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Swansea North BESS: Coal Mining Risk Assessment

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Document Control

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Swansea North BESS: Coal Mining Risk Assessment

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1. Introduction

1.1. Instruction

Aqua Terra Consultants Ltd (Aqua Terra) was instructed by Land Use Consultants (LUC) (the Client) on behalf of EDF Energy Renewables Limited to provide a Coal Mining Risk Assessment (CMRA) for Swansea North BESS at Felindre, Swansea (the Site). Instruction to proceed in accordance with the Technical Workslope – Swansea BESS was confirmed by email dated 19th February 2025.

1.2. Brief

The Client is supporting EDF Renewables through the planning and consenting process for a Battery Energy Storage System (BESS), including associated cable route and infrastructure on the Site. Aqua Terra has been instructed to provide a desk based CMRA to identify potential risks to the proposed development arising from the historical mining legacy beneath the Site in accordance with Mining Remediation Authority (MRA) formerly the Coal Authority requirements.

1.3. Scope

The following scope of works was agreed and undertaken:

- Review of a MRA CON29 report obtained for the Site;
- Review of a previous CMRA for the adjacent site;
- Review of recent deep boreholes logs for the adjacent site;
- Review of detailed published geological mapping and data for the Site; and,
- Undertake a qualitative risk assessment in accordance with MRA guidance to provide clear and accessible recommendations for potential further works (if required).

This report presents records of desk study research, which are subsequently used to develop a conceptual site model and inform a preliminary coal mining risk assessment.

1.4. Limitations

This report is written strictly for the benefit of the Client and bound by the conditions presented in Appendix A.

