



RHONDDA
GEOTECHNICAL
SERVICES

VALIDATION REPORT
C.A. PERMIT No. 31114
M.T.C.B.C. PLANNING REF. P/24/0239
DETACHED DWELLING WITH PARKING
LAND ADJACENT TO LLE HYFRYD
MOUNT PLEASANT
HEOLGERRIG
MERTHYR TYDFIL
CF48 1RY
6/08/2026

All Ordnance Survey mapping used in this report has been purchased from Groundsure, Promap or U.K. Map Centre and remains Crown Copyright. The Geological Survey map is from the Author's own collection and is also Crown Copyright. Coal Authority documents are also copyright. All plans are orientated north unless otherwise indicated.

This report is supplied in confidence to the client as a Validation Report as required by planning conditions. The report will also accompany the Permit Discharge to the Coal Authority. The author cannot be held responsible for unauthorised use by third parties. The report, and any part of it not in the public domain, remain the author's intellectual property. Unauthorised use will result in legal action.

INTRUSIVE INVESTIGATION VALIDATION REPORT

1. INTRODUCTION

This Validation Report has been produced for Paul Thomas of Utopia Designs, Merthyr. They are acting as planning agents for Judith Budding. Granted Planning Permission P/24/0239 from Merthyr Tydfil L.P.A. is for a detached dwelling on a vacant plot adjacent to Lle Hyfryd, Mount Pleasant, Merthyr Tydfil. The intrusive investigation described within this report was required to discharge Condition 10 of the granted permission:-

10 No development shall commence until:

- a) a scheme of intrusive investigations has been carried out on site to establish the risks posed to the development by past shallow coal mining activity and to locate or discount mine shaft 303206-040; and
- b) any remediation works and/or mitigation measures to address land instability arising from coal mining legacy, as may be necessary, have been implemented on site in full in order to ensure that the site is made safe and stable for the development proposed.

The intrusive site investigations and remedial works shall be carried out in accordance with the approved details.

Reason - The site may be unstable and as such in the interests of safety remedial measures may need to be carried out to accord with Policy EnW4 of the Merthyr Tydfil County Borough Council Replacement Local Development Plan.

11 Prior to the occupation of the development, or it being taken into beneficial use a signed statement or declaration prepared by a suitably competent person confirming that the site is, or has been made, safe and stable for the approved development shall be submitted to the Local Planning Authority for approval in writing. This document shall confirm the methods and findings of the intrusive site investigations and the completion of any remedial works and/or mitigation necessary to address the risks posed by past coal mining activity.

Rhondda Geotechnical Services were commissioned by the applicant to act as agents for the Coal Authority permit application ref. 31114. They also designed, instructed and supervised the intrusive works. This report will accompany the Permit Closure Form to be returned to the C.A. following the completion of the works. The report will also be submitted to M.T.C.B.C. for review in consultation with the C.A. to allow the partial discharge of Condition 10. No intrusive works connected with locating the supposed shaft formed part of the Permit application. Indeed, since the C.A. Shaft co-ordinates locate off the land

ownership, this would be physically impossible. The report will describe the site investigation results carried out under permit and will then use desk study material to assess the risk (if any) from the supposed shaft.

Condition 11 will be the subject of a separate document once the risk from the shaft has been assessed and the assessment agreed with both M.T.C.B.C. and the Coal Authority.

The site is centred on grid reference 303320, 206360 at an elevation of approximately 249m A.O.D. The plot is a featureless level rectangular area between two existing properties and is finished with aggregate. It covers an area of approximately 0.04 Ha. with residential properties adjoining the northeast and southwest boundaries. A large colliery spoil heap rises from the northwest boundary. The site fronts onto Mount Pleasant to the southeast, a narrow residential street. The site location is shown in Figure 1 overleaf, the site boundary and proposed house footprint is shown in Figure 2.

