

LAND AT MAES TY CANOL, BAGLAN, SA12 8US

(Residential Development)

Phase II:

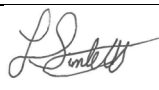
Ground Investigation Interpretative Report (inc. Coal Mining Investigation)

Report No. Q1195/IR

December 2023

DOCUMENT CONTROL

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Final	01-12-23	Lee Simlett	P. Darby	Ross McDermott
				
		Senior Engineering Geologist B.Sc.(Hons.), F.G.S.	Principal Engineering Geologist/ B.Sc.(Hons.),M.Sc., C.Geol., F.G.S.	Chartered Engineering Geologist/ Managing Director B.Sc.(Hons.),M.Sc., C.Geol., F.G.S.
<i>Disclaimer: Quantum Geotechnic Limited has prepared this report in accordance with the instructions of the above-named Client for their sole and specific use. Any third parties who may use the information contained herein do so at their own risk.</i> Quantum Geotechnic Ltd, Plas Newydd Farm, Llanedi, Swansea T: 01554 744880 E: enquiries@quantumgeotech.co.uk				

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0.0 FOREWORD

The following Conditions and Notes on Site Investigation Procedures should be read in conjunction with this report.

0.1 General

Recommendations made and opinions expressed in the report are based on the strata observed in the excavations, together with the results of site and laboratory tests. No responsibility can be held for conditions which have not been revealed by the Exploratory Holes or which occur between Exploratory Holes. Whilst the report may suggest the likely configuration of strata, both between Exploratory Holes and below the maximum depth of investigation, this is only indicative, and liability cannot be accepted for its accuracy.

Unless specifically stated, no account has been taken of possible subsidence due to mineral extraction below or close to the site.

0.2 Investigation Procedures

Rotary Percussive Borehole techniques for ground investigation have been employed within the project. All Exploratory Hole operations, sampling and logging of soils, rocks and in-situ testing complies with the recommendations of the British Code of Practice BS 5930: 2015+A1 2020 'Site Investigations', British Code of Practice BS 10175: 2011 +A1:2013 'Investigation of Potentially Contaminated Sites' and BS 1377: 1990, 'Methods of Test for Soils for Engineering Purposes'.

0.3 Routine Sampling

Representative bulk disturbed and environmental samples of the different strata are taken following completion of logging. These samples are sealed and labelled in clear plastic bags and 2kg plastic tubs. Soil samples obtained for environmental testing are sampled and sealed in borosilicate amber jars or in specialist vessels where required. All samples are returned from site to QGL's facility for controlled storage within 24 hours of sampling to await test scheduling/ requirements.

0.4 In-Situ Testing, Surveying & Instrumentation

In-situ testing comprised:

- Rotary Percussive Borehole

0.5 Groundwater

Where possible, the depth of entry of any influx of groundwater is recorded during the course of excavation or boring operations. The rate of inflow into the excavation or borehole is monitored during the course of the excavation or during boring procedures. Upon encountering any water strikes, work is temporarily halted, and the water levels monitored for a standard twenty-minute period recording the change in water level at the end of the twenty minutes.

Groundwater conditions observed in the excavations are those appertaining to the period of investigation. It should be noted, however, that groundwater levels are subject to diurnal, seasonal and climatic variations and can also be affected by drainage conditions or other causes.

0.6 Retention of Samples

After satisfactory completion of all the scheduled laboratory tests on any sample, the remaining material is discarded. Unless otherwise instructed or detailed within the Contract, all soil and/or rock samples not tested will be discarded 28 days after submission of the approved final report.

EXECUTIVE SUMMARY

The following highlights the key findings, conclusions and recommendations obtained from the following Ground Investigation Report.

1	An intrusive ground investigation has been undertaken on an area of land north of the existing large estate of Maes Ty Canol, Baglan. The approximate National Grid Reference of the site is SS 75366 93058 with a nearby postcode of SA12 8US.
2	The Ground investigation was scoped, designed by Quantum Geotech and delivered by Quantum Geotech in October 2023 and comprised Rotary Percussive Borehole(s).
3	The proposed development plans are for a series of residential developments
4	The area under review is currently being developed by the Shrimpton Developmetns Ltd in the form of vegetation clearance and re-profiling.
5	The 2023 ground investigation works (QGL) revealed Glacial Till (Cohesive) in nature over mudstone of the South Wales Middle Coal Measures. 3 No Coal Seams were encountered, all of which were un-worked/intact. The risk from potential shallow mine workings below the site is considered to be Low Risk. Based on the ground gas monitoring findings to date, the site is classified as Characteristic Situation 3. The investigation indicates shallow foundations are likely to be suitable for the proposed development, however, this is subject to design loads.
6	No Geotechnical/ Geo-Environmental laboratory sampling or testing was carried out as part of the Phase II intrusive investigation.

1.0 INTRODUCTION

1.1 *General*

Upon the instructions of Shrimpton Developments Ltd (Client), Quantum Geotechnic Ltd (QGL) has been commissioned to undertake a Ground Investigation for a proposed new residential development north of Maes Ty Canol, Baglan.

In this interpretative report, a factual account of the fieldwork, the strata encountered including contamination and groundwater observations are detailed. Guidance and recommendations on geotechnical issues and provided details on any remedial or mitigative measures deemed necessary.

1.2 *Purpose of Ground Investigation*

In order to confirm the potential for shallow mine workings below the site and to allow a site-specific preliminary geotechnical assessment of the existing ground conditions, to aid with the foundation design for the proposed residential and commercial developments.

The proposed investigation by Quantum Geotechnic Ltd comprised 5 No. rotary percussive borehole(s) with ground gas/ groundwater standpipe installations.

2.0 SITE DETAIL

2.1 Site Description

The area under review is currently being developed by the Shrimpton Developmetns Ltd in the form of vegetation clearance and re-profiling. The proposed development plans are for a series of new residential developments. The development site is north of the existing large estate of Maes Ty Canol, Baglan.

The approximate National Grid Reference of the site is SS 75366 93058 with a nearby postcode of SA12 8US.

An Ordnance Survey extract of the site from current on-line mapping is presented below.