2. Desk Study

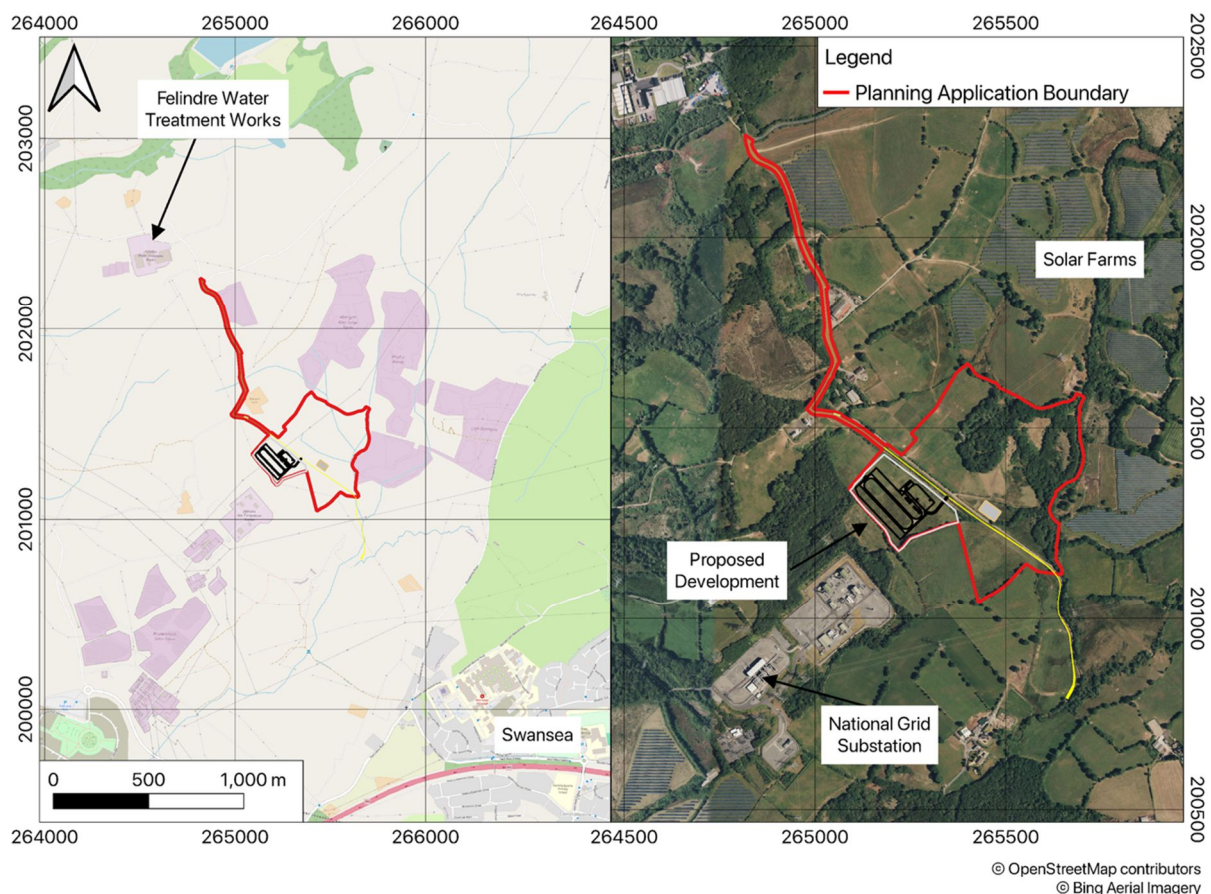
2.1. Site location and description

A Site location plan is presented in Figure 2-1 and the Site address is given as follows:

Swansea North BESS,
Felindre,
Swansea,
SA5 7NN

The Site is approximately 22.1Ha in size and comprises two separate land parcels, this report focusses on the Proposed Development Area only as shown in Figure 2-1.

Figure 2-1 Site location



2.2. Proposed development

The proposed development is understood to be a Battery Energy Storage System (BESS), including associated infrastructure and vehicular access. An initial layout provided to Aqua Terra is presented in Appendix B.

2.3. Geology

A review of British Geological Survey (BGS) 1:50,000 scale mapping and 1:10,000 scale mapping (Sheet No. SN60SW and SN60SE) indicates the geological sequence underlying the Site is as follows:

- Superficial geology: Till – Devensian (Diamicton) outcrops development area with a small section of peat shown across a small section at the east of the development area.
- Solid geology: Grovesend Formation - Mudstone, siltstone and sandstone.

Nearby historical borehole logs within the BGS database confirm this succession and those closest are summarised in Table 2-1.

Table 2-1 Strata encountered in nearby historical borehole logs

Borehole ref.	Strata	Maximum depth (m bgl)
SN60SE24 (0.15km NW)	Brown sandy clayey TOPSOIL	0.3
	Firm yellow brown, sandy, very gravelly CLAY with occasional cobbles	6.4
	Grey brown very clayey SAND	6.5
	Grey brown very clayey pebbly fine SAND	7.4
	Grey brown very clayey fine SAND	8.4
	Grey brown clayey gravelly SAND	9.7
	Grey brown clayey SAND	10.7
	Grey brown very clayey fine SAND. Trace of coal	11.7
	Grey brown very clayey fine SAND grading into Grey brown sandy CLAY	14
	Grey brown clayey fine SAND	15
	Grey brown sandy CLAY	
	Firm yellow CLAY becoming stiff grey gravelly CLAY (possible boulder CLAY)	

2.4. Hydrogeology

The Grovesend Formation is classified by National Resources Wales (NRW) as a Secondary A Aquifer. These are defined as comprising permeable layers that can support local water supplies and may form an important source of base flow to rivers. Groundwater vulnerability within the aquifer is classed as high. The Glacial Till (Diamicton) is classified as a Secondary (Undifferentiated) Aquifer. These are defined as aquifers where it is not possible to apply either a Secondary A or B definition because of the variable characteristics of the rock type. These have only a minor value. The peat deposits are classified by NRW as unproductive strata.

2.5. Hydrology

2.5.1. Surface water

The development area is drained by the Afon Llan, a WFD waterbody, which borders the south of the wider Site. A network of streams extend across the southern land parcel running in a broadly south easterly direction).

2.5.2. Flooding

Flood risk to the Site in general is mapped by Natural Resources Wales (NRW) low, with a very small area in the south of the Site within Flood Zones 2 and 3 of the fluvial flood risk extents, and a number of areas (predominantly in the south of the Site) within Zones 2 and 3 of the surface water and small watercourses flood extent. Groundwater flooding

Mapping from Ambiantal Risk analytics, indicates the risk of groundwater flooding across the Development Area to be low and in the area of BGS mapped peat, the risk is negligible.

