

loft^{co.}

LoftCo

Land At Winch Fawr Road

Coal Mining Risk Assessment

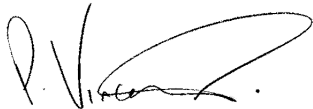
December 2020

Document Control

Document: Coal Mining Risk Assessment
Project: Merthyr CMRA
Client: LoftCo
Job Number: B005817
File Origin: \\Cardiff31\dataold\Environmental\projects\B005817 - Merthyr CMRA\Report\Merthyr CMRA V1 Dev 20 Final.docx
Revision: V1
Date: Dec 2020

Prepared by

Checked and Approved By



Paul Vincent BSc (Hons) CGeol EurGeol FGS
Principal Engineering Geologist



Chris Pugh
Technical Director

Contents

1	INTRODUCTION.....	1
1.1	INSTRUCTION	1
1.2	BRIEF	1
1.3	REPORT SCOPE.....	1
1.4	LIMITATIONS.....	1
2	SITE INFORMATION.....	2
2.1	LOCATION	2
2.2	GROUND CONDITIONS	2
2.2.1	<i>Coal Authority information</i>	<i>2</i>
2.2.2	<i>British Geological Information.....</i>	<i>4</i>
3	RISK ASSESSMENT AND MITIGATION STRATEGY	7
4	CONCLUSION AND RECOMMENDATIONS.....	9
4.1	MITIGATION	9

Figures

Figure 1 – Site Location Plan & Existing and Proposed Plans

Appendices

Appendix A – Report Conditions

Appendix B – Coal Authority Report

Appendix C – BGS Borehole Records

1 Introduction

1.1 Instruction

WYG Environment Planning Transport Ltd (WYG) were commissioned by LoftCo to undertake a Coal Mining Risk Assessment (CMRA) at the site of Land at Winch Fawr Rd, Merthyr Tydfil, South Wales.

1.2 Brief

The proposed development includes the development of residential land to include a residential building.

The brief was to prepare a Coal Mining Risk Assessment including the collation of all available site records and subsequent risk qualitative assessment. Provide recommendations for future actions required in order to mitigate any potential risk posed by mining beneath the site.

1.3 Report Scope

This CMRA includes the following key elements;

- Presents all data and information obtained regarding mining beneath the site;
- Assesses the risk to the site from any known mining issues;
- Sets out appropriate mitigation measures (if required) for dealing with any mining issues.

1.4 Limitations

This report has been prepared in accordance with the requirements of LoftCo. It is subject to the report conditions contained in Appendix A.

The information contained in this report is intended for the use of LoftCo. WYG can take no responsibility for the use of this information by any third party or for uses other than that described in this CMRA.

2 Site Information

2.1 Location

The site is located on Winch Fawr Road, Heolgerrig, Merthyr Tydfil, South Wales centred at National Grid Reference SO 03049 06024. A site location and layout plan are included in Figures 1.

2.2 Ground Conditions

All information collated on ground conditions is based on extrapolation from data available on adjacent sites, and from literature sources. In summary, the following data sources have been consulted:

- Coal Authority Report ref. MR- 51002324208001 dated 14th Oct 2020
- Coal Authority Online Viewer
- British Geological Survey 1:50,000 scale mapping, Sheet 231: Merthyr Tydfil
- British Geological Survey Geoindex Online Mapping
- British Geological Survey Borehole Database, comprising borehole logs of shafts and borehole records adjacent to the site.

2.2.1 Coal Authority information

A Coal Authority mining report was obtained on 14th October 2020 and is presented in Appendix B. The findings are summarised below:

- The property is in a surface area that could be affected by underground mining in 3 seams of coal from shallow to 70m depth, and last worked in 1939.
- The site is not within a surface area that could be affected by present or future underground mining.
- The property is not in an area where the Coal Authority has plans to grant a licence to remove coal using underground methods. The property is not in an area where a licence has been granted to remove or otherwise work coal using underground methods.
- The property is not in an area likely to be affected from any planned future underground coal mining. However, reserves of coal exist in the local area which could be worked at some time in the future.

