to the mile Geological Survey sheet SO 00NW covers the area around the site. The 1921 County Series Geological Map GLAM XI NE was also consulted. Outcrop positions are very similar to the revision. The map adds little additional information to the assessment apart from the fact that many more mining features are marked on the older base map. Figure 6 is a recent aerial photograph of the site georeferenced onto the National Grid O.S. that forms the base map for the Geological Survey Sheet. The reason for doing this is that the urban landscape around the site has changed considerably since the publication of the Geological Survey, making it hard to place the site accurately on the Survey Sheet. An extract of the Survey Sheet has been reproduced as Figure 7 overleaf. A section of the stratigraphic column from the map is shown in Figure 8 with the approximate site level marked. It is always very useful to study the survey sheets in conjunction with the Memoirs. Used together, the six-inch survey sheets and the Memoirs are an invaluable source of much detailed geological information on the area. Much of this has been obtained from mining records. Due to the very high economic importance of the area, extensive government funded geological surveys have been carried out in the past. These were completed in 1845, 1899 and 1954 respectively. Very little information on historical coal mining in the area is missing.

In Figure 7 the large areas of NW-SE cross hatching north and west of the site represents Made Ground from very extensive surface mining of Ironstone and Coal. The debris from this can be seen on the underlying base map. The broad outcrop pattern is similar to Figure 5 but with fewer outcrops. This is because the Survey usually only shows the most important economic seams to avoid overcomplicating the map. In contrast, many of the outcrops on the C.A. Viewer can be thin and unworkable. North of the site the entire Lower Coal Measures are exposed from the basal Garw Seam to the Amman Marine Band which marks the junction with the Middle Coal Measures. The site is shown sitting on the Amman Rider and the associated Amman Marine Band. Only four coal seam outcrops are shown in the entire Lower Coal Measures. These are the Garw, Five Foot, Seven Foot and Yard. The Memoirs make it clear that there are other closely spaced coal seams underground with splits and recombination giving quite a complicated picture. The entire Lower Coal Measures are only 60m thick in the West Merthyr Area, containing multiple rich coal seams over a short succession. There are no measured dips nearby which is unfortunate as strata dip and topography is going to have a very important bearing on the depths of the seams below the site. The C.A. seam nomenclature can be very confused

and is not helped by the profusion of seam splits and recombinations which often produced the same name for different seams, Clay and Yard being good examples. Figures 5 and 7 basically agree that the site is underlain by the Seven Foot and Yard Seams at shallow depth. The Amman Rider, although an important stratigraphical marker is a thin highly sulphurous coal that was never mined. The No.9 Level is marked by an arrow symbol in Figure 7, on the outcrop of the Seven Foot and orientated toward the site.

The British Coal Rationalised Plan was a large project mainly concerned with estimating coal reserves and land usage for planning opencast mining. The primary source of information was the Geological Survey together with input from geological observations made by N.C.B./B.C. geologists on working opencast sites. The standard of seam logging is very high and extremely complex. The Rationalised Plan is in turn the primary source for the Interactive Viewer. When this was digitalised the sheer complexity of the information led to frequent mistakes and differences between the C.A. digital data, the Rationalised Plan and the original Geological Survey maps. In these situations, it is best to go back to the original source. Figure 9 is a section of the B.C.D.P. 07/D/SO/00NW. There is little conflict here. 07/D/SO/00NW differs little from the Geological Survey and the Interactive Viewer with the outcrop pattern. The seam codes are linked to the correct seam names but in this instance, this is of academic interest only. The main significance of Figure 9 is that it shows the site within an opencast site. The pink with blue edging signifies a working site, but the accompanying notes indicate it is a *prospective* site with a predicted yield of 290,000 tons. It can be seen from the base map that the housing estate that the site sits within had not been constructed at the time the map was drawn (1979). The N.C.B. (and British Coal) had a legally enforceable option of opencasting any potential development site that would sterilise the coal deposits below it. However, there appear to be no records of this ever having been done.