3. Published data review

3.1. Data sources

The following data sources have been used to inform the assessment detailed herein:

- British Geological Survey (BGS) Mine Remediation Authority interactive viewer;
- BGS onshore Geoindex;
- Coal Authority Mining Report Reference 51003495632001 dated 2nd May 2025;
- BGS historic borehole logs obtained from the BGS Borehole Database: SN60SE24 Mining Remediation Authority (MRA) interactive viewer

The online MRA database identifies the Development Area to lie within a 'Coal Mining Reporting Area' however it is not located within a 'Development Risk Area'. A coal seam is shown to outcrop (Seam code SW117I) across the centre of the Development Area, in a north east, south west trend. The closest marked seam level contours from the MRA indicate seam SW114I to be approximately 43m aOD, approximately 51m below ground level (bgl).

3.2. Development Area history

The Development Area occupies an area of 4.6ha in the west of the southern land parcel. The earliest OS mapping shows the Development Area to comprise agricultural fields lined to the south and west by trees, neighboured to the north, east, and south by agricultural fields, and to the southeast and west by woodland. 1961 mapping shows the land use to comprise rough pasture. 1975 mapping shows an electricity transmission line crossing the Development Area from northeast to southwest, joining a pylon 125m southwest. Recent aerial imagery shows a track running along the northeastern boundary of the Development Area. The Development Area remains undeveloped on recent mapping and aerial imagery, neighboured to the north by agricultural fields and Abergelli Farm, to the east, south, and west by agricultural fields and woodland, and to the southwest by Felindre Gas Compressor Station.

3.3. Other historical sources

Anecdotal information from the Northern Mine Research Society provides further detail on Abergelli Colliery located to the north of the development area. The colliery is described to have opened in 1930 and targeted the Graigola Four-Foot seam with facilities including a boiler house, fan house, pump room, Cornish boiler, a winder with 25-inch cylinders, a drying room, cycle shelter, powder and oil stores, an ambulance room, fitting and electrical shops, a smithy, and an electrical substation¹.

3.4. MRA Consultants Report

A Consultants Coal Mining Report was obtained from the Mine Remediation Authority for the Site and is provided in **Appendix B**. The findings are summarised below and discussed further in the context of other available information in Section 3.

3.4.1. Underground mine workings

¹ Ray Lawrence (n.d.). *Abergelli Colliery*. Northern Mine Research Society [Online]. Available at: <https://nmrs.org.uk/mines-map/coal-mining-in-the-british-isles/swales/gorseinon/abergelli-colliery/> (Accessed: 02/05/2025).

The Site is within the surface area that could be affected by recorded underground coal mine workings in at least five seams, at depths ranging from approximately 38m to 303m below ground level. The most recent recorded working beneath or in the vicinity of the Site was in 1947.

Figure 3-1 Seams Worked below Development Area

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	MYNYDDISL WYN LOWER LEAF	Coal	4A1P	38	Beneath Property	2.8	South-West	100	1938
unnamed	MYNYDDISL WYN LOWER LEAF	Coal	4A1Q	48	Beneath Property	4.2	South	100	1939
unnamed	SWANSEA NO.3	Coal	4A1I	278	Beneath Property	2.1	South-East	190	1939
unnamed	SWANSEA NO.3	Coal	4A1A	303	South-East	6.9	West	190	1947
unnamed	SWANSEA NO.3	Coal	4A1B	303	South	5.1	West	190	1947

The Site is not located within an area where a licence has been applied for, granted, or is under consideration for future underground coal mining. Coal reserves are recorded beneath the Site.

No notices have been given stating that the Site is at risk of subsidence.

3.4.2. Mine entries

No mine entries are recorded within the development area or within 100 metres of its boundary.

3.4.3. Unrecorded Shallow Workings

There are no probable unrecorded shallow workings noted to be present below the development area.

