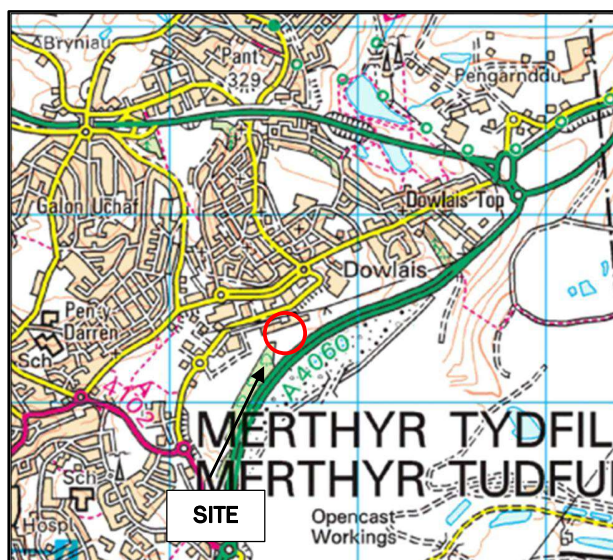


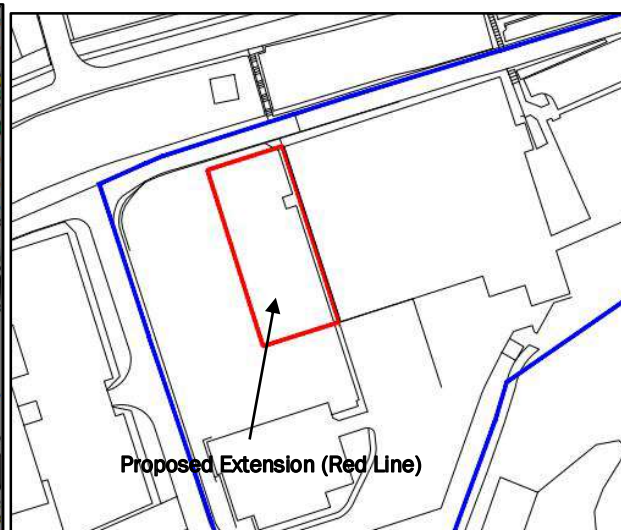
Phase One Coal Mining Risk Assessment

Project:	Stephen & George The Printers Preliminary Coal Mining Risk Assessment	Report No.:	8040.3644
Site Address:	Land off existing Stephen and George the Printers, Goat Mill Road, CF48 3TD	National Grid Reference:	(ST) 306449 207381
Developer/Client:	Edward Davies Construction	Planning ref.:	N/A
Nature of Development:	Extension of existing factory building – See Insert 2	Existing Site Use:	Current vacant ground adjacent to existing Stephen and George building.

Insert 1: Ordnance Survey Map (not to scale)



Insert 2: Proposed Site Layout (not to scale)



Scope of Assessment:

Earth Science Partnership Ltd. (ESP) have been commissioned by the Client to prepare a preliminary Coal Mining Risk Assessment (CMRA) for the proposed development site. The information presented here will provide the Local Planning Authority with details of historical coal mining and an assessment of its impact on land stability. The purpose of this CMRA is to:

- Present a desk-based review of available information (see 'Sources of Information') on coal mining issues relevant to the site,
- Use the above information to identify and assess the risks posed by historical coal mining (including cumulative impact issues) on the proposed development,
- Set out appropriate mitigation measures to address the historical mining features affecting the site; including any necessary remedial works and/or demonstrate how coal mining issues have influenced the proposed development, and
- Demonstrate to the Local Planning Authority that the application site is, or can be made, safe and stable to meet the requirements of national planning policy with regard to development on unstable land.