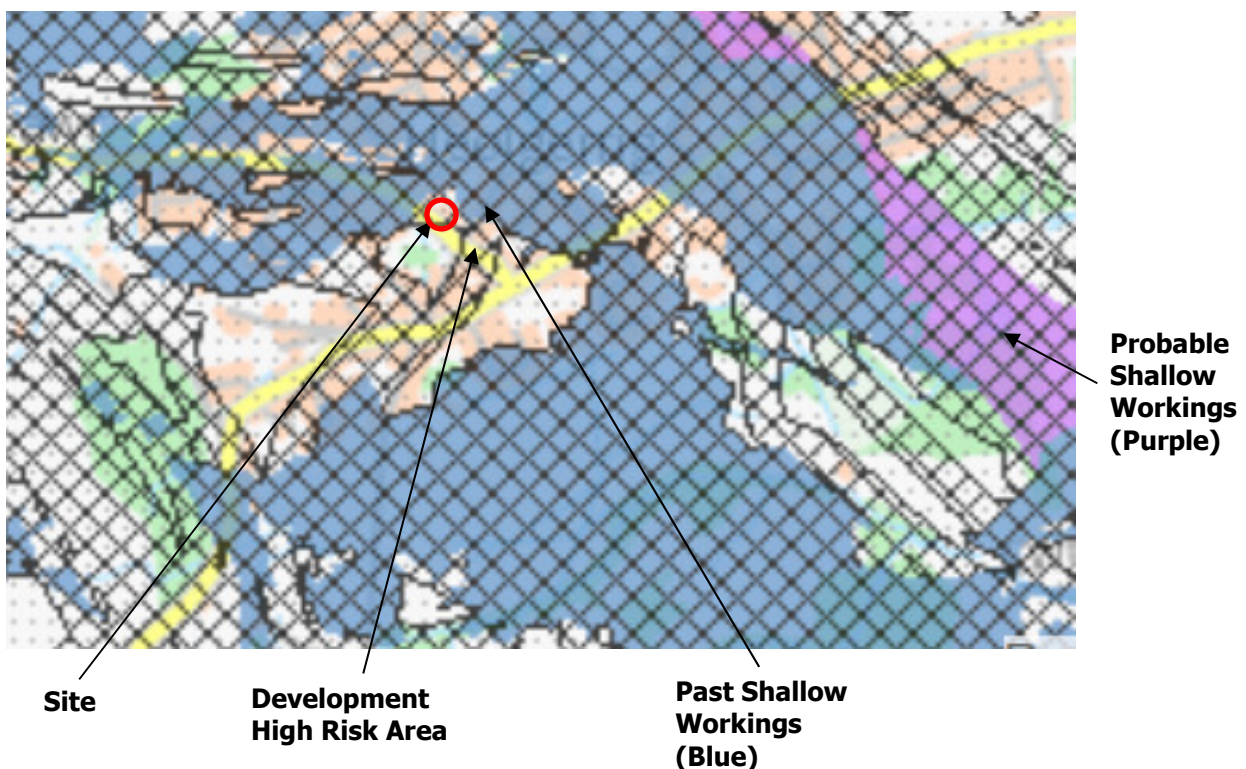
- No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.
- There are no known mine entries within, or within 20m of the site boundary. There may however be mine entries/additional mine entries in the local area which the Coal Authority has no knowledge of.
- The Coal Authority is not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining.
- The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.
- The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.
- There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary.
- The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.
- 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 31st 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.
- The Coal Authority has no record of a mine gas emission requiring action.
- The site has not been subject to remedial works, by or on behalf of the Coal Authority, under its Emergency Surface Hazard Call Out procedures.
- 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.
- The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

2.2.1.1 Coal Authority Interactive Online Mapping

The Coal Authority interactive online mapping indicated the following:

- The site falls within a 'Development High Risk Area', (See Plate 1 below).
- The property outside an area of past shallow coal mining workings.
- The property outside an area of probable shallow coal mining workings

Plate 1: CA interactive online mapping – development high risk area



2.2.1.2 Coal Authority Consultation

Consultation with the Coal authority (PLANNING APPLICATION: P/19/0319 – 1/12/20) has highlighted that the Red Vein coal seam, which is located between the Six Foot and Nine Foot seams outcrops to the north and east of the site but is not identified on the BGS plans.