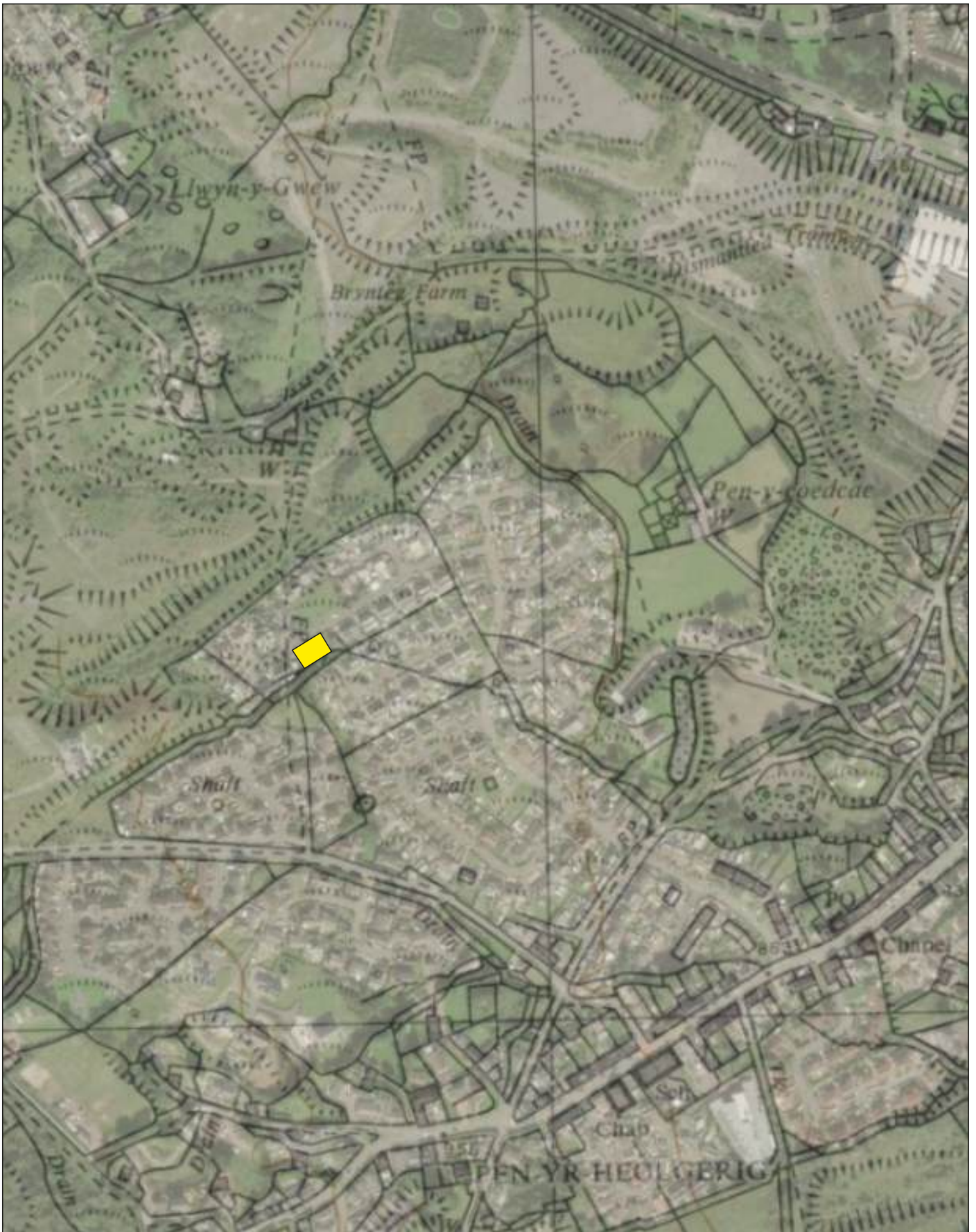
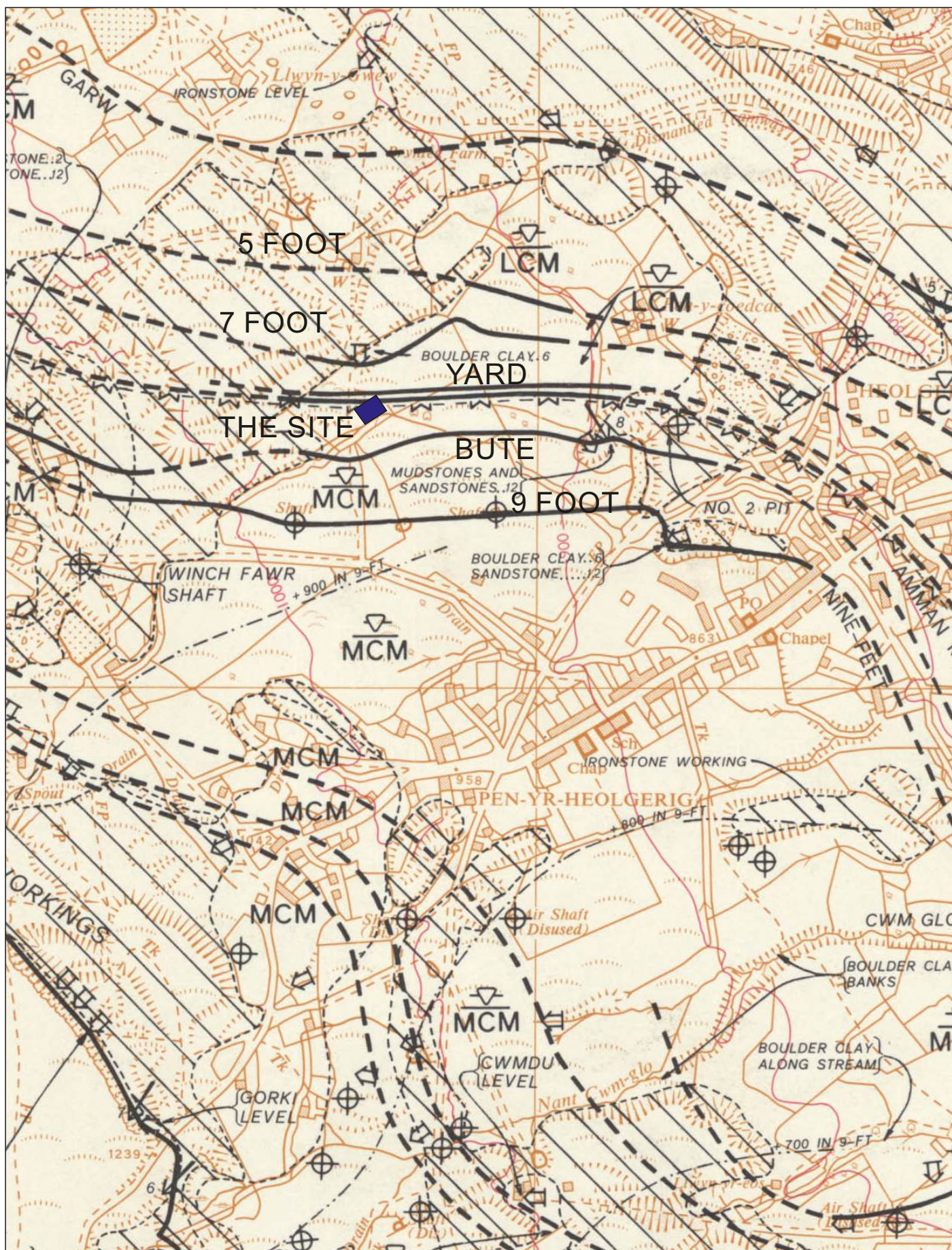


FIGURE 6

THE SITE GEOREFERENCED ONTO THE 1965 NATIONAL GRID MAP.