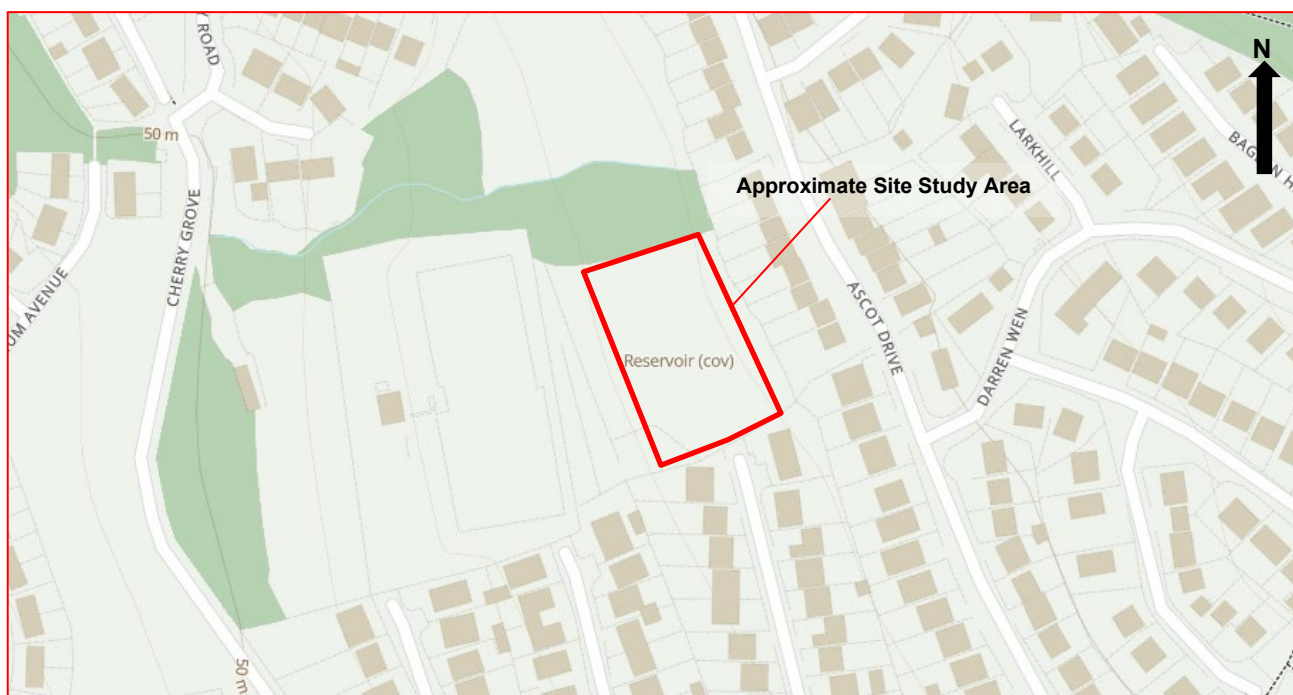


Figure 1: Proposed site boundary ©Ordnance Survey

2.2 Published Geology

British Geological Survey sheets 247 Swansea (1:63,600 scale) and Glamorgan XXV.NW (1:10,560 scale) show the site to be mantled by Superficial Deposit. The lithological description (Glacial Till) can be summarised as primary deposits, laid down directly by glaciers, and secondary deposits, reworked by fluvial transport and other processes comprising clay, silt, sand and gravel. The Solid Geology of the area is represented by the South Wales Middle Coal Measures Formation. The lithological description can be summarised as grey coal bearing mudstones/ siltstones with seatearths and minor sandstones. The general dip of the bedrock in the area trends to the north at an angle between 30-50 degrees.

Structurally the site is shown to lie 135m (east) of the (NE-SW trending) un-named Fault with a downthrow to

the west.

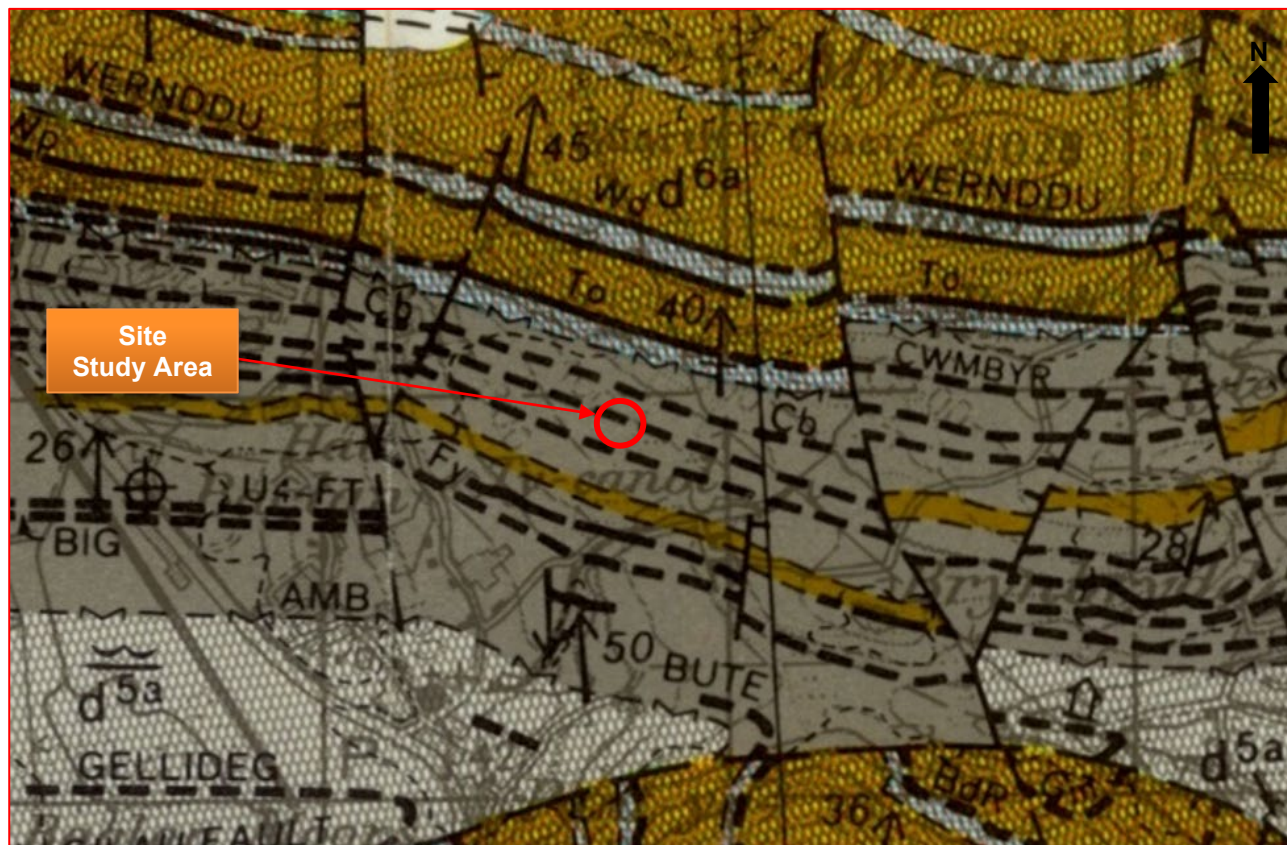


Figure 2: Location of proposed development site (Sheet 247) ©British Geological Survey

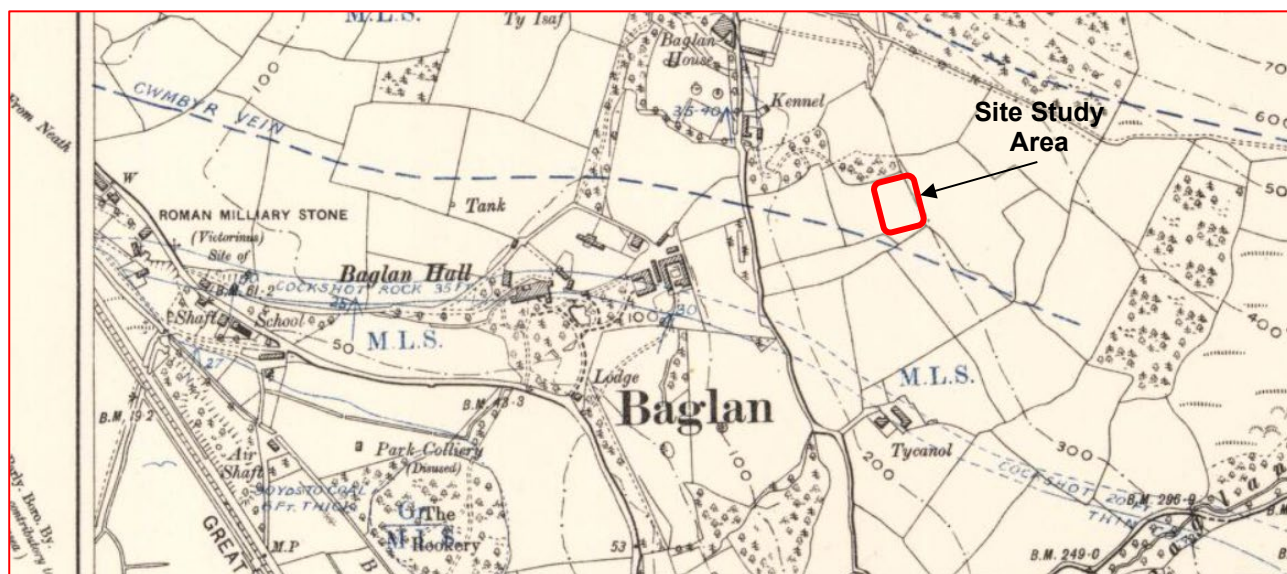


Figure 3: Extract of Glamorgan XXV.NW with proposed development site outlined (Not to Scale)