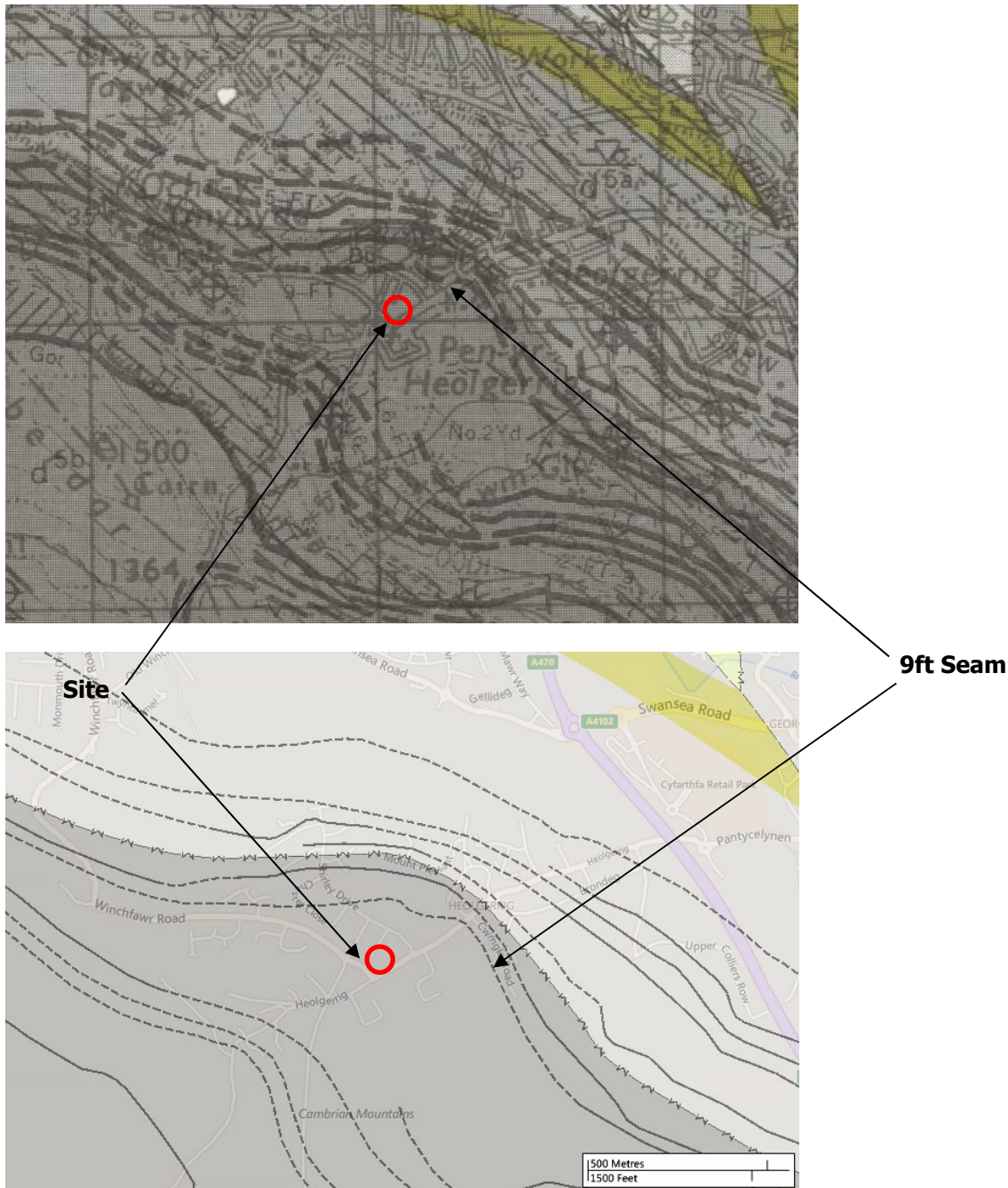
2.2.2 British Geological Information

The geology of the site area is covered by:

- British Geological Survey (BGS) 1:50,000 mapping, Sheet No. 231; Merthyr Tydfil Solid and Drift, 1979.

These show the site to be underlain by Glacial Till superficial deposits and solid geology of the South Wales Middle Coal Measures. A coal seam, the Nine Foot, is conjectured to outcrop 165m north of the site, dipping approx. 8 degrees in a generally south to south easterly direction. The site sits approximately +10m aOD topographically from where the seam outcrops.

Plates 2 & 3: BGS online mapping



2.2.2.1 BGS Borehole Records

Two borehole records were obtained from the BGS Geoindex Online Mapping service, the two boreholes were located approximately 150m south west of the site and topographically 3m lower aOD (285m aOD). The findings of the two BH's were as follows:

- The Red Vein was encountered at depths between 13.20m (R3) and 18.60m (R2) and was 500mm thick in both boreholes and unworked.

BGS borehole records are presented in Appendix



3 Risk Assessment and Mitigation Strategy

The following table summarises the key hazards identified by review of the available data sources, the factors affecting risk posed by each hazard and an assessment of the estimated risk posed to any proposed re-development on the site.

Assessing risks from coal mining is based upon guidance provided by the Coal Authority following a 'risk based' approach implemented through PPG 14 – Development on Unstable Land.

The risk posed has been assessed as one of three categories;

High risk	Based upon the data available there is a significant risk of shallow ground instability associated with coal mining. Investigation will be required as part of the site re-development. Mitigation measures likely to be required.
Moderate risk	Based upon the data available there is a potentially significant risk of shallow ground instability associated with coal mining. Investigation will be required as part of the site re-development. Mitigation measures may be required.
Low risk	Based upon the data available there is a low risk of shallow ground instability associated with coal mining. No further assessment or investigation is recommended.

