COAL MINING INVESTIGATION



25 MOORE AVENUE, SOUTH SHIELDS, SOUTH TYNESIDE, NE34 6AA
PREPARED FOR GARY CRAIG ARCHITECTURAL SERVICES LIMITED

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Project No.	**GEOL20-9383**	**Client**	**Mr & Mrs Keith Thompson**
Report Type	**Coal Mining Investigation**		
Planning Ref.	**ST/0828/20/FUL**		
Design Team	**Gary Craig Architectural Services Limited**		
Project Type	**Proposed Residential Development**		
Site Address	**25 Moore Avenue, South Shields, South Tyneside, NE34 6AA**		
NGR	**437485, 564796**		
Date	**07/03/2021**		

Prepared by **Qualifications** **Position**	**Richard Stripp** **BSc (Hons) MSc FGS MIEnvSc** **Director**	[redacted]
Approved by **Qualifications** **Position**	**Terry M^{c}Menam** **BSc (Hons) CSci CEnv FGS MIEnvSc FCMI MoID** **Director**	[redacted]

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The findings and opinions provided in this document are given in good faith and are subject to the limitations and constraints imposed by the methods and information sources described in this report. Factual information, including, where stated, a visual inspection of the site, has been obtained from a variety of sources. GEOL assumes the third-party information to be reliable, but has not independently confirmed this, therefore, GEOL cannot and does not guarantee the authenticity or reliability of third-party information it has relied upon. The findings and opinions presented in this report are also relevant to the dates when the assessment was undertaken but should not necessarily be relied upon to represent conditions at a substantially later date. Further information, ground investigation, construction activities, change of site use, or the passage of time may reveal conditions that were not indicated in the data presented and therefore could not have been considered in the preparation of the report. Where such information might impact upon stated opinions, GEOL reserves the right to modify the opinions expressed in this report. Where opinions expressed in this report are based on current available guidelines and legislations, no liability can be accepted by GEOL for the effects of any future changes to such guidelines and legislation.

REPORT REVISION HISTORY				
Issue	**Description**	**Date**	**Author**	**Approval**
1	**Final Issue**	**07/03/2021**	**RS**	**TMc**

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TABLE OF CONTENTS

1.0 INTRODUCTION	PAGE 3
2.0 SITE GEOLOGICAL SETTING	PAGE 3
3.0 SUMMARY OF COAL MINING RISK ASSESSMENT	PAGE 3
4.0 SITE-SPECIFIC COAL MINING INVESTIGATION WORKS (FEBRUARY 2021)	PAGE 5
5.0 CONCLUSIONS & RECOMMENDATIONS	PAGE 6

APPENDIX I	SITE LOCATION / EXISTING SITE LAYOUT PLAN, AERIAL PHOTOGRAPH & PROPOSED DEVELOPMENT LAYOUT PLAN
APPENDIX II	GEOL COAL MINING RISK ASSESSMENT (CMRA)
APPENDIX III	BOREHOLE LOCATION PLAN, BOREHOLE RECORD SHEETS (RBH01 & RBH02) & THE COAL AUTHORITY PERMIT (21330)

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1.0 Introduction

Following completion of a desk-based Coal Mining Risk Assessment (CMRA), reference GEOL20-9383, completed by Geol Consultants Limited (GEOL) during December 2020, GEOL were commissioned by Gary Craig Architectural Services Limited on behalf of Mr & Mrs Keith Thompson to undertake a program of follow-on intrusive Coal Mining Investigation works to confirm the actual risks posed to the proposed development from possible shallow unrecorded coal workings within the Usworth coal seam. The proposed development comprises a detached residential property (bungalow) located within the rear garden area of no. 25 Moore Avenue in South Shields, South Tyneside. The National Grid Reference for the centre of the development area is 437485, 564796.

2.0 Site Geology Setting

Based on geological maps produced by the BGS, the site is shown to be initially overlain by the Pelaw Clay Member. These deposits generally comprise stiff, reddish-brown, and dark brown, silty, occasionally gravelly clays and are expected to be circa 8m in thickness below this part of South Shields before bedrock deposits are expected. The solid geology below the site consists of the Pennine Middle Coal Measures (MCM) of Carboniferous age, where mudrock deposits (mudstone, siltstone, or shale) are present at rockhead level below the site area.

The shallowest coal seam present below the site is the Usworth, which is recorded to subcrop approximately 130m north / northeast and dips to the south / southwest, below the site. The Usworth coal seam locally ranges in thickness from between 0.28m up to 0.79m and is estimated to be present at a depth of 10m below rockhead levels. The Usworth coal seam is not known to have been extensively worked locally in this area.

3.0 Summary of Coal Mining Risk Assessment

The Coal Authority has divided the coalfield 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 such depth that it poses a low risk to new development. The Coal Authority places the site within a DHRA where coal mining risks are potentially present at shallow depth, and which may affect new developments. Whilst the site is not recorded to be underlain by past recorded shallow coal mining workings, it does lie within an area where probable shallow coal mining workings may exist.

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3.0 Summary of Coal Mining Risk Assessment (Cont'd)

A Consultants Coal Mining Report was procured from The Coal Authority to assess the risks posed to the site with respect to possible instability issues arising in the future as a direct result of past shallow coal mining activities. The report concludes the relevant information as shown in the Table below.