2.3 Mining & Quarrying

The nearest colliery is Park Colliery located 643m south-west of the site study area with a series of mapped shafts along with mine infrastructure and railway links. The colliery was in production from 1862 to 1887 and worked the Baglan, Rider, Big and an Un-named Seam. Sidings on east side of G.W.R's South Wales Main Line, between Briton Ferry and Port Talbot. Another notable colliery in the area is Swan Colliery which is located 869m west of the site study area and comprises a series of drift (adit) entrances targeting the Big (Black & Parson), Cwmmawr and Clay Seam. Tramway to Park Colliery siding on east side of G.W.R's South Wales Main Line, between Briton Ferry and Port Talbot.

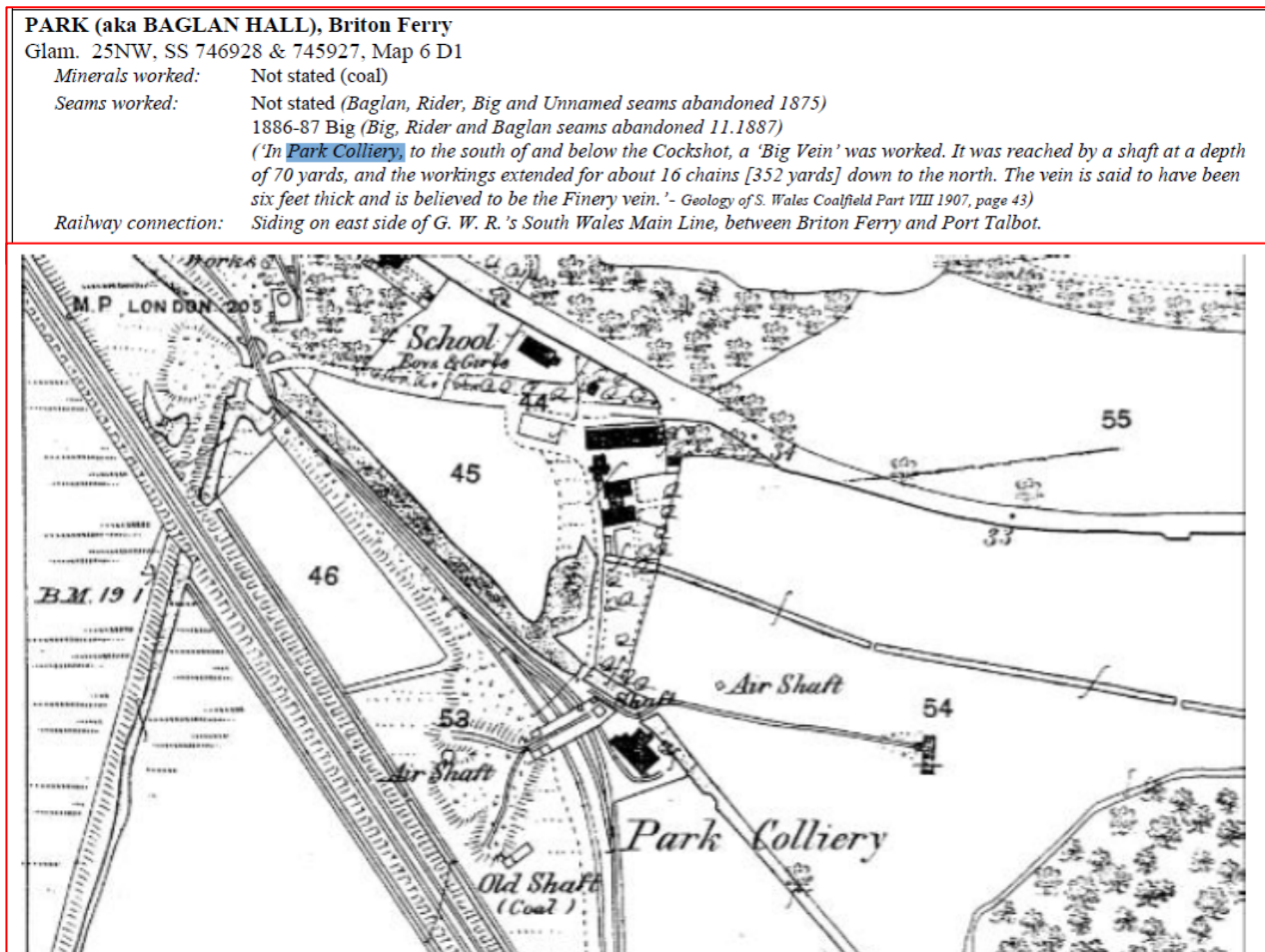


Figure 4: Park (Baglan Hall) Colliery Information ©SouthWalesGazetteer

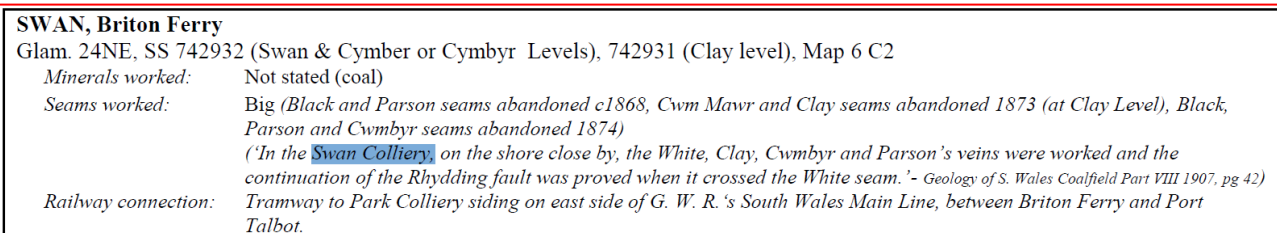


Figure 5: Swan Colliery Information ©SouthWalesGazetteer

2.4 Statutory Service Information

A complete set of Service plans were provided by the Client prior to starting the site works. QGL undertook full Cable Avoidance Tool (CAT) scans of each exploratory hole location before breaking the ground. Safe digging practices in accordance with HS(G)47 were employed when breaking and excavating grounds with all traceable services demarcated prior to works commencing.

3.0 FIELDWORK

3.1 General

In October 2023, Quantum undertook a Ground Investigation at the proposed development site. Site supervision and attendance by an Engineering Geologist from QGL was undertaken on all aspects of the site works and subsequent reinstatement works of all exploratory hole locations. All Site Personnel inducted by QGL and briefed of the pertinent Risk Assessments and Method Statements relating to the tasks to be undertaken. No incidents or near misses were recorded during the fieldworks, with the works being incident free. Coal Authority Permit reference 27249 (dated: 15th September 2023).