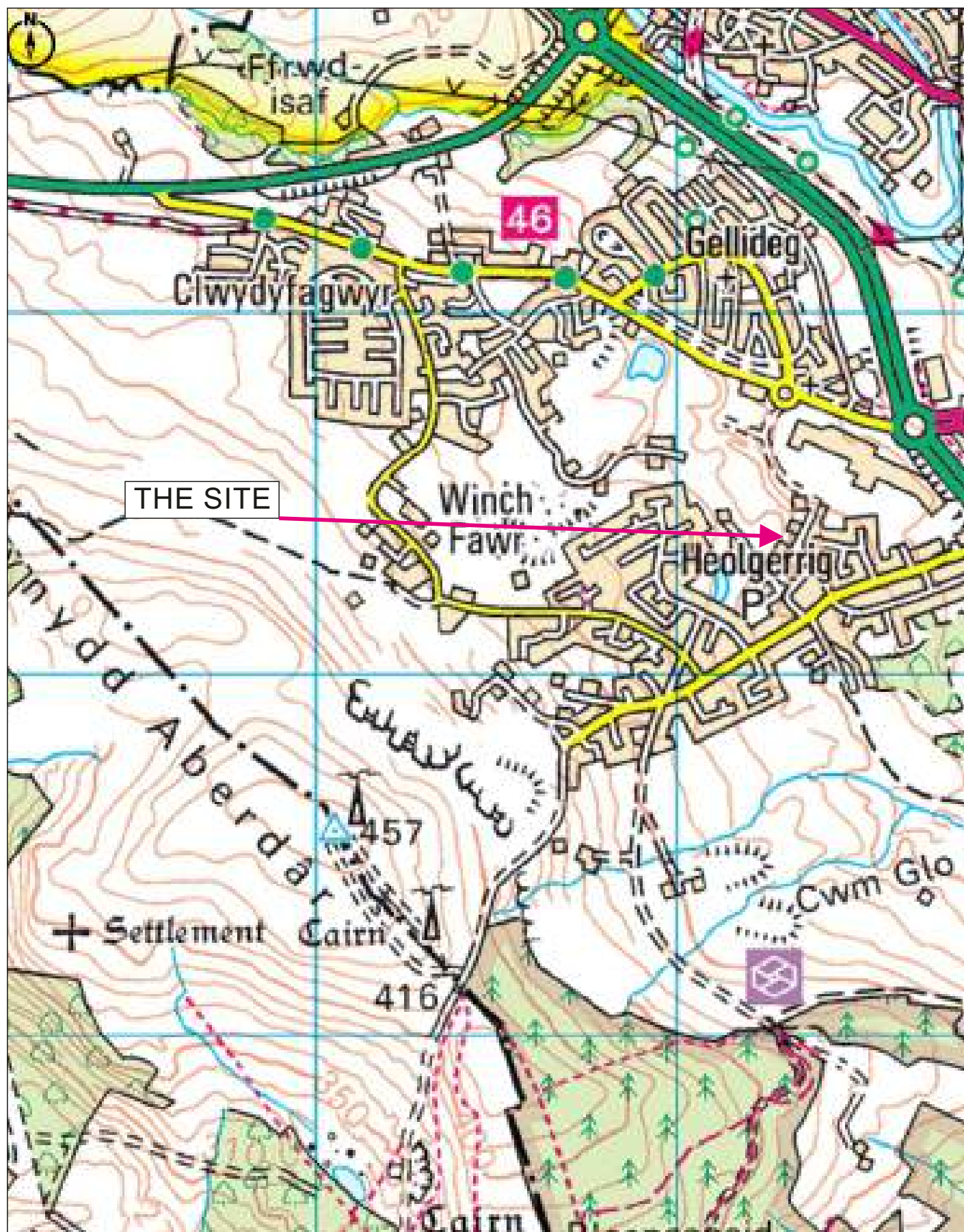


FIGURE 1
SITE LOCATION

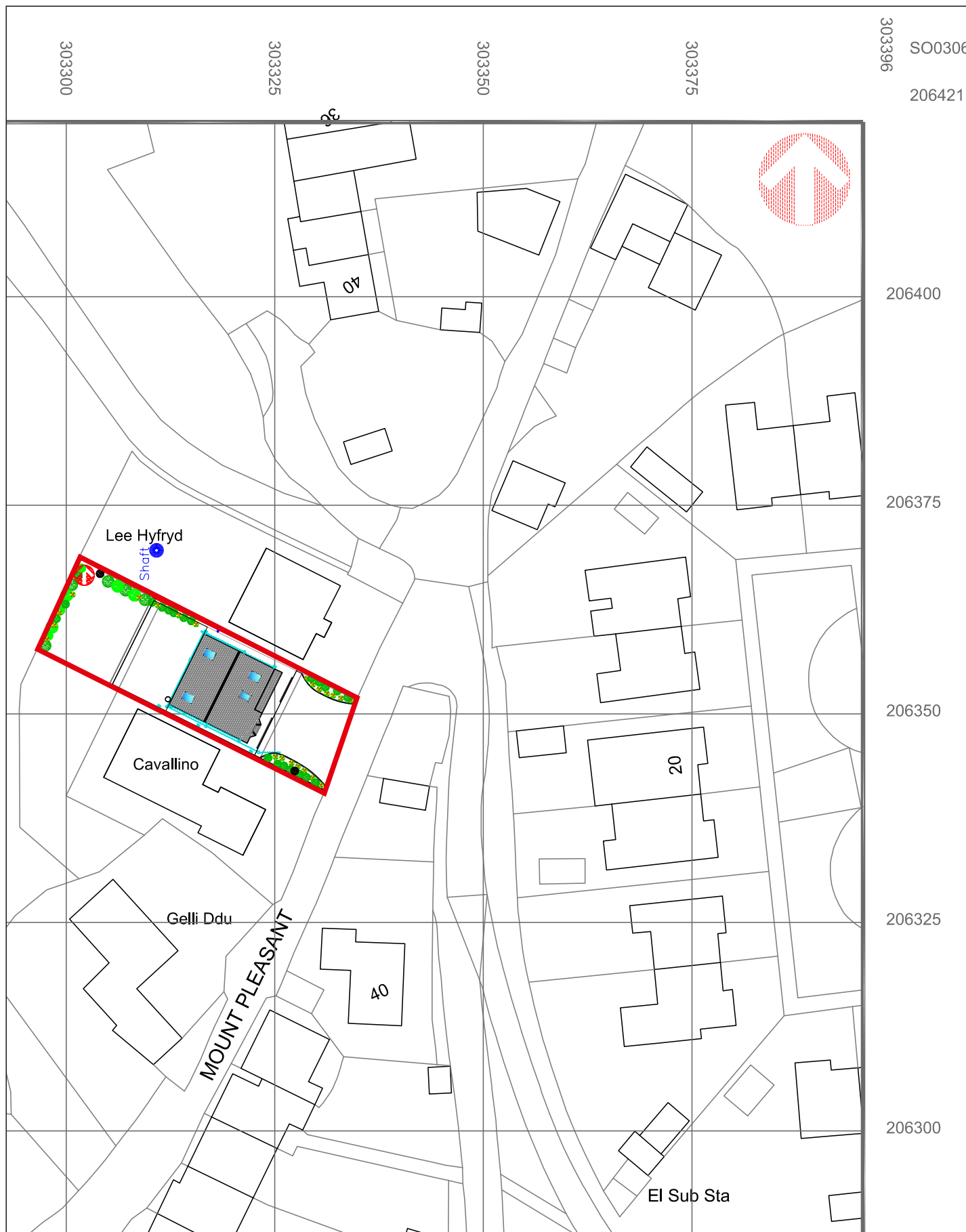


FIGURE 2

PLOT WITH PROPOSED HOUSE FOOTPRINT OUTLINED IN RED.
N.B. THE SHAFT POSITION HAS BEEN INCORRECTLY PLOTTED
BY THE ARCHITECT AND SHOULD BE IGNORED.

2. BRIEF DESK STUDY

In circumstances where R.G.S. have not produced the C.M.R.A. it is company policy to carry out an independent review of the geology. This will enable anyone reviewing the Validation Report to place the results of the intrusive investigation in context. In the case of this site, the C.M.R.A. was produced by Terra Firma for Ms Budding in March 2025. The C.M.R.A. draws on an appropriate range of sources. The summary below will reference the original source material directly and produce brief summaries of information contained, where relevant to the site.

SOURCES OF INFORMATION

- a) Coal Authority Consultants Report ref 51003481204001.
 - b) The C.A. interactive viewer.
 - c) The 6" to the mile Geological Survey sheet SO 00NW (1968-69 resurvey, published 1972)
 - 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) Historic Ordnance Survey Maps Glamorgan XI.4 1875 with 1904, 1919 and 1944 revisions
- 2a) The Consultants Report states that there is recorded underground mining of coal directly beneath the site in the Lower Seven Foot Bottom Leaf at 6m depth. This has an extraction thickness of 1.6m and was last worked in 1896. This claim will be commented on later in the report. The report goes on to say the C.A. believe there are no shallow unrecorded workings or shallow spine roadways beneath the site. The report states that there are four mine entries within 100m of the boundary of the site. these are two adits and two shafts. The details given in the Consultants Report are as follows:-
- SHAFT 303206-023- Treatment details unknown
- SHAFT 303206-040- Treatment details unknown
- ADIT 303206-047- Treatment details unknown
- ADIT 303206-066- Treatment details unknown
- Three of the mine entries are far enough away to have no influence on the site. Shaft 303206-040 is the shaft mentioned in the planning conditions and is crucial to the final

risk assessment. The shaft will be examined in detail in the final section following the results of the intrusive investigation. The C.A. is not aware of any geological faults, fissures, breaklines or other weaknesses that have been affected by coal mining. There are no recorded areas of opencast mining within 500m of the site boundary.

In Section 2 the report records no site investigations have been carried out within 50m of the site. Neither are there any surface hazards that have required remedial action within 50m. The C.A. has received no 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 stop notices or Section 33 notices that the C.A. are aware of. There are no records of gas emissions requiring action within 500m of the site boundary.

Section 3 states there is no licensing for present or future coal mining within 200m. There are no Section 46 notices or Withdrawal of Support Notices. No Section 41 notice has been given cancelling the entitlement to withdraw support. In Section 4 the Consultants Report states that potential risks have been identified and should be investigated further as part of any risk assessment. It then goes on to recommend technical advice is sought before beginning work on site. It also warns that the fact there have been no recorded gas emissions does not mean that mine gas is not present. It recommends the risk should be addressed and assessed.

b) The interactive viewer can be a very useful additional source of information on outcrops and mine entries when the Summary of Findings map is not available, as is the case here. Figure 3 is taken from the Mining Data window of the Viewer. The nearest outcrops to the site have been labelled by the author using the C.A. Seam Code Directory. From the ascending seam codes, it can be inferred that the strata are dipping to the southwest. If the Interactive Viewer is correct, then the site will be underlain by the Lower Seven Foot (SW0181) at shallow depth with the Seven Foot (SW0221) either at very shallow depth or removed by erosion. This agrees with the Consultants Report which states the seam outcrops are 30m and 5m away respectively. Further north are the outcrops of the Five Foot, Gellideg and Garw (SW0101). The Garw is the basal seam of the Coal Measures. The mine entrances will be addressed in the final section of this report following the results of the intrusive investigation.

c, d,) The landscape and built environment in the Heolgerrig area has changed dramatically since the 1870s. So the site could be readily located on the Geological Survey National Grid revision SO00NW, the 1963 base map was georeferenced onto a modern aerial photo. This has been done in Figure 4. The site was then transferred onto the Survey Sheet. This has been done in Figure 5. The trend of the outcrop pattern

is very similar to the Interactive Viewer. This is hardly surprising as the Survey is the main source of the C.A.'s outcrop data via the British Coal Rationalised Plan. However, there are significant differences in the detail. The major difference is that the Geological Survey shows the outcrop of the Seven Foot Seam south of the site. With a generalised strata dip to the southeast, this means the Seven Foot cannot underlie the site as claimed in the Consultants Report. The conjectural outcrop of the Five Foot is north of the site. East of the site the outcrop of the Gellideg Seam is closely associated with the Five Foot. This means both have the potential to underlie the site at shallow depth. The Garw Seam outcrop is further north again (unlabelled in Figure 5) and is known to be worked. The distance from the site and the rising topography means that although it will underlie the site it is unlikely to be at a depth where workings would affect ground stability. Figure 6 is a section of the stratigraphic column from SO 00NW. This shows the approximate site level if the outcrop positions marked in Figure 5 are correct.

The author is in possession of multiple mine plans of Coal workings on the Cyfarthfa Estate, of which the site was a part. The plans have been looked at but are of limited value to this assessment for various reasons. Lack of surface features and antiquated seam names being chief amongst them.

e) The historic O.S. maps are of value in the assessment of the possible risk to the site from shaft 303206-040 and will be discussed in the final section after the description of the intrusive investigation results.

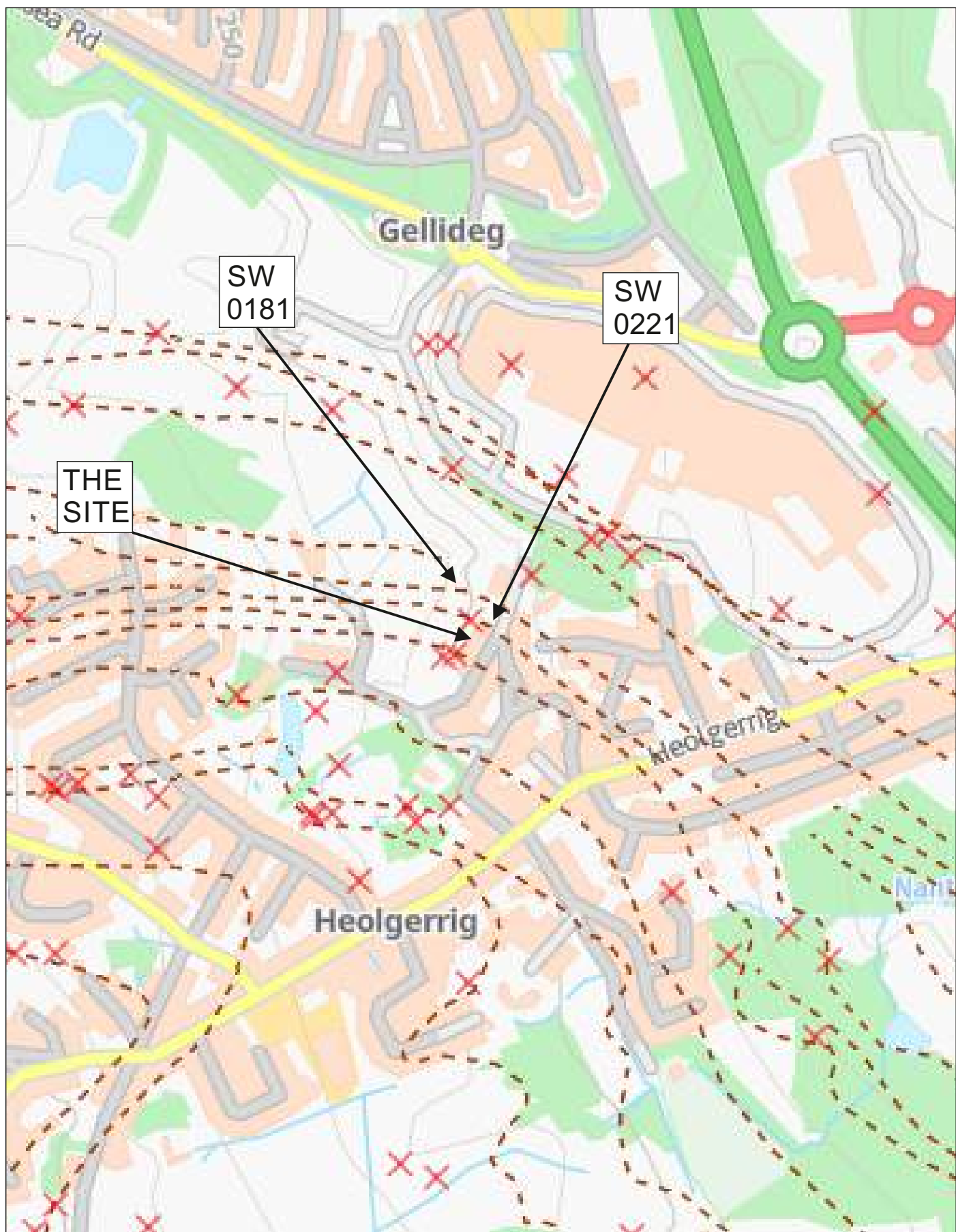


FIGURE 3
SECTION OF THE C.A. VIEWER WITH SEAM CODES ADDED.