Coal Mining Activities	Details
Past underground mining	The shallowest recorded workings are within the Yard coal seam positioned at a depth of 255m, with a recorded extraction thickness of 1.32m and last worked in 1951
Probable unrecorded shallow workings	Yes, associated with the Usworth coal seam
Spine roadways at shallow depth	No spine roadways recorded at shallow depth
Mine entries	None recorded within 100m of the enquiry boundary
Outcrops	No outcrops recorded
Geological faults, fissures and breaklines	No faults, fissures or breaklines recorded
Opencast mines	None recorded within 500m of the enquiry boundary
Coal Authority managed tips	None recorded within 500m of the enquiry boundary
Site investigations	None recorded within 50m 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 50m of the enquiry boundary, since 31st October 1994
Mine gas	None recorded within 500m of the enquiry boundary
Mine water treatment schemes	None recorded within 500m of the enquiry boundary

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. In accordance with CIRIA (C758D) Abandoned mine workings manual, 2019 the actual geological, site location and development circumstances will influence the selection of a site-specific cover ratio, as will the proposed end-use.

The 10 times (10t) criterion has been used as a 'rule of thumb' throughout the UK despite wide stratigraphic variance and other evidence to contrary. The degree of protection it affords varies according to location. Nevertheless, this empirical approach, which has been proven to provide conservatism, has served the industry well to date, often irrespective of detailed knowledge of bedrock condition.

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3.0 Summary of Coal Mining Risk Assessment (Cont'd)

Although, conceptually, the greater the depth of workings the less the risk of surface impact, it is important to recognise that it is not actual depth that isolates the workings but, primarily, the thickness of dependable bedrocks occurring below engineering rockhead.

Based on the geological assessment and coal mining data reviewed for this development site, it was considered unlikely that the Usworth coal seam would have been historically worked below the site and as such the risk of surface instability occurring at any time in the future was low. However, this conclusion was only an assumption, based on our knowledge of the area and the coal seam in question, and should historical workings have gone unrecorded within the Usworth coal seam, based on the ratio of rock cover (<10m) to seam thickness (0.79m) it is possible that the 10t criterion may not be fully met below the proposed residential development and therefore we are unable to confirm the site to be safe, stable and suitable for development at this time without the benefit of site-specific borehole data. It was therefore recommended that appropriate borehole investigation works should be completed to depths of up to 25m below ground level to confirm the actual depth and condition of the Usworth coal seam. The investigation works will determine if the proposed development site is safe, stable, and suitable for development or if mitigation measures are required prior to development.

4.0 Site-Specific Coal Mining Investigation Works (February 2021)

Given the nature of the bedrock geology, GEOL completed a series of rotary open hole boreholes using a water flush medium to determine the risks posed to the site from potential unrecorded workings within the Usworth coal seam. Copies of the borehole record sheets can be seen attached in Appendix III. A permit (reference 21330) was obtained directly from the Coal Authority to enter or disturb their coal mining related interests prior to undertaking the borehole investigation works. The boreholes were sunk on Tuesday 2nd February 2021, to a maximum depth of 35.00m below existing site levels and purposely targeted the Usworth coal seam. Rotary open hole drilling / probing is a crude method of drilling and the primary purpose of using this technique is to determine the presence or evidence of coal workings by 'feeling' the ground. During drilling operations water flush and small cuttings are brought to the surface for identification purposes and drilling rates are observed to determine changes in the strength of the ground.

At the borehole locations, natural limestone bedrock deposits were recorded at depths of between 3.65m (RBH01) and 3.80m (RBH02) and were proven to depths ranging between 9.15m (RBH01) and 9.25m (RBH02) before thin sandstone deposits were recorded (ranging between 0.50m to 1.35m in thickness).

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4.0 Site-Specific Coal Mining Investigation Works (February 2021) (Cont'd)

Mudstone deposits were recorded to a depth of between 23.00m (RBH01) and 27.40m (RBH02) before siltstone deposits were encountered. The siltstone deposits contained occasional mudstone interbeds and were recorded to a maximum depth of 35m below existing site levels at the borehole locations.

No coal seams, or any evidence of coal workings (broken ground or voiding) or water ingress, were recorded at the borehole locations. Full (100%) water flush and steady drilling rates were maintained during the investigation period and there were no significant gas readings detected during and upon completion of the boreholes. The boreholes were backfilled with bentonite and made safe upon completion.

The presence of limestone deposits recorded at the borehole locations suggests the site may be initially overlain by thin Permian strata, before Carboniferous deposits were encountered.

5.0 Conclusions & Recommendations

The rotary borehole investigation works were designed based on determining the risks posed to the site from unrecorded shallow coal workings only. In terms of coal mining risk assessments, the basic principle which underpins the process is that within the defined Coal Authority DHRA's 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. In accordance with CIRIA (C758D) Abandoned mine workings manual, 2019 the actual geological, site location and development circumstances will influence the selection of a site-specific cover ratio, as will the proposed end use. The 10 times (10t) criterion has been used as a 'rule of thumb' throughout the UK despite wide stratigraphic variance and other evidence to contrary.

The degree of protection it affords varies according to location. Nevertheless, this empirical approach, which has been proven to provide conservatism, has served the industry well to date, often irrespective of detailed knowledge of bedrock condition. Although, conceptually, the greater the depth of workings the less the risk of surface impact, it is important to recognise that it is not actual depth that isolates the workings but, primarily, the thickness of dependable bedrocks occurring below engineering rockhead.