3.4.4. Spine Roads

There are no spine roadways noted below the development area.

3.4.5. Outcrops

There is a single coal seam outcrop shown running across the development area, the 'Pennyscallen' seam is shown to outcrop bearing 211.

3.4.6. Coal mining geology

The MRA is not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining. However, a geological fault is shown in the MRA report to be crossing the centre of the Development Area.

3.4.7. Opencast coal mining

The development area is not located in an area of historic or current opencast mining and the Site is not located in an area where a licence to extract coal in the future by opencast mining has been requested or granted.

The development area is not in an area that could be affected by present opencast mining.

3.4.8. Coal mining subsidence

A subsidence damage claim was submitted in November 1996 for a nearby property (Abergelli Farm, Felindre, Swansea, SA5 7NN); this claim was rejected. There are no further details supplied about this claim.

There is no current Stop Notice delaying remedial works or repairs at the Site, and there are no recorded requests for preventive works under Section 33 of the Coal Mining Subsidence Act 1991.

3.4.9. Mine gas

The MRA has no record of mine gas emission requiring action within 500m of the development area boundary.

3.5. Hazards relating to coal mining

The Site has not been subject to remedial works, by or on behalf of the MRA, under its Emergency Surface Hazard Call Out procedures

3.5.1. 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.

3.5.2. Working facilities order

The Site 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.

3.5.3. Payments to owners of former copyhold land

The Site is not within an area where a relevant notice has been published under the Coal Industry Act 1975/ Coal Industry Act 1994.

4. Assessment of data obtained

4.1. Evidence of coal mining activities

The MRA Consultants Coal Mining report states that the Site lies within a surface area which could be affected by underground workings in 5No. seams of coal, ranging from 38 to 303m bgl. The shallow Mynyddislwyn Lower Leaf is anticipated to have been mined at between 38 and 48m bgl under the development area. The anticipated extraction thickness is 1m. With the Mine Remediation Authorities current working guidelines indicating the potential zone of influence being 0.7 times the working thickness, i.e. 7m. There is still approximately 31m of overburden between the potential zone of influence and the ground surface.

4.2. Recorded mine entries

No recorded mine entries have been identified at the Site by the MRA. It is reasonable to assume that the workings beneath the Site were accessed via roadways from existing shafts at Abergelli Colliery, north of the development area.

4.3. Shallow mine workings

According to the MRA, shallow coal workings, comprise workings within the upper 30m of the subsurface. Based on the consultants coal mining report, shallow coal workings are not anticipated below the Site. The Site walkover did not indicate any signs of subsidence at the development area, nor were any shallow mine workings such as suspected bell pits observed in the area that the Pennyscallen seam was anticipated to subcrop. The presence of substantial superficial deposits as evidenced in the nearby BGS borehole logs would further indicate that shallow mine workings accessed from the surface of the development area would be unlikely.

4.4. Stability

Although deep coal mining has occurred beneath the Site, this ceased over 75 years ago. The MRA notes that any movement in the ground associated with these workings should have stopped by now.

There is no evidence to suggest there is any recent mining induced instability at the Site with the walkover indicating no signs of subsidence.

5. Risk assessment

Based upon the previous sections, Table 5-1 summaries the potential hazards and risks associated with coal mining in the context of the proposed development on Site.

Table 5-1 Risk assessment

Coal mining hazard	Present on/ beneath Site?	Likelihood of occurrence	Consequence of surface instability	Risk Assessment
Shallow mine workings (including unrecorded workings and features such as bell pits)	No	Unlikely	Medium	Low: Presence of significant superficial deposits would deter accessing subcropping coal seam.
Underground coal mining (recorded)	Yes	High likelihood	Minor	Low: Whilst there are known workings below Site, associated with the Mynyddislwyn Lower Leaf, these are at depths of at least (conjectured) >38m bgl. Based on the likely seam extraction thickness (1m), should workings have collapsed they are considered to have propagated a maximum of 7m into the overlying bedrock.
Mine entries (shafts and adits)	No	Unlikely	Medium	Low: No recorded mine entries on or near Site.
Coal mining and geology (fissures)	No	Unlikely	Mild	Very low: A single recorded fault is crossing the centre of the development area. No signs of instability have been noted
Record of past mine gas emissions or potential	No	Low likelihood	Mild	Low: There is no evidence of past or potential mine gas emissions reported by the MRA. There is also a significant thickness of superficial deposits, reducing the likelihood of preferential pathways (marked fault and potential unmarked break lines, fissures etc) and the absence of mine entries.
Recorded coal mining surface hazard	No	Low likelihood	Mild	Low – See section 3.4.8 for details, but a claim in the local area has been rejected
Surface mining (opencast workings)	No	Unlikely	Mild	Very low – See section 3.4.7

