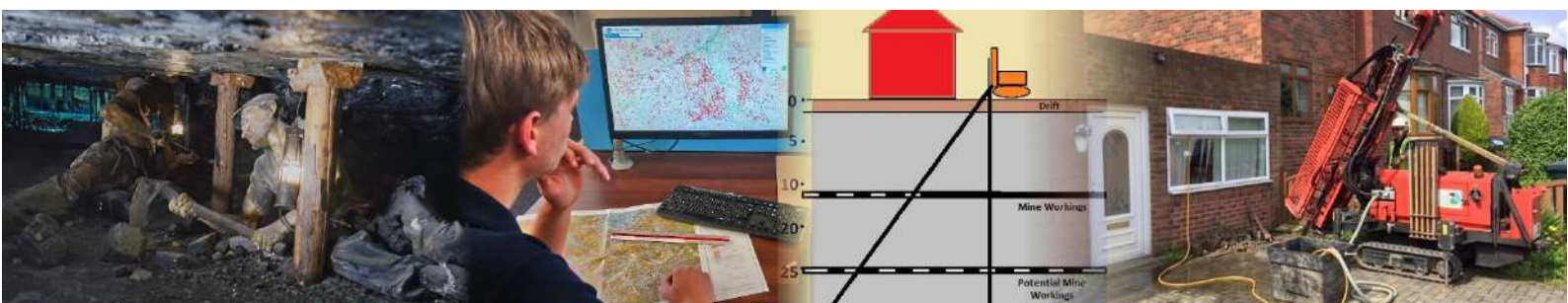




GEOLOGICAL
GEOTECHNICAL
GEOENVIRONMENTAL
CONSULTANCY
DRILLING & DATA ACQUISITION



GEOINVESTIGATE LIMITED

Coal Mining Risk Assessment (CMRA)

LOCATION	Hillside, Neath, Swansea SA11 1TP
ISSUE DATE	15 August 2022
FOR	Husam Sami
CLIENT REF.	
OUR REF.	G22349

Prepared by

Holly Lewis FGS
Trainee Geoenvironmental Engineer

Checked by

Ross Nicolson BSc (Hons) MSc (Eng) CEng MIMMM
Principal Geotechnical Engineer

SUMMARY FINDINGS

OUTCOME MITIGATION REQUIRED

YES. This CMRA has identified the possible presence of up to 2 levels of unrecorded working mine working within very shallow to shallow depth beneath the site, with the potential to significantly impact surface ground stability within the proposed building area.

Whether unrecorded workings will impact the development depends on drift/bedrock depth, mine working (if any) depth and rock cover thickness. Intrusive ground investigation is therefore required to establish these parameters within the site.

Notwithstanding, on the basis of the CMRA work to date, we are of the opinion that the mining stability and mine gas risks posed by the strata beneath this site from coal mining legacy can be mitigated by routinely adopted measures and should not preclude planning permission being registered in the interim with regard to coal mining legacy issues conditional upon the work being carried out at a later date.

WHAT TO DO NEXT

Obtain quotes for the intrusive site investigation works (if considered appropriate). The cost of the SI works should be a **"lump sum" fixed price**. Geoinvestigate can provide advice and assistance with helping you find suitable site investigation & drilling contractors. Call us on 01642 713779 or email enquiries@geoinvestigate.co.uk.

1. CMRA INTRODUCTION

Site Location and Description:

The approximate centre of this site is at National Grid Reference 275620 E, 196657 N with elevation between 36m and 47mOD. The site is located on hillside rising from Hillside Road on the north to St Joseph's RC Primary School and Cook Rees Ave in the south. The boundary shown RED in the Coal Authority (CA) report provided in Appendix A corresponds with the planning application area.

The image provided in Appendix B show the site was cleared for development prior to October in 2009 but remained undeveloped. An access cut and several raised mounds occupy the site which is currently heavily overgrown with vegetation. The site's irregular surface and thick vegetation make access difficult.

Proposed Development:

It is proposed to erect 9 residential dwellings (semi-detached and detached) on the site. Site location and development plans are provided in Appendix B.

Historical Development:

The OS map record from 1878 shows the site occupied by Oakleigh House and its garden and grounds. The site remained largely unchanged, up to the 1950s, when the property was occupied by nuns of the Poor Clare Colletine Monastery. Subsequently, the house may have been extended under their ownership. According to a local BBC News article the monastery was closed in 2006 and sold for housing development. The monastery buildings were cleared between 2006 and 2009.