Based on the borehole investigation works completed, the site of the proposed residential building can be considered safe, stable, and suitable for development and thus no further assessment or intrusive investigation works are required with regards to historical shallow coal mining activities.

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5.0 Conclusions & Recommendations (Cont'd)

Furthermore, in accordance with the Coal Authority permit, gas monitoring for CO, CH_4, CO_2, O_2 & H_2S was undertaken at the borehole locations. Gas readings were observed at regular intervals as the borehole depth progressed and upon completion, prior to backfill and sealing off.

There were no detectable gas levels recorded and O_2 levels were observed to be at 20.4 % v/v. The proposed development is therefore not anticipated to be at risk from mine gas rise, since shallow coal, or shallow coal workings are not present.

End of Report

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APPENDIX I

Site Location / Existing Site Layout Plan
Aerial Photograph &
Proposed Development Layout Plan

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Street wise

Map data

SITE LOCATION PLAN
AREA 2 HA
SCALE 1:1250 on A4
CENTRE COORDINATES: 437472, 564800



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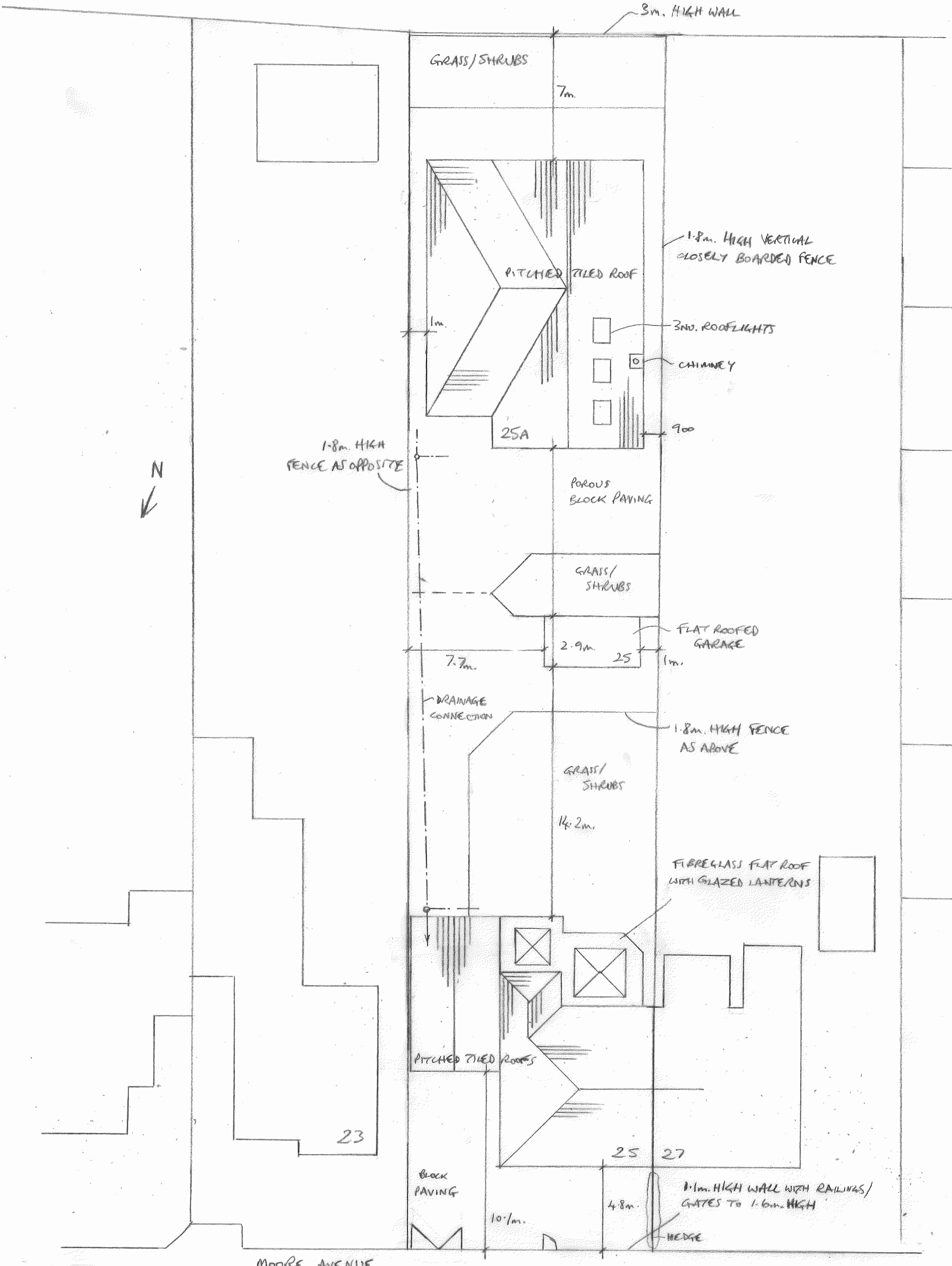
AERIAL PHOTOGRAPH

Report Type: Coal Mining Investigation
Site Address: 25 Moore Avenue, South Shields, South Tyneside, NE34 6AA
Project No.: GEOL20-9383

25 MOORE AVE., S. SHIELDS

1:200 SITE/ROOF PLAN

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APPENDIX II

GEOL Coal Mining Risk Assessment (CMRA)

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COAL MINING RISK ASSESSMENT (CMRA)