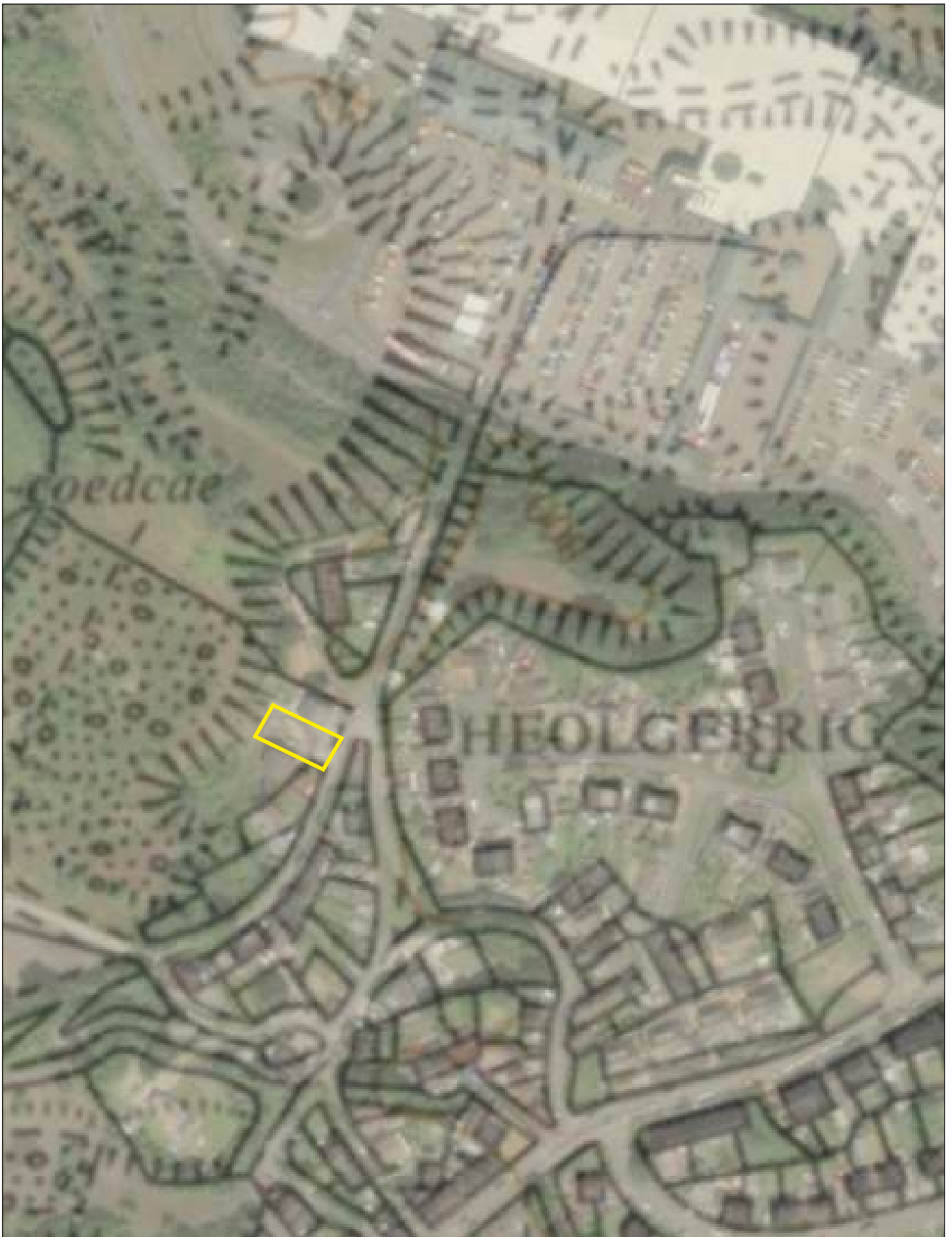
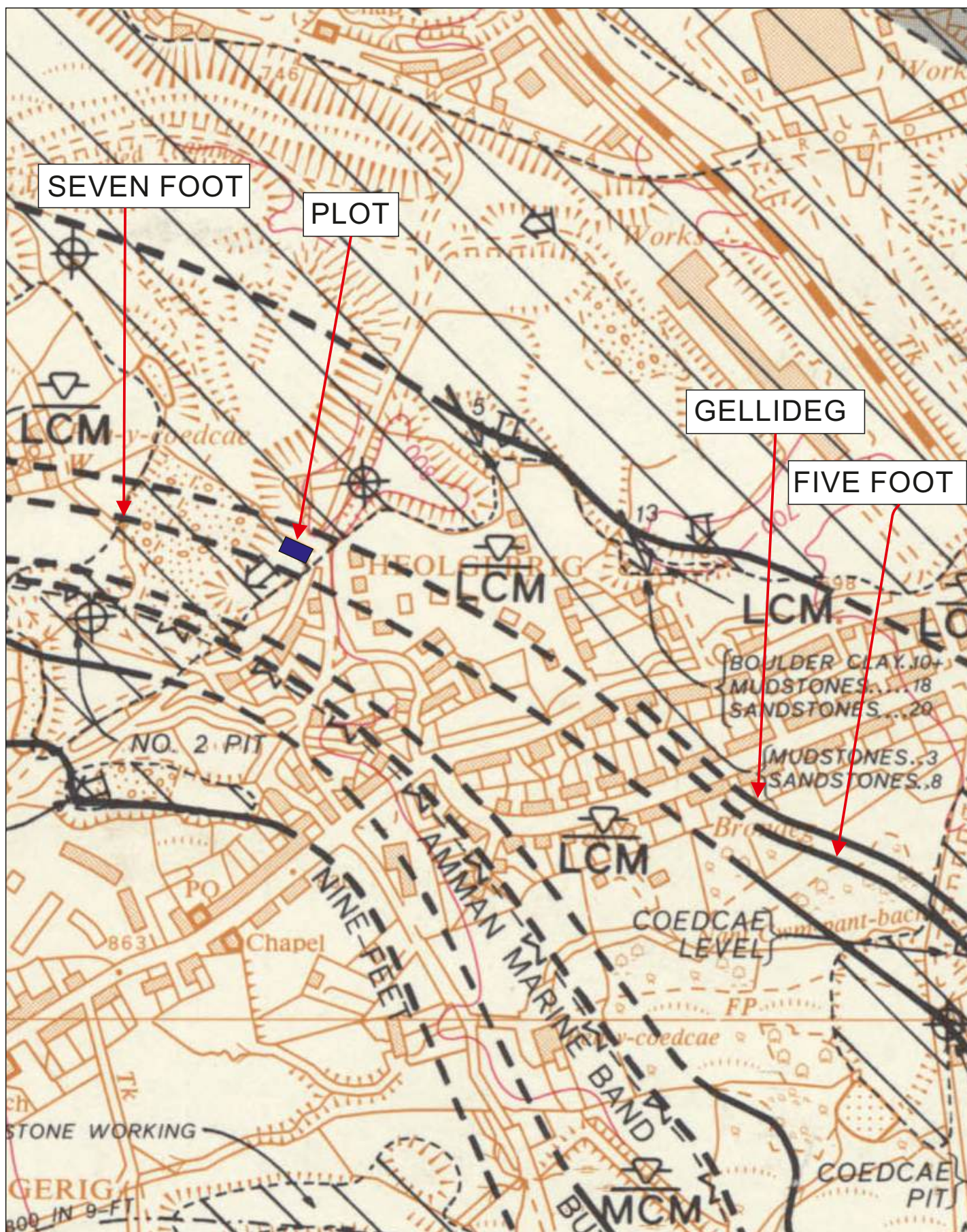


FIGURE 4
THE 1965 NATIONAL GRID 1:10,560 O.S. GEOREFERENCED
ONTO A MODERN AERIAL PHOTO WITH THE SITE HIGHLIGHTED.