The table below summarises the potential risks associated with coal mining legacy at the site.

Table 1: Potential Coal Mining Legacy Issues

Coal Mining Legacy	Yes	No	Risk Assessment
Underground mining (recorded)		x	Required
Shallow (<30m) underground mining (recorded)		x	Not required
Underground mining (unrecorded)		x	Not required
Shallow (<30m) underground mining (unrecorded)	✓		Required
Recorded mine entries (Shafts and adits)		x	Not Required
Mining geology	✓		Required
Record of previous mine gas emissions		x	Not Required
Record of coal mining surface hazard		x	Not Required
Surface mining (recorded/unrecorded)		x	Not Required

Based on the information obtained from this assessment, the following risk assessment has been compiled, which identified plausible risks at the site in the context of the proposed end use.

Table 2: Identified Risks and Mitigation

Hazard	Area of site affected	Factors affecting risk	Risk	Mitigation	Risk following mitigation
Collapse of unrecorded shallow workings at the site/Mining Geology	Entire site	- The development area is categorised as high risk due to the close proximity of the Red Vein coal seam outcrop. The seam is conjectured to outcrop to the north and east of the site with the BGS map showing the dip (~8 degrees) locally in a generally south to south east direction. - The coal authority (Online viewer) does not categorise the site as being at risk from past or probable shallow mine workings. - BGS boreholes indicate that the Red Vein seam is approx. 13m to 18m deep in the close proximity (~150m south west of the site, topographically 3m lower) and is 500mm thick and unworked. Given this, and that the local dip is in a south to south easterly direction, the depth to the Red Vein is likely to be similar beneath the development site.	Low to moderate risk	For small structures such as houses, conventional but reinforced strip or pad foundations may be adequate to resist the effects of minor instances of subsidence. They should be laid on a suitable sliding layer and have compressible materials placed at external vertical faces. However, a raft foundation, as near square as possible, with no projections or indentations that would give rise to stress concentrations, will ride out subsidence better than strip footings. Raft foundations are used to spread the structural load over a wide area when founding on weak or variable ground and to remain intact following ground deformation.	Low Risk

4 Conclusion and Recommendations

The mining risk assessment indicates that there is a **low to moderate risk** of ground instability as a result of unrecorded shallow mining and mining geology beneath the site.

- The development area is categorised as high risk due to the close proximity of the Red Vein coal seam outcrop. The seam is conjectured to outcrop to the north and east of the site with the BGS map showing the dip locally in a generally south to south easterly direction.
- The Coal Authority (Online viewer) does not categorise the site as being at risk from past or probable shallow mine workings.
- The proposed development is situated approx. 150m north east of 2no. BGS boreholes which encountered the Red Vein at between 13m and 18m depth at a thickness of 500mm and unworked in both boreholes, the site of the boreholes is also approx. 3m topographically lower than the site of the boreholes. Given that the local dip is generally in a south to south easterly direction it is likely that the Red Vein is at a similar depth beneath the development site.

