

Environmental
Geotechnical
Specialists

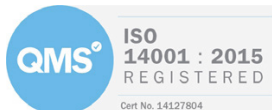


COAL MINING RISK ASSESSMENT REPORT

job number	C3843/23/E/5816	date	04.10.2023
site address	12 Tivy Dale Drive, Cawthorne, Barnsley, S75 4EN.		
written by	S. Alexander	checked by	R. Palmer
issued by	S. Alexander		



Please consider the environment before printing this report.



<ENVIRONMENTAL> <GEOTECHNICAL>



Environmental
Geotechnical
Specialists

Rogers Geotechnical Services Ltd
Offices 1 & 2 Barncliffe Business Park, Near Bank, Shelley, Huddersfield, HD8 8LU
☎ 01484 604354 Company No. 5130864

Contents

		Page
1.	Introduction	1
2.	Geological Desk Study	1
2.1	British Geological Survey Map Viewer	1
2.2	Coal Authority Mines Report	2
2.3	Geological Survey Borehole Records	3
3.	Risk Assessment	4
3.1	Risks Posed by Shall Coal Workings	5
3.2	Risks Posed by Coal Workings at Depth	5
3.3	Risks Posed by Surface Workings	5
3.4	Risks Posed by Mine Gas	5
4.	Conclusions	6

Appendices

1.	Site Plan
2.	Coal Authority Report
3.	BGS Borehole Records

Report on a Coal Mining Risk Assessment

Location: 12 Tivy Dale Drive, Cawthorne
Barnsley, S75 4EN

For: Mike Laverack

Consultants: Eight One Two Architects

Report No. C3843/23/E/5816

Report date: October 2023

For and on behalf of **Rogers Geotechnical Services Ltd**



Scott Alexander BSc FGS
Geo-environmental Engineer



Rob Palmer MSc FGS ACIEH
Senior Geo-environmental Engineer

1. Introduction

It is understood that as part of the planning application at the site, a Coal Mining Risk Assessment has been requested by the planning authority. Consequently, a desktop study was commissioned in order to assess the risk to the development from coal mining. This report presents the findings of the study.

2. Geological Desk Study

The geological desk study has been undertaken using the following sources of information.

- British Geological Survey map sheet¹.
- British Geological Survey *Geology of Britain Viewer*².
- Coal Authority Consultants Coal Mining Report³.
- British Geological Survey *Borehole Records*⁴.

¹ Sources: British Geological Survey (NERC) Map Sheet 87; Barnsley Solid and Drift Editions

² Sources: British Geological Survey (NERC) Geology of Britain Viewer [online resource from www.bgs.ac.uk]

³ Coal Authority Reference: 51003379735001 dated 25th September 2023.

⁴ Sources: British Geological Survey (NERC) Borehole Records [online resource from <http://www.bgs.ac.uk/>]

2.1 British Geological Survey Maps and Viewer

The appropriate map sheet for the site and the geology viewer has been examined and the following table presents the indicated geology:

Table 1: Geological Data for the Site			
Strata Type	Strata Name ⁵	Previous Name ⁶	Description ³
Superficial Geology	None recorded	-	-
Solid Geology	Pennine Lower Coal Measures Formation	-	Interbedded grey mudstone, siltstone and pale grey sandstone, commonly with mudstones containing marine fossils in the lower part, and more numerous and thicker coal seams in the upper part.

On the geological map, there does not exist any local dip indicators however the regional dip of the beds is at a shallow angle with dips recorded between 4 and 7 degrees towards the north-east.

Two coal seams are inferred to outcrop within the local area. These are summarised as follows:

Table 2: Summary of Coal Seams Within the Vicinity of the Site.			
Seam Name	Seam thickness ^{5*}	Outcrop distance from site ^{5*}	Anticipated depth below site
Silkstone	0.1m – 2.3m	Immediately north-west	5-10m below surface of site.
Top Lousy (Lower Leaf of Silkstone Coal)	Possibly combined with Silkstone Coal.		

*All distances are given as approximations only. It should be noted that coal seam thicknesses vary over relatively short distances

In light of the above available information the Silkstone Coal is likely to be present at a shallow depth beneath the site. The client should be aware that the Silkstone seam may be combined with its lower leaf named as the Top Lousy and may be of significant thickness.