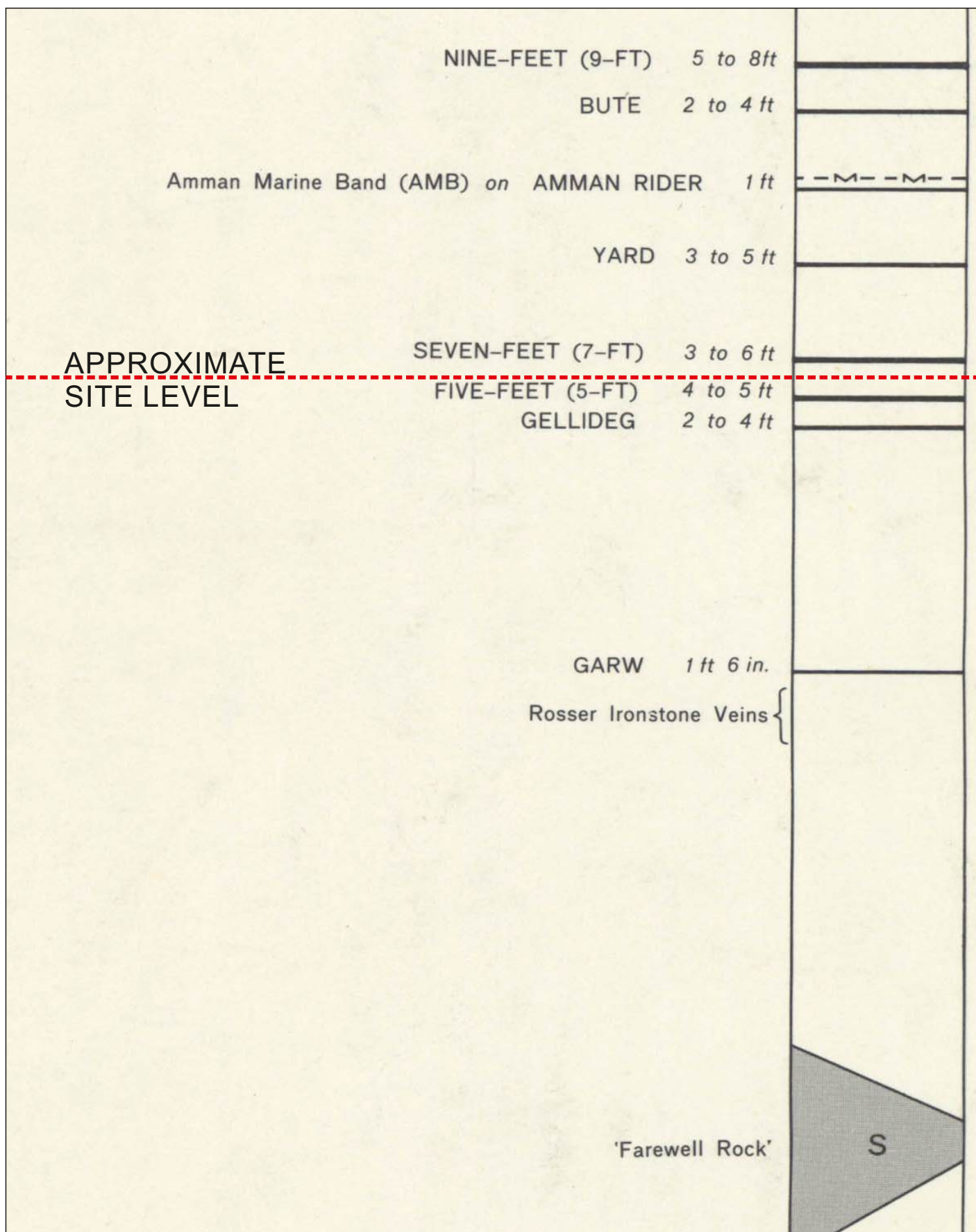


FIGURE 6
SECTION OF THE STRATIGRAPHIC COLUMN FROM SO 00NW.
THE APPROXIMATE SITE LEVEL IS MARKED.

3. SITE INVESTIGATION DESIGN

The granted planning application is for a single detached property. The permit application was made for four boreholes approximately outside the four corners of the proposed house footprint. The Permit Department requested that BH2 was moved southward to avoid the zone of influence of shaft 303206-040. The boreholes were drilled in the positions shown in Figure 7. At the time of the permit application, the depth of superficial deposits was unknown, but suspected to be 8m-10m of Colliery spoil or Glacial Till. Using this estimate, the permit application was made for 45m boreholes, with the intention of proving 30m of bedrock beneath the proposed buildings.

4. RESULTS

The boreholes were drilled between 15th-21st May 2026 either side of the weekend. Apex Drilling used a compact Fraste PLG rotary rig to drill the boreholes. The rig was chosen for two reasons. Both strong, thick overburden above the bedrock and an unknown depth of colliery spoil were possibilities, requiring a rig with a powerful torque to case them off. Also, an earlier site visit had suggested the compact size of the rig would be crucial to access the proposed borehole positions on such a small plot. Four boreholes were then drilled in the positions shown in Figure 7.

All permit conditions were adhered to, with water flush being employed from rockhead after the superficial deposits were cased using air flush and an ODEX overburden casing system. When rockhead was established, the flush was switched to water. Continuous gas monitoring at the rig, and regular monitoring in the surrounding area detected no mine gases. Full borehole logs are contained in Appendix 1. In summary, all four boreholes were drilled to 40m proving 30m of bedrock beneath the superficial deposits. The superficials comprised of approximately 3m of colliery spoil at the rear (northwest) of the plot increasing to 6m depth toward the front (southeast). Mudstone bedrock was consistent at approximately 10m depth with the intervening superficials between the base of the spoil and rockhead being a stiff Glacial Till. The bedrock was predominantly Mudstone with some sandstone toward the base. There was good correlation between the boreholes with a distinctive pair of workable thickness Coal Seams in all four holes, although there was a considerable variation in seam depth across such a small plot. The separation between the seams was consistent at 3.5m-4.3m. The upper seam varied from 1.5m-2.5m in thickness. The lower seam was 0.8m-1.3m thick in three of the boreholes but thickened to 2.6m in BH2. Such variations are quite common in the Lower Coal Measures, mainly due to structural deformation. There were no voids and no loss of flush in any borehole.

5. CONCLUSIONS OF THE INTRUSIVE INVESTIGATION

Two closely spaced coal seams were seen in all four boreholes. These were interpreted as the Five Foot and Gellideg Seams. This was based on their thickness, close spacing and the outcrop positions on the Geological Survey. The seams were intact with no voids and no loss of returns in any of the four boreholes.

The information in the Consultants Report is clearly wrong. This is probably due to the difficulties in interpreting the Cyfarthfa mine plans correctly. This was mentioned in Section 2. It is informative that Benny's Level (303206-023/047) is shown on the Seven Foot outcrop *as shown by the Geological Survey*, not the C.A. Data. The mine plans only show one mine entry. Double entries are common in C.A. data due to two different sources being referenced for the same entrance. In this case the two sources were the mine plan and the historic Ordnance Survey maps.

Recorded very shallow workings in the Seven Foot were the main potential mining legacy issue at the site. This risk can now be safely dismissed. Before the site can be considered safe and stable in line with national guidelines, the issue of a potential threat to stability from mineshaft 303206-040 will need to be assessed. This will not involve intrusive works because the shaft is not on land owned by the client. Therefore, this Validation Report will be sufficient to accompany the Permit Closure Form. An expanded version of the report with a risk assessment for the shaft will be submitted to M.T.C.B.C. Planning. It is anticipated they will consult with the C.A. Planning department regarding any potential risk from the mineshaft.

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

6.08.2026

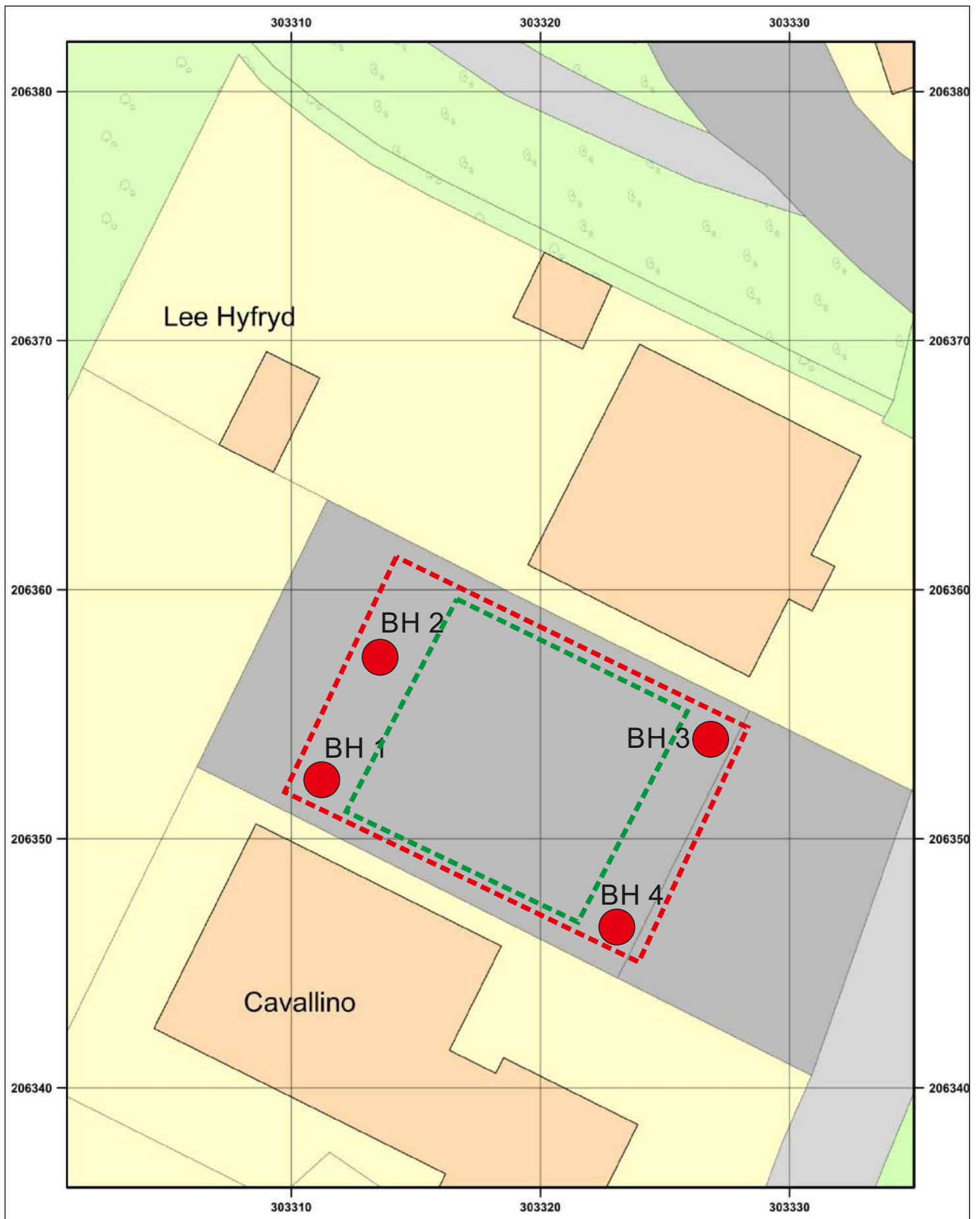


FIGURE 7
BOREHOLE POSITIONS AT LLE HYFRYD AS DRILLED, WITH
THE PROPOSED HOUSE FOOTPRINT OUTLINED IN GREEN.