25 MOORE AVENUE, SOUTH SHIELDS, SOUTH TYNESIDE, NE34 6AA
PREPARED FOR GARY CRAIG ARCHITECTURAL SERVICES LIMITED

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Project No.	**GEOL20-9383**	**Client**	**Gary Craig Architectural Services Limited**
Report Type	**Coal Mining Risk Assessment (CMRA)**		
Project Type	**Proposed Residential Development**		
Site Address	**25 Moore Avenue, South Shields, South Tyneside, NE34 6AA**		
NGR	**437485, 564796**		
Date	**02/12/2020**		

Prepared by **Qualifications** **Position**	**Richard Stripp** **BSc (Hons) MSc FGS MIEnvSc** **Director**	[redacted]
Approved by **Qualifications** **Position**	**Terry McMenam** **BSc (Hons) CSci CEnv FGS MIEnvSc FCMI MoID** **Director**	[redacted]

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REPORT REVISION HISTORY				
Issue	**Description**	**Date**	**Author**	**Approval**
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TABLE OF CONTENTS

1.0 INTRODUCTION	PAGE 3
2.0 SITE GEOLOGY	PAGE 3
3.0 COAL MINING RISK ASSESSMENT (CMRA)	PAGE 4

APPENDIX I	SITE LOCATION / EXISTING SITE LAYOUT PLAN, AERIAL PHOTOGRAPH AND PROPOSED DEVELOPMENT LAYOUT PLAN
APPENDIX II	THE COAL AUTHORITY CONSULTANTS COAL MINING REPORT

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1.0 Introduction

Geol Consultants Limited (GEOL) were commissioned by Gary Craig Architectural Services Limited to undertake a Coal Mining Risk Assessment (CMRA) to assist with a new planning application for a proposed residential development located within the boundaries of 25 Moore Avenue in South Shields, South Tyneside, where proposals have been made to construct a new residential dwelling (bungalow) in the rear garden sometime soon. The National Grid Reference for the centre of the development area is 437485, 564796.

The purpose of this CMRA is to provide the Local Planning Authority (LPA) with information on coal mining setting and to provide an assessment of its potential impact on land stability in relation to the proposed development. This CMRA has been prepared in accordance with the requirements of the Coal Authority Guidance Document, reference; Risk Based Approach to Development Management, Guidance for Developers (Version 4 – 2017). The geological and coal mining assessments for this site have been based on records produced by the British Geological Survey (BGS) and the Coal Authority. The following documents have been reviewed as part of this CMRA.

- BGS Sheet NZ 36 SE, 1:10,560
- The Coal Authority; Online Interactive Map Viewer
- The Coal Authority Consultants Coal Mining Report, reference; 510023213510001. Copy attached in Appendix II

2.0 Site Geology

Based on geological maps produced by the BGS, the site is shown to be initially overlain by the Pelaw Clay Member. These deposits generally comprise stiff, reddish-brown, and dark brown, silty, occasionally gravelly clays and are expected to be circa 8m in thickness below this part of South Shields before bedrock deposits are expected. The solid geology below the site consists of the Pennine Middle Coal Measures (MCM) of Carboniferous age, where mudrock deposits (mudstone, siltstone, or shale) are present at rockhead level below the site area.

The shallowest coal seam present below the site is the Usworth, which is recorded to subcrop approximately 130m north / northeast and dips to the south / southwest, below the site. The Usworth coal seam locally ranges in thickness form between 0.28m up to 0.79m and is estimated to be present at a depth of 10m below rockhead levels. The Usworth coal seam is not known to have been extensively worked locally in this area.

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3.0 Coal Mining Risk Assessment

The Coal Authority has divided the coalfield 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 such depth that it poses a low risk to new development.

In accordance with the Coal Authority Online Interactive Map Viewer, the site falls within a DHRA where coal mining risks are potentially present at shallow depth, and which may affect new developments. Whilst the site is not recorded to be underlain by past recorded shallow coal mining workings, it does lie within an area where probable shallow coal mining workings may exist.

For completeness, a Consultants Coal Mining Report was procured from the Coal Authority to further assess the risks posed to the site with respect to possible instability issues arising in the future as a direct result of past shallow coal mining activities. The report concludes the relevant information as shown in the Table below.

Coal Mining Activities	Details
Past underground mining	The shallowest recorded workings are within the Yard coal seam positioned at a depth of 255m, with a recorded extraction thickness of 1.32m and last worked in 1951
Probable unrecorded shallow workings	Yes, associated with the Usworth coal seam
Spine roadways at shallow depth	No spine roadways recorded at shallow depth
Mine entries	None recorded within 100m of the enquiry boundary
Outcrops	No outcrops recorded
Geological faults, fissures and breaklines	No faults, fissures or breaklines recorded
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3.0 Coal Mining Risk Assessment (Cont'd)

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.

In accordance with CIRIA (C758D) Abandoned mine workings manual, 2019 the actual geological, site location and development circumstances will influence the selection of a site-specific cover ratio, as will the proposed end-use. The 10 times (10t) criterion has been used as a 'rule of thumb' throughout the UK despite wide stratigraphic variance and other evidence to contrary. The degree of protection it affords varies according to location. Nevertheless, this empirical approach, which has been proven to provide conservatism, has served the industry well to date, often irrespective of detailed knowledge of bedrock condition. Although, conceptually, the greater the depth of workings the less the risk of surface impact, it is important to recognise that it is not actual depth that isolates the workings but, primarily, the thickness of dependable bedrocks occurring below engineering rockhead.