2.2 Coal Authority Mines Report

As part of this study a Coal Authority Consultants Coal Mining Report has been obtained. The report is presented as Appendix 2 and for the purposes of discussion has been summarised below:

⁵ Sources: British Geological Survey (NERC) Map Sheets 87; Barnsley; Solid and Drift Edition, and Geology of Britain Viewer [online resource from www.bgs.ac.uk]

⁶ Sources: British Geological Survey (NERC) Lexicon of Named Rock Units [online resource from www.bgs.ac.uk]

Table 3: Summary of the Consultant's Coal Mining Report

Has the report highlighted evidence or potential of:			
Ref	Mining Feature	Yes/No	Comments
1	Underground Coal Mining	Yes	No recorded underground workings.
2	Probable Unrecorded Shallow Workings	Yes	-
3	Spine Roadways at Shallow Depth	No	No spine roadway recorded at shallow depth.
4	Mine Entries	No	None recorded within 100m of the enquiry boundary.
5	Abandoned mine plans	Yes	Plans of abandoned mine workings below the site are suggested to be available by the Coal Authority.
6	Outcrops	No	No outcrops recorded.
7	Geological Faults	No	No faults, fissures or breaklines recorded.
8	Opencast Mines	No	None recorded within 500 metres of the enquiry boundary.
9	Coal Authority Managed Tips	No	None recorded within 500 metres of the enquiry boundary.
10	Site Investigations	No	None recorded within 50 metres of the enquiry boundary
11	Remediated Sites	No	None recorded within 50 metres of the enquiry boundary.
12	Coal Mining Subsidence	No	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 31st 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.
13	Mine Gas	No	None recorded within 500 metres of the enquiry boundary.
14	Mine Water Treatment Schemes	No	None recorded within 500 metres of the enquiry boundary.
15	Future underground mining	No	For further information please see section 3 of the Consultant's Coal Mining Report (ref 51003379735001).
16	Coal mining licensing	No	
17	Court orders	No	
18	Section 46 notices	No	
19	Withdrawal of support notices	No	
20	Payments to owners of former copyhold land	No	

2.3 Geological Survey Borehole Records

The British Geological Survey (NERC) keeps borehole records from across Britain which are available for public viewing through their website⁷. As part of this study, the records in the area around the site have been reviewed in order to assist in establishing the geological conditions. These are recorded in the following table.

Table 4: Notable Geological Features

Borehole	Approx. Distance from Site	Depth of Borehole (m)	Notable Features
SE20NE22 ⁷	150m SW	12.0	Good quality Coal (Silkstone) – 9.00m (0.60m thickness). Good quality Coal (Silkstone) – 9.80m (0.70m thickness). Light grey shaly mudstone (seatearth) 10.50m (1.00m thickness)

It should be appreciated that there was limited borehole data within the immediate vicinity of the site that was available for public viewing. Other borehole scans were available, however, these were felt to be of limited value and did not penetrate to great enough depth to provide bedrock data.

The borehole has indicated the presence of the Silkstone seam at a shallow depth beneath the local area. With the regional geology dipping towards the north-east it is reasoned this borehole is located parallel to the strike of the beds and similar geological conditions are likely to be present beneath the proposed development area. Such seam from the records presents an economically viable workable thickness and quality. The record indicates the coal seam is present in two leaves, which corroborates with the geological records indicating that the Silkstone seam and the Top Lousy seam are combined in this area.

3. Risk Assessment

The risk to the stability of the proposed residential development has been evaluated from the data obtained and with reference to the following ratings and definitions:

- Low - The possibility of instability is unlikely therefore no further action is necessary.
- Moderate - The possibility of instability is likely and further investigation or remedial action may be required.
- High - The possibility of instability is highly likely and further investigation or remedial action will be necessary.