An old coal pit is shown 50m or so to the northeast of the property.

Later St Joseph RC Primary School was established on higher ground to the south of the site.

Anticipated Geology:

The location of the site is shown on the extract of BGS solid geology map are presented in Appendix C.

The British Geological Survey (BGS) 1:50,000 scale map for the area (Sheet 247, Swansea) indicates that little or no drift deposits occur within the site and Hughes Member bedrock strata lies at or near surface at this locality. The Hughes Member comprises mudstone, siltstone, sandstone, and coal seams of varying thicknesses. Although no drift is recorded on site, it is likely that thin topsoil/completely weathered bedrock is present overlying the bedrock.

The geology map shows the H Coal seam outcropping within the site and dipping 20 degrees NNE. This seam and any mine workings within it could underlie the eastern half of the site within very shallow depth (< 10m) while the Westernmoor Coal may occur within shallow depth < 30m.

A nearby BGS borehole record, SS79NE248, located approximately 250m to the southeast of the site, is included in Appendix D. It shows a drift/bedrock depth of 1m, underlain mostly by sandstone with an unnamed 1.60m thick coal horizon between 16.20 – 17.80m. It is uncertain whether this coal is the Graigola (Gr) or H seam.

Risk Methodology Applied: This document and the risk assessment methodology adopted herein is based on CA publication RISK BASED APPROACH TO DEVELOPMENT MANAGEMENT - GUIDANCE FOR DEVELOPERS Version 3, 2014 and Version 4 - 2017. The template contained therein is adopted with minor amendments made by Geoinvestigate Limited.

2. ASSESSMENT OF SITE-SPECIFIC COAL MINING ISSUES

The table below summarises the potential risks associated with coal mining legacy for the proposed development site, identified from list sources of information.

Coal Mining Issues	Yes	No	Risk Assessment/Remarks
Past underground coal mining	Yes		2.1.1
Probable unrecorded shallow workings	Yes		2.1.2
Spine roadways at shallow depth		No	
Mine entries		No	2.1.3
Outcrop	Yes		2.1.2 & 2.1.4
Geological faults, fissures and breaklines		No	
Opencast Mines		No	
Coal Mining Subsidence		No	
Mine Gas		No	2.1.5
Site investigations		No	

Note: For those coal mining issues above identified as “Yes” or highlighted “YELLOW” a more detailed discussion and assessment are made of the risks to the application site and the proposed development.

2.1 DETAILED DISCUSSION & ASSESSMENT RESPONSE

2.1.1 Past Underground Mining

There has been 1 level of past underground mining directly beneath the property. This was in the Hughes Coal seam at a depth of 212m beneath the surface with extraction thickness of 1.32m. These workings are likely to lie too deep to impact the surface ground stability within the development area.

2.1.2 Probable Unrecorded Shallow Workings

According to the CA report the site falls within a zone of probable unrecorded shallow workings. The CA define Probable Unrecorded Shallow Workings as “Areas where the Coal Authority believes there to be unrecorded coal working that exist at or close to the surface” (i.e., less than 30m).

The location of the site is shown on the extract of BGS solid geology map presented in Appendix D. The tentative elevation of the site relative to the vertical geology column is shown below the map. The drift/soil horizon above the solid geology bedrock is not shown on the column.

Outcrop of the H Coal seams occurs within the site boundary. Unrecorded working (if any) may underlie the new buildings within very shallow depth, while similarly unrecorded working in the Westernmoor Coal may occur within 30m depth.

2.1.3 Mine Entries

Three untreated mine shafts are recorded in the CA report (refs 275196-005, 012 and 013). Mine shaft 013 lies > 60m southwest of the site, and shafts 012 and 005 > 30m northeast. In our opinion the shafts are too distant to impact ground stability in the development area. However, their presence raises further concern about possible unrecorded shallow mining at this locality.

2.1.4 Outcrop

One coal outcrop is identified with the site as discussed above within Anticipated Geology and Section 2.1.2.

2.1.5 Mine Gas

No mine gas incident or remediation is recorded within 500m of the proposed development and typically, in the UK mine gas is Low risk. Notwithstanding, given the possible presence of shallow mine workings beneath the proposed development area and the serious nature of mine gas it is recommended that the risk is raised to **MODERATE** to perhaps High until indicated otherwise by gas testing during drilling.

3. SUMMARY AND OUTCOME

This CMRA has identified the possible presence of up to 2 levels of unrecorded coal mine working within very shallow and shallow depth beneath the site.