No deviations from the Standards and Procedures adopted for the works were recorded.

All exploratory hole locations were subject to the hand excavation of a 1.2m deep service/ utility inspection pit prior to any drilling. Also, each area of investigation was fully CAT ('Cable Avoidance Tool') scanned prior to breaking ground.

A summary of the fieldworks completed is outlined below.

- 5 No. Rotary Percussive Boreholes
- 3 No. Standpipe Installation

3.2 Exploratory Hole Locations

The exploratory hole locations were set out by a QGL Engineering Geologist at locations specified by QGL to obtain as best coverage of the site and where access could be gained with the investigation equipment. An Exploratory Hole Location Plan is presented as Figure 2 in Appendix I.

3.3 Rotary Percussive Boreholes

A total of 5 No. Rotary Percussive Borehole (BH01-05) were undertaken during the site works. The Rotary Probe Boreholes were drilled using Comacchio 450P drill rig. All rotary probe boreholes were kept open using an ODEX casing system of 115mm casing. A combination of drilling systems were used to progress the boreholes through rock, with either DTH hammers / bits or drag bits with air/mist and water flush used to clear the hole of returns and debris. The drilling method used for the various boreholes was dependent upon the gas risk associated with drilling the particular boreholes and ground conditions encountered.

A summary of the Rotary Percussive Boreholes including termination details is presented in Table 1 overpage. A complete set of Engineering Geologist's Rotary Percussive Borehole logs are presented within Appendix II.

Table 1: Rotary Percussive Borehole Detail

Borehole ID	Easting	Northing	Ground Level mAOD	Final Depth mbgl	Reason for Termination	Combined Gas & Groundwater Monitoring Standpipe Installed
BH01	275389.58	193043.82	86.92	40.00	Target depth achieved	Standpipe installed to 12.00 – 40.00 (response)
BH02	275369.87	193074.50	85.65	40.00	Target depth achieved	No Install – Bentonite sealed
BH03	275331.88	193076.65	80.60	40.00	Target depth achieved	Standpipe installed to 9.00 – 40.00 (response)
BH04	275339.00	193055.19	80.65	40.00	Target depth achieved	No Install – Bentonite sealed
BH05	275349.76	193029.67	81.54	40.00	Target depth achieved	Standpipe installed to 9.00 – 40.00 (response)

4.0 GROUND CONDITIONS ENCOUNTERED

4.1 General

The sequence of deposits encountered during the investigation is detailed within the Drillers logs presented within Appendix II. The following sections summarise the findings of the exploratory holes.

4.2 Ground Conditions

4.2.1 Overview of Strata Encountered

Table 2 summarises ground conditions encountered.

Table 2: Generalised Stratigraphic Sequence Encountered Across Site

Strata	Depth Ranges (m.bgl)	
	From	To
Glacial Till (Cohesive)	GL.	7.70
South Wales Middle Coal Measures Formation (SWMCMF)	5.80	40.00 ⁺

G.L. = Ground Level

+ = Base of Strata not proven

Made Ground

No Made Ground was observed during the intrusive investigation phase.

Superficial Deposits

- Glacial Till (Cohesive)

The Glacial Till was predominantly cohesive in nature and generally described as gravelly boulder CLAY. The Glacial Till was observed between ground level and 7.70mbgl.

Bedrock (Solid Geology)

The underlying bedrock geology that occupies all of the site study area is that of the South Wales Middle Coal measures Formation. The strata was generally described as MUDSTONE with COAL. The SWMCMF was observed from 5.80mbgl to a maximum depth of 40.00mbgl. The base of the strata was not observed.

Legacy Coal Mining Features

The intrusive investigation revealed a series of un-worked coal seam(s) below the site study area. The three seam(s) in question are the '**Black**' (*Un-worked/ Intact*), '**Golden Rider**' (*Un-worked/ Intact*) and '**Golden**' (*Un-worked/ Intact*).

'Black Seam':

- CA = Pentre Rider Seam
- Observable Thickness = 0.60-1.0m
- Depth:
 - 17.90-18.60mbgl (BH01),
 - 32.20-33.00mbgl (BH02),
 - 24.10-24.70mbgl (BH03),
 - 10.80-11.80mbgl (BH04),
 - 10.20-11.50mbgl (BH05)
- Intact (un-worked)
- No Observable Voids

'Golden Rider Seam':

- CA = Upper Pentre Seam
- Observable Thickness = 0.40-0.80m
- Depth:
 - 29.00-29.40mbgl (BH01),
 - 34.50-35.10mbgl (BH03),
 - 32.10-32.90mbgl (BH04),
 - 20.20-21.00mbgl (BH05)
- Intact (un-worked)
- No Observable Voids

'Golden Seam'

- Observable Thickness = 1.00m
- Depth = 32.00-33.00mbgl (BH05)