6. MINESHAFT RISK ASSESSMENT- 303206-040

To recap from the introduction, the granted planning contains the following statement:-

10 No development shall commence until:

- a) a scheme of intrusive investigations has been carried out on site to establish the risks posed to the development by past shallow coal mining activity and to locate or discount mine shaft 303206-040.

As demonstrated in the previous sections of the report, the intrusive investigation established that the C.A. data on shallow mining was incorrect and that there was only intact coal beneath the site. This now only leaves the last sentence “*to locate or discount mine shaft 303206-040*”

Before going any further, now there are records from an intrusive investigation a zone of influence from a potentially nearby shaft can be calculated. The normal method of doing this is to project a cone with an apex angle of 45° from rockhead to the surface. The resulting circle at ground level is the zone of influence. This is a simplistic rule of thumb with a very large margin of safety built in. The formula assumes that any superficial deposits will have no cohesion and very little shear strength, such as sands, gravels or made ground. It is assumed they will therefore collapse to a 45° angle should the shaft in the centre collapse/open. This is very far from the case in most of South Wales. The superficial deposit around most shafts is Diamicton. Formerly known as Boulder Clay or Glacial Till, the composition varies enormously from place to place. In most of the South Wales Coalfield it is an overconsolidated deposit with a high shear strength and high cohesion. It can frequently be observed in the region standing unsupported in near vertical excavations many years old. This makes a nonsense of the rockhead cone of influence. Instead the top of the Diamicton should be taken as the point from which the cone should be projected to the surface to define the zone of influence. BH2 was the nearest borehole to the C.A. shaft coordinates. This proved 2.6m of colliery spoil over Diamicton. Therefore, the zone of influence can be taken as a 3m radius assuming some water softening of the surface of the former ground level. This figure will now be taken forward in the report.

It would be physically impossible to locate the mineshaft as requested in the planning condition. It is supposedly in the garden of a house adjacent to the site. Even if it was in an open field, the overlying colliery spoil would make locating it by geophysical survey or excavation extremely difficult. There is a high degree of

uncertainty regarding the true position. Figure 8 is the location plan from the Mine Entry Shaft Plan and Datasheets Report purchased from the C.A. as a starting point for the risk assessment of the shaft. The plan is too small scale to accurately address the exact position. The Data Sheet Report gives the coordinates 303312,206367. Curiously, the Data Sheet gives no departure for the shaft position. On the Interactive Viewer, the departure is given as 10m. Figure 9 is the Architect's drawing. The shaft position has been wrongly marked by the architect (purple circle). The correct shaft coordinates correspond to the small red circle. The larger shaded circle is a 10m radius centred on the coordinates. Theoretically, the shaft could be located anywhere within this circle. Ten metre departures are given when the evidence for the actual position is very poor. Figure 10 is a higher quality map. This again shows the 10m zone of influence. The second, larger circle is the furthest possible extent of a theoretical zone of influence. This is 3m further out, the radius of a 6m zone of influence. This shows a theoretical risk to the northern corner of the proposed house. For this risk to be real, the mineshaft would need to be situated somewhere in the shaded area. Any other position would pose no risk to the proposed house.

Returning to the evidence for the existence or position of the shaft, there is no additional information on the shaft given in the report:-

Colliery name: Unknown

Entry name: Unknown

Date abandoned: Unknown

Depth of superficial deposits (m): Unknown

Depth of shaft (m): Unknown

Diameter of shaft (m): Unknown

Probable adit azimuth: Not Applicable

Treatment details: Unknown

The only source given for the shaft is the British Coal East Wales Shaft Register. The evidence for the position of shaft -040 can be contrasted with the other two mine entries in the report. Shaft 303206-066 is evidenced by the 1904 1:2500 O.S., Abandonment Plan SWR3141 and the Geological Survey Sheet SO 00NW. Adit 303206-023 is shown on the same historic O.S., five different abandonment plans and SO 00NW. Both mine entrances can be seen in Figure 5.

The Cyfarthfa Estate operated as a monopoly, mining all Coal and Ironstone on the estate. This was used to supply the Cyfarthfa Ironworks, which for a time was the largest in the world. The estate is covered by hundreds of abandonment plans. These date back to 1820 and beyond. They were kept for commercial and mining purposes for at least fifty years before the keeping of mine plans became a legal requirement. It is unbelievable that the shaft does not appear on a single plan.

The origin of the Shaft Register dates to the formation of the N.C.B. in 1947. At a stroke the N.C.B. Surveyors were tasked with listing every mine entry in Britain. This was a vast task. The C.A. currently hold the details of over 170,000. Part of this work was to mark every mine entry on six-inch O.S. maps. The original Shaft Registers for East and West Wales are no longer held by the Coal Authority, presumably being lost or destroyed during the digitalisation of the old N.C.B./B.C. paper records. In past studies by the author the register has proved extremely unreliable. Figure 11 is a section of the Shaft Register for SS 88SE which covers an area northwest of Bridgend. This was given to the author by a long-retired British Coal Surveyor during research on another site several years ago. The map is reproduced here to illustrate the differing sources of information and the inaccuracy of the positional information on the register. The area of the map sheet selected here has been chosen because it is rural. Poor reproduction means the urban areas on this copy are much more unclear. Also, the author recently carried out an exhaustive mine plan search covering the area in Figure 11. The mine entries labelled 20, 21 and 22 do not appear on any mine plan, but are taken directly from the O.S. map. In contrast, 23 and 24 are not marked on the historic O.S. but are taken from abandonment plan SWR3221. When the Shaft Register is the only source of information on a supposed mine entry, it must be borne in mind that the hand drawn circles on the map sheet scale out at 25m-30m across. The site investigation this part of the Register was connected to in 2022 was similar to the site currently being discussed. There was a “shaft” supposedly on site that the C.A. was upholding as a reason to object to planning being granted. The only evidence for the shaft was the British Coal Register. The site had a mining history dating from the 1820’s with multiple mine plans, none of which showed the shaft. A large-scale soil strip was carried out, as the site was a derelict industrial area. No trace of a shaft was found. This demonstrates the author’s opinion that the shaft register is both unreliable and inaccurate when it is the sole evidence for a mine entry. What could be the origin of the supposed Merthyr shaft in the British Coal Register? It does not appear on 100+ mine plans covering the area. It does not appear on the Geological Survey. As a source for a mine entrance location, this only really leaves the Ordnance Survey as a possible source. As part of the research into

this, the author purchased a complete set of historic Ordnance Survey maps from Groundsure. The study of these turned up one interesting feature. Figure 12 shows the 1:2500 O.S. with the site outlined. The upper section is the 1886 map. This shows the site bisected by a tramline running out of Benny's Level. In the middle section from 1904 a circular feature is marked to the north of the site. Benny's Level is marked as disused and an air shaft is labelled opposite the houses of Tramroadside. This circular feature is also marked on the 1922 map which is not reproduced here. In the lower image from 1964 the feature is gone and a small square building stands on the location. Figure 13 shows 1904 map in more detail. The C.A. coordinates for shaft -040 have been marked, together with a 10m departure radius. This does take in part of the circular feature. The feature is unlabelled, and it is unclear what it is. It seems too large to be a shaft, unless possibly a collapsed trial pit. The complex geology meant trial pits were frequently dug ahead of advancing workings where the seam was "lost" from faulting, washout or structural thinning. Some examples are shown in Figure 14.