Sources of Information:

The sources of information reviewed in compiling this CMRA are as follows:

- Historical Ordnance Survey maps.
- An up-to-date Consultants Coal Mining Report (obtained from The Coal Authority).
- The Coal Authority Interactive Map Viewer.
- Published geological map at 1:10,000 scale (Reference Sheet SO 00 NE) and 1:50,000 scale (Sheet 231).
- The British Geological Survey website (namely the GeoIndex Database).

Geological Setting:

The published geological map for the area of the site (1:10,560 scale, SO 00 NE) indicates the site to be underlain by Made Ground, associated with a former iron works, followed by Glacial Diamicton overlying bedrock of the Lower Coal Measures. The Glacial Till superficial strata would be expected to be fine-grained in nature with some gravel, and possibly cobbles and boulders. The Coal Measures bedrock comprises an interbedded succession of sandstones, siltstones and mudstones, with coal seams and associated seat earths.

The published 1:50,000 scale geological map for the area of the site (Sheet 231, available on the website of the British Geological Survey) and reference to up-to-date mapping available on the BGS website indicate a similar succession.

The bedrock underlying the site is situated near the base of the Lower Coal Measures succession, with the conjectural top of the 'Farewell Rock', a thick succession of sandstones indicated approximately 350m to the north. The bedrock is indicated to dip approximately between

Phase One Coal Mining Risk Assessment

8° and 20° to the south east (downhill from the site). The Dowlais fault, trending northwest-southeast, is indicated approximately 150m to the south west.

The geological map indicates the conjectural outcrop of the Gellideg coal seam to strike north east to south west some 150m to the east of the site. Based on the above and the known geological succession for the Lower Coal Measures we do not anticipate that there are any significant coal seams beneath the site, however, the Garw seam is likely to be present approximately 50m to the north west and worked south east from the crop and as such the potential for shallow coal cannot be discounted. Multiple and potentially significant Ironstone workings are indicated to be present below the site.

Previous investigation works undertaken by ESP in other areas of the wider site, identified a coal seam at variable depth between 6.7m and 8.3m below ground level and a number of ironstone seams at (general) depths of around 10-11m, 16m, 20m & 28m.

Evidence of Mining from Historical Maps:

The historical Ordnance Survey maps identify significant evidence of mining and industry within the area including a number of pits, ironstone levels, earthworks, iron and brick works, infrastructure and reservoirs. The majority of these features are present on the earliest maps and no longer shown at the after 1900s, suggesting they may pre-date the available mapping/records.

Summary of The Coal Authority data (Interactive Map Viewer and Consultants Coal Mining Report):

Site within Development High Risk Area?	Y	Evidence of Recorded Past Mine Entries	Y
Evidence of Recorded Past Workings?	Y	Recorded Past Instability	N
Suspicion of Potential Past Workings?	Y	Recorded Mine Gas Emissions	N
Recorded Past Opencast	Y	Recorded fissures and break lines	N

Identification and Assessment of Site-Specific Coal/Ironstone Mining Risks (ESP assessment)

Underground Coal/Ironstone Mining (recorded at shallow depth)	Y	The Coal Authority Consultants Report identifies that 5no. ironstone seams are recorded beneath the site at depths of 0m (immediately below superficial deposits) and 25m. The Garw Seam (coal) is recorded to outcrop ~50m to the north west and dip beneath the site.
Underground Coal/Ironstone Mining (probable at shallow depth)	N	The Coal Authority do not identify any evidence of 'probable' unrecorded shallow workings. However, see below for further discussion.
Mine Entries (shafts and adits)	Y	The Coal Authority identifies the presence of 2no. mine shafts and a further 2no. mine adits, immediately to the west of the development boundary and approximately 50m from the proposed extension footprint.
Coal Mining Geology (faults and fissures)	N	The Coal Authority report recorded no faults, fissures or break lines on site.
Records of Past Mine Gas Emissions or Potential	N	None recorded within 500m.
Recorded Coal Mining Surface Hazard	N	None recorded.
Surface Mining (Opencast workings)	N	The south boundary of the site is noted to have formerly been within an opencast boundary, identified by the Coal Authority as the "Great White Tip".