In our opinion, whether shallow mine working poses a significant risk to the development cannot be properly assessed without additional information namely drift depth, coal seam depth and mine working (if any) depth and rock cover thickness at this locality. In our opinion exploratory drilling is required to obtain this information and enable further assessment of the risks posed by shallow mine working at this locality. Gas monitoring must be carried out during drilling.

4. MITIGATION STRATEGY PROPOSED AND CONCLUSION

To properly determine the coal mining risk at this site it is proposed to drill 6 boreholes at the property to target depths up to 30m (but not necessarily reaching 30m depending on ground conditions encountered) to locate shallow coal seams and mine working (if any) below the new development as well as establishing drift and bedrock depth. Gas monitoring **MUST** be carried out during drilling.

Risks for Different Drilling Scenarios					
Air flush	Mist flush	Foam flush	Water flush	Mud flush	Additional controls
HIGH	HIGH / MED'M	HIGH / MED'M	LOW	LOW	- Monitoring at rig and other open holes. - Seal boreholes

A Coal Authority Permit needs to be obtained (ahead of) further intrusive exploratory drilling. Water Drill Flush to be used when drilling. The permit application must state **WATER ONLY DRILL FLUSH** for the safety of the public and drill crew.

On the basis of the CMRA work to date, we are of the opinion that the mining stability and mine gas risks posed by the strata beneath this site from coal mining legacy can be mitigated by routinely adopted measures and should not preclude planning permission being registered with regard to coal mining legacy issues.

In conclusion we see no reason why Planning Permission should not be granted in the interim with respect to coal mining legacy issues and that these works form a condition on the planning approval.

Appendices:

- CA Consultants Coal Mining Report issued 2 August 2022 ref.51003293934001.
- Site image, Site Location & Proposed Development Plan
- Extracts of BGS Geology Map, Sheet 247 – Swansea at 1:50000 scale
- BGS borehole log

APPENDIX A

COAL AUTHORITY REPORT

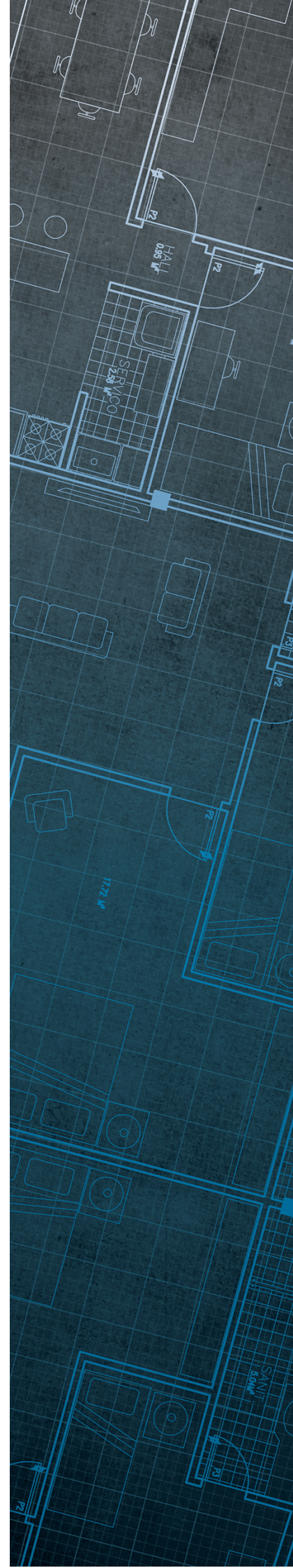


The Coal
Authority

Consultants Coal Mining Report

Land At
Hillside
Neath
Swansea
SA11 1TX

Date of enquiry:	2 August 2022
Date enquiry received:	2 August 2022
Issue date:	2 August 2022
Our reference:	51003293934001
Your reference:	G22349