Table 5: Development Specific Risk Assessment

Item	Risk attributed to	Coal Seam(s) Considered	Risk Rating
3.1	Shallow coal workings	Silkstone Coal (S)	High
		Top Lousy (SL)	High
3.2	Coal workings at depth	The Coal Authority report indicates that the property is not within a surface area that could be affected by past underground mining.	Low
3.3	Mine gas	Shallow coal workings within Silkstone coal Adjacent historical opencast workings	Moderate
3.4	Mine shafts	N/A	N/A

⁷ Sources: BGS Borehole Scan SE20NE22 online resource from <https://api.bgs.ac.uk/sobi-scans/v1/borehole/scans/items/56114>

3.1 Risks Posed by Shallow Coal Workings

On the basis of all of the information provided above, The Silkstone Coal and the Top Lousy, a bottom leaf of the Silkstone Coal are anticipated to be present within 30m of the surface at the site. It is possible that these seams may be combined or close together providing a significant potential worked seam thickness. The Coal Authority indicates the site is located within a High Risk Development Area and Area of Probable Shallow Coal Mining Workings. Given that historic coal mining activity is evident in the nearby area, it is considered that if coal was known to be close to ground level it could have been removed illicitly via shallow mining methods with relative ease.

It may be noted that guidance available from both the NHBC and the CIRIA publication, SP32 - *construction over abandoned mine workings*, suggests that competent overburden thickness above a coal seam should be greater than 10 times the thickness of a seam plus seam thickness in order that the collapse of workings would pose a low risk to surface structures.

On this basis, assuming a maximum thickness of the coal seams, the table below suggests the thickness of competent overburden required above each seam to mitigate instability at the surface.

Table 6: Required Thickness of Competent Overburden			
Seam Name	Seam thickness	Anticipated depth below site	Required thickness of competent overburden.
Silkstone (S)	0.1 – 2.3m	5-10m	25m
Top Lousy (SL)	No thickness given. Likely present at or close to the surface.		

Based on the above information, it is considered that there will not be a sufficient thickness of competent overburden above the shallowest seam in order to prevent the risk of instability posed by the presence of any illicit workings. Therefore, a high risk rating has been placed on these seams, and further investigation is recommended to prove or disprove the presence of illicit mining activity.

3.2 Risks Posed by Coal Workings at Depth

In regard to deeper mining which could affect the site, the property is not within a surface area that could be affected by past underground mining at depth (greater than 30m below the surface of the site).

3.3 Risks Posed by Surface Workings

The site is located adjacent to an area of historical opencast workings. Geological and coal mining records indicate the boundary of the workings is likely to be approximately 12m north-west from the nearest boundary of the site. However, should coal be present at or close to the surface of the site there exists the possibility that this could have been worked and removed by illicit opencast methods should it be of economic thickness.

3.4 Risks Posed by Mine Gas

This assessment has identified that there is potential for shallow mine workings to be present beneath the proposed development. Whilst the Consultants Coal Mining Report has not reported any incidents of mine gas within the vicinity of the development, shallow mining activity represents a

credible source of ground gas. Indeed the Silkstone coal seam has a history of recorded spontaneous combustibility thus the presence of mine gas both reaching the surface and under the ground should be assessed. As such, a moderate risk rating has been assigned, and further assessment may be required.

4. Conclusions

In light of the potential risks of instability at the site from the working of shallow coal, it cannot be recommended that development takes place without further investigation to conclusively determine the presence of such workings. This work should include physical drilling methods to explore the ground conditions.

General practice is to undertake rotary openhole boreholes at three locations across the site to mitigate against the potential for drilling through intact columns associated with pillar and stall workings. Furthermore, it is normal to investigate the ground to 30m below ground level; any workings below this depth are unlikely to result in significant instability. In this case, as the proposed development comprises the construction of a single property it is recommended that two boreholes should be drilled to determine the presence of the Silkstone (S) coal and the Top Lousy (SL) coal.

The next shallowest named coal seam is anticipated to be the Black Band coal which is shown to be present a significant depth (>50m) beneath the Silkstone coal from the Generalised Vertical Section (GVS) thus presents a low to negligible risk to developments on the surface of the site. The Lousey (Linfit Lousy) Coal, is thought to be locally absent, indeed no outcrops of the Lousey (Linfit Lousy) Coal are shown within 1km of the site development area on the geological maps.