Further discussion on above:

The site is indicated to be underlain by a complex series of ironstone seams, at shallow variable depths and the Garw Coal seam (which is recorded to outcrop to the north west). In addition to this, a number of mine entries (shafts and adits) are recorded immediately to the west, with the south boundary, formerly encroached upon by an opencast pit/mine.

The Garw seam and the shallow Ironstones are well known to have been worked in the local area and the site is located in a complex area where these seams were extracted by shaft, adit and opencast, with clear records available for this extraction.

ESP Previous Investigation:

Previous investigation works have been undertaken by ESP in other areas of the wider site and have identified a coal seam at variable depth between ~6m and ~8m below ground level and a number of ironstone seams at (general) depths of around 10-11m, 16m, 20m & 28m.

In addition to this, ESP have also supervised a number of drill and grout works for previous extensions/developments at the site prior to consideration of this current phase. .

Phase One Coal Mining Risk Assessment

Mitigation Strategy Proposed:

Intrusive Investigation Recommended:

The site is located within a 'Development High Risk Area', as defined by The Coal Authority, with a strong likelihood that historically worked coal seams will be present within influencing distance of the surface.

Given the above, and the fact that the wider surrounding area appears to have an extensive history of coal mining, evidenced by historical maps, Coal Authority information and professional knowledge, it will be necessary to undertake a preliminary mining investigation is undertaken to determine the depths to any shallow coal and/or ironstone seams underlying the site and their precise thickness via rotary borehole drilling. The investigation will also look for evidence that the proposed development area benefits from the grouting of other adjacent areas.

These works are already programmed to be undertaken early in 2022 once a permit to enter workings is returned as any intrusive investigation which intercepts interests of The Coal Authority (coal seams, workings or mine entries) requires a permit to be obtained from The Coal Authority, prior to commencement.

A series of trial pits/trial trenching of the near surface soils has also already been undertaken (December 2021) to inform the shallow ground model and the potential for anomalous ground conditions or evidence for historic mine workings in the upper 3-4m of the site.

As the Coal Authority also note that abandonment plans are available, these should be obtained as part of the intrusive assessment.

Upon completion ESP will provide a revised Coal Mining Risk Assessment that will develop the ground model and understanding of risk posed by shallow Coal and Ironstone seams and the potential impact of the shafts/adits identified in close proximity to the site.

Conclusions:

The site is located within an area potentially at risk of subsidence due to the presence of shallow, historic mine workings and a combined rotary borehole and trial pit/trench investigation is underway to clarify the potential risk(s) posed.

Report Prepared by:	Reported Checked by:	Reported Approved by:	Date:
Danilo Bettosi BSc MSc CGeol CSci FGS RoGEP Professional	Danilo Bettosi BSc MSc CGeol CSci FGS RoGEP Professional	Giles Sommerwill BSc MSc CGeol FGS RoGEP Specialist SiLC	December 2021

Enclosure A1 – Consultants Coal Mining Report (The Coal Authority)

Enclosure A2 – Consultants Coal Mining Report Plan (The Coal Authority)