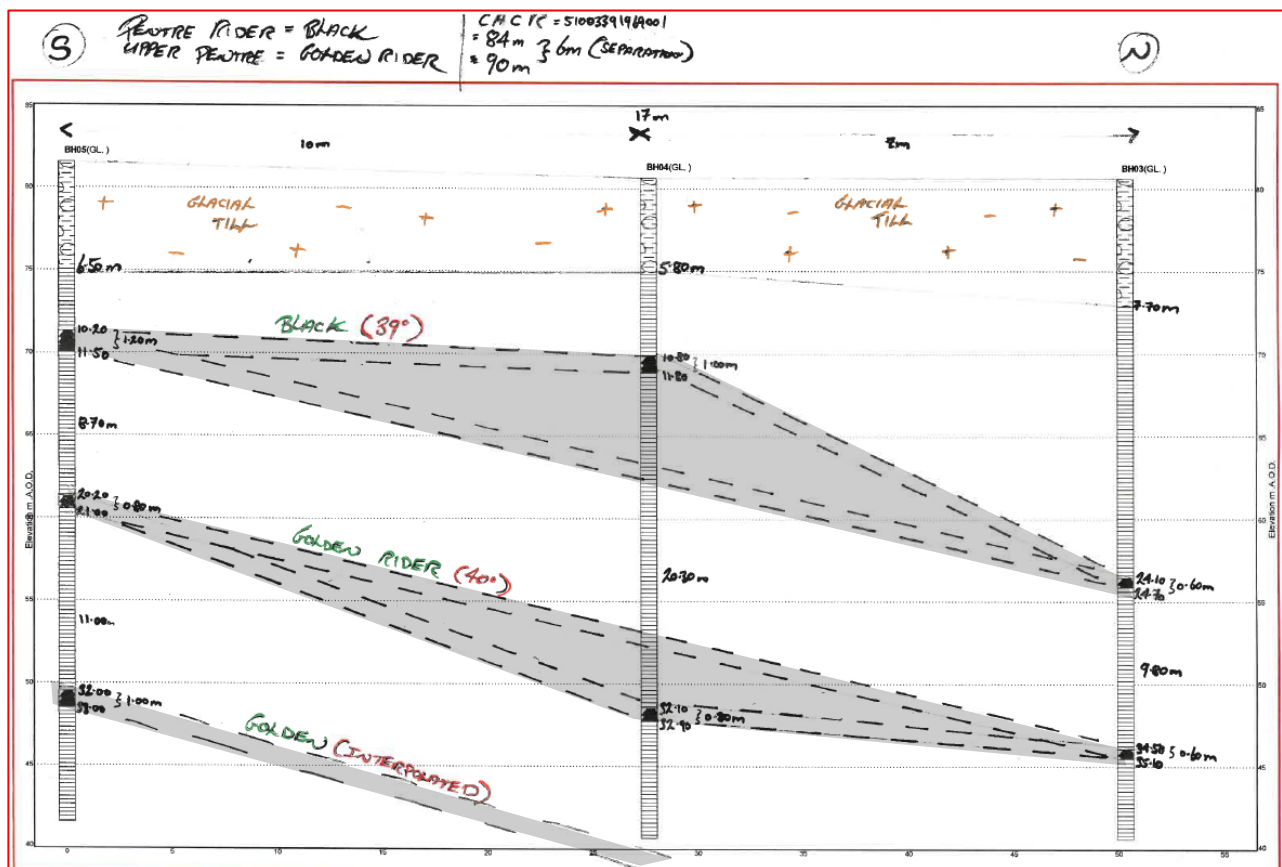


Figure 6: Cross-Section illustrating coal seam projection between BH03 - 05

4.2.2 Groundwater Conditions

No groundwater was observed during the intrusive investigation.

The groundwater conditions observed in these exploratory holes are those appertaining to the period of the investigation. However, it should be noted that groundwater levels are subject to diurnal, seasonal and climatic conditions or may vary due to other causes.

4.2.3 *Buried Structures*

No buried structures were revealed within the exploratory holes during the ground investigation.

4.2.4 *Visual & Olfactory Evidence of Soil Contamination*

No visual or olfactory evidence of soil contamination was encountered during the fieldworks.

4.2.5 *Visual & Olfactory Evidence of Groundwater & Surface Water Contamination*

No visual or olfactory evidence of groundwater contamination was encountered during the fieldworks.

5.0 MINING INVESTIGATION BOREHOLES

5.1 Overview

Boreholes BH01 to BH05 were all drilled to a depth of 40.00mbgl utilising a water flush medium.

BH01, located furthest south-east, encountered Glacial Till (cohesive) to a depth of 6.00mbgl with the bedrock proven to a depth of 40.00mbgl. There were 2 No. coal(s) observed that being the Black Seam at 19.90-18.60mbgl and the Golden Rider Seam at a depth of 29.00-29.40mbgl. There were no indications of any mine workings, with no voids or broken ground encountered. No observable groundwater strike(s). Standpipe installation was installed 12.00-40.00 (response zone).

BH02, located furthest north-east, encountered Glacial Till (cohesive) to a depth of 6.00mbgl with the bedrock proven to a depth of 40.00mbgl. There was only 1 No. coal observed that being the Black Seam at 32.20-33.00mbgl. The Golden Rider Seam was not observed in BH01 due to the dip angle of the strata 39 degrees to the north. There were no indications of any mine workings, with no voids or broken ground encountered. No observable groundwater strike(s). No standpipe installation, bentonite sealed.

BH03, located furthest north-west, encountered Glacial Till (cohesive) to a depth of 7.70mbgl with bedrock proven to a depth of 40.00mbgl. There were 2 No. coal(s) observed that being the Black Seam at 24.10-24.70mbgl and the Golden Rider Seam at a depth of 34.50-35.10mbgl. There were no indications of any mine workings, with no voids or broken ground encountered. No observable groundwater strike(s). Standpipe installation was installed 9.00-40.00 (response zone).

BH04, located in the centre (west side), encountered Glacial Till (cohesive) to a depth of 5.80mbgl with bedrock proven to a depth of 40.00mbgl. There were 2 No. coal(s) observed that being the Black Seam at 10.80-11.80mbgl and the Golden Rider Seam at a depth of 32.10-32.90mbgl. There were no indications of any mine workings, with no voids or broken ground encountered. No observable groundwater strike(s). No standpipe installation, bentonite sealed.

BH05, located furthest south-west, encountered Glacial Till (cohesive) to a depth of 6.50mbgl with bedrock proven to a depth of 40.00mbgl. There were 3 No. coal(s) observed that being the Black Seam at 10.20-11.50mbgl, Golden Rider Seam at a depth of 20.20-21.00mbgl and the Golden Seam at a depth of 32.00-33.00. There were no indications of any mine workings, with no voids or broken ground encountered. No observable groundwater strike(s). Standpipe installation was installed 9.00-40.00 (response zone).

6.0 GEO-ENVIRONMENTAL CONSIDERATIONS

6.1 Ground Gas Monitoring Results

3 No. post-fieldwork monitoring ground gas visits have been undertaken to allow a preliminary assessment to be undertaken. Appendix III presents the monitoring records with the results discussed below.

The results show maximum CH₄ concentrations of 0.2%v/v and CO₂ concentrations of 5.0 %v/v. Maximum measured flow rate was recorded as 1.8 l/hr whilst O₂ levels ranged between 1.0 and 21.1%v/v. Carbon Monoxide (CO) was recorded at 1ppm. No H₂S was recorded.

The potential risks posed by any recorded presence of potentially harmful gases can be assessed on a semi-quantitative basis by reference to the guidance in documents CIRIA 665 and BS8485. The assessment comprises multiplying the maximum measured steady gas flow rate (expressed as litres per hour) by the maximum steady gas concentration (expressed as percentage-by-volume; divided by 100) to derive a Gas Screening Value (GSV). The GSV can then be used to determine a risk classification and a Characteristic Situation for the site as defined in Table 3.

Table 3: Gas Screening Value and Characteristic Situation Classification

Characteristic Situation	Risk Classification	Gas Screening Value (l/hr) - GSV
1	Very low	<0.07
2	Low	>0.07, <0.7
3	Moderate	>0.7, <3.5
4	Moderate to High	>3.5, <15
5	High	>15, <70
6	Very High	>70

Based on the ground gas monitoring findings to date, the calculated GSV = 0.09litres/hr which would indicate CS2. However, as the maximum CO₂ level recorded is 5% by volume, guidance recommends that the characteristic situation be increased by one class, i.e., CS3.

The design engineer should consult CIRIA C665 and BS8485 to determine the appropriate protective measures for the proposed development.

7.0 CONCLUSIONS AND RECOMENDATIONS

7.1 Conclusion

The risk from potential shallow mine workings below the site is considered Low Risk as no evidence of coal having been worked has been found. As the site lies in a Coal Authority High Risk Development Area, it is recommended nominal mesh reinforcement should be included in the foundation design.

It is anticipated a shallow foundation solution will be suitable for the proposed development, however this is dependent on anticipated loadings and the findings of any additional investigation undertaken.

7.2 Additional GI Requirement

Depending on planning conditions further assessment/ investigation may be required to fully understand the ground conditions of the site study area. Geotechnical and Geo-Environmental sampling and testing is required to provide geo-environmental considerations including deriving a Conceptual Site Model (*Source-Pathway-Receptor*), in line with current Government Land Contamination Risk Management guidelines <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>.