The risk from possible unrecorded coal workings is thought to result from the Silkstone and the Top Lousy coal seams only, which are anticipated to be combined into two leaves present at a depth up to 10m below the surface of the site. It is reasoned that one of the boreholes should be drilled to a depth of approximately 20m below the surface to disprove the presence of any further coal seams and one borehole to 5m beyond the base of the coal seam say up to 15m. Should the coal seam or workings be proven at a very shallow depth (ie around 5m below the surface) it may preferable to complete additional boreholes terminating at the base of the coal seam where soft light grey mudstone named as a seatearth has been recorded in the nearby borehole records. This unit would act as a good indicator layer for the base of the coal seam for comparison between boreholes should workings be proven.

In any event, it is considered that approval should be sought with the Local Authority as to the efficacy of this approach.

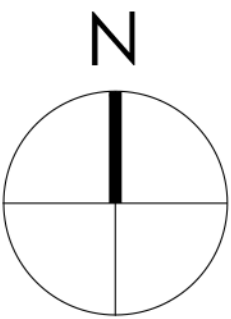
It is of note that Rogers Geotechnical Services would be happy to assist in any further intrusive investigation that may be required.

Appendix 1

Site Plan

Notes_

PLANNING



0 1000 2000 3000 4000 5000mm
SCALE 1:100

0 1000 2000 3000 4000 5000mm
SCALE 1:100

Note:
Surrounding contextual buildings and information are based on received ordinance survey drawings and are shown for illustrative purposes only. assumed site boundary is subject to confirmation to legal confirmation

Note:
Information is based on OS map and received information and is subject to full topographical survey.
Assumed site boundary and site constraints subject to legal confirmation.
All Legal easements and extent of existing underground services locations are subject to confirmation.

Rev_ Date_ Amendments_ By_ App'd_

Eight_ OneTwo Architects

Tel_ +44 (0)7761 570735
Email_ mail@eightonetwo.co.uk
www.eightonetwo.co.uk
Studio A5, Brooke's Mill, Armitage Bridge, Huddersfield, HD4 7NR