6. Conclusions

The available published information on the geology and coal mining legacy beneath the Site has been compiled and assessed, and a desk based CMRA undertaken. This represents a robust preliminary assessment but is necessarily dependent upon the accuracy of published data, and on the interpolation of ground conditions.

This risk assessment has concluded that there is a **LOW** risk of collapse of underground coal workings causing ground instability on the Site. The above assessment and conclusion is based upon historical Site data and readily available published information on the geology beneath the Site. Published BGS and MRA data indicate known underground workings beneath Site are likely to be present with a minimum conjectured depth of 38m bgl.

Based on published data, the Mynyddislwyn Lower Leaf workings have a calculated thickness estimated to be approximately 1m, assuming the full thickness of coal is worked below the Site this would give a vertical collapse propagation of ~7m using MRA guidance, leaving approximately 30m of overburden between the collapse and surface level.

A significant thickness of superficial deposits would deter any artisanal superficial mining, such as bell pits and also serves as a barrier to potential mine gas pathways.

Therefore, it is concluded that whilst coal workings are known to be present below the Site, these are at sufficient depth such as to not cause potential ground instability at the surface. At this stage, no further works are recommended. However, this conclusion should be re-visited should deep piled foundations be proposed as part of a suitable geotechnical investigation.

Appendix A Report conditions



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Report Conditions

This report has been prepared by Aqua Terra Consulting Ltd. (Aqua Terra) in its professional capacity as soil and groundwater specialists, with reasonable skill, care and diligence within the agreed scope and terms of contract and taking account of the manpower and resources devoted to it by agreement with its client and is provided by Aqua Terra solely for the internal use of its client.

The advice and opinions in this report should be read and relied on only in the context of the report, taking account of the terms of reference agreed with the client. The findings are based on the information made available to Aqua Terra at the date of the report (and will have been assumed to be correct) and on current UK standards, codes, technology, and practices as at that time. They do not purport to include any manner of legal advice or opinion. New information or changes in conditions and regulatory requirements may occur in future, which will change the conclusions presented here.

Where necessary and appropriate, the report represents and relies on published information from third party, publicly and commercially available sources which is used in good faith of its accuracy and efficacy. Aqua Terra cannot accept responsibility for the work of others.

Site investigation results necessarily rely on tests and observations within exploratory holes only. The inherent variation in ground conditions mean that the results may not be representative of ground conditions between exploratory holes. Aqua Terra take no responsibility for variation in ground conditions between exploratory positions.

This report is confidential to the client. The client may submit the report to regulatory bodies, where appropriate. Should the client wish to release this report to any other third party for that party's reliance, Aqua Terra may, by prior written agreement, agree to such release, if it is acknowledged that Aqua Terra accepts no responsibility of any nature to any third party to whom this report or any part thereof is made known. Aqua Terra accepts no responsibility for any loss or damage incurred as a result, and the third party does not acquire any rights whatsoever, contractual, or otherwise, against Aqua Terra except as expressly agreed with Aqua Terra in writing. Aqua Terra reserves the right to withhold and/ or negotiate the transference of reliance on this report, subject to legal and commercial review.



