

Coal Mining Risk Assessment (CMRA) by GEOL Consultants LTD

Gardwood Street,
South Shields,
South Tyneside,
NE33 5AG

Site Geology

The southern portion of the site is shown to comprise an outcrop of the Grindstone Post Member, a named sandstone unit within the Pennine Middle Coal Measures Formation. Mudstone is recorded at rockhead level below most of the site and these deposits include coal seams with the conjectured subcrop position of the Usworth coal seam shown within the site boundary, dipping to the southwest.

Whilst no artificial deposits are recorded over the site area in accordance with available BGS mapping, areas of made ground / fill deposits are present adjacent to the site's western boundary and given the historical development of the site, made ground deposits are likely to be present over most parts of the site. An archive BGS borehole record shows up to 5.20m of made ground comprising brick rubble and ash, sunk at the location of an historical church on site; this is likely due to a basement / crypt below the building.

Ground stability hazards on the site are listed in the Landmark Envirocheck Datasheet as no hazard, very low, low and moderate. The moderate record is associated with compressible ground stability hazards.

Coal Mining Risk Assessment (CMRA)

The site is located within a Coalfield Consultation Area. The coalfield is divided into two areas, referred to as development high risk areas (DHRA's), and development low risk areas (DLRA's). The DHRA forms 15% of the coalfield area, where coal mining risks are present at shallow depth which are likely to affect new development. The DLRA forms 85% of the coalfield where past coal mining activity has taken place at enough depth that it poses low risk to new development. The Coal Authority places the site within a DHRA, due to the subcrop position of the Usworth coal seam which is shown to subcrop within the boundary of the site.

In terms of coal mining risk assessments, the basic principle which underpins the process is that within the defined Coal Authority development high risk areas there are existing recorded risks to the ground stability from coal mining legacy hazards and that new development proposals need to assess and mitigate these risks in the interests of public safety.

Therefore, a Consultants Coal Mining Report, reference; 51003383655001 was procured from the Coal Authority, the findings of which can be seen attached in Appendix III. The relevant coal mining related information contained within this report has been summarised in the Table on the following page.

Data type	Details
Past underground mining	Recorded workings have been identified 3 no. seams with the shallowest being the High Main coal seam at a depth of 200m bgl, with an extraction thickness of 1.95m and last worked in 1825
Probable unrecorded shallow workings	Yes
Spine roadways at shallow depth	No spine roadways recorded at shallow depth
Mine entries	None recorded within 100 metres of the enquiry boundary
Geological faults, fissures and breaklines	No faults, fissures or breaklines recorded
Mine gas	None recorded within 500m from the site boundary
Opencast mines	An unlicensed opencast site was located c.220m west of the site
Coal mining licensing	None recorded within 200m from the site boundary
Coal mining subsidence	The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50m of the site boundary, since 31st October 1994

For illustration purposes, an extract of BGS Sheet NZ36NE, 1:10,560 scale can be seen in Figure 1 below.



Coal Mining Risk Assessment (CMRA) - Continued

Based on the expected site geology, there are 5 no. coal seams above the shallowest recorded workings, with the Usworth coal seam being the shallowest and subcropping beneath the site with a seam thickness of 0.55m. Based on the Generalised Vertical Section, the second shallowest seam beneath the site (Top Ryhope Five-Quarter) would be anticipated to be c.122m below the Usworth coal. An archive BGS borehole records a 0.50m thick coal seam at c.15.50m below ground level that remained intact. Data obtained directly from the Coal Authority, along with BGS mapping and historical borehole logs, indicate that if there are unrecorded workings present within the Usworth coal seam, which subcrops beneath the site at an estimated depth of between 15m and 20m below site levels, the 10t criterion would not be met for the site. The overall risk is considered to be MEDIUM, therefore, to fully assess the extent of the risk posed by the Usworth coal seam beneath the site, confirmatory deep rotary boreholes will be required.

In accordance with the decision support tool for mine gas risk assessment (MGRA) contained within the CL:AIRE Publication 'Good practice for risk assessment for coal mine gas emissions', dated 2021, the following risk assessment has been determined.

- The site is located within a Coal Authority defined Coal Mining Reporting Area and has been determined to lie in a DHRA. The Usworth coal seam subcrops beneath the site.
- No mine entries are recorded within 100m of the site.
- The Coal Authority report obtained for this site has recorded coal workings present in 3 no. coal seams between depths of 200m and 323m.
- The site is not underlain by geological faulting which could represent a potential pathway connecting the surface to deeper workings if present.
- Reference to the Coal Authority Interactive viewer indicates the site is in an area of probable shallow workings.

Based on the above information the site has been assessed to lie within a low risk zone, and therefore mitigation is not required. As such the completion of insitu ground gas monitoring should be undertaken in accordance with CIRIA C665.

Mining Activity & Geology

Post 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
Manor Wallsend	High Main	Coal	5177	200	Beneath Property	3.4	South	195	1825
Weston	Maudlin	Coal	5129	279	North	3.1	South-West	158	1947
Weston	Maudlin	Coal	5122	284	Beneath Property	4.2	South-West	160	1924
Unnamed	Maudlin	Coal	5128	287	North-West	8.3	South-West	150	1947
Weston	Hutton	Coal	3QAB	316	North	3.9	South-West	175	1947
Weston	Hutton	Coal	3Q9R	323	Beneath Property	5.4	South-West	173	1925

Probable unrecorded shallow workings: Yes.

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.

D724, D190, 15028, 0, D841, D455, 16287, D28

Outcrops

Seam Name	Mineral	Seam Workable	Distance To Outcrop (M)	Direction To Outcrop	Bearing To Outcrop
Usworth	Coal	No	Within	N/A	306

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.

Investigate 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.

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.

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.

Data Definitions

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.

Summary of Findings



Key

Approximate position of the enquiry boundary shown



Outcrop (Conjectured)