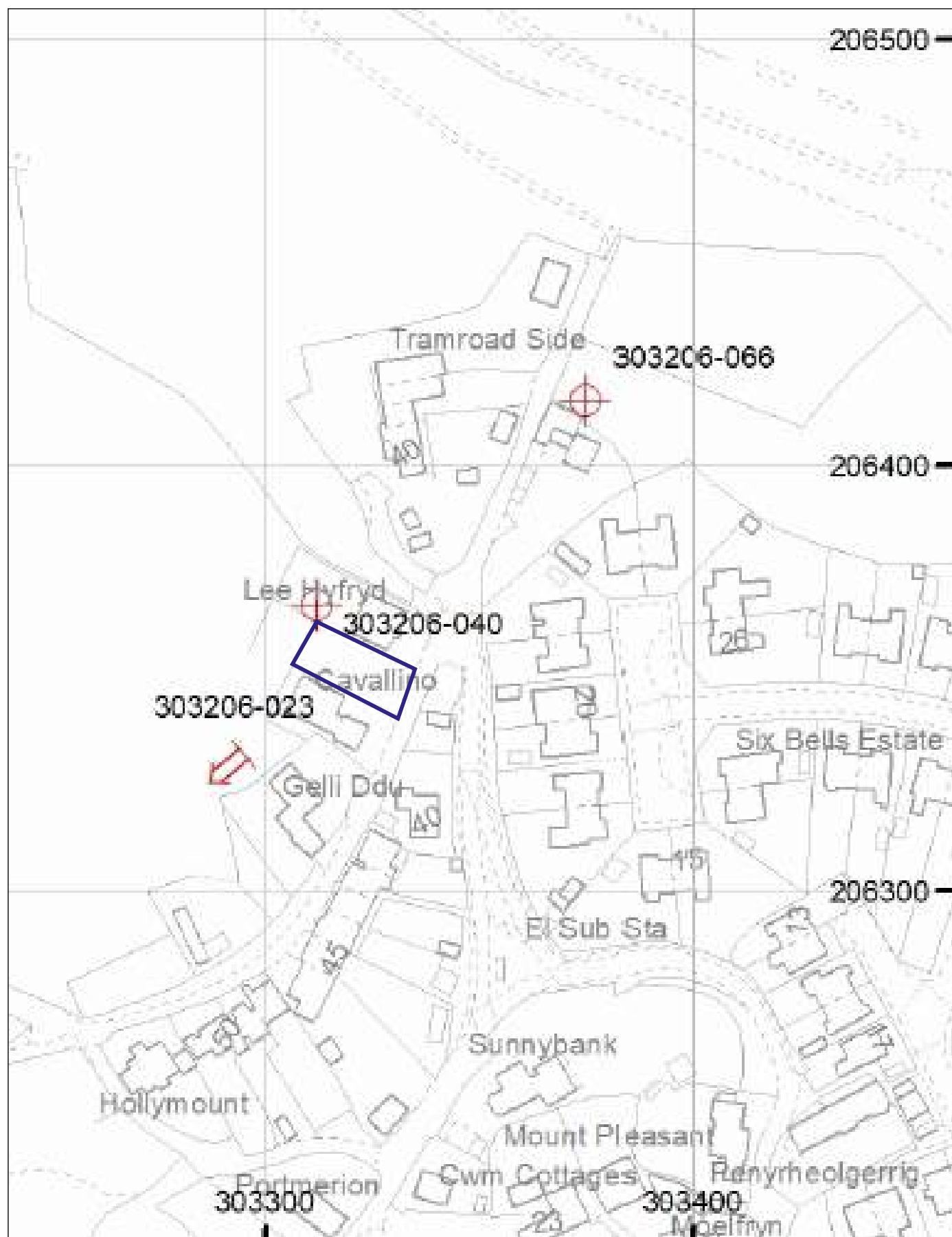


FIGURE 8
PLAN FROM THE MINE ENTRY DATASHEET
REPORT WITH THE SITE HIGHLIGHTED.

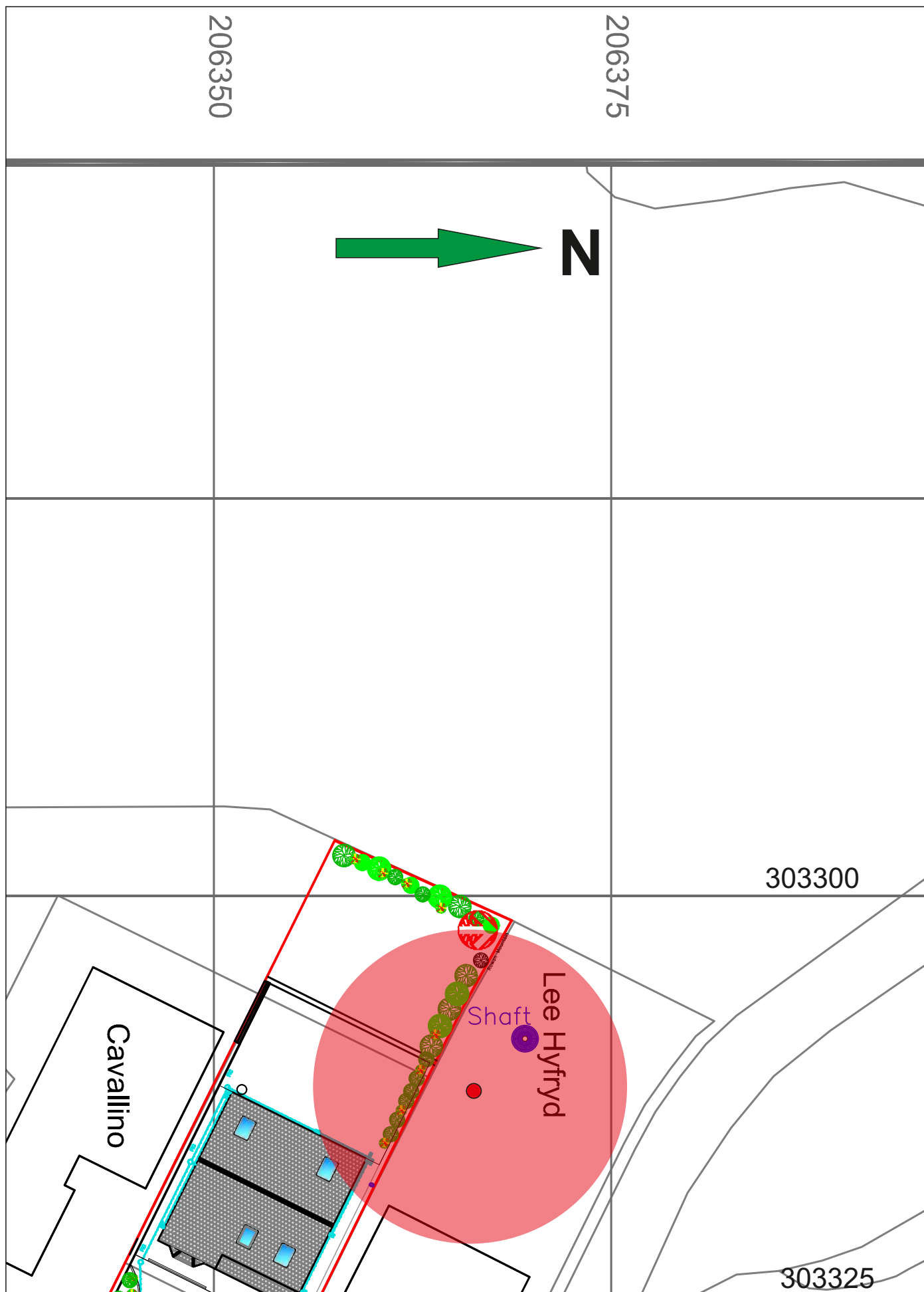


FIGURE 9
10m DEPARTURE RADIUS AROUND C.A. COORDINATES

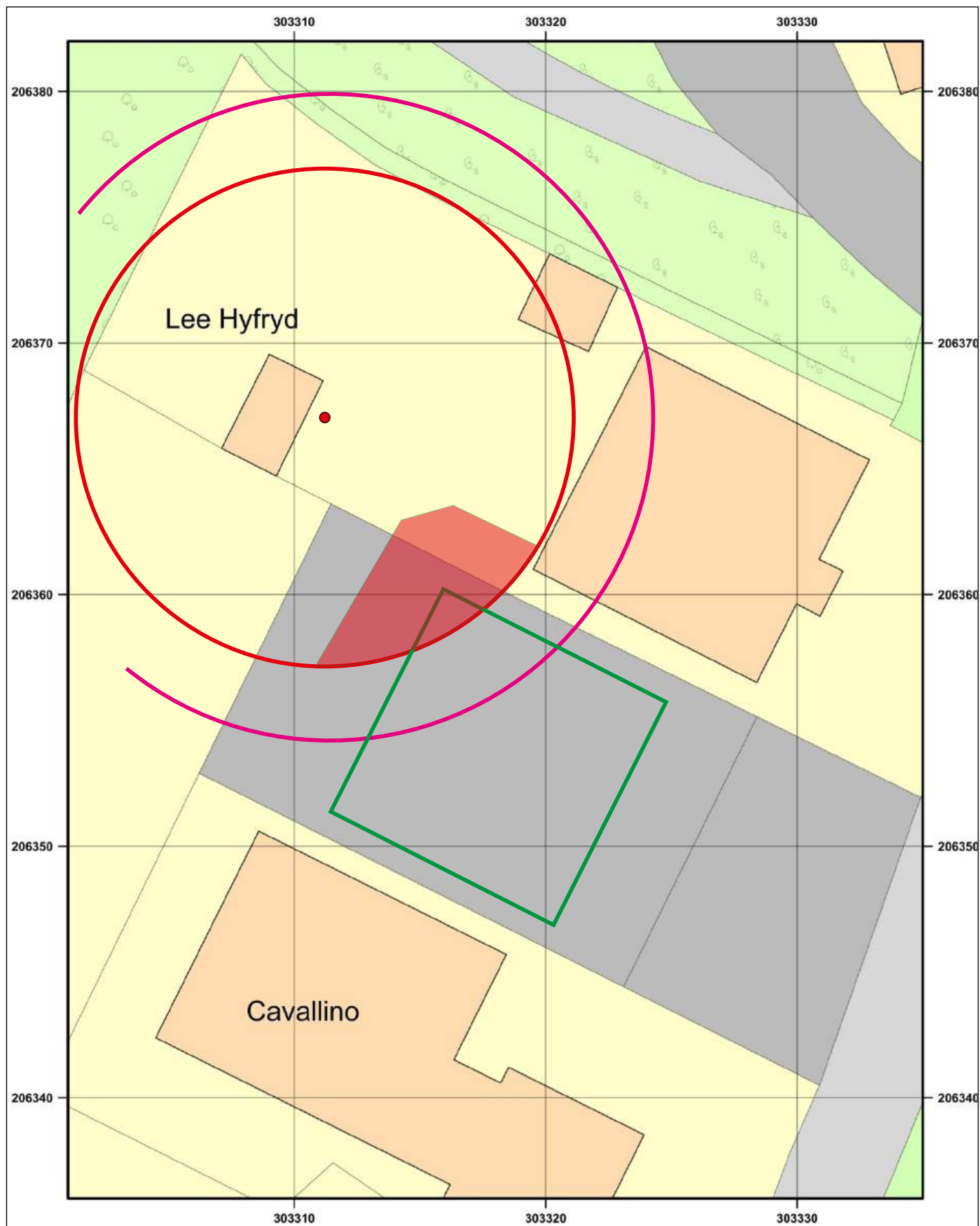


FIGURE 10
 LARGE SCALE O.S. WITH DEPARTURE ZONE (RED),
 EXTREME POSSIBLE EXTENT OF THE ZONE OF INFLUENCE
 (MAGENTA) AND PROPOSED HOUSE FOOTPRINT (GREEN)