General Notes



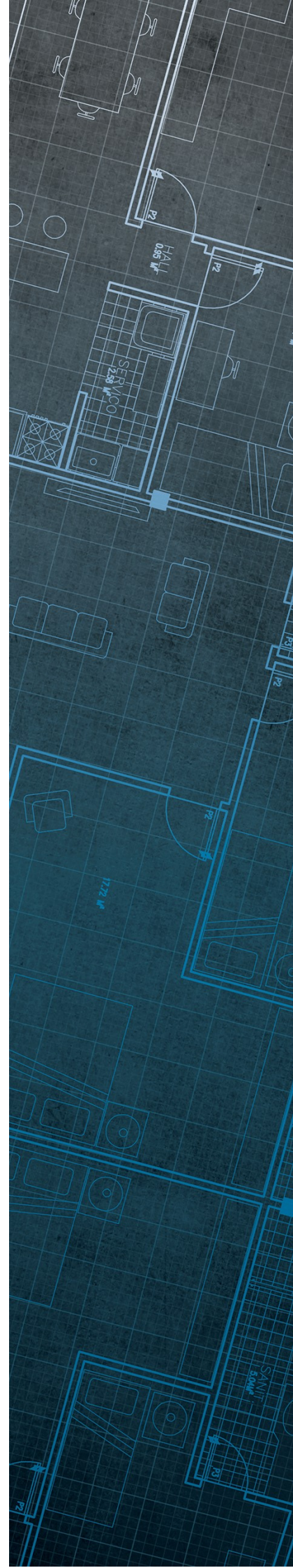
The Coal
Authority

Consultants Coal Mining Report

Stephens & George Ltd
Goat Mill Road
Dowlais
Merthyr Tydfil
CF48 3TD

Date of enquiry:	9 December 2021
Date enquiry received:	9 December 2021
Issue date:	9 December 2021

Our reference:	51002774243001
Your reference:	8040_PO-10270 MRS



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

Earth Science Partnership

Enquiry address

Stephens & George Ltd
Goat Mill Road
Dowlais
Merthyr Tydfil
CF48 3TD

How to contact us

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

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

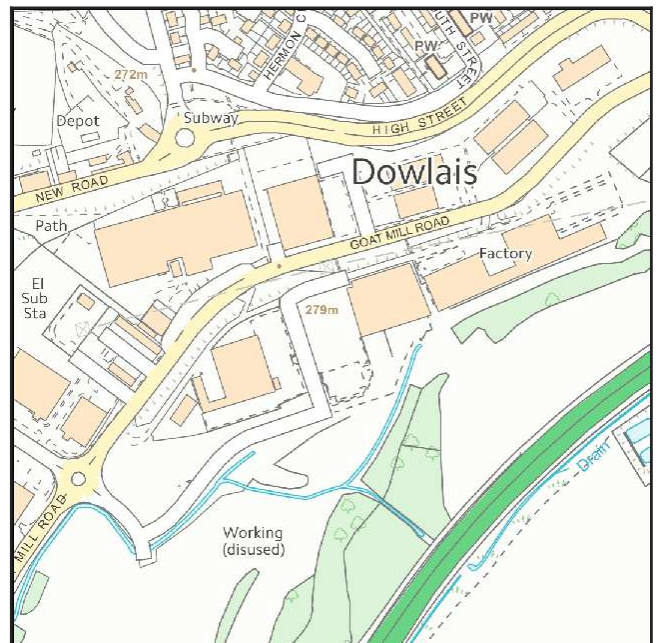
www.groundstability.com

 @coalauthority

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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
unnamed	BOTTOM VEIN IRONSTONE	Ironstone	4E5I	0	Beneath Property	4.8	South-East	100	1878
unnamed	BOTTOM VEIN IRONSTONE	Ironstone	4E5H	0	Beneath Property	4.8	South-East	110	1878
unnamed	GARW NO.1 IRONSTONE	Ironstone	4E5F	0	Beneath Property	4.8	South-East	333	1878
unnamed	GARW RIDER IRONSTONE	Ironstone	4E5G	14	Beneath Property	4.8	South-East	110	1878
unnamed	ROSSER IRONSTONE	Ironstone	4E5J	25	Beneath Property	4.8	South-East	127	1878

Probable unrecorded shallow workings

None.

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	306207-022	306387 207339		Coal	
Adit	306207-077	306329 207301		Coal	
Shaft	306207-102	306359 207340		Coal	
Adit	306207-103	306367 207343		Coal	

Abandoned mine plan catalogue numbers

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

SWR2272	SWR2523	SWR2510
17930		

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
GARW VEIN	Coal	Yes	46.8	North-West	217

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

Distance to site investigation (m)	Direction
Within	N/A

See Section 4 for further information.

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.