Drawing Status_

PLANNING

Client_

MR + MRS LAVERACK

Project_

PROPOSED DETACHED DWELLING_ 12 TIVY DALE DRIVE, CAWTHORNE

Drawing Title_

AS EXISTING_ SITE PLAN

Drawing Scale_

1:100

Drawn By_

JAL

Checked By_

JAL

Paper Size_

A1

Drawn Date_

MAY 2023

Checked Date_

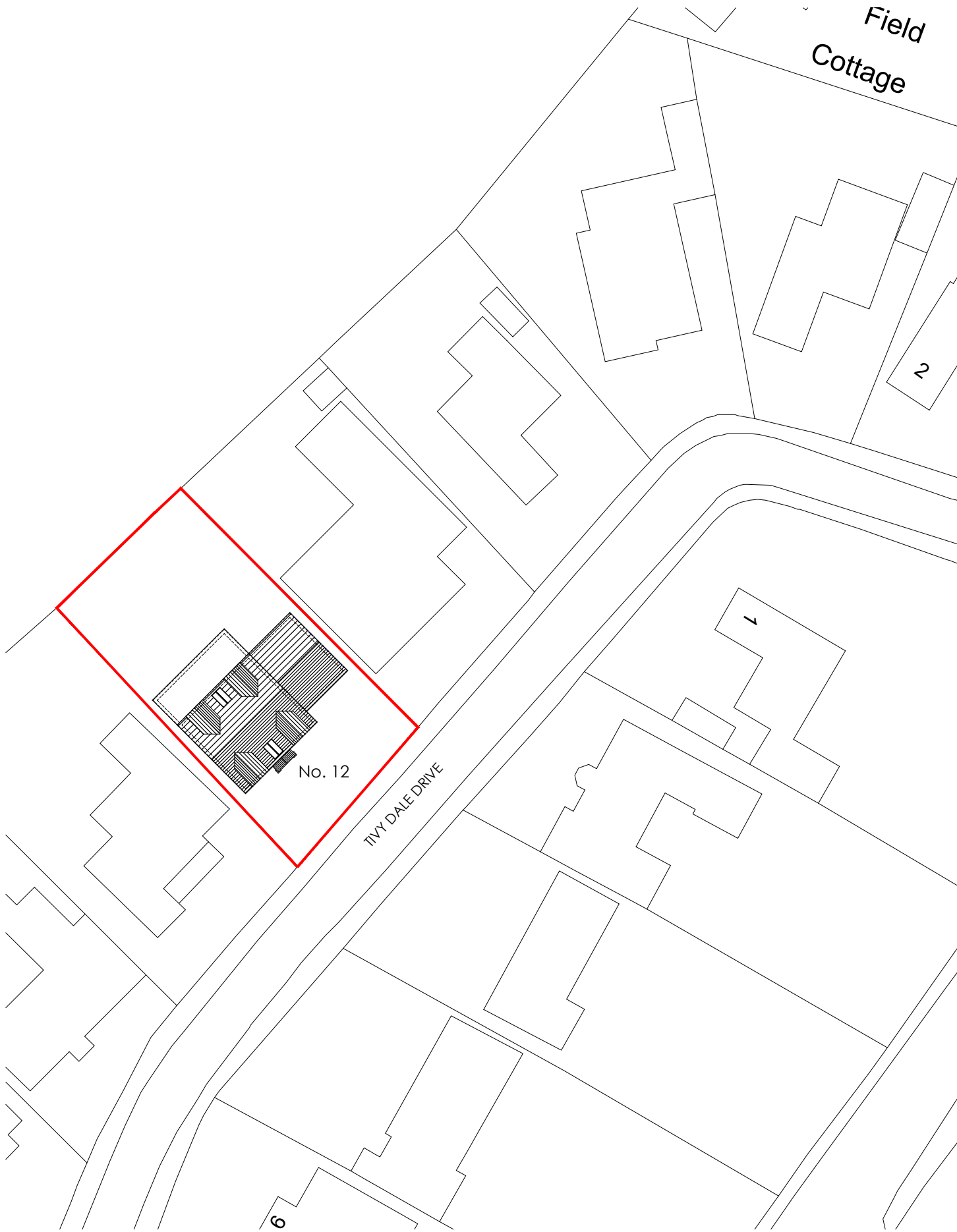
JUNE 2023

Drawing Number_

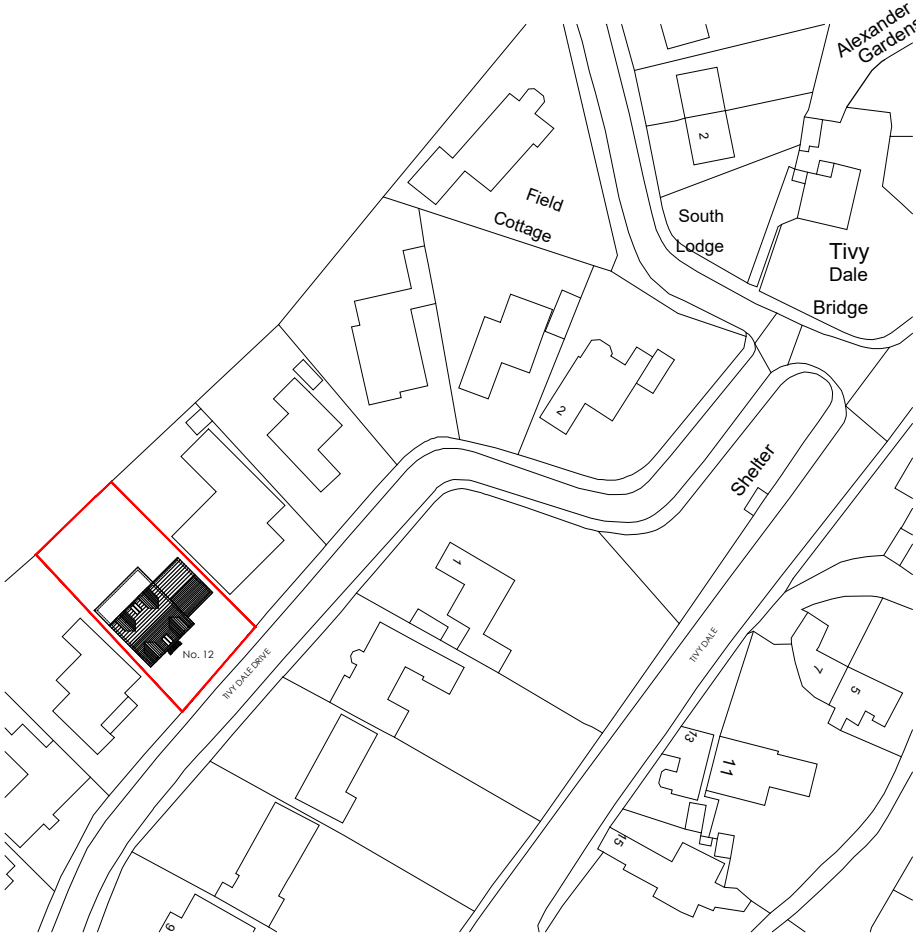
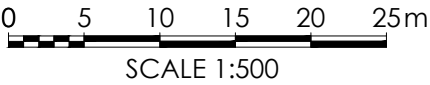
23_807 100