8.0 REFERENCES

British Geological Survey:

- British Geological Survey (BGS) Sheet 247 'Swansea' 1:50,000.
- Geological Sheet Glamorgan XXV NW 1:10,560
- BGS Lexicon of Named Rock Units (www.bgs.ac.uk/lexicon)
- BGS Geology of Britain Viewer (www.bgs.ac.uk)

Specialist Publications:-

- BS 5930:2015+A1:2020 '*Code of Practice for Site Investigations*'
- BS 1377:1990 '*Methods of test for soils for civil engineering purposes*'.
- BS 10175:2011 '*Code of Practice for Investigation of Potentially Contaminated Sites*'
- BS EN ISO 14688-1:2018 Geotechnical investigation and testing. Identification and classification of soil. Identification and description
- BS EN ISO 14688-2:2018 Geotechnical investigation and testing. Identification and classification of soil. Principles for a classification.
- BS EN ISO 14689-1:2003 Ground Investigation and Testing – Identification and classification of rock
- Health and Safety Executive Guidance Note EH40/90
- BRE (2005) Special Digest 1:2005, 3rd Edition, Concrete in aggressive ground. BRE, Garston.
- BS 6031: 2009 Code of Practice for Earthworks.
- ICE UK Specification for Ground Investigation Second Edition.
- Specification for Highways Works Series 600 Earthworks
- Environment Agency Science Report SC050021/[various] (2009) *Soil Guideline Values*
- LQM/CIEH Publication S4UL3409 (2015) '*Generic Assessment Criteria for Human Health Risk Assessment*'
- World Health Organisation (2011) '*Guidelines for drinking-water quality, 4th edition*'
- Statutory Instruments (UK Legislation) 2016 No. 614 '*The Water Supply (Water Quality) Regulations*' retrieved from www.legislation.gov.uk/2016/614
- Statutory Instruments (UK Legislation) 2015 No. 1623 '*The Water Framework Directive (Standards and Classification) Directions (England and Wales)*'
- CIRIA C665 Assessing risks posed by hazardous ground gases to buildings
- BS8485:2015+A1:2019 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings

APPENDIX I – SITE PLANS & FIGURES



APPENDIX II – ROTARY BOREHOLE LOGS & KEY

Contract : Land at Maes Ty Canol, Baglan Client : Shrimpton Developments Limited										Borehole No. BH01		
Date : 9/10/23 Location : Proposed Plots					Job Number : Q1195 Engineer : Quantum Geotechnic Ltd					Ground Level : 86.92 m A.O.D. <i>Level to Ordnance Datum</i> Coordinates: 275389.58 E 193043.82 N <i>Co-ordinates to National Grid</i>		

m B.G.L.	Run Details				Fractures		Samples		Strata				Water	Install/ Backfill
	Core Run	TCR %	SCR %	RQD %	Min Avg Max	FI	Depth	Type No. Blows	Depth (Thickness)	Description	Legend	Red. Level A.O.D.		
0														
1										DRILLERS DESCRIPTION: BOULDER CLAY & GRAVEL				
2														
3									(6.00)			(6.00)		
4														
5														
6									6.00	DRILLERS DESCRIPTION: MUDSTONE		80.92		
7														
8														
9														
10														
11														
12									(11.90)			(11.90)		
13														
14														
15														
16														
17														
18									17.90	DRILLERS DESCRIPTION: COAL		69.02		
19									(0.70)	DRILLERS DESCRIPTION: MUDSTONE		(0.70)		
20									18.60			68.32		
21														
22														
23														
24									(10.40)			(10.40)		
25														
26														
27														
28														
29									29.00	DRILLERS DESCRIPTION: COAL		57.92		
30									(0.40)	DRILLERS DESCRIPTION: MUDSTONE		(0.40)		
31									29.40			57.52		
32														
33														
34														
35									(10.60)			(10.60)		
36														
37														
38														
39														
40									40.00	Borehole Terminated Upon Target Depth		46.92		
41														

Hole Progress / Water Obs				Casing		Groundwater				Flush		
Date / Time	H. Depth	C. Depth	Water	Depth	Diam.	Struck	Rose To	Behaviour	Sealed	Depth	Type	Returns
09/10/2023 08:00	0.00	0.00	0.00	7.00	115.00	2.28		Groundwater Seepage		0.00 - 40.00	Water	100
09/10/2023 17:00	40.00	7.00	DRY									

Remarks: MC450

	Plas Newydd, Llanedi, Pontarddulais SA4 0FQ Tel: 01554 744880 Fax: email:	Operator: QGL	Logged By: G. Farr	Sheet No. 1 Of 1	m Per Page 42	All measurements in metres unless otherwise stated	
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Contract : Land at Maes Ty Canol, Baglan Client : Shrimpton Developments Limited											Borehole No. BH02						
Date : 10/10/23 Location : Proposed Plots					Job Number : Q1195 Engineer : Quantum Geotechnic Ltd					Ground Level : 85.65 m A.O.D. <i>Level to Ordnance Datum</i> Coordinates: 275369.87 E 193074.50 N <i>Co-ordinates to National Grid</i>							
m B.G.L.	Run Details				Fractures		Samples		Strata				Water	Install/ Backfill			
	Core Run	TCR %	SCR %	RQD %	Min Avg Max	FI	Depth	Type No. Blows	Depth (Thickness)	Description	Legend	Red. Level A.O.D.					
0																	
1										DRILLERS DESCRIPTION: BOULDER CLAY & GRAVEL							
2									(6.00)			(6.00)					
3																	
4																	
5																	
6									6.00	DRILLERS DESCRIPTION: MUDSTONE		79.65					
7										- 'Wet' at 25.00mbgl							
8																	
9																	
10																	
11																	
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31																	
32									32.20	DRILLERS DESCRIPTION: COAL		53.45					
33									(0.80)	DRILLERS DESCRIPTION: MUDSTONE		(0.80)					
34									33.00			52.65					
35																	
36																	
37									(7.00)			(7.00)					
38																	
39																	
40									40.00	Borehole Terminated Upon Target Depth		45.65					
41																	
Hole Progress / Water Obs					Casing		Groundwater					Flush					
Date / Time		H. Depth	C. Depth	Water	Depth	Diam.	Struck	Rose To	Behaviour		Sealed	Depth	Type	Returns			
10/10/2023 08:00		0.00	0.00	0.00			25.00		Groundwater Seepage			0.00 - 40.00	Water	100			
10/10/2023 17:00		40.00	0.00	DRY													
Remarks: MC450																	
		Plas Newydd, Llanedi, Pontarddulais SA4 0FQ Tel: 01554 744880 Fax: email:				Operator: QGL		Logged By: G. Farr		Sheet No. 1 Of 1		m Per Page 42		All measurements in metres unless otherwise stated			

Contract : Land at Maes Ty Canol, Baglan Client : Shrimpton Developments Limited											Borehole No. BH03		
Date : 11/10/23 Location : Proposed Plots					Job Number : Q1195 Engineer : Quantum Geotechnic Ltd					Ground Level : 80.60 m A.O.D. <i>Level to Ordnance Datum</i> Coordinates: 275331.88 E 193076.65 N <i>Co-ordinates to National Grid</i>			

m B.G.L.	Run Details				Fractures		Samples		Strata				Water	Install/ Backfill
	Core Run	TCR %	SCR %	RQD %	Min Avg Max	FI	Depth	Type No. Blows	Depth (Thickness)	Description	Legend	Red. Level A.O.D.		
0														
1														
2														
3														
4									(7.70)		DRILLERS DESCRIPTION: BOULDER CLAY & GRAVEL		(7.70)	
5														
6														
7														
8									7.70		DRILLERS DESCRIPTION: MUDSTONE		72.90	
9														
10														
11														
12														
13														
14														
15														
16									(16.40)				(16.40)	
17														
18														
19														
20														
21														
22														
23														
24														
25									24.10		DRILLERS DESCRIPTION: COAL		56.50	
26									(0.60)		DRILLERS DESCRIPTION: MUDSTONE		(0.60)	
27									24.70				55.90	
28														
29														
30														
31									(9.80)				(9.80)	
32														
33														
34														
35									34.50		DRILLERS DESCRIPTION: COAL		46.10	
36									(0.60)		DRILLERS DESCRIPTION: MUDSTONE		(0.60)	
37									35.10				45.50	
38									(4.90)				(4.90)	
39														
40														
41									40.00		Borehole Terminated Upon Target Depth		40.60	