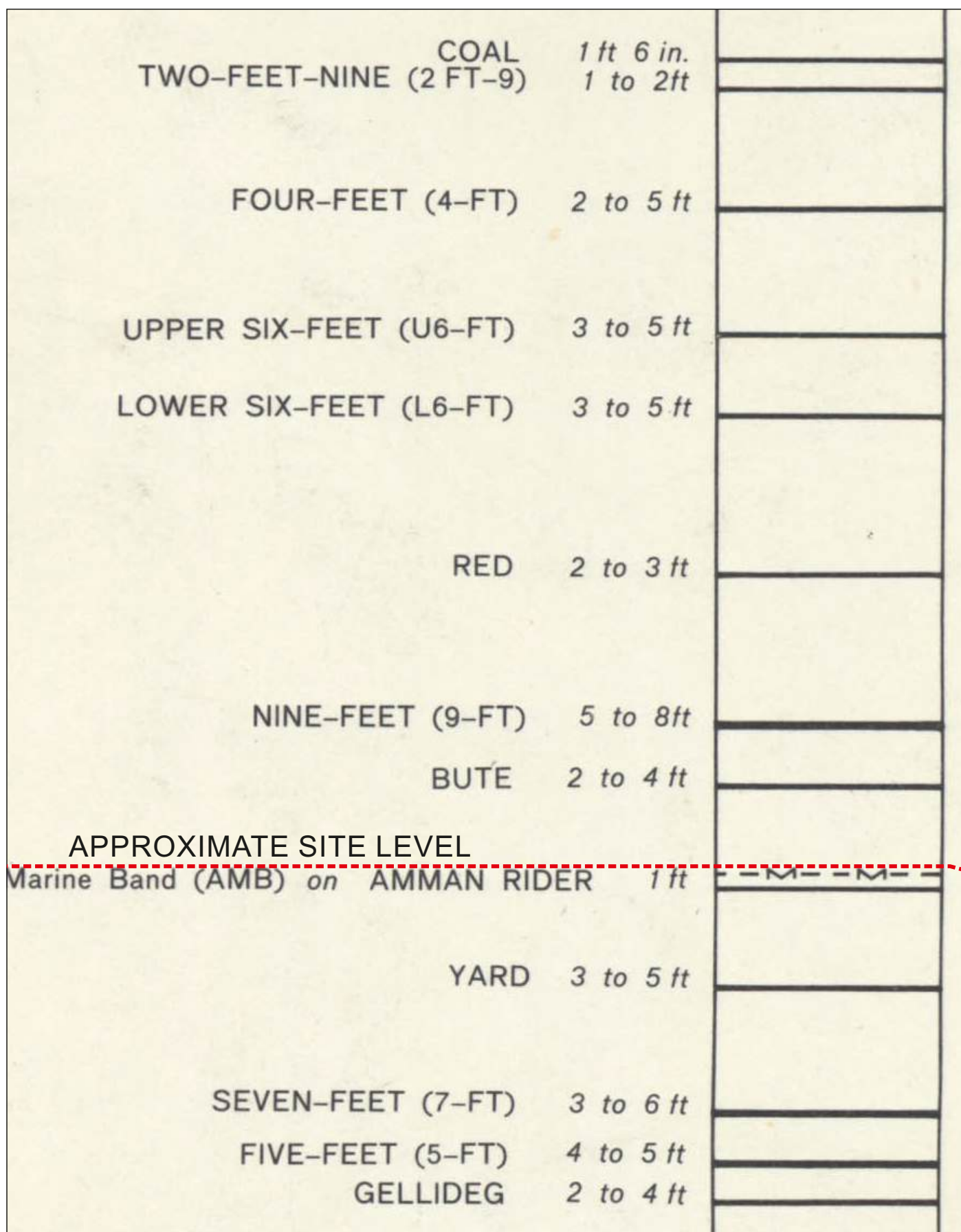


FIGURE 8
SECTION OF THE STRATIGRAPHIC COLUMN FROM SO 00NW.
THE APPROXIMATE SITE LEVEL IS MARKED.