Based on the geological assessment and coal mining data reviewed for this development site, in our opinion the Usworth coal seam is unlikely to have been historically worked below the site and as such the risk of surface instability occurring at any time in the future is considered to be low.

However, our opinion is only an assumption, based on our knowledge of the area and the coal seam in question, and should historical workings have gone unrecorded within the Usworth coal seam, based on the ratio of rock cover (<10m) to seam thickness (0.79m) it is possible that the 10t criterion may not be fully met below the proposed residential development and therefore we are unable to confirm the site to be safe, stable and suitable for development at this time without the benefit of site-specific borehole data.

We would therefore recommend undertaking appropriate borehole investigation works, sunk to depths of up to 25m below ground level to confirm the actual depth and condition of the Usworth coal seam. The investigation works will determine if the proposed development site is safe, stable, and suitable for development or if mitigation measures are required prior to development.

End of Report

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APPENDIX I

Site Location / Existing Site Layout Plan
Aerial Photograph &
Proposed Development Layout Plan

3 Gladstone Terrace,
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Street wise

Map data

SITE LOCATION PLAN
AREA 2 HA
SCALE 1:1250 on A4
CENTRE COORDINATES: 437472, 564800



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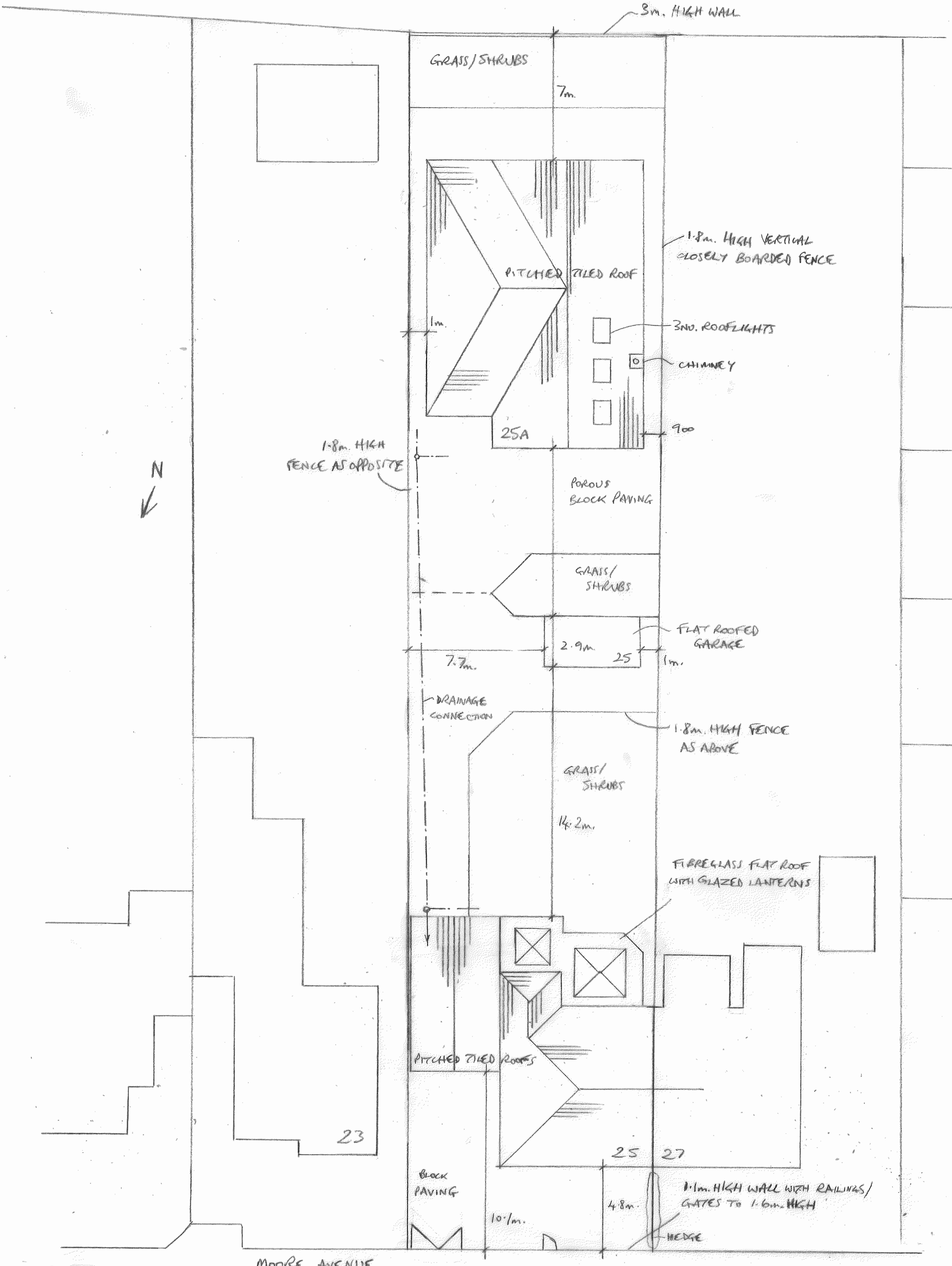
AERIAL PHOTOGRAPH

Report Type: Coal Mining Risk Assessment (CMRA)
Site Address: 25 Moore Avenue, South Shields, South Tyneside, NE34 6AA
Project No.: GEOL20-9383