SITE PLAN_
AS EXISTING_
SCALE 1:100

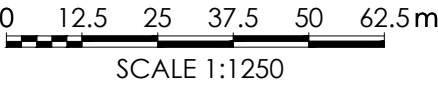




SITE PLAN AS PROPOSED



LOCATION PLAN AS PROPOSED



Note:
Surrounding contextual buildings and information are based on received ordinance survey drawings and are shown for illustrative purposes only. assumed site boundary is subject to legal confirmation

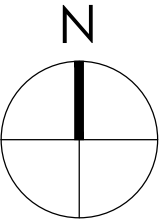
Note:
Information is based on OS map and received information and is subject to full topographical survey.
Assumed site boundary and site constraints subject to legal confirmation.
All Legal easements and extent of existing underground services locations are subject to confirmation.

The drawing is copyright © Eight One Two Architects Ltd. If in doubt... ASK.
Drawing measurements shall not be obtained from scaling from the drawing. All dimensions are to be site verified prior to construction. Any discrepancies are to be reported to Eight One Two Architects Ltd immediately. This drawing is to be read in conjunction with all associated drawings and specifications including all relevant sub-consultants information.

RIBA  
Chartered Practice Architects Registration Board

Notes_

PLANNING



Rev_ Date_ Amendments_ By_ Apr'd_

Eight_
OneTwo
Architects

Tel_ +44 [0]7761 570735
Email_ mail@eightonetwo.co.uk
www.eightonetwo.co.uk
Studio A5_Brooke's Mill_Armitage Bridge_Huddersfield_HD4 7NR