2f) As mentioned in Section 2a, a mine plan search was ordered and paid for. The two plans the Information Managers recommended were 8695 sheets 7 and 10. Both were purchased to inform this risk assessment. They cover workings from the Cwm Pit and Mountain Levels. These were owned by the Cyfarthfa Colliery Company which supplied Cyfarthfa Ironworks. At one time the works was the largest in the world before being overtaken by the nearby Dowlais Works. Cyfarthfa owned the mineral rights to 4000 acres (16.5 km²) on the west side of the River Taff. This covered fabulously rich deposits of both coal and ironstone. Sheet 7 covers workings in the Lower Two Foot Nine and Clay Seams. This illustrates the problems with seam nomenclature. As far as the author is aware the first name has never been used anywhere else outside the Cyfarthfa Estate. The Two Foot Nine is one of the finest steam coals in the South Wales Coalfield. It is one of the upper seams in the Middle Coal Measures and is separated from the Lower Coal Measures by several hundred metres of strata containing other rich seams including the Four Foot, Six Foot, Red, Nine Foot and Bute. So the “Lower Two Foot Nine” has absolutely no connection with the Two Foot Nine. In contrast, the name Clay Seam is very widely used across the coalfield, most prominently for the Hafod Seam, the highest of the true steam coals. However, it is often used for other seams, usually when the seatearth beneath a particular seam has also been mined extensively for brickmaking. Looking at the information on the plans it would appear that these seams are the Upper and Lower Yard of the N.C.B. standardised names. The evidence for this includes the fact there are air pits connecting the Bute Seam to the “Lower Two Foot Nine” and between that seam and the Seven Foot. The outcrop of the “Lower Two Foot Nine” also coincides with the Yard. The colour key on Sheet 7 suggests that the Clay is between the “Lower Two Foot Nine” and the Seven Foot thus making it the Lower Yard. The workings in the Clay Seam are limited in extent and mainly post-date the workings in the other two seams.

Figure 10 is a small section from sheet 7. There are very few surface features over the entire plan. There are none in the vicinity of the site which was an industrial wasteland with no buildings at the time. The plan has been rotated to true north by the author and the approximate site location located using the mine entrances. There are pencilled numbers on the mine entrances. These have been done at a later date by N.C.B. Surveyors tasked with recording all known mine entrances. This work now forms part of the C.A. database. For example, the 19 at the mouth of the No.2 Level is now mine entrance 302206-019. The No.9 Level has 76 pencilled beside it. This now has the reference

302206-076. The orientations of these levels are different to those given on the database, by about 15° in the case of No.9, but by a massive 70° with the No.2 Level. The black shading shows cross measure hard headings. The yellow colour shows the roadway going through the Seven Foot. The unshaded roads with black boundaries are in the Lower Two Foot Nine, the red roads are in the Clay Seam. There doesn't appear to be workings in either seam beneath the site, but this statement would be dependent on the accuracy of the author's positioning. Figure 11 is from Sheet 10, also rotated to true north. This shows workings in the Seven Foot Seam. These definitely underlie the site, which is easier to position. This has been done using the two air shafts pencilled 94 and 64 together with the No.9 Level. Before leaving the plans, it should be noted that the only surveyed levels on both sheets are in a solitary roadway far to the northwest of the site on Sheet 10. There is also a generalised dip of 3.3" per yard which is approximately 5° , the direction of dip is close to due south.

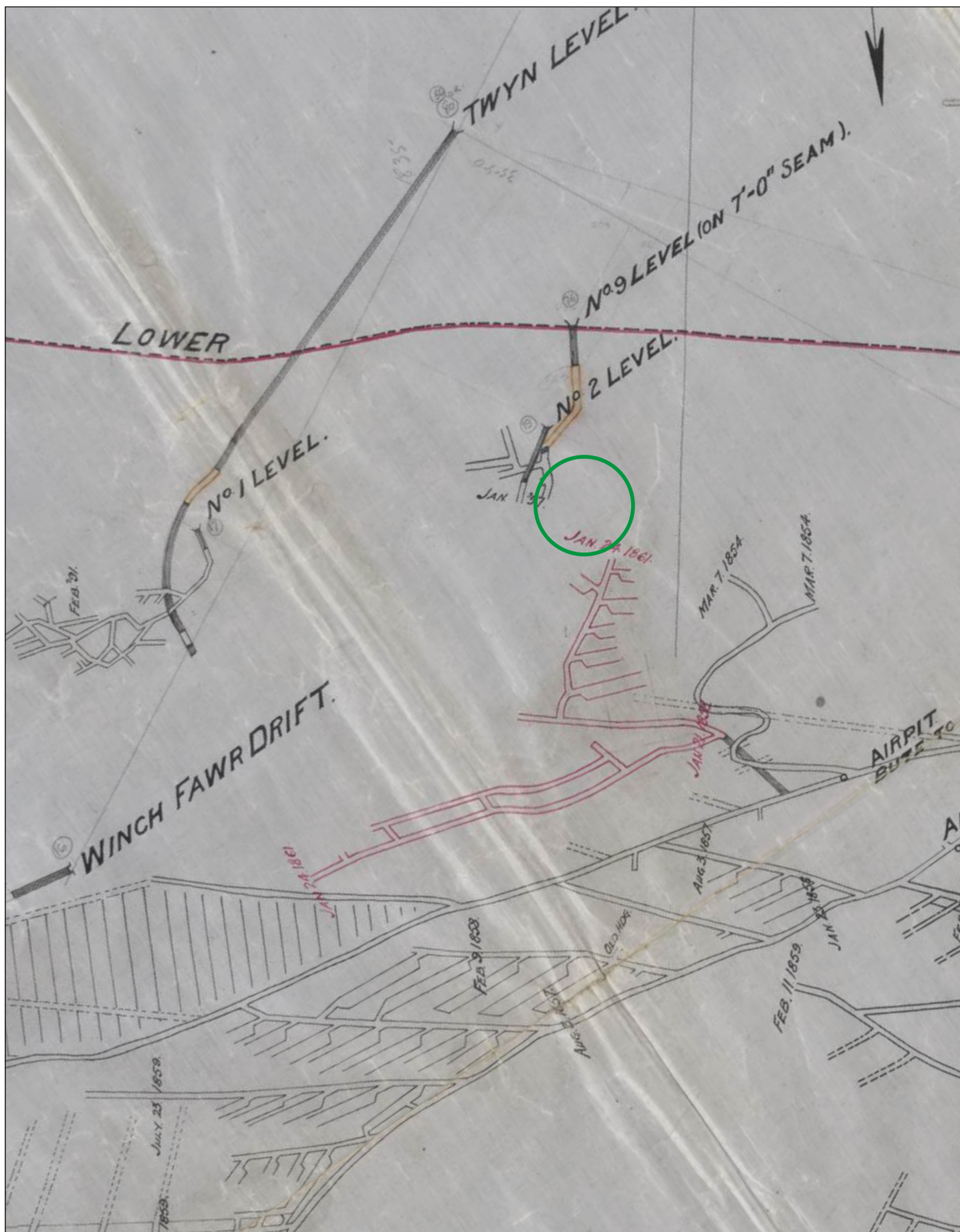


FIGURE 10
SECTION OF MINE PLAN 8695/7 POSSIBLE SITE LOCATION CIRCLED.