Hole Progress / Water Obs				Casing		Groundwater				Flush		
Date / Time	H. Depth	C. Depth	Water	Depth	Diam.	Struck	Rose To	Behaviour	Sealed	Depth	Type	Returns
11/10/2023 08:00	0.00	0.00	0.00	8.50	115.00			No Groundwater Strike		0.00 - 40.00	Water	100
11/10/2023 17:00	40.00	8.50	DRY									

Remarks: MC450

	Plas Newydd, Llanedi, Pontarddulais SA4 0FQ Tel: 01554 744880 Fax: email:	Operator: QGL	Logged By: G. Farr	Sheet No. 1 Of 1	m Per Page 42	All measurements in metres unless otherwise stated	
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Contract : Land at Maes Ty Canol, Baglan Client : Shrimpton Developments Limited											Borehole No. BH04				
Date : 12/10/23 Location : Proposed Plots					Job Number : Q1195 Engineer : Quantum Geotechnic Ltd					Ground Level : 80.65 m A.O.D. <i>Level to Ordnance Datum</i> Coordinates: 275339.00 E 193055.19 N <i>Co-ordinates to National Grid</i>					
m B.G.L.	Run Details				Fractures		Samples		Strata					Water	Install/ Backfill
	Core Run	TCR %	SCR %	RQD %	Min Avg Max	FI	Depth	Type No. Blows	Depth (Thickness)	Description	Legend	Red. Level A.O.D.			
0															
1										DRILLERS DESCRIPTION: BOULDER CLAY & GRAVEL					
2									(5.80)			(5.80)			
3															
4															
5															
6									5.80	DRILLERS DESCRIPTION: MUDSTONE		74.85			
7									(5.00)			(5.00)			
8															
9															
10															
11									10.80	DRILLERS DESCRIPTION: COAL		69.85			
12									(1.00)	DRILLERS DESCRIPTION: MUDSTONE		(1.00)			
13									11.80			68.85			
14															
15															
16															
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23									(20.30)			(20.30)			
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31															
32									32.10	DRILLERS DESCRIPTION: COAL		48.55			
33									(0.80)	DRILLERS DESCRIPTION: MUDSTONE		(0.80)			
34									32.90			47.75			
35															
36															
37									(7.10)			(7.10)			
38															
39															
40									40.00	Borehole Terminated Upon Target Depth		40.65			
41															
Hole Progress / Water Obs					Casing		Groundwater					Flush			
Date / Time		H. Depth	C. Depth	Water	Depth	Diam.	Struck	Rose To	Behaviour		Sealed	Depth	Type	Returns	
12/10/2023 08:00		0.00	0.00	0.00	7.00	115.00			No Groundwater Strike			0.00 - 40.00	Water	100	
12/10/2023 12:00		40.00	7.00	DRY											
Remarks: MC450															
Plas Newydd, Llanedi, Pontarddulais SA4 0FQ Tel: 01554 744880 Fax: email:					Operator: QGL		Logged By: G. Farr		Sheet No. 1 Of 1		m Per Page 42		All measurements in metres unless otherwise stated		

Contract : Land at Maes Ty Canol, Baglan Client : Shrimpton Developments Limited										Borehole No. BH05																																																																																		
Dates : 12/10/23 - 13/10/23 Location : Proposed Plots				Job Number : Q1195 Engineer : Quantum Geotechnic Ltd				Ground Level : 81.54 m A.O.D. <i>Level to Ordnance Datum</i> Coordinates: 275349.76 E 193029.68 N <i>Co-ordinates to National Grid</i>																																																																																				
m B.G.L.	Run Details				Fractures		Samples		Strata				Water	Install/ Backfill																																																																														
	Core Run	TCR %	SCR %	RQD %	Min Avg Max	FI	Depth	Type No. Blows	Depth (Thickness)	Description	Legend	Red. Level A.O.D.																																																																																
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<table border="1"> <thead> <tr> <th colspan="4">Hole Progress / Water Obs</th> <th colspan="2">Casing</th> <th colspan="4">Groundwater</th> <th colspan="3">Flush</th> </tr> <tr> <th>Date / Time</th> <th>H. Depth</th> <th>C. Depth</th> <th>Water</th> <th>Depth</th> <th>Diam.</th> <th>Struck</th> <th>Rose To</th> <th>Behaviour</th> <th>Sealed</th> <th>Depth</th> <th>Type</th> <th>Returns</th> </tr> </thead> <tbody> <tr> <td>12/10/2023 12:00</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>7.00</td> <td>115.00</td> <td>21.00</td> <td></td> <td>Groundwater Seepage</td> <td></td> <td>0.00 - 40.00</td> <td>Water</td> <td>100</td> </tr> <tr> <td>12/10/2023 17:00</td> <td>24.00</td> <td>7.00</td> <td>DRY</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>13/10/2023 08:00</td> <td>24.00</td> <td>7.00</td> <td>DRY</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>13/10/2023 12:00</td> <td>40.00</td> <td>7.00</td> <td>DRY</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>															Hole Progress / Water Obs				Casing		Groundwater				Flush			Date / Time	H. Depth	C. Depth	Water	Depth	Diam.	Struck	Rose To	Behaviour	Sealed	Depth	Type	Returns	12/10/2023 12:00	0.00	0.00	0.00	7.00	115.00	21.00		Groundwater Seepage		0.00 - 40.00	Water	100	12/10/2023 17:00	24.00	7.00	DRY										13/10/2023 08:00	24.00	7.00	DRY										13/10/2023 12:00	40.00	7.00	DRY									
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APPENDIX III – GROUND GAS AND GROUNDWATER MONITORING

Page 1 of 1

Project Name:	Maes Ty Canol, Baglan
Project No.:	Q1195
BH/TP No.:	BH01
Instruments Used:	Water Dip Meter Probe, GA2000 Gas Analyser

Installation Date:				
GL (mAOD)	Pipe	Type	Installation Depth (mbgl)	Response Zone (mbgl)
	A			

[illegible]

Page 1 of 1

Project Name:	Maes Ty Canol, Baglan
Project No.:	Q1195
BH/TP No.:	BH03
Instruments Used:	Water Dip Meter Probe, GA2000 Gas Analyser

Installation Date:				
GL (mAOD)	Pipe	Type	Installation Depth (mbgl)	Response Zone (mbgl)
	A			

[illegible]

Page 1 of 1

Project Name:	Maes Ty Canol, Baglan
Project No.:	Q1195
BH/TP No.:	BH05
Instruments Used:	Water Dip Meter Probe, GA2000 Gas Analyser

Installation Date:				
GL (mAOD)	Pipe	Type	Installation Depth (mbgl)	Response Zone (mbgl)
	A			

[illegible]

APPENDIX IV – COAL AUTHORITY (CONSULTANTS REPORT)