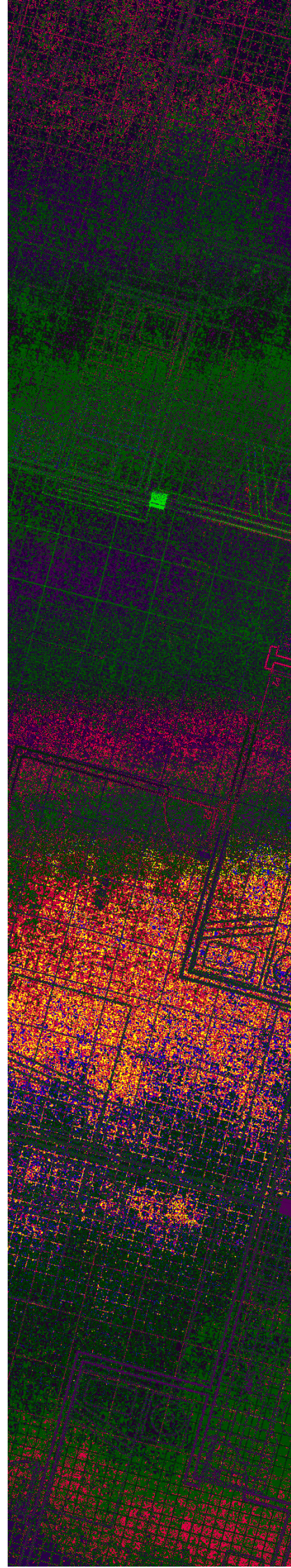
The Coal
Authority

Consultants Coal Mining Report

Swansea Bess
Swansea
SA5 7NN

Date of enquiry:	2 May 2025
Date enquiry received:	2 May 2025
Issue date:	2 May 2025

Our reference:	51003495632001
Your reference:	Swansea Bess V2



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

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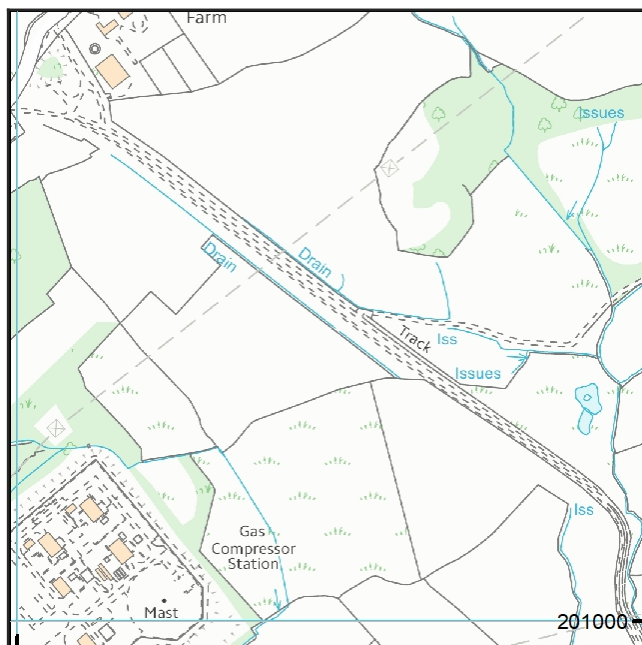
www.groundstability.com

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 /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
unnamed	MYNYDDISL WYN LOWER LEAF	Coal	4A1P	38	Beneath Property	2.8	South-West	100	1938
unnamed	MYNYDDISL WYN LOWER LEAF	Coal	4A1Q	48	Beneath Property	4.2	South	100	1939
unnamed	SWANSEA NO.3	Coal	4A1I	278	Beneath Property	2.1	South-East	190	1939
unnamed	SWANSEA NO.3	Coal	4A1A	303	South-East	6.9	West	190	1947
unnamed	SWANSEA NO.3	Coal	4A1B	303	South	5.1	West	190	1947

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:

SWR666	SWR2651	SWR2710
SW514	R10493	SWA1795

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
PENNYSCALLEN	Coal	No	Within	N/A	211

Geological faults, fissures and breaklines

Please refer to the 'Summary of findings' map (on separate sheet) for details of any geological faults, fissures or breaklines either within or intersecting the enquiry boundary.

Fault under or close to the property 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

A damage notice or claim for alleged subsidence damage was made in November 1996 for ABERGELLI FARM, FELINDRE, SWANSEA, SA5 7NN. However, the claim was rejected.