FIGURE 11
SECTION OF PLAN 8695/10 WITH POSSIBLE SITE LOCATION CIRCLED

COAL MINING ISSUE		YES	NO	R.A?
SHALLOW RECORDED WORKINGS		X		X
SHALLOW UNRECORDED WORKINGS			X	
MINE ENTRIES			X	
FISSURES			X	
GAS EMISSIONS		X		X
SURFACE HAZARDS			X	
SURFACE MINING			X	
FUTURE MINING LICENSE			X	

3. SITE SPECIFIC COAL MINING RISKS

From the table above it can be seen that only two major issues require a risk assessment for this site. They are the presence of shallow recorded workings beneath the site. If coal workings are assumed to underlie all or part of the site, then the issue of risk from mine gases should also be addressed in detail.

To first briefly deal with the issues marked NO on the table:-

- a) If there are unrecorded shallow workings beneath the site, they would have to be in the Upper and Lower Yard Seams (the Lower Two Foot Nine and Clay Seams of the mine plans). Mining in the area long pre-dates the legal requirement to keep mine plans. There are areas of older workings alluded to in some areas of the maps, but this is unlikely beneath the site.
- b) None of the three closest mine entrances to the site are near enough to affect ground stability at the site.
- c) The Consultants report lists no fissures, faults or breaklines.
- d) The C.A. report states there have been no recorded gas emissions within the area surrounding the site, but the presence of shallow recorded coal workings means further assessment will be necessary.
- e) There are no licenses for future mining in existence.

The Consultants Report states there are underground workings in three coal seams beneath the site. This information has been obtained from the mine plans examined in the previous section. It is possible that the C.A. are mistaken about the relative positions of the Clay and Yard Seams. From the author's examination

of the plans it seems likely the positions and depths given in the Consultants Report should be reversed. It is also possible that the workings in the two shallower seams do not underlie the site. Even if this were correct, the workings in the Seven Foot do underlie the site and still pose a very real potential hazard. The mine plans have no surveyed depths that can be used to directly determine depth beneath the site. It is the author's assumption that seam projection is the only method available to determine the depth of the workings beneath the site. There has been so much tipping and reinstatement around the site that it is unclear what the original topographic relationship between the site and the No.9 Level was. The level was on the former outcrop of the Seven Foot seam and is approximately 140m due north of the site. If both positions were at the same elevation, using the 5° dip due south from the mine plans would place the seam 16m-18m below the site. There is currently only 5m height difference between them, thus making the seam 21m-23m below the site. It is now impossible to tell by how much land reclamation has buried the position of the No.9 Level. If an arbitrary 5m was assumed, this would result in a very similar depth to the Seven Foot Seam to the 27m given in the Consultants Report.

4. MITIGATION STRATEGY

The site-specific risk assessment demonstrated there are definitely recorded "shallow" workings beneath the site in the Seven Foot Seam. The evidence for workings in the Upper and Lower Yard Seams is more ambiguous, but impossible to write off with a desk study. It cannot be established beyond doubt the possibility and degree of ground instability caused by coal mining legacy issues at the site. There are too many unknowns to quantify the risk. The main unknown factor is the depth to the recorded workings. Workings are present, their condition and the nature and thickness of the overlying strata will need to be assessed. The degree of collapse will also have a major bearing on the possibility of void migration. The mine gas risk assessment will also need to be produced and this will be partly dependent on the position of the water table. Because of the many unknown factors, an intrusive investigation is proposed as an initial mitigation strategy (see following section for more details). Possible remedial strategies after the proposed investigation will need to be informed by the results. They could encompass ground remediation, specialist foundations, gas membranes or a combination of any of these. It is pointless speculating on mitigation at present without being in possession of all required information.