4.1 Mitigation

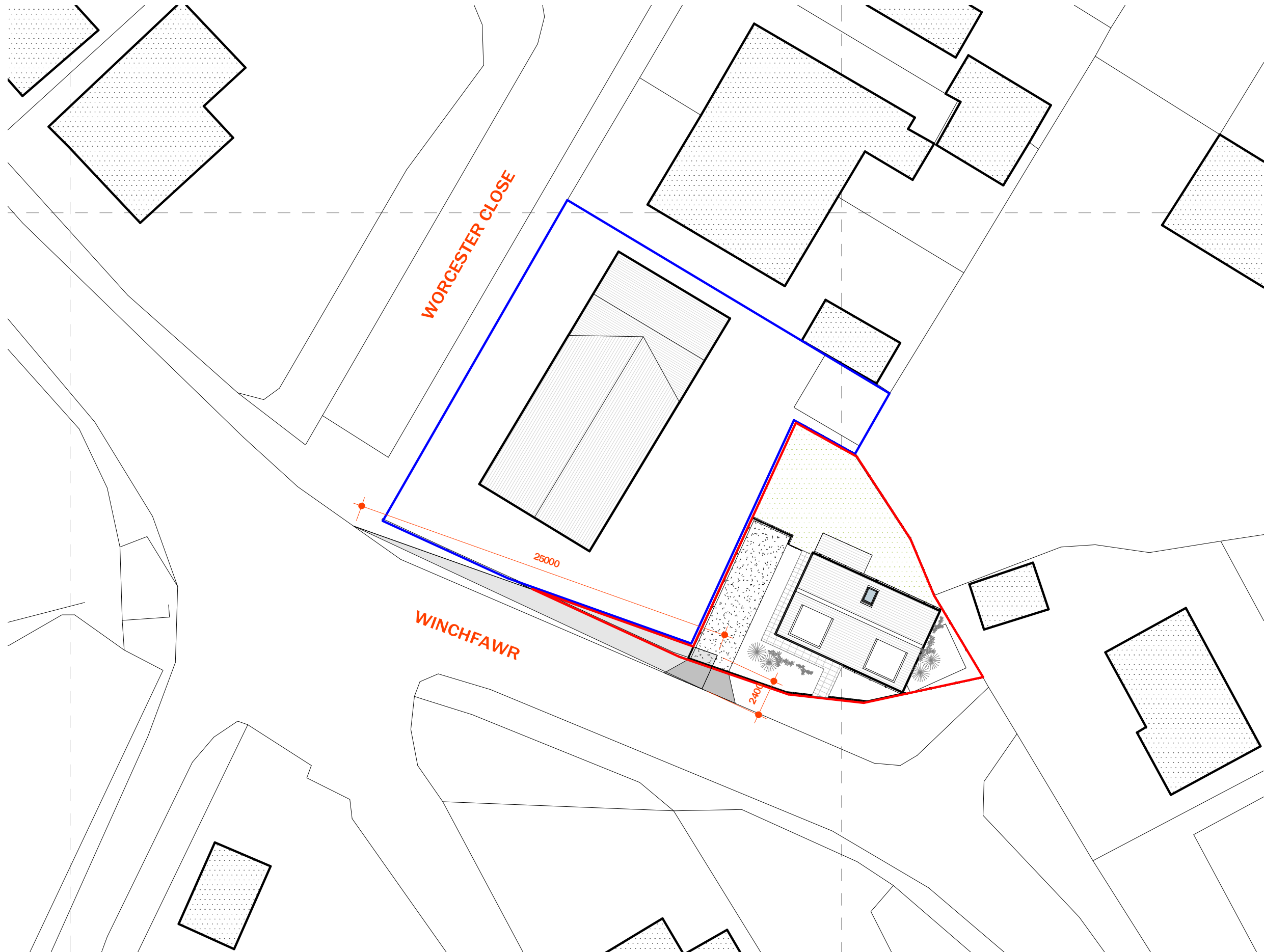
For small structures such as houses, conventional but reinforced strip or pad foundations may be adequate to resist the effects of minor instances of subsidence. They should be laid on a suitable sliding layer and have compressible materials placed at external vertical faces.

However, a raft foundation, as near square as possible, with no projections or indentations that would give rise to stress concentrations, will ride out subsidence better than strip footings. Raft foundations are used to spread the structural load over a wide area when founding on weak or variable ground and to remain intact following ground deformation.

The mining risk assessment indicates that if the mitigation measures are implemented there is a **low risk** to the proposed development of ground instability as a result of unrecorded shallow mining and mining geology beneath the site.

Figures

Figure 1 – Site Location Plan & Existing and Proposed Plans



YOUR ADDRESS 02019

PROJECT:
**PROPOSED
BUILDING
PLOT**

WINCHFAWR,
MERTHYR TYDFIL

DATE: 09.09.19
PROJECT NO: PC054

REVISION	DATE
C	19.02.20
D	06.03.20
E	19.04.20
F	21.08.20

NOTES:

**PROPOSED
SITE
LAYOUT**

SCALE: 1 : 250

A1.2

DRAWN BY: PC

1

INDICATIVE GROUND FLOOR PLAN

SCALE: 1 : 250

Appendices

Appendix A – Report Conditions

APPENDIX A - REPORT CONDITIONS GROUND INVESTIGATION

This report is produced solely for the benefit of LoftCo and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise.

This report refers, within the limitations stated, to the condition of the site at the time of the inspections. No warranty is given as to the possibility of future changes in the condition of the site.

This report is based on a visual site inspection, reference to accessible referenced historical records, information supplied by those parties referenced in the text and preliminary discussions with local and Statutory Authorities. Some of the opinions are based on unconfirmed data and information and are presented as the best that can be obtained without further extensive research. Where ground contamination is suspected but no physical site test results are available to confirm this, the report must be regarded as initial advice only, and further assessment should be undertaken prior to activities related to the site. Where test results undertaken by others have been made available these can only be regarded as a limited sample. The possibility of the presence of contaminants, perhaps in higher concentrations, elsewhere on the site cannot be discounted.

Whilst confident in the findings detailed within this report because there are no exact UK definitions of these matters, being subject to risk analysis, we are unable to give categorical assurances that they will be accepted by Authorities or Funds etc. without question as such bodies often have unpublished, more stringent objectives. This report is prepared for the proposed uses stated in the report and should not be used in a different context without reference to WYG. In time improved practices or amended legislation may necessitate a re-assessment.