Drawing Status_
PLANNING

Client_
MR + MRS LAVERACK

Project_
PROPOSED DETACHED DWELLING_ 12 TIVY DALE DRIVE_ CAWTHORNE

Drawing Title_
AS PROPOSED_ SITE + LOCATION PLAN

Drawing Scale_ Drawn By_ Checked By_
1:500 1.1250 JaL JaL

Paper Size_ Drawn Date_ Checked Date_
A3 MAY 2023 JUNE 2023

Drawing Number_
23_807 106

Appendix 2

Coal Authority Report



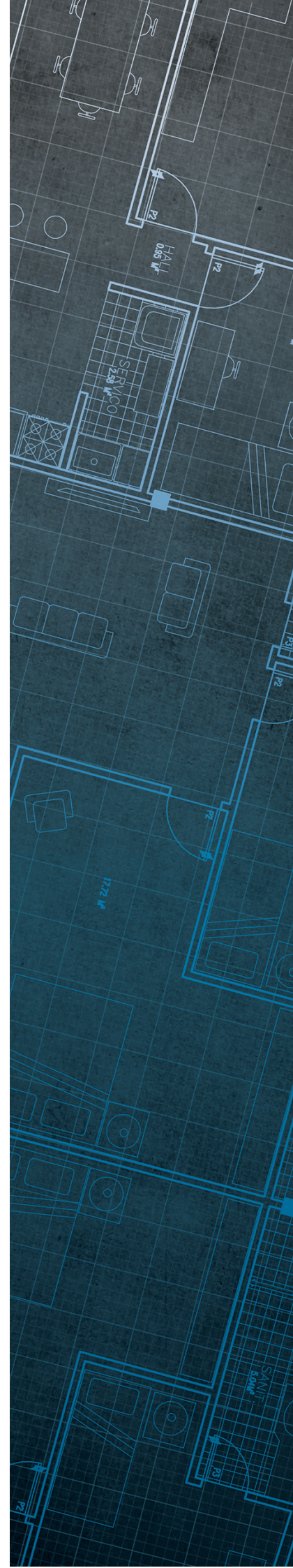
The Coal
Authority

Consultants Coal Mining Report

12 Tivy Dale Drive
Cawthorne
Barnsley
South Yorkshire
S75 4EN

Date of enquiry:	25 September 2023
Date enquiry received:	25 September 2023
Issue date:	25 September 2023

Our reference:	51003379735001
Your reference:	C/3843/23/E/5816



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

ROGERS GEOTECHNICAL SERVICES LTD

Enquiry address

12 Tivy Dale Drive
Cawthorne
Barnsley
South Yorkshire
S75 4EN

How to contact us

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

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

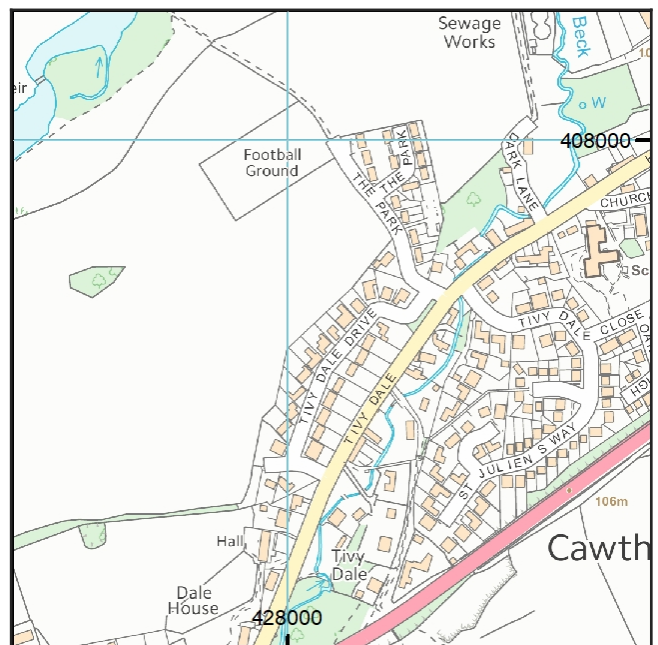
www.groundstability.com

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



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

Ordnance Survey Licence number: 100020315

Section 1 – Mining activity and geology

Past underground mining

No past mining recorded.

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:

10322	NE123	NE621
-------	-------	-------

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

No outcrops recorded.

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

Based on the responses in this report, no further information has been highlighted.

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.

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

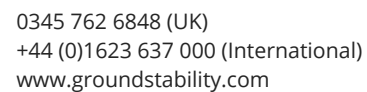
Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

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.