5. CONCLUSION

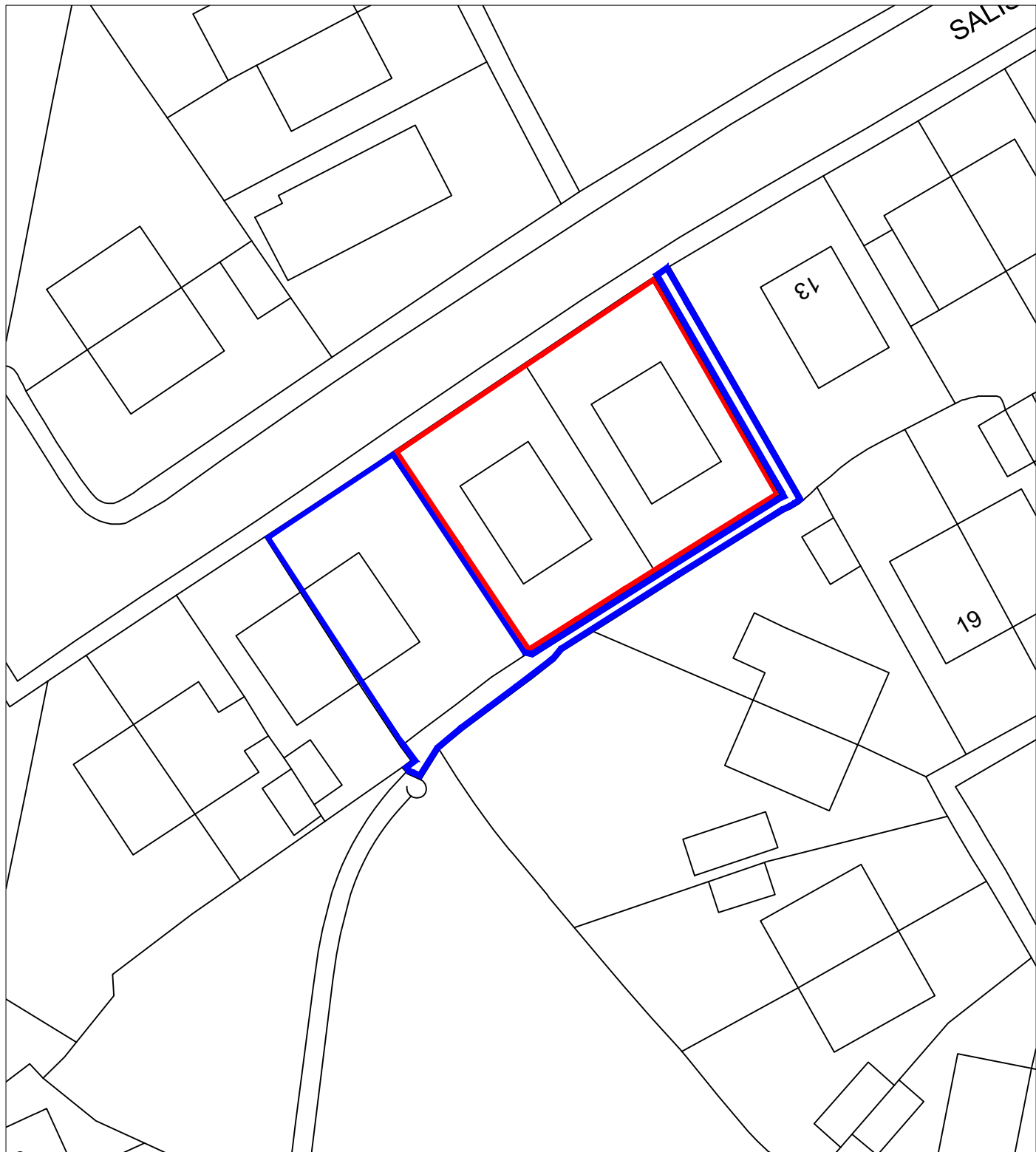
This risk assessment has presented evidence from comprehensive research that there is a potential risk to the proposed development from ground stability issues. These are due to coal mining legacy issues beneath the site. There are recorded workings beneath the site. These are possibly at a dangerously shallow depth. The condition of the workings, their exact depth and type of cover cannot be quantified by a desk study alone. An intrusive investigation is going to be necessary to provide more information. This should take the form of rotary boreholes, the position and depth of which will need to be designed by a competent, experienced Mining Geologist. The boreholes will need to be drilled under the Coal Authority permit system with all relevant methodologies adhered to. Therefore, there is no reason for the C.A. to object to any proposed planning application provided an intrusive investigation is conditioned in the full planning permission.

Richard Davies BSc. (Hons), MSc., F.G.S.

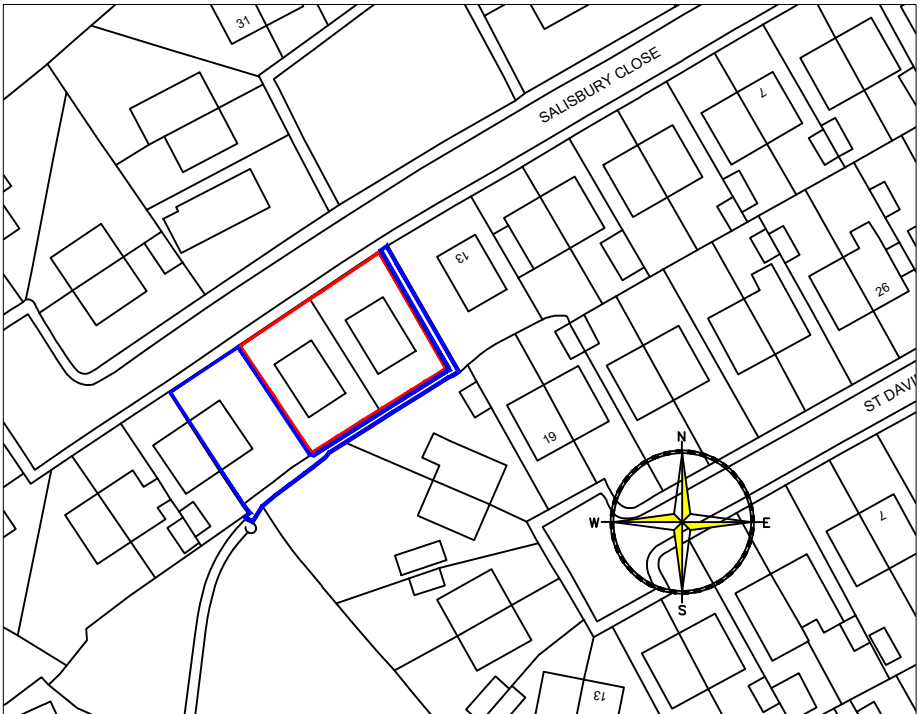
12/06/2024

APPENDIX 1

REPRESENTATIVE SITE PLANS



Block Plan 1:500



Location Plan 1:1250

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Can Plan

Denis Canney
Chartered Town Planner

18 West Grove, Merthyr Tydfil
South Wales CF47 8HJ
tel: 07807 502231

Revision

project

Proposed New Dwellings
at
Salisbury Close
Heolgerrig
Merthyr Tydfil
CF48 1SD
302797 206318
Client