The assessment of ground conditions within this report is based upon the findings of the study undertaken. We have interpreted the ground conditions in between locations on the assumption that conditions do not vary significantly. However, no investigation can inspect each and every part of the site and therefore changes or variances in the physical and chemical site conditions as described in this report cannot be discounted.

The report is limited to those aspects of land contamination specifically reported on and is necessarily restricted and no liability is accepted for any other aspect especially concerning gradual or sudden pollution incidents. The opinions expressed cannot be absolute due to the limitations of time and resources imposed by the agreed brief and the possibility of unrecorded previous use and abuse of the site and adjacent sites. The report concentrates on the site as defined in the report and provides an opinion on surrounding sites. If migrating pollution or contamination (past or present) exists further extensive research will be required before the effects can be better determined.

Appendix B – Coal Authority Report



The Coal
Authority

CON29M

coal mining report

LAND AT WINCH FAWR ROAD, WINCH FAWR ROAD, HEOLGERRIG, MERTHYR
TYDFIL, CF48 1SP



Known or potential coal mining risks

Past underground coal mining	Page 4
Future underground coal mining	Page 4
Mine entries	Page 4



Further action

No further reports from the Coal Authority are required. Further information on any next steps can be found in our Professional opinion.

For more information on our reports please visit
www.groundstability.com



Professional opinion

According to the official mining information records held by the Coal Authority at the time of this search, evidence of, or the potential for, coal mining related features have been identified. In view of the coal mining circumstances we would recommend that any planned or future development should follow detailed technical advice before beginning work on site. Please see **page 3** for further details on **Future development**.

Your reference: **C20/579**
Our reference: **51002324208001**
Date: **14 October 2020**

Client name:
WYG

If you require any further assistance please
contact our experts on:
0345 762 6848
groundstability@coal.gov.uk



The Law
Society

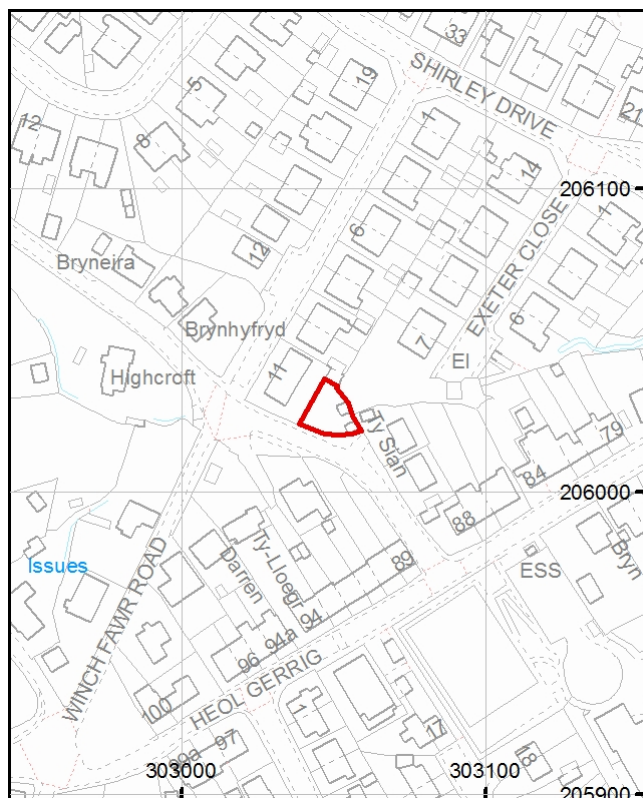
Enquiry boundary

Key

Approximate position of enquiry boundary shown



We can confirm that the location is
on the coalfield



Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2018. All rights reserved.
Ordnance Survey Licence number: 100020315.

This report is prepared in accordance with the latest Law Society's Guidance Notes 2018, the User Guide 2018 and the Coal Authority's Terms and Conditions applicable at the time the report was produced.



Accessibility

If you would like this information in an alternative format, please contact our communications team on 0345 762 6848 or email communications@coal.gov.uk.

Professional opinion



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. 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.

If you are looking to develop, or undertake works, within a coal mining development high risk area your Local Authority planning department may require a Coal Mining Risk Assessment to be undertaken by a qualified mining geologist or engineer. Should you require any additional information then please contact the Coal Authority on **0345 762 6848** or email **cmra@coal.gov.uk**.

Detailed findings

Information provided by the Coal Authority in this report is compiled in response to the Law Society's CON29M Coal Mining enquiries. The said enquiries are protected by copyright owned by the Law Society of 113 Chancery Lane, London WC2A 1PL.