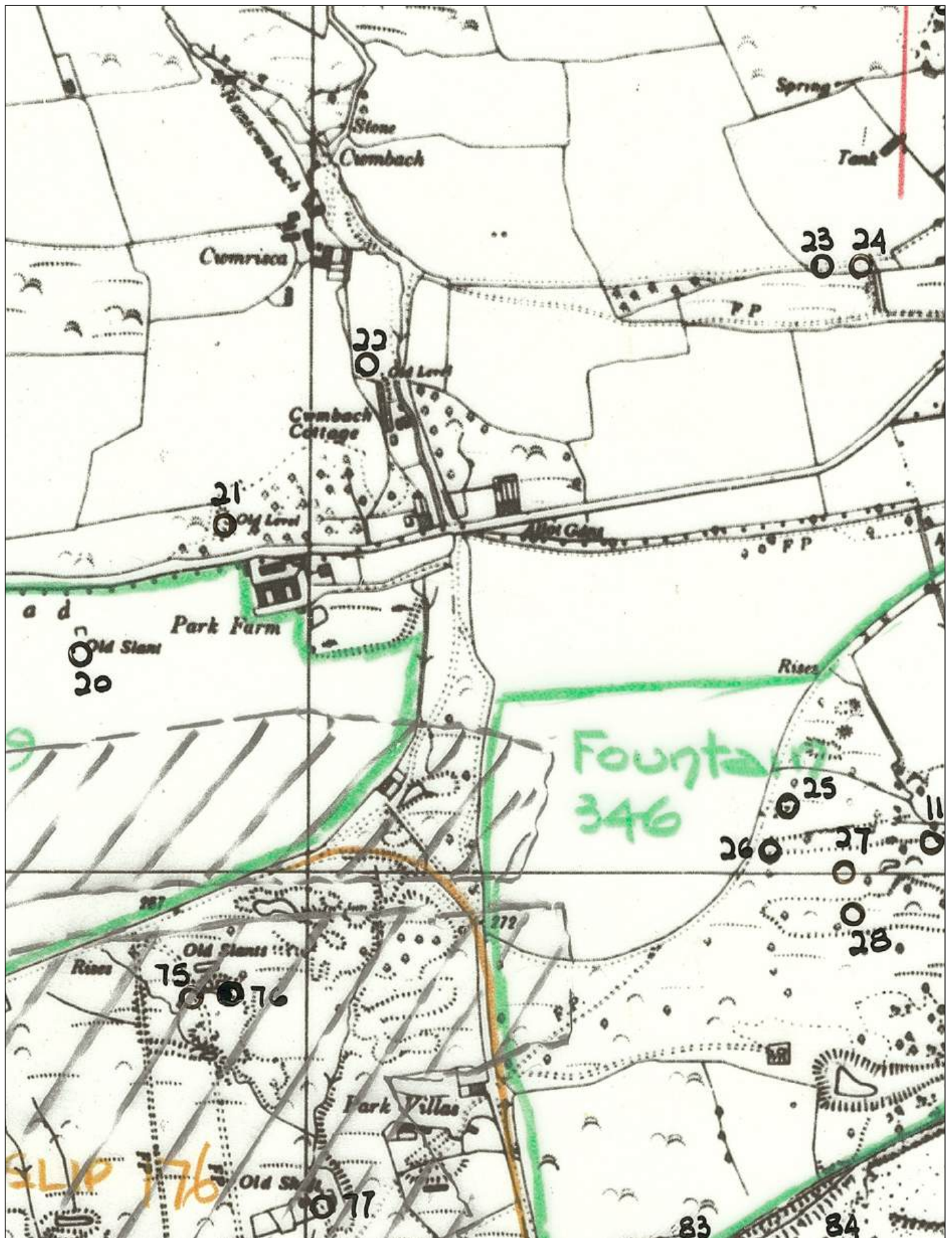


FIGURE 11

ILLUSTRATIVE SECTION OF A BRITISH COAL SHAFT REGISTER.

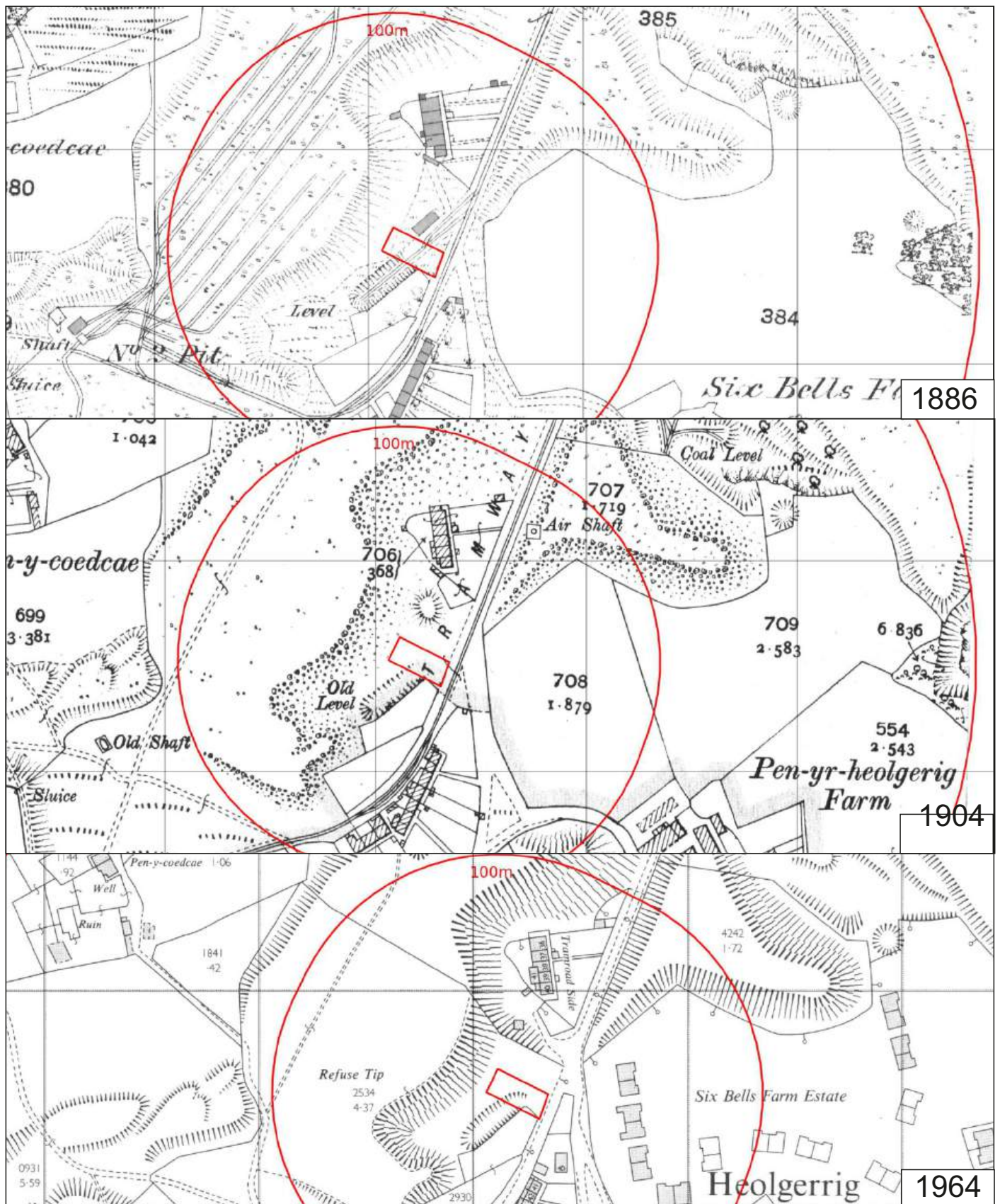


FIGURE 12
ORDNANCE SURVEY MAPS OF THE SITE AT 1:2500 SCALE.