title

Proposed Block Plan &
Location Plan

Date: February 2024

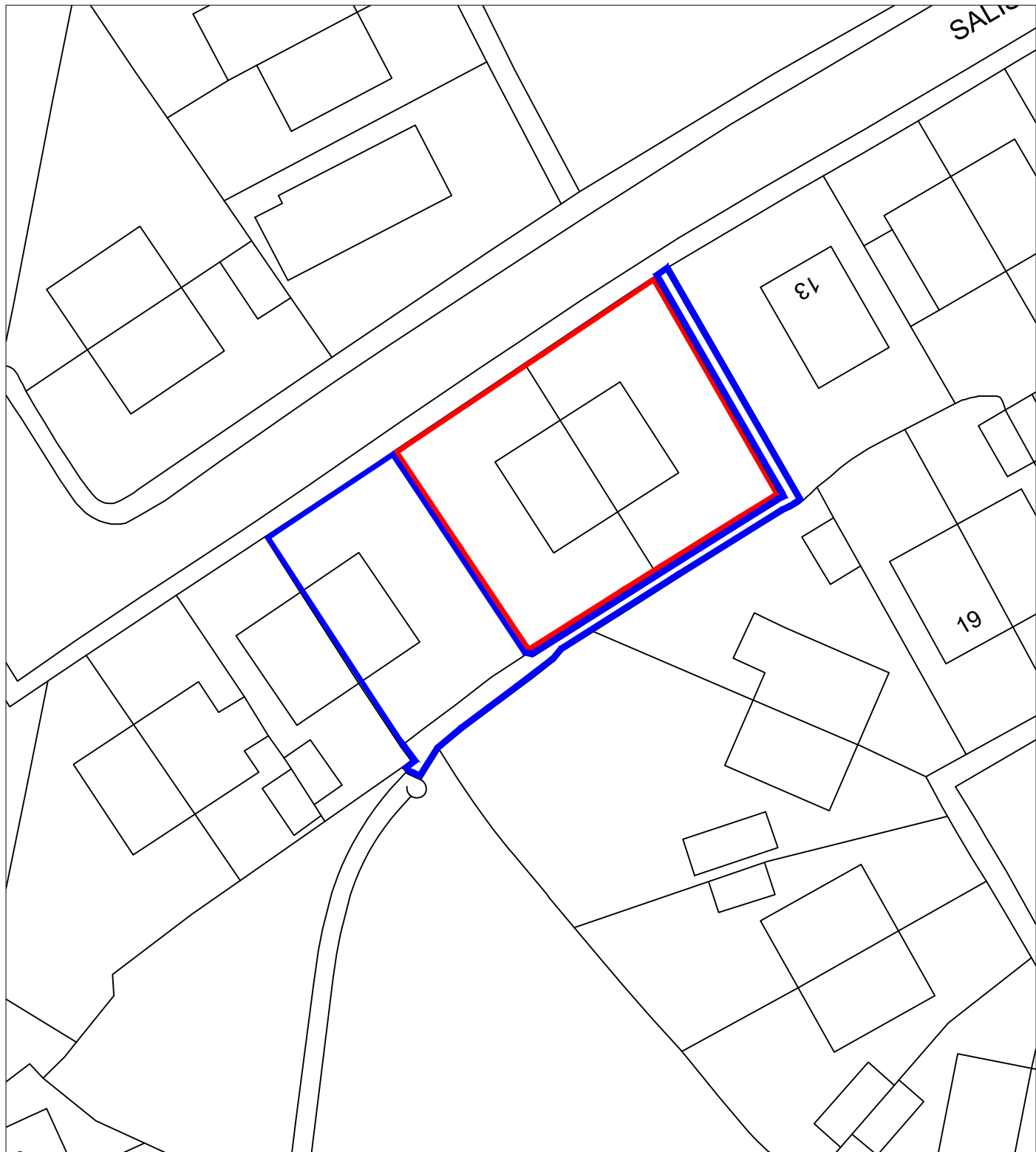
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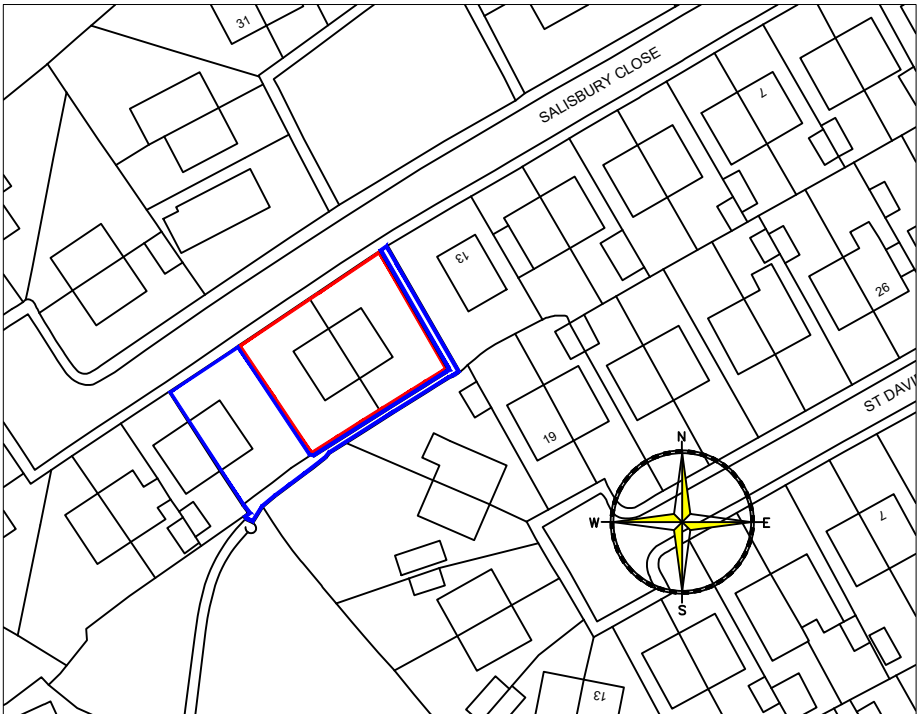
Drawing No.