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

GEOINVESTIGATE

Enquiry address

Land At
Hillside
Neath
Swansea
SA11 1TX

How to contact us

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

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

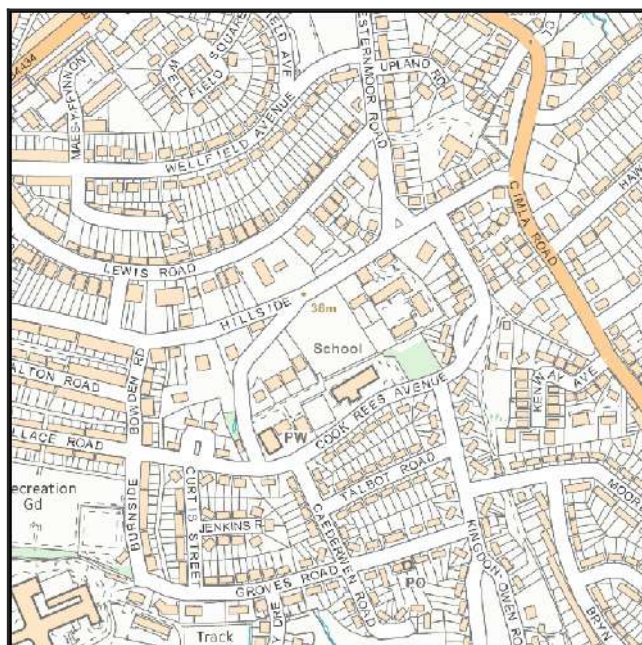
www.groundstability.com

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



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

Ordnance Survey Licence number: 100020315

Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	HUGHES	Coal	4JE8	212	Beneath Property	11.7	North-East	132	1902

Probable unrecorded shallow workings

Yes.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

Entry type	Reference	Grid reference	Treatment description	Mineral	Conveyancing details
Shaft	275196-005	275676 196708		Coal	I.G.Hale (Properties) Ltd 28/08/1991
Shaft	275196-012	275647 196729		Coal	
Shaft	275196-013	275539 196579		Coal	

Abandoned mine plan catalogue numbers

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

SWR1671	R10976	R10975
1999	R12044	3273
PO0	4440	SWR2654

Our records show we have more plans than those shown above which could affect the enquiry boundary.

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
UNNAMED	Coal	Yes	Within	N/A	157

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.

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.

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.

The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

Approximate position of the enquiry boundary shown 

Disused mine shaft 

Outcrop (Proven) 

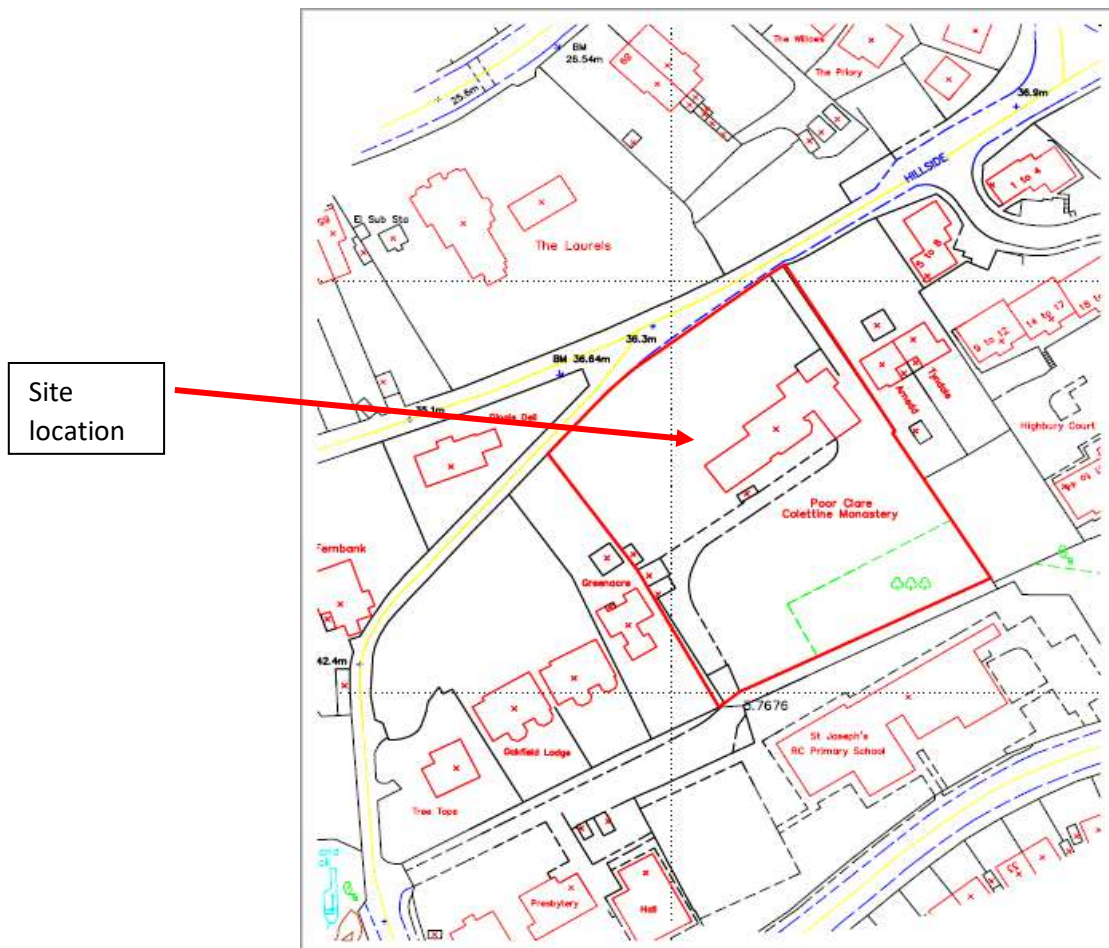
How to contact us
0345 762 6848 (UK)
+44 (0)1623 637 000 (International)
www.groundstability.com