The Coal Authority owns the copyright in this report and the information used to produce this report is protected by our database rights. All rights are reserved and unauthorised use is prohibited. If we provide a report for you, this does not mean that copyright and any other rights will pass to you. However, you can use the report for your own purposes.

1 Past underground coal mining

The property is in a surface area that could be affected by underground mining in 3 seams of coal at shallow to 70m depth, and last worked in 1939.

2 Present underground coal mining

The property is not within a surface area that could be affected by present underground mining.

3 Future underground coal mining

The property is not in an area where the Coal Authority has received an application for, and is currently considering whether to grant a licence to remove or work coal by underground methods.

The property is not in an area where a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area likely to be affected from any planned future underground coal mining.

However, reserves of coal exist in the local area which could be worked at some time in the future.

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

4 Mine entries

There are no recorded coal mine entries known to the Coal Authority within, or within 20 metres, of the boundary of the property.

This information is based on the information that the Coal Authority has at the time of this enquiry.

Based on the Coal Authority's knowledge of the mining circumstances at the time of this enquiry, there may be unrecorded mine entries in the local area that do not appear on Coal Authority records.

5 Coal mining geology

The Coal Authority is not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining.

6 Past opencast coal mining

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

7 Present opencast coal mining

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

8 Future opencast coal mining

There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

9 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.

10 Mine gas

The Coal Authority has no record of a mine gas emission requiring action.

11 Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Coal Authority, under its Emergency Surface Hazard Call Out procedures.

12 Withdrawal of support

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.

13 Working facilities order

The property is not in an area where an order has been made, under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

14 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.

Statutory cover



Coal mining subsidence

In the unlikely event of any coal mining related subsidence damage, the Coal Authority or the mine operator has a duty to take remedial action in respect of subsidence caused by the withdrawal of support from land or property in connection with lawful coal mining operations.

When the works are the responsibility of the Coal Authority, our dedicated public safety and subsidence team will manage the claim. The house or land owner ("the owner") is covered for these works under the terms of the Coal Mining Subsidence Act 1991 (as amended by the Coal Industry Act 1994). Please note, this Act does not apply where coal was worked or gotten by virtue of the grant of a gale in the Forest of Dean, or any other part of the Hundred of St. Briavels in the county of Gloucester.

If you believe your land or property is suffering from coal mining subsidence damage and you need more information on what to do next, please use the following link to our website which sets out what your rights are and what you need to consider before making a claim.

www.gov.uk/government/publications/coal-mining-subsidence-damage-notice-form



Coal mining hazards

Our public safety and subsidence team provide a 24 hour a day, 7 days a week hazard reporting service, to help protect the public from hazards caused by past coal workings, such as a mine shaft or shallow working collapse. To report any hazards please call **01623 646 333**. Further information can be found on our website: www.gov.uk/coalauthority.

Glossary



Key terms

adit - horizontal or sloped entrance to a mine

coal mining subsidence - ground movement caused by the removal of coal by underground mining

Coal Mining Subsidence Act 1991 - the Act setting out the duties of the Coal Authority to repair damage caused by coal mining subsidence

coal mining subsidence damage - damage to land, buildings or structures caused by the removal of coal by underground mining

coal seams - bed of coal of varying thickness

future opencast coal mining - a licence granted, or licence application received, by the Coal Authority to excavate coal from the surface

future underground coal mining - a licence granted, or licence application received, by the Coal Authority to excavate coal underground. Although it is unlikely, remaining coal reserves could create a possibility for future mining, which would be licensed by the Coal Authority

mine entries - collective name for shafts and adits

payments to owners of former copyhold land - historically, copyhold land gave rights to coal to the copyholder. Legislation was set up to allow others to work this coal, but they had to issue a notice and pay compensation if a copyholder came forward

shaft - vertical entry into a mine

site investigation - investigations of coal mining risks carried out with the Coal Authority's permission

stop notice - a delay to repairs because further coal mining subsidence damage may occur and it would be unwise to carry out permanent repairs

subsidence claim - a formal notice of subsidence damage to the Coal Authority since it was established on 31 October 1994

withdrawal of support - a historic notice informing landowners that the coal beneath their property was going to be worked

working facilities orders - a court order which gave permission, restricted or prevented coal mine workings

Appendix C – BGS Borehole Records

SO 00 NW 394

Norwest Holst Soil Engineering Ltd.

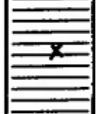
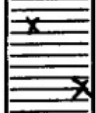
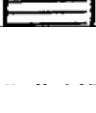
Borehole No.
R2

Contract No. **F5397**
Location **Hoelgerrig**
Client **Merthyr Tydfil Borough Council**
Method of Boring **Rotary Coring**
Diameter of Borehole **105mm**

BOREHOLE LOG

Co-ordinates of site
0289 E. 0592 N.