07-18-01

Rev.



Block Plan 1:500



Location Plan 1:1250

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Can Plan

Denis Canney
Chartered Town Planner

18 West Grove, Merthyr Tydfil
South Wales CF47 8HJ
tel: 07807 502231

Revision

project

Proposed New Dwellings
at
Salisbury Close
Heolgerrig
Merthyr Tydfil
CF48 1SD
302797 206318
Client

title

Proposed Block Plan &
Location Plan

Date: February 2024

Scale: As Shown

Drawn: DC

Drawing No.

07-18-01

Rev.

APPENDIX 2
COAL AUTHORITY
CONSULTANTS REPORT
SALISBURY CLOSE
HEOLGERRIG
MERTHYR TYDFIL



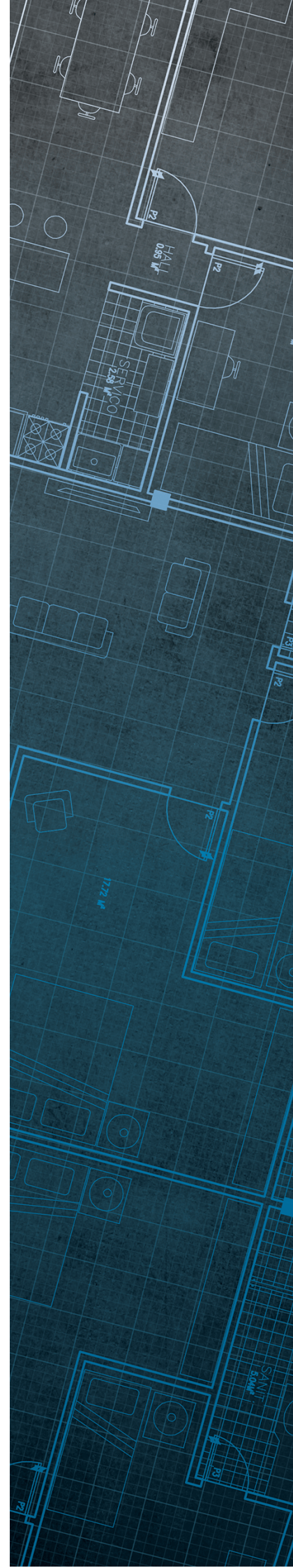
The Coal
Authority

Consultants Coal Mining Report

14 Salisbury Close
Heolgerrig
Merthyr Tydfil
Merthyr Tydfil
CF48 1SD

Date of enquiry:	27 April 2024
Date enquiry received:	27 April 2024
Issue date:	27 April 2024

Our reference:	51003420797001
Your reference:	



Consultants

Coal Mining Report

This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

RICHARD Davies

Enquiry address

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Approximate position of property



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Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	NUMBER 3 CALY	Coal	4BX1	13	Beneath Property	10.7	South	120	1860
unnamed	YARD	Coal	4BXU	21	Beneath Property	6.6	South	120	1858
unnamed	LOWER 7FT BOTTOM LEAF	Coal	4BXC	27	Beneath Property	3.8	South	160	1896

Probable unrecorded shallow workings

None.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

Entry type	Reference	Grid reference	Treatment description	Mineral	Conveyancing details
Adit	302206-019	302809 206379		Coal	
Shaft	302206-064	302835 206373		Coal	
Shaft	302206-094	302788 206383		Coal	

Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

SWR3140	8695	SWR3141
SWR1978	OM15055	SWR3139
SWR3137		

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
YARD	Coal	Yes	31.7	North	88
YARD (MEADOW)	Coal	Yes	9.4	North	91

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations

None recorded within 50 metres of the enquiry boundary.

Remediated sites

None recorded within 50 metres of the enquiry boundary.

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.

Mine gas

None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

Section 3 – Licensing and future mining activity

Future underground mining

None recorded.

Coal mining licensing

None recorded within 200 metres of the enquiry boundary.

Court orders

None recorded.

Section 46 notices

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

Withdrawal of support notices

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.

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.

Section 4 – Further information

The following potential risks have been identified and as part of your risk assessment should be investigated further.

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.

MINE GAS: Please note, if there are no recorded instances of mine gas within 500m of the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. 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. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk**.

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

Opencast mines

Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips

Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations

Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites

Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence

Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas

Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission. Please note, if there are no recorded instances of mine gas reported, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded.

Mine water treatment schemes

Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining

Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing

Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders

Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices

Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices

Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land

Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.