25 MOORE AVE., S. SHIELDS

1:200 SITE/ROOF PLAN

PROPOSED



APPENDIX II

The Coal Authority, Consultants Coal Mining Report

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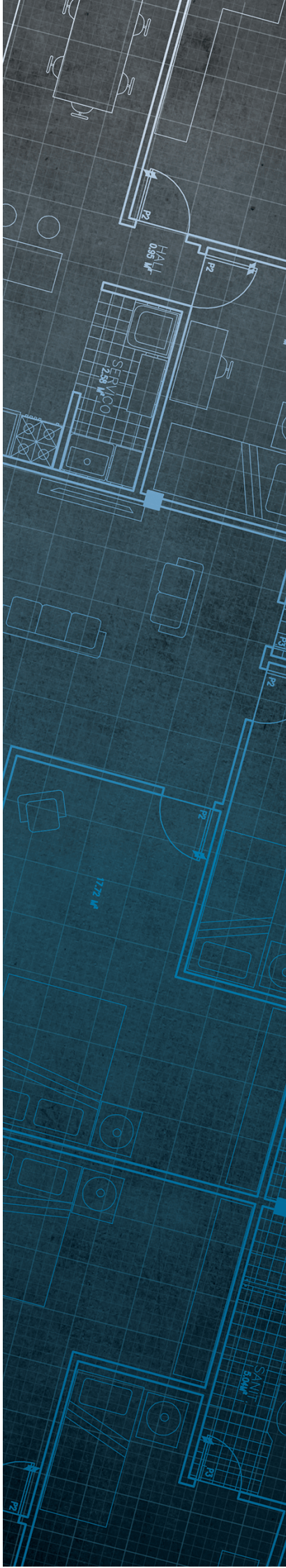
The Coal Authority

Consultants

Coal Mining Report

25 Moore Avenue
South Shields
South Tyneside
NE34 6AA

Date of enquiry:	**19 November 2020**
Date enquiry received:	**19 November 2020**
Issue date:	**19 November 2020**
Our reference:	**51002321351001**
Your reference:	**GEOL20-9383**



Consultants

Coal Mining Report

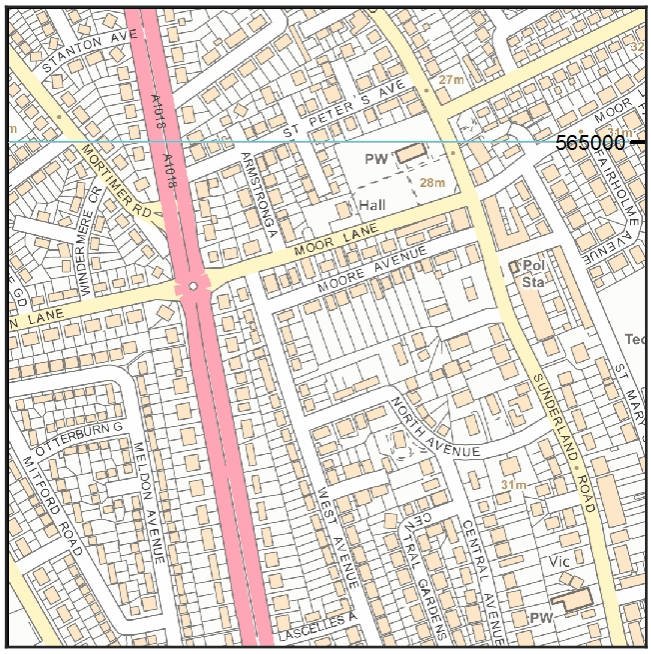
This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

Paul Evans

Enquiry address

25 Moore Avenue
South Shields
South Tyneside
NE34 6AA



Approximate position of property

Map data

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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
HARTON	YARD	Coal	513H	255	North	3.1	South-West	132	1951
HARTON	YARD	Coal	5139	263	Beneath Property	4.3	South-West	120	1947
unnamed	MAUDLIN	Coal	512M	277	North	4.1	South-West	198	1924
HARTON	MAUDLIN	Coal	512H	286	Beneath Property	5.1	South-West	180	1914
unnamed	MAUDLIN	Coal	512K	287	Beneath Property	4.3	South-West	170	1914
unnamed	BRASS THILL	Coal	3LUG	304	North	3.3	South-West	140	1963
HARTON	BRASS THILL	Coal	3LU6	312	Beneath Property	3.3	South-West	130	1963
WESTON	HUTTON	Coal	3QBC	322	North	3.0	South-West	210	1917
unnamed	HUTTON	Coal	3QAP	325	Beneath Property	2.4	South-West	190	1892
HARTON	HUTTON	Coal	3QAQ	329	Beneath Property	3.6	South-West	190	1910
HARTON	HARVEY	Coal	3LWA	373	North	2.7	South-West	109	1957
HARTON	HARVEY	Coal	3LW7	377	Beneath Property	5.1	South-West	112	1957

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.

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Abandoned mine plan catalogue numbers

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

11871	D724	D1237
D1238	D841	D1060
D862		

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

None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

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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.

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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.

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Section 4 – Further information

The following potential risks have been identified and as part of your risk assessment should be investigated further.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

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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.

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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.

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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.