Sheet **1** of **5**
Chainage.....
Ground Level..... m.A.O.D.
Date **16-22/12/82**

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D.%	Daily Progress
MADE GROUND: Bricks		0.60					
MADE GROUND: Clay		1.30					
Light brown CLAY		3.30					
Grey brown CLAY		3.80					
Grey brown silty sand CLAY with mudstone fragments		4.90			4.50		
Grey, very silty, moderately to highly weathered MUDSTONE weak, highly to very highly fractured					93%	0%	
--becoming completely weathered, extremely fractured with clayey matrix from 11.40 to 11.80 and from 13.80 to 15.50					6.00		
--becoming carbonaceous from 15.50 to 15.80					100%	0%	
					7.50		
					93%	0%	
					9.00		
					100%	0%	

SO 00 NW 394

Norwest Holst Soil Engineering Ltd.

Borehole No.

R2

Contract No. F5397

BOREHOLE LOG

Location. Hoelgerrig

Sheet 2 of 5

Client Merthyr Tydfil Borough Council

Chainage.....

Method of Boring Rotary coring

Ground Level..... m.A.O.D.

Diameter of Borehole 105mm

Date 16-22/12/82

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.O.D.%	Daily Progress
Grey, very silty, moderately to highly weathered MUDSTONE, weak highly to very highly fractured.					10.40		
					100%	0%	
					11.80		
					100%	0%	
					13.00		
					100%	0%	
					15.00		
					97%	0%	
		18.60			18.00		
COAL		19.10			75%	0%	
Grey very silty, moderately to highly weathered MUDSTONE, weak to very weak very highly fractured with plant traces and sub-vertical to vertical					20.00		

So 00 NW 394

Norwest Holst Soil Engineering Ltd.

Borehole No.

R2

Contract No. E5397

BOREHOLE LOG

Location Hoalgarrig

Sheet 3 of 5

Client Merghyr Tydfil Borough Council

Chainage

Method of Boring Rotary coring

Ground Level m.A.O.D.

Diameter of Borehole 105mm

Date 16-22/12/82

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.O.D. %	Daily Progress
Gray very silty, moderately to highly weathered MUDSTONE, weak to very weak very highly fractured with plant traces and sub-vertical to vertical joints from 18.60-20.70m.							
					75%	0%	
					23.00		
					94%	0%	
					24.60		
		25.20			68%	13%	
Light grey to gray, very silty, completely weathered MUDSTONE, very weak, very highly to extremely fractured with plant traces.					26.00		
					45%	0%	
					28.00		
		28.60			100%	0%	
COAL					28.90		
		29.60			84%	0%	
Dark grey, slightly silty moderately weathered MUDSTONE, moderately weak moderately fractured with occasional sub-vertical joints listric surfaces							

5000 NW 395

Norwest Holst Soil Engineering Ltd.

Borehole No.

R3

Contract No. F5397

BOREHOLE LOG

Location. Heolgerrig

Sheet 1 of 3

Client. Merthyr Tydfil Borough Council

Chainage

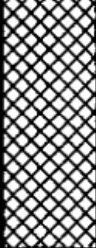
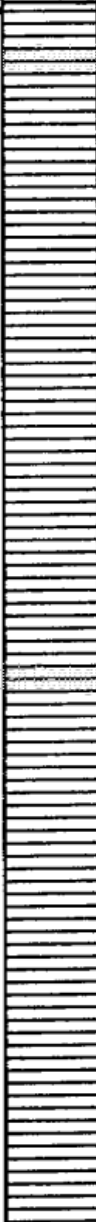
Method of Boring. Rotary Openhole Coordinates of site

Ground Level m.A.O.D.

Diameter of Borehole 80mm

0299 E. 0592 N.

Date 13-14/1/83

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/ R.Q.D. %	Daily Progress
MADE GROUND: Ash and hardcore.		1.70					
Brown CLAY.		1.90					
Grey/brown MUDSTONE with occasional hard bands.							

SO 00 NW 395

Norwest Holst Soil Engineering Ltd.

Borehole No.

R3

Contract No. E5397

BOREHOLE LOG

Location Heolgerrig

Sheet 2 of 3

Client Merthyr Tydfil Borough Council

Chainage

Method of Boring Rotary Openhole

Ground Level m.A.O.D.

Diameter of Borehole 80mm

Date 13-14/1/83

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/ R.Q.D. %	Daily Progress
Grey/brown MUDSTONE with occasional hard bands.		13.20					
COAL		13.70					
Dark grey MUDSTONE.							