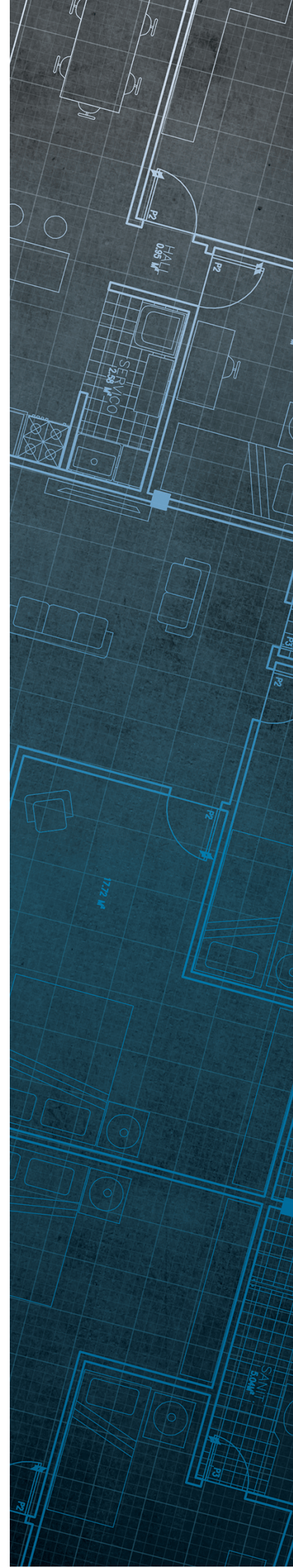
The Coal
Authority

Consultants Coal Mining Report

Land At Maes Ty Canol
Maes Ty Canol
Baglan
Neath Port Talbot
SA12 8US

Date of enquiry:	28 November 2023
Date enquiry received:	28 November 2023
Issue date:	28 November 2023

Our reference:	51003391969001
Your reference:	Q1195



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

Lee Simlett

Enquiry address

Land At Maes Ty Canol
Maes Ty Canol
Baglan
Neath Port Talbot
SA12 8US

How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

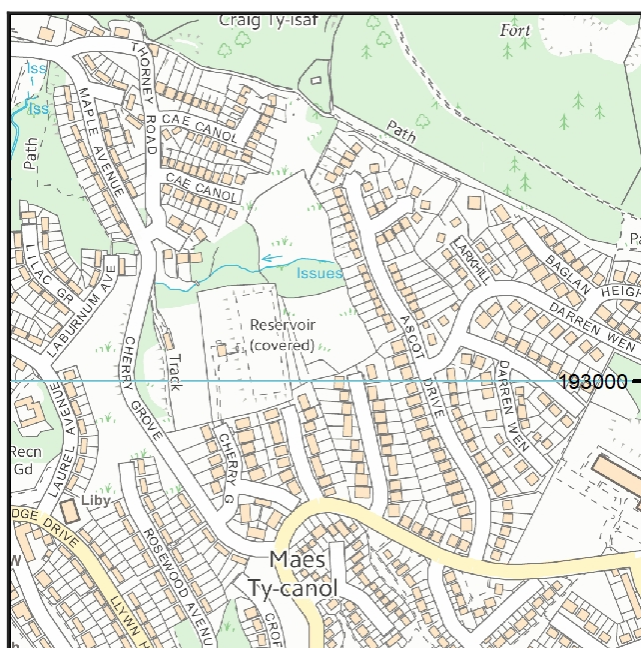
www.groundstability.com

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



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
SWAN	PENTRE RIDER	Coal	4JE3	84	Beneath Property	42.2	North	60	1900
SWAN	UPPER PENTRE	Coal	4JE5	90	Beneath Property	33.7	North	51	1900
BAGLAN HALL	SIX FOOT	Coal	4JDR	301	South	45.6	North	183	1887
BAGLAN HILL	SIX FOOT	Coal	4JE6	392	West	45.0	North	183	1887

Probable unrecorded shallow workings

None.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers

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

SWR2654	SWR4123	PO0
2003	2135	

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
GORLLWYN	Coal	Yes	35.0	South-West	113
LOWER PENTRE	Coal	Yes	11.1	South	104
LOWER PENTRE	Coal	Yes	30.5	West	111
PENTRE RIDER	Coal	Yes	Within	N/A	104
UPPER PENTRE	Coal	Yes	Within	N/A	104

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.

APPENDIX V – COAL AUTHORITY PERMIT



The Coal
Authority

Permit to Enter or Disturb Coal Authority Interests

Permit 27249

Name and Address of Permit Holder:

*Shrimpton Developments Ltd
13 Cae Canol
Baglan
SA12 8LX*

Site Location:

*Land North of
Maes Ty Canol
Baglan
SA12 8US*

This certificate hereby grants the above named Permit Holder a Permit to carry out:-

Ground investigation by five boreholes to 40m to determine presence of shallow mine workings, installation of land gas monitoring wells

within the Authority's interests at the identified site location above as shown on the Grant Permit Boundary (overleaf) for the period of **12 months** from the granted date shown below. *The granting of this Permit does not constitute advice given by the Authority in relation to the proposed operations. It is the Permit Holder's responsibility to obtain appropriate health, safety, environmental, technical and legal advice.*

Conditions:

- *Manned entry (i.e.) into mine entries/workings) is strictly prohibited.*
- *Water flush*
- *Gas Monitoring CO, CH₄, CO₂, O₂, H₂S at borehole and rig*
- *Operators undertaking the work must be in possession of this certificate and the Permit boundary plan at the time of works*
- *Appropriate borehole sealing without delay and to withstand site level changes*

Signed: Helen Day Granted Date: 15 September 2023

For and on behalf of The Coal Authority

Nominated Representative: Helen Day, Permitting Manager;

The Coal Authority, Permitting Office, 200 Lichfield Lane, Mansfield, Notts, NG18 4RG

Tel: 01623 637450; E-Mail: permissions@coal.gov.uk

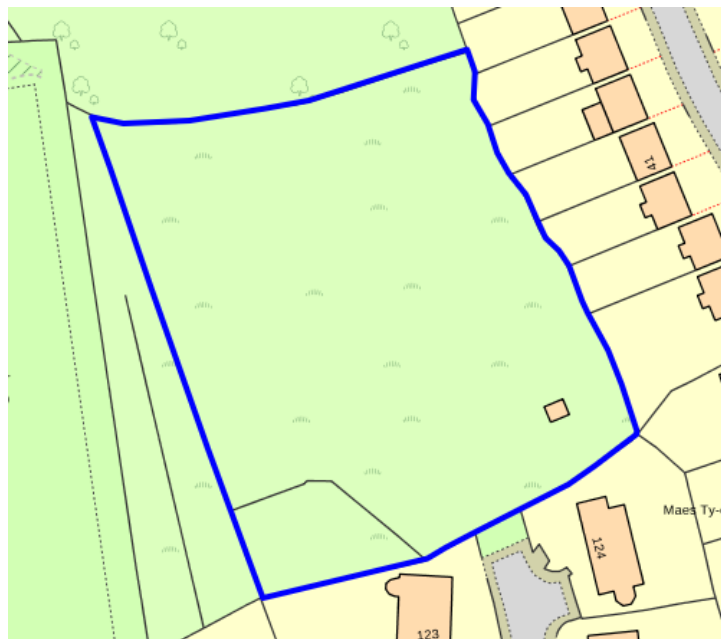


The Coal
Authority

Granted Permit Boundary

Permit Ref: 27249

Permit Boundary:



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