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The Coal Authority

Summary of findings

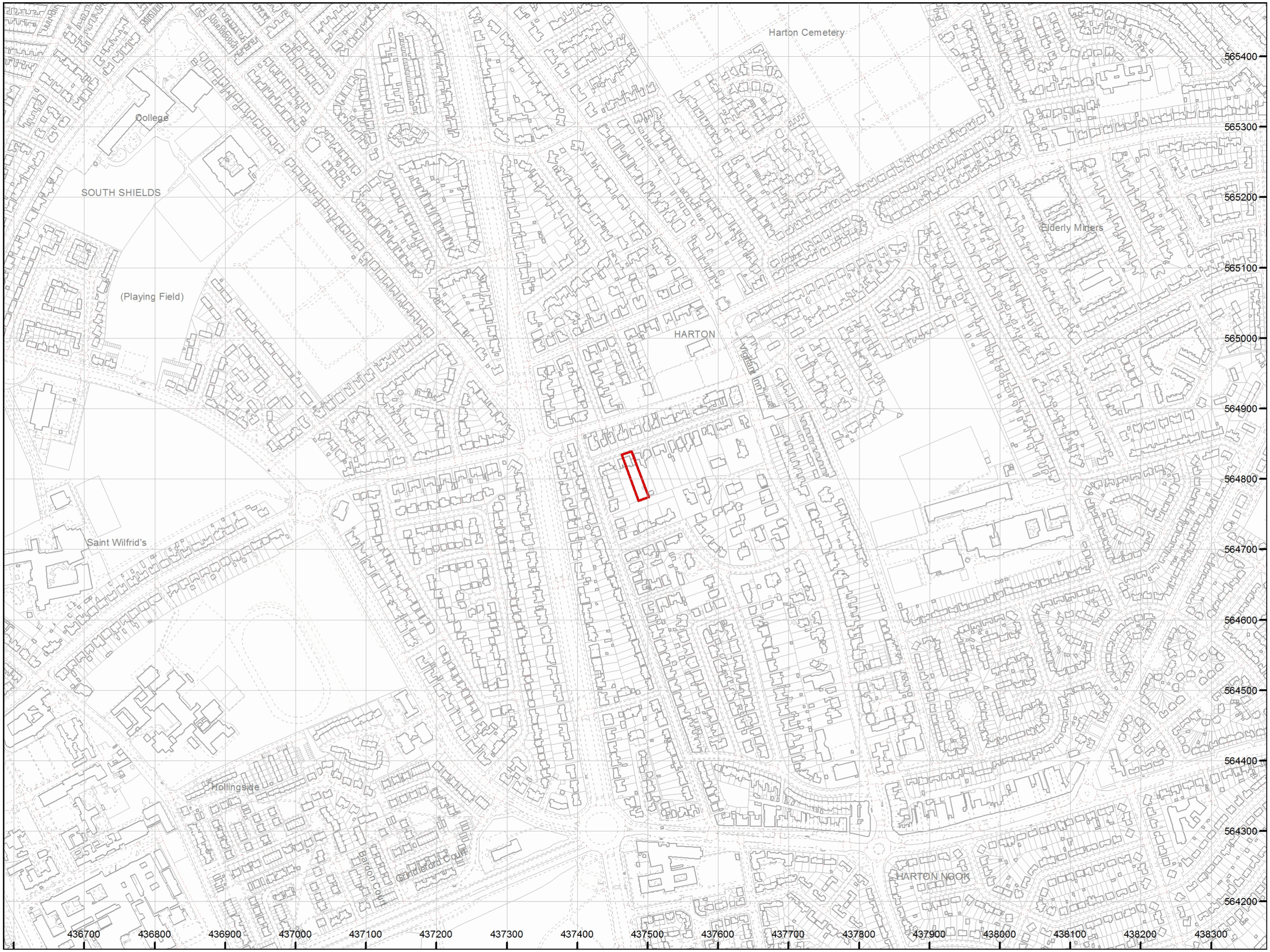
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Map data