APPENDIX B

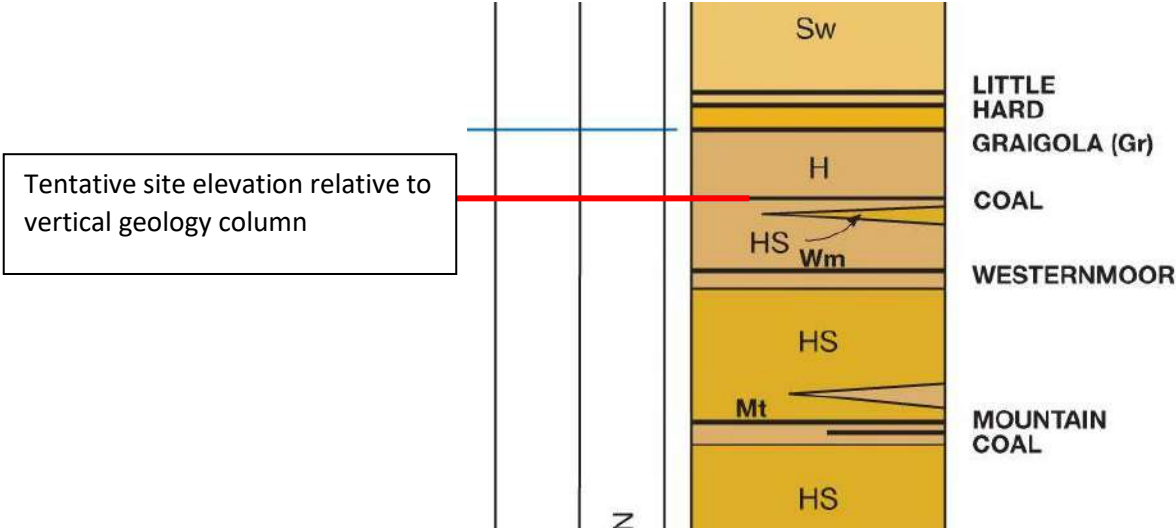
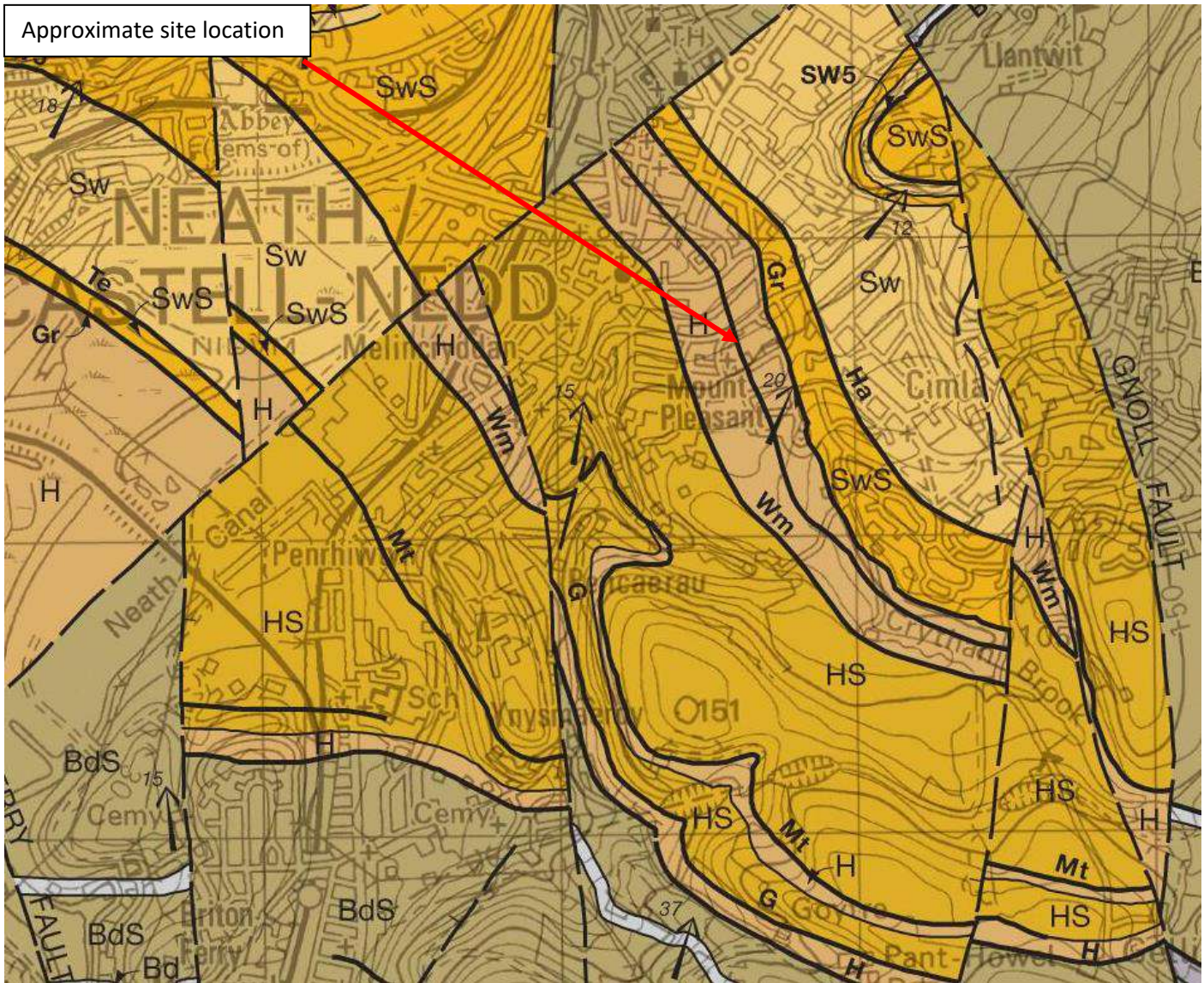
SITE IMAGES, SITE LOCATION & PROPOSED DEVELOPMENT PLAN