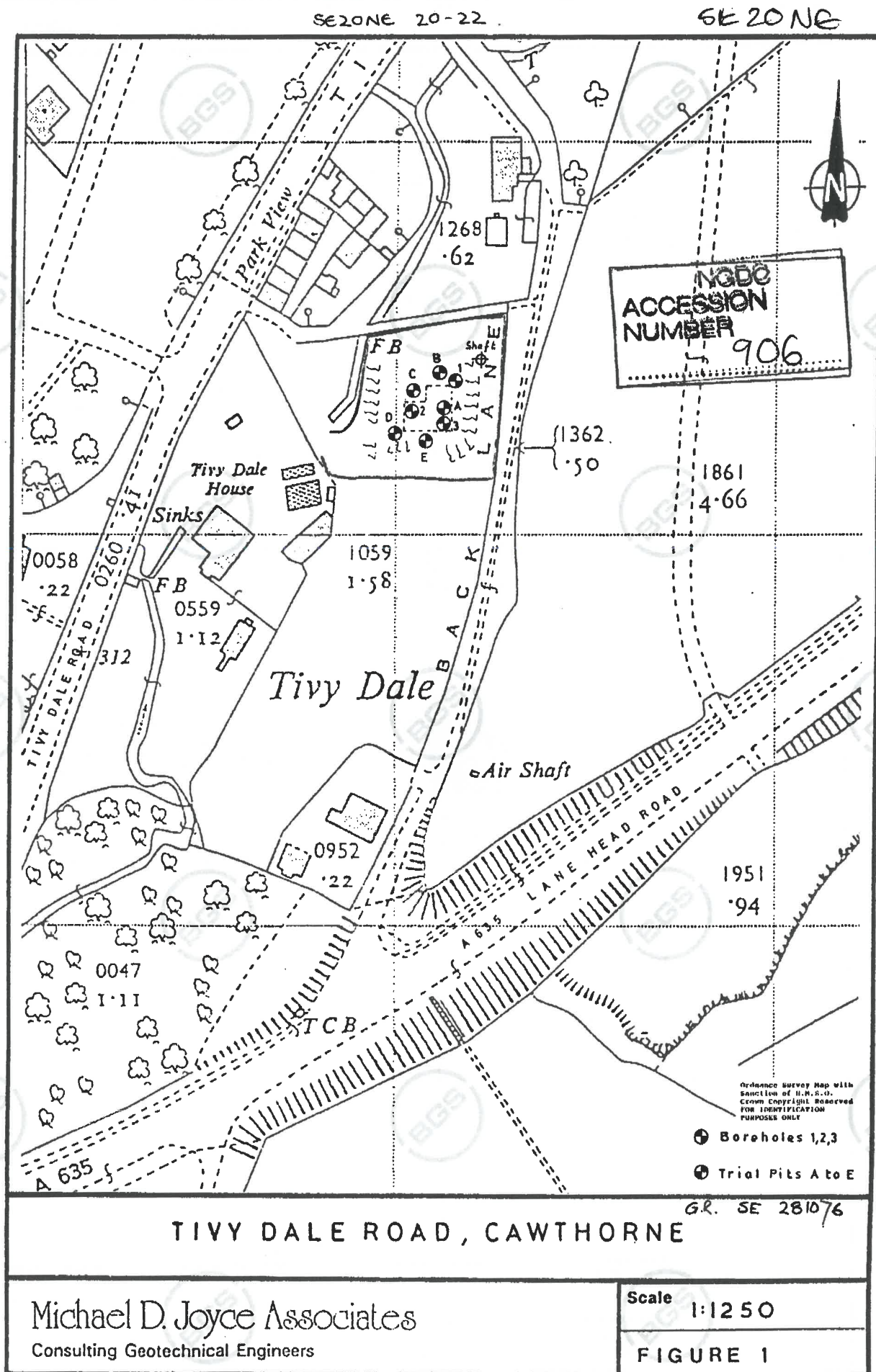
Approximate position of the enquiry boundary shown 

Unlicensed opencast site 



Appendix 3

BGS Borehole Records





SE20NE 22 281-076

Michael D. Joyce Associates Consulting Geotechnical Engineers				BOREHOLE RECORD		BOREHOLE NUMBER
Site Tivy Dale Road				Location Cawthorne		3
Client Classic Construction				Method/Size Rotary Openhole/75mm		
BORING			STRATA RECORD			SHEET 1 of 1
DATE	CASING (m)	WATER	DEPTH (m)	LEVEL (m)	KEY	DESCRIPTION
10/2/89			G.L.			
			2.00			MADE GROUND Firm medium grey-brown silty clay with mudstone and shale fragments.
			2.50			Black carbonaceous SHALE.
						Medium grey ironstained silty shaly MUDSTONE. Occasional thin black shale bands. Occasional thin grey-brown siltstone bands.
10/2/89			9.00			
			9.60			Good quality COAL (Silkstone Coal seam)
			9.80			Medium to dark brown MUDSTONE.
			10.50			Good quality COAL (Silkstone Coal seam)
			11.50			Light to medium grey silty shaly MUDSTONE. (Seatearth).
10/2/89			12.00			Medium grey ironstained silty shaly MUDSTONE.
						End of Borehole.

Remarks and Water Observations

Groundwater seepages at 9.0m.
Poor air returns G.L - 2.0m.
Good air returns 2.0 - 12.0m.