The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

Approximate position of the enquiry boundary shown



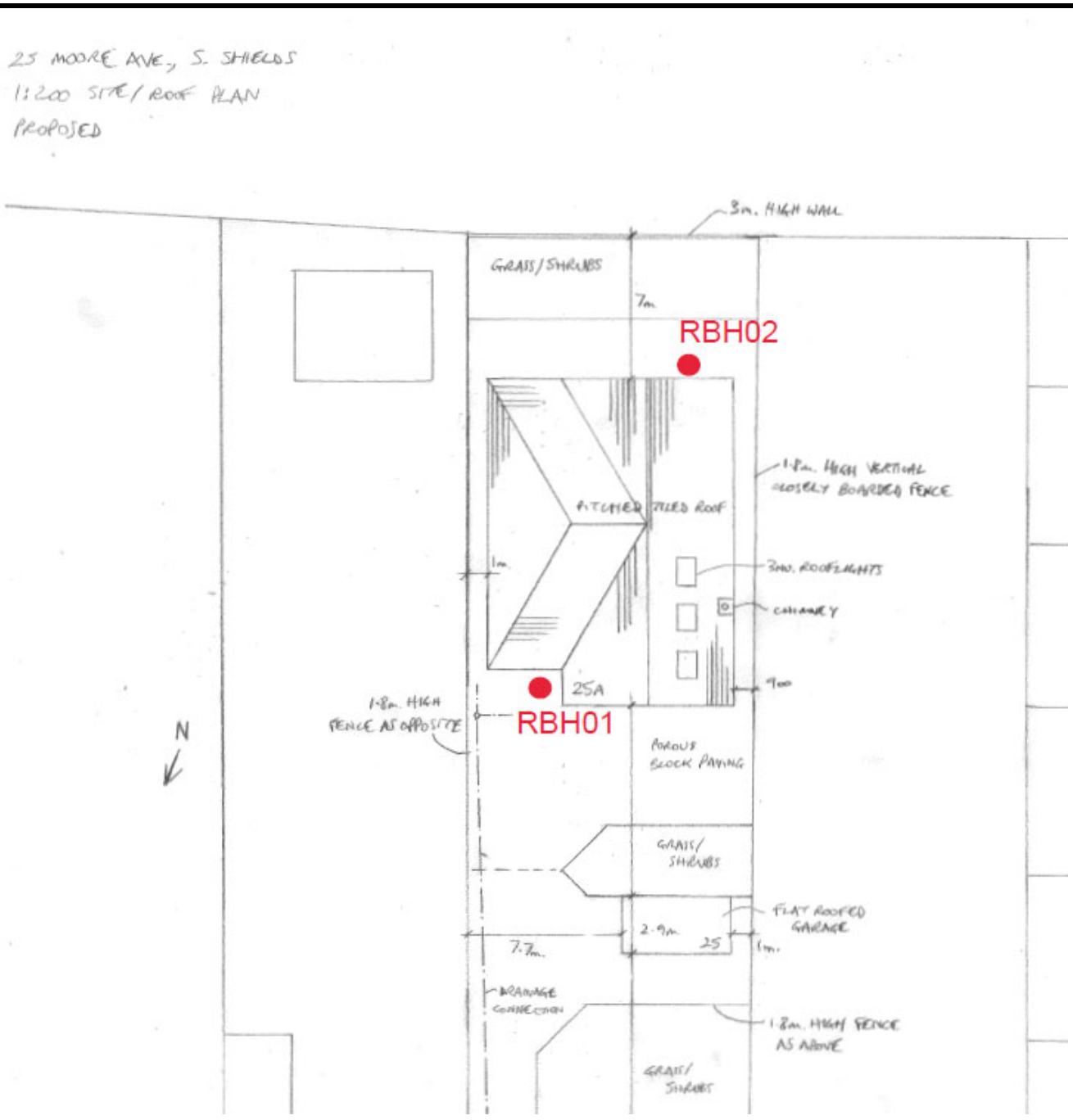
How to contact us
0345 762 6848 (UK)
+44 (0)1623 637 000 (International)
www.groundstability.com

APPENDIX III

Borehole Location Plan
Borehole Record Sheets (RBH01 & RBH02) &
The Coal Authority Permit (21330)

3 Gladstone Terrace,
Gateshead, NE8 4DY
Tel. 0191 477 2020
Email: enquiries@geolconsultants.co.uk

3 Gladstone Terrace
Gateshead
Tyne & Wear
NE8 4DY
Tel: 0191 477 2020
Email: enquiries@geolconsultants.co.uk



BOREHOLE LOCATION PLAN

Report Type: Coal Mining Investigation
Site Address: 25 Moore Avenue, South Shields, South Tyneside, NE34 6AA
Project No.: GEOL20-9383

Geol Consultants Limited
3 Gladstone Terrace
Gateshead
NE8 4DY
0191 477 2020
enquiries@geolconsultants.co.uk

ROTARY BOREHOLE LOG

Project				DRILLHOLE No
25 Moore Avenue, South Shields, NE34 6AA				**RBH01**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEOL20-9383	02-02-21			
Contractor				Sheet
Geol Consultants Limited				1 of 2

RUN DETAILS				STRATA					
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION Main		Geology	Instrument/ Backfill
					0.30	Grass overlying dark brown soil (drillers description).			
					(3.35)	Medium brown sandy gravelly CLAY (drillers description).			
					3.65				
					(5.50)	Light brown sandy LIMESTONE (drillers description).			
					9.15				
					(1.35)	Medium brown SANDSTONE (drillers description).			
					10.50				
					(12.50)	Dark brown silty MUDSTONE (drillers description).			
					23.00				
						Light grey SILTSTONE with MUDSTONE interbeds (drillers description).			

Gas Monitoring During Drilling						
Date	Time	Oxygen	Carbon Dioxide	Methane	Carbon Monoxide	Hydrogen Sulphide

Rotary Flush			
From	To	Type	Returns
0	35.00	Water	100%

GENERAL REMARKS

The descriptions are based on the drillers interpretation of the cuttings brought to the surface and the drilling rates maintained during the drilling process.

All dimensions in metres Scale 1:150	Client Mr. Keith Thompson	Method/ Plant Used Rotary Open Hole	Logged By TMc

GEOL ROTARY WITH GAS LOGS.GPJ GINT STD AGS 3_1.GDT 7/3/21

Geol Consultants Limited
3 Gladstone Terrace
Gateshead
NE8 4DY
0191 477 2020
enquiries@geolconsultants.co.uk

ROTARY BOREHOLE LOG

Project				DRILLHOLE No
25 Moore Avenue, South Shields, NE34 6AA				**RBH01**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEOL20-9383	02-02-21			
Contractor				Sheet
Geol Consultants Limited				2 of 2

RUN DETAILS				STRATA				
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION Main	Geology	Instrument/ Backfill
					(12.00)	Light grey SILTSTONE with MUDSTONE interbeds (drillers description). *(continued)*		
					35.00	Borehole terminated at a depth of 35.00m. No ground gases detected during the investigation period.		

Gas Monitoring During Drilling						
Date	