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.

If further subsidence damage claims information is required, please visit www.groundstability.com.

See Section 4 for further information.

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.

Coal mining subsidence

The site is within an area of previous interest. It is close to where the Coal Authority or licensed mine operator has investigated and where necessary remediated issues relating to coal mining subsidence.

The site requires further investigation and may influence your risk assessment. We recommend that you order the appropriate **Coal Authority Subsidence Claims Report**, which will include more information about the hazard.

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 C CIRIA 552 Risk Matrix



Risk classification methodology

The method of risk evaluation adopted in this document is consistent with CIRIA C552 (2001). Hence, risk is considered to be a function of both the probability (likelihood) of contamination occurring at the study site and also the potential severity (consequence) of the environmental impacts associated with this contamination.

The classification system used to define contaminant probability, consequence and risk is described in the following tables.

Table A: Classification of probability

Classification	Definition
High Likelihood	There is a contaminant linkage and an event that appears either very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution.
Likely	There is a contaminant linkage and all the elements are present and in the right place, which means that it is probably that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term, and likely over the long term.
Low Likelihood	There is a contaminant linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term.
Unlikely	There is contaminant linkage but circumstances are such that it is improbable that an event would occur even in the long term.

Table B: Classification of consequence

Classification	Receptor	Definition	Examples
Severe	Humans	Short-term (acute) risk to human health likely to result in "significant harm" as defined in the CTL Statutory Guidance	High concentrations of cyanide on the surface of an informal recreation area
	Controlled waters	Short-term risk of pollution (note: Water Resources Act contains no scope for considering significance of pollution) of sensitive water resource	Major spillage of contaminants from site into controlled water
	Property	Catastrophic damage to buildings/property	Explosion, causing building collapse (can also equate to an acute human health risk if buildings are occupied)
	Ecology	A short-term risk to a particular ecosystem, or organism forming part of such eco-system	Potentially long term derogation of a designated site or protected species
Medium	Humans	Chronic damage to human health ("significant harm" as defined in the CTL Statutory Guidance)	Concentrations of a contaminant from a residential site exceed the site-specific assessment criteria
	Controlled waters	Pollution of sensitive water resources (note: Water Resources Act contains no scope for considering significance of pollution)	Leaching of contaminants from a site to a principal or secondary aquifer
	Property	Significant damage to crops, buildings, structures and services	Damage to building rendering it unsafe to occupy (e.g. foundation damage resulting in instability).

Classification	Receptor	Definition	Examples
	Ecology	A significant change in a particular ecosystem	Death of a species within a designated nature reserve
Mild	Humans	Contamination present although unlikely to constitute a significant chronic health risk	Concentrations of a contaminant from a public access site moderately exceed the generic assessment criteria
	Controlled waters	Pollution of non-water resources	Pollution of non-classified groundwater
	Property	Damage to sensitive buildings/structures/services	Aggressive ground conditions leading to potential for long term degradation of buried concrete
	Ecology	Damage to the environment	Localised damage to aquatic habitat causing temporary relocation of certain species
Minor	Humans	Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc.)	The presence of contaminants at such concentrations that protective equipment is required during site works.
	Controlled waters	Potential minor release of contamination to local water features	Short term or low volume release of potentially polluting material to a secondary surface water course of low existing quality
	Property	Easily reparable effects of damage to buildings, structures and services. Harm which may result in a financial loss, or expenditure to resolve.	The loss of plants in a landscaping scheme. Discolouration of concrete
	Ecology	Short term, localised damage may occur; consequences are spatially and temporally limited	Short term or localised disruption to in situ flora or fauna; no lasting effects

Table C: Risk classification (comparison of consequence and probability)

Probability (likelihood)		Consequence (severity)			
		Severe	Medium	Mild	Minor
	High likelihood	Very high risk	High risk	Moderate risk	Low risk
	Likely	High risk	Moderate risk	Moderate/low risk	Low risk
	Low likelihood	Moderate risk	Moderate/low risk	Low risk	Very low risk
	Unlikely	Moderate/low risk	Low risk	Very low risk	Very low risk