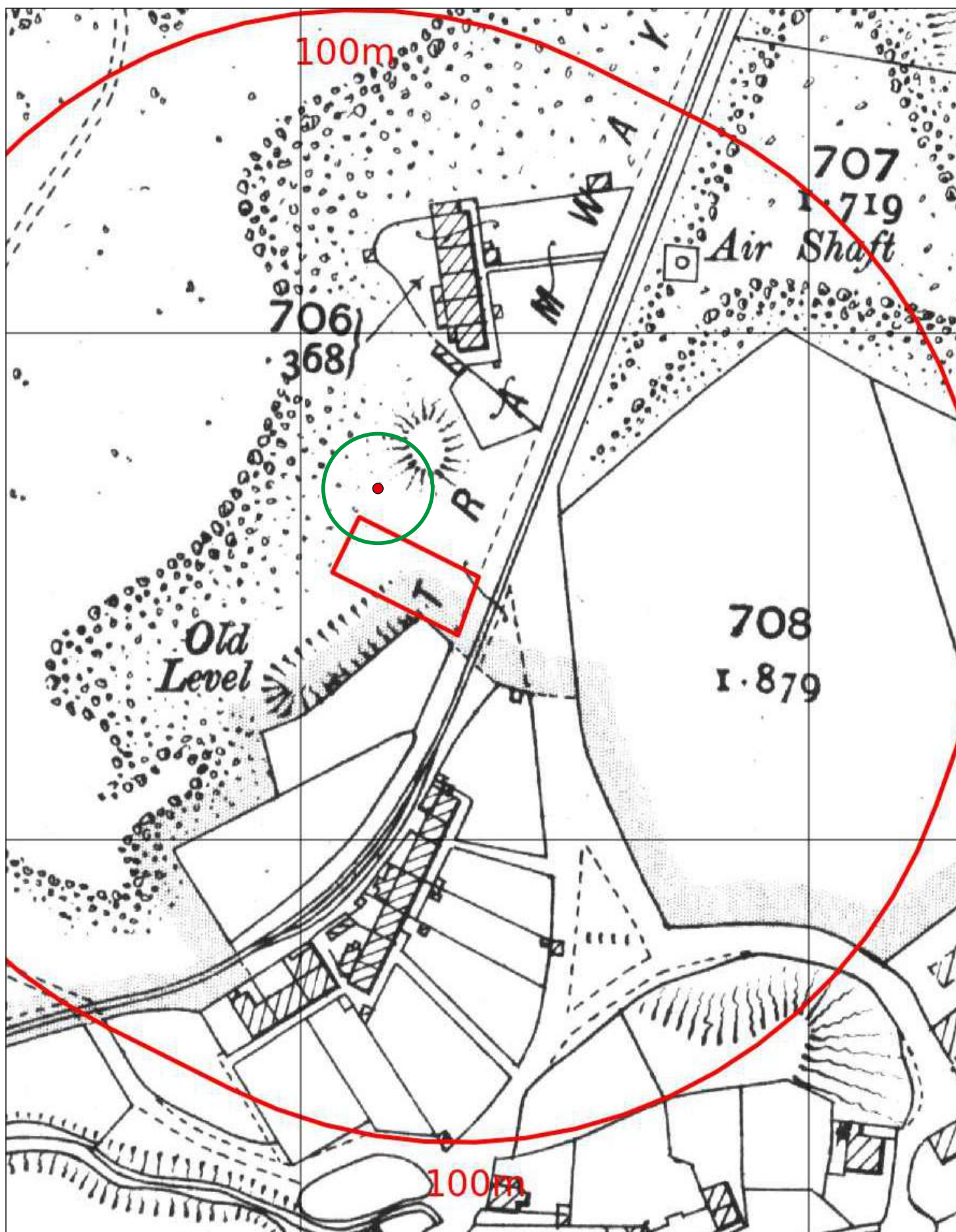


FIGURE 13
THE 1904 1:2500 O.S. WITH THE C.A. COORDINATES
MARKED AND A 10 METRE DEPARTURE ZONE

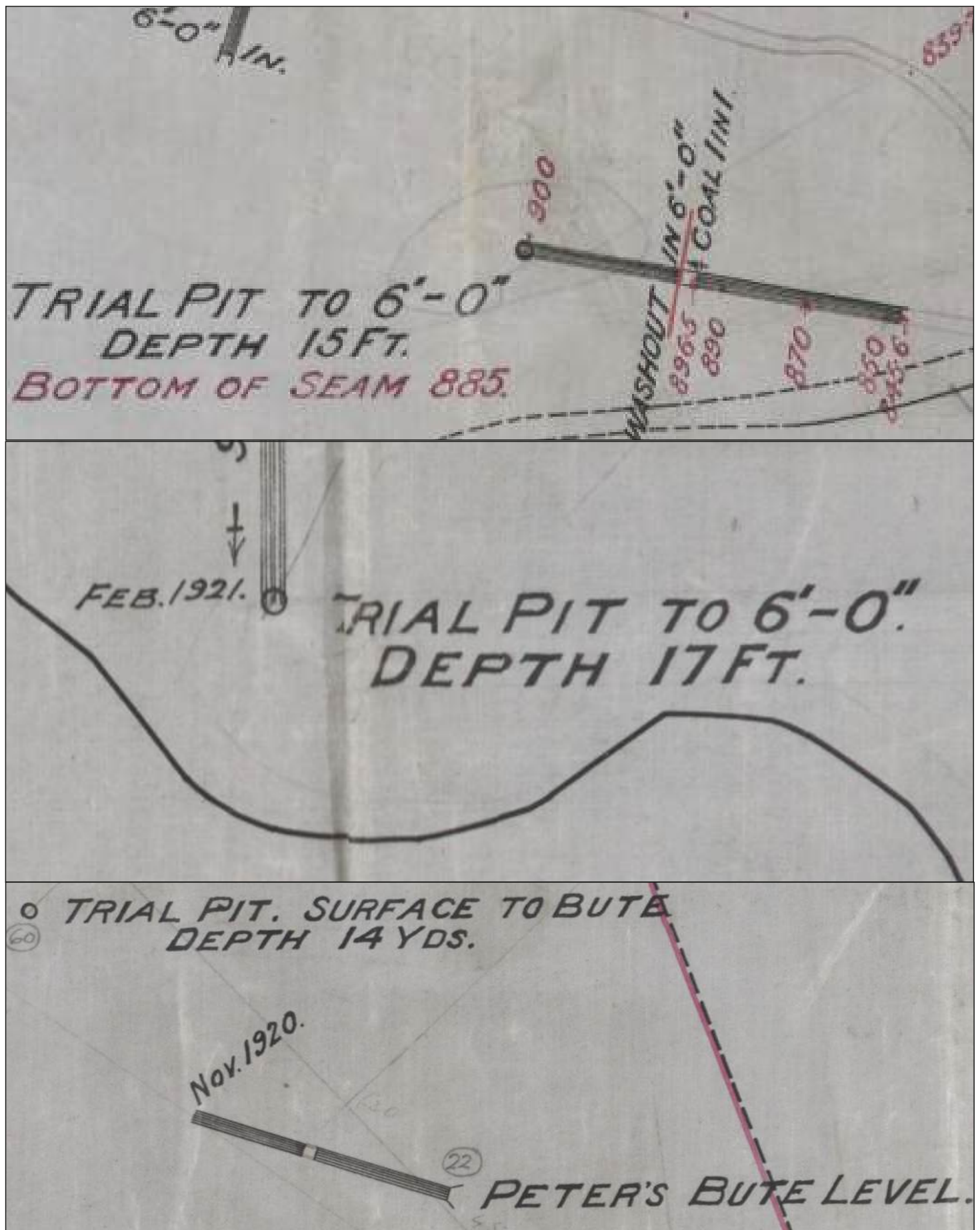


FIGURE 14

EXAMPLES OF TRIAL PITS ON MINE PLAN 8695 SHEETS 1 AND 3

7. CONCLUSION

The intrusive investigation detailed in this Validation Report has established that there is no risk of ground instability from shallow mining beneath the site. Four boreholes all proved intact coal which was almost certainly the Five Foot and Gellideg Seams. The Seven Foot Seams must outcrop to the south of the site. Although the seam(s) is/are undoubtedly worked, these workings cannot underlie the site because of the regional dip. Therefore the C.A. data is wrong in claiming these workings extend under the site at very shallow depth.

This leaves the supposed existence of a mineshaft, possibly close to the site, as the sole coal mining legacy issue. As outlined in the previous section, the evidence for the existence of this shaft was very poor originally and is now non-existent with the loss of the original shaft register. The absence of any evidence from a very extensive collection of mine plans is very puzzling. Even if the shaft did exist, it would have to be situated in a very limited area to pose any threat to the site (ref. Figure 10). As a mitigation factor it is proposed to build the house on a mining raft foundation. This will be designed by a qualified structural engineer and will be capable of bridging a 3m void and cantilevering over a 2m void.

With no proven mining legacy issues affecting ground stability, this assessment concludes that the site is safe and stable in line with national guidelines and there is no reason for the Coal Authority objecting to planning provided a professionally designed mining raft is conditioned in the granted planning.

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

12/08/2026

APPENDIX 1

ROTARY BOREHOLE LOGS

LLE HYFRYD

MOUNT PLEASANT

MERTHYR TYDFIL

BH1 LLE HYFRYD	
Strata Depth (m)	Strata Description
G.L.-2.8	MADE GROUND. GREY AND BLCK MUDSTONE GRAVEL WITH SMALL COAL (COLLIERY SPOIL).
2.8-10.2	YELLOWISH BROWN AND BROWN DIAMICTON (GLACIAL TILL).
10.2-15.8	GREY MUDSTONE
15.8-17.3	COAL
17.3-20.8	GREY MUDSTONE
20.8-22.1	COAL
22.1-30.5	GREY MUDSTONE
30.5-37.1	GREY SANDSTONE WITH THIN MUDSTONES
37.1-40.0	GREY MUDSTONE

GROUNDWATER 18.2m WITH SUPERFICIALS STILL CASED PRIOR TO GROUTING.

BH2 LLE HYFRYD	
Strata Depth (m)	Strata Description
G.L.-2.6	MADE GROUND. GREY AND BLCK MUDSTONE GRAVEL WITH SMALL COAL (COLLIERY SPOIL).
2.6-9.8	YELLOWISH BROWN AND BROWN DIAMICTON (GLACIAL TILL).
9.8-12.4	GREY MUDSTONE
12.4-14.2	COAL
14.2-18.3	GREY MUDSTONE
18.3-20.9	COAL
20.9-31.0	GREY MUDSTONE
31.0-38.1	GREY SANDSTONE WITH THIN MUDSTONES
38.1-40.0	GREY MUDSTONE

GROUNDWATER 17.9m WITH SUPERFICIALS STILL CASED PRIOR TO GROUTING.

BH3 LLE HYFRYD	
Strata Depth (m)	Strata Description
G.L.-5.8	MADE GROUND. GREY AND BLCK MUDSTONE GRAVEL WITH SMALL COAL (COLLIERY SPOIL).
5.8-9.5	YELLOWISH BROWN AND BROWN DIAMICTON (GLACIAL TILL).
9.5-14.3	GREY MUDSTONE
14.3-16.8	COAL
16.8-20.9	GREY MUDSTONE
20.9-22.8	COAL
22.8-29.1	GREY MUDSTONE
29.1-38.6	GREY SANDSTONE WITH THIN MUDSTONES
38.6-40.0	GREY MUDSTONE

GROUNDWATER 18.9m WITH SUPERFICIALS STILL CASED PRIOR TO GROUTING.

BH4 LLE HYFRYD	
Strata Depth (m)	Strata Description
G.L.-6.1	MADE GROUND. GREY AND BLCK MUDSTONE GRAVEL WITH SMALL COAL (COLLIERY SPOIL).
6.1-9.9	YELLOWISH BROWN AND BROWN DIAMICTON (GLACIAL TILL).
9.9-14.9	GREY MUDSTONE
14.9-16.8	COAL
16.8-21.1	GREY MUDSTONE
21.1-22.9	COAL
22.9-28.8	GREY MUDSTONE
28.8-37.9	GREY SANDSTONE WITH THIN MUDSTONES
37.9-40.0	GREY MUDSTONE

GROUNDWATER 17.7m WITH SUPERFICIALS STILL CASED PRIOR TO GROUTING.