APPENDIX C
EXTRACTS OF BGS GEOLOGY MAP



APPENDIX D

BGS BOREHOLE LOG

Applied Geology				SITE 83 CIMLA ROAD, NEATH										HOLE No. 1									
PROJECT REFERENCE 31024				CONTRACTOR APEX DRILLING SERVICES					CLIENT DESIGN AND MATERIALS LTD					SHEET 1 of 2									
DRILLING DATA										PROGRESS					CO-ORDINATES								
DEPTH 30.0		METHOD ROTARY PERCUSSIVE		BIT TYPE ROCK ROLLER		HOLE DIAM 100 mm		CORE DIAM		CASING DEPTH -		DATE 30/9/93 30/9/93		TIME AM AM		HOLE DEPTH CL 30.0		CASING DEPTH -		DEPTH TO WATER -		ELEVATION	
RUN (FLUSH) %		TCR (ICR) %		SCR %		MAX MIN CL		ROD %		F.I.		DISCONTINUITIES		DEPTH		SAMPLES		DESCRIPTION & REMARKS		REDUCED LEVEL		LEGEND	
																		TOPSOIL				π π	
																		Brown gravelly CLAY (GLACIAL TILL)				π π	
																		Weathered MUDSTONE				π π	
																		Weathered MUDSTONE with bands of SANDSTONE				π π	
																		SANDSTONE				π π	
																		MUDSTONE				π π	
																		SANDSTONE				π π	
																						π π	
																						π π	
																						π π	
																						π π	
																						π π	
																						π π	
																						π π	
																						π π	
																						π π	
																						π π	
																						π π	
																						π π	
																						π π	
																						π π	
																						π π	
																						π π	
																						π π	
																						π π	
																						π π	
																						π π	
																						π π	
																						π π	
																						π π	
																						π π	
																						π π	
																						π π	