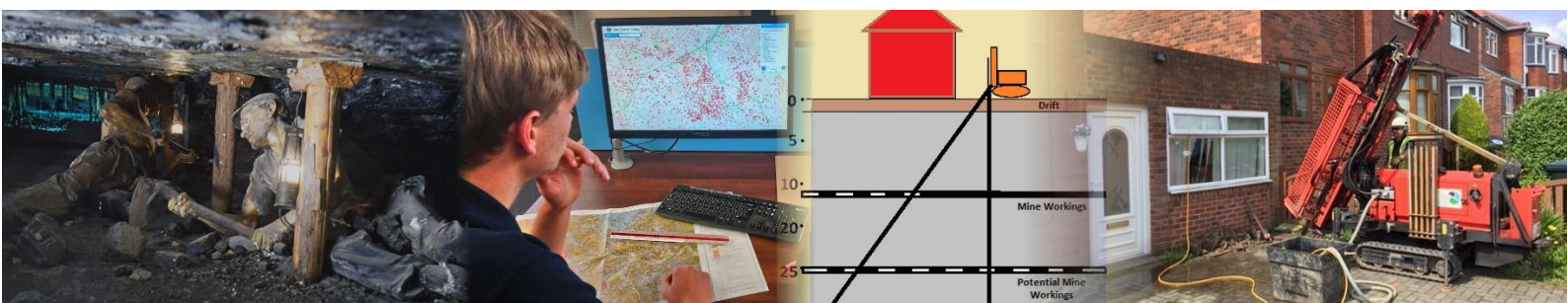




GEOLOGICAL
GEOTECHNICAL
GEOENVIRONMENTAL
CONSULTANCY
DRILLING & DATA ACQUISITION



GEOINVESTIGATE LIMITED

Coal Mining Risk Assessment (CMRA)

LOCATION	Tanyrallt, Graig Road, Gwaun Cae Gurwen, Neath, Port Talbot SA18 1EH
ISSUE DATE	16 January 2024
FOR	Ceri Jones
CLIENT REF.	
OUR REF.	G24015

Prepared by

A handwritten signature in grey ink, appearing to read "H. Lewis".

Holly Lewis MEarthSci (Hons) FGS
Assistant Geoenvironmental Engineer

Checked by

A handwritten signature in black ink, appearing to read "Ross Nicolson".

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

1. CMRA INTRODUCTION & COAL MINING HAZARDS

1.1 Site Location and Description

The approximate centre of the site lies at 270009 E 213316 N with ground height about 168m aOD.

The boundary shown in RED on the Coal Authority (CA) report provided in Appendix A corresponds with the planning application area.

The site is currently occupied by a two-storey dwelling. A site image is provided in Appendix B. It is proposed to erect a single detached bungalow in the side garden of the property as per the development plan in Appendix C.

1.2 Historical Maps

A desk study of limited available historical OS maps shows between 1830s to 1880s the site to be undeveloped, with the Great Western Railway present to the north of the property. Later maps show old pits, mining levels/adits and collieries in the distant surrounding area but not within, or adjacent to the property.

No surface mining activity, clay sand or gravel pits or stone quarries are shown within or adjacent to the site.

1.3 Anticipated Geology

The location of the property is shown on the extract of British Geological Survey (BGS) 1:50,000 Solid geology map (Sheet 230, Ammanford) presented in Appendix D. This map shows the site to have no superficial/drift cover at this locality with bedrock of the South Wales Middle Coal Measures lying at or near surface comprising sandstone.

Outcrop of an unnamed coal horizon (perhaps the Soap or Penny Pieces) occurs to the north of the property dipping south under the proposed development area, where it may lie within very shallow or shallow depth. Outcrop of the Stwrin (Sn) seam is shown further north.

The tentative elevation of the site relative to the vertical geology column is shown below the map.

As there are no BGS borehole records within the site or within its vicinity the coal mining geology below the proposed new building is unknown

1.4 Mine Workings, Mine Shafts & Opencast

The CA report in Appendix A report identifies one level of recorded mine workings at a depth of 186m below the property. In Geoinvestigate's opinion, this working lies too deep to impact surface ground stability in the building area. These workings dip 8.7 degrees south.

The CA report places the site in an area of NO probable shallow coal mine workings. The CA define Probable Unrecorded Shallow Workings as *"Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface"* (i.e., less than 30m). However, the CA report identifies an unnamed coal seam (perhaps the Soap or Penny Pieces) as well as the Black Pins Ironstone, outcropping 15.5m and 48.9m west of the site, generally dipping south at this locality, placing the coal and ironstone within very shallow depth i.e. < 10m depth. According to the CA report, both horizons are workable.

Due to the presence of a workable coal outcrop, which occurs within influencing distance of the site, the CA's online interactive mapping service identifies the site as falling with Development High Risk Area (DHRA).

While there is no information confirming that ironstone and/or coal have been worked at this locality and the absence of a name for the coal may suggest it was an insignificant deposit left unmined, it is our experience that the CA consider that coal outcrop poses the same risk as probable shallow mine workings until shown, or proven, otherwise.

Consequently, it is Geoinvestigate's opinion that the presence of workable coal and ironstone deposits within very shallow depth poses a significant ground stability risk to the new building development.

Therefore, Geoinvestigate consider the possible presence of unrecorded mine workings within very shallow and shallow depth beneath the proposed new building requires further intrusive site investigation.

The CA show an unlicensed opencast site some 240m northwest of the property. While this is too distant to impact ground stability within the development area, its presence raises further concern about possible shallow mine workings at this locality.

Encouragingly, the CA report does not identify any known mine shafts within 100m of the site boundary.

1.5 Geological Faults Fissures & Breaklines

The geological mapping and the CA report do not identify any faults, fissures, or breaklines within the site or within influencing distance of it.

1.6 Mine Gas

According to the CA report, no mine gas incident or remediation have been recorded within 500m of the enquiry boundary and typically on the UK coalfields, mine gas risk to surface development is low. Circumstances where gas risk increases include proximity (typically < 50m) to mine entries (adits and shafts), proximity to recorded mine gas incidents, where development is located above or adjacent to very shallow and shallow (< 30m) unflooded mine workings or roadway tunnels. In addition, increased mine gas risk may be attributable to coal seams with a history of spontaneous combustion, natural or artificial pathways providing routes for gas migration eg permeable soil cover, pathways created by geological faults, mining induced breaklines/fractures, collapsed mine roof strata, mining subsidence, mining sinkholes/crown holes and unsealed boreholes.

This CMRA has indicated that conditions may exist at this site increasing mine gas risk - namely the possible presence of very shallow mine workings. However, the risk may be less if mining is absent within shallow depth and because there has been no reported mine gas incident at this locality.

2. RISK ASSESSMENT OF SITE-SPECIFIC COAL MINING ISSUES

The risk assessment methodology adopted in this section 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 broadly adopted in the table below with amendments made by Geoinvestigate Limited. The factual information it is based on, is derived mostly from the CA Consultants Coal Mining Report and additional desk study information including available historical maps, geological maps & memoirs, BGS boreholes, online articles etc. It is not an exhaustive desk study review. Therefore, if new information is released or found in the future, this CMRA may require updating.

The table also provides advice on next step mitigation and the likely planning decision.

RISK ASSESSMENT & MITIGATION		
Coal Mining Issues/Hazards	Risk	Next Step Mitigation
Past underground coal mining	L	
Probable unrecorded shallow workings	M	Drilling to enable further assessment
Outcrop	L	
Spine roadways at shallow depth	NONE	
Mine entries	NONE	
Geological faults, fissures and breaklines	NONE	
Mine gas	M	Drilling to enable further assessment
Opencast mines within 500m	YES	Too distant to be of concern
Coal mining subsidence claims within 50m	NONE	
Site investigations within 50m	NONE	
Likely Planning Decision	Yes/No	Reason
Is planning permission likely to be given with respect to coal mining legacy issues CONDITIONAL upon carrying out further intrusive investigation leading to possible building design mitigation at a future date but before construction begins?	Yes	Yes. Because the site is NOT impacted by known mine entry proximity hazard and the site-specific ground stability and possible mine gas risks to the proposed development identified in this CMRA can be mitigated by routine engineering solutions.

Assessed risk level – High, Medium Low, NONE

3. CMRA OUTCOME & RECOMMENDATIONS

This CMRA has identified increased risk to the proposed development from possible shallow mine workings as well as perhaps mine gas. Drilling investigation is required to further assess both risks. However as both risks can be mitigated by routine engineering solutions **planning permission should not in our opinion be withheld with respect to coal mining legacy issues** providing further intrusive investigation is carried out at a future date and the permission is **CONDITIONED** accordingly.

In Geoinvestigate's opinion a minimum of 2 or 3 rotary open boreholes (without requirement for core sample recovery) should be sunk at the site to depths up to 30m (but not necessarily reaching 30m) to establish bedrock depth and mine working depth (if any) beneath the site.

A Coal Authority Permit needs to be obtained (ahead of) further intrusive exploratory drilling. As per the table below 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. **Failure to do so may result in prosecution by the HSE and a hefty fine.**

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

Boreholes must be sealed on completion.

Gas monitoring **MUST** be carried out during drilling and may provide further indication of mine gas risk.

However, if the drilling investigation encounters shallow mine working longer term gas monitoring in specially installed gas wells may be required to further assess the ground gas risk.

Alternatively, longer term gas monitoring may be avoidable if the installation of precautionary gas protection measures are included in the design of the new buildings in line with "Characteristic Situation 2" (CS2) based upon the CIRIA 665 (revised) report – "Assessing the risks posed by hazardous ground gases to buildings". However, agreement will be required from the Local Planning Authority for this alternative proposal.

WHAT TO DO NEXT? Obtain quotes for the intrusive site investigation works. 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.

Appendices:

- A. CA Consultants Coal Mining Report issued 12 January 2024 ref. 51003398706001
- B. Site Image
- C. Proposed Development
- D. Geology Map Extracts

APPENDIX A
COAL MINING REPORT



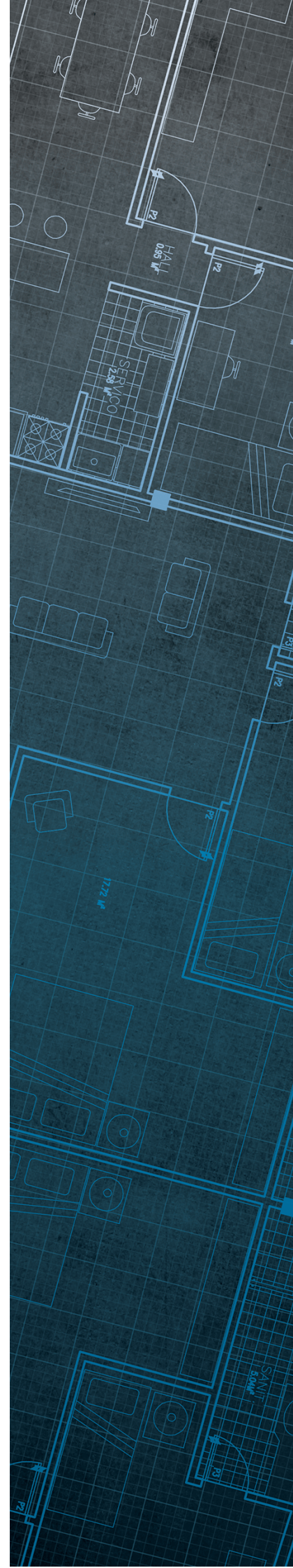
The Coal
Authority

Consultants Coal Mining Report

Tanyralt
Graig Road
Gwaun Cae Gurwen
Neath Port Talbot
SA18 1EH

Date of enquiry:	11 January 2024
Date enquiry received:	11 January 2024
Issue date:	11 January 2024

Our reference:	51003398706001
Your reference:	G24015



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

Tanyrallt
Graig Road
Gwaun Cae Gurwen
Neath Port Talbot
SA18 1EH

How to contact us

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 @coalauthority

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Approximate position of property



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Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
GARNANT	UPPER NINE FOOT	Coal	4HLA	186	Beneath Property	8.7	South	147	1910
unnamed	LOWER NINE FOOT TOP LEAF	Coal	4GKY	223	East	12.5	South-West	110	1929
unnamed	MIDDLE BUTE LEAF	Coal	4HL2	295	North	26.6	South-East	143	1908
unnamed	UPPER GELLIDEG	Coal	4GCI	308	East	6.0	South	150	1947
unnamed	MIDDLE BUTE LEAF	Coal	4GCX	308	North	33.7	South-East	143	1909
unnamed	GELLIDEG	Coal	4GCO	320	North-East	12.3	South	130	1959

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:

14497	SWR1481	CRO68
SWR2809	SW317	LPL477
SWR1497	PO0	SW465

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
BLACK PINS IRONSTONE	Ironstone	Yes	48.9	West	8
UNNAMED	Coal	Yes	15.5	West	0

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

Please refer to the "Summary of findings" map (on separate sheet) for details of any opencast areas 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.

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

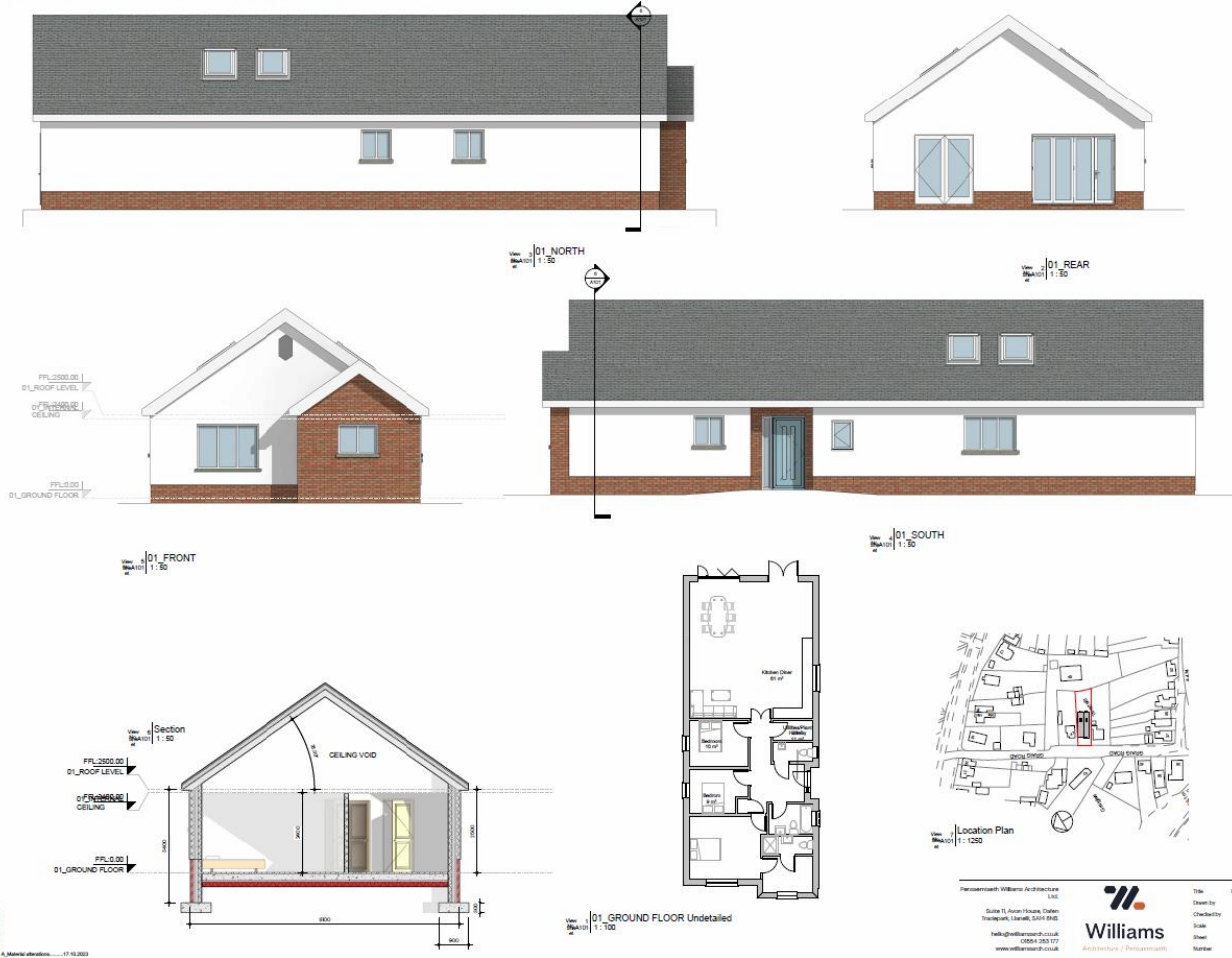
APPENDIX B

SITE IMAGE



APPENDIX C PROPOSED DEVELOPMENT

All dimensions are in millimetres unless otherwise stated. Do not scale from this drawing. Check dimensions on site, report any discrepancies immediately.
Drawings are copyright of Penarth Bay Williams Architecture Ltd. and must not be altered, reproduced, or passed on to any third party without prior consent.



Schedule of Finishes:
Grey brickwork
White smoothcast render
White UPVC windows and doors
White UPVC weatherboarding

Penarth Bay Williams Architecture Ltd.
17.10.2023

Penarth Bay Williams Architecture Ltd.
17.10.2023
Tanyralt

Title	PROPOSED DEVELOPMENT	Client	Mr & Mrs Jones
Drawn by	L. Jones	Address	123 Main Street, Cardiff
Checked by	L. Jones	Project	12345678
Scale	As Indicated	Reference	1234567
Sheet	12	Status	1234 Stage 1
Number	123	Date	17/10/2023 10:00:00

APPENDIX D GEOLOGY MAP EXTRACTS



TENTATIVE SITE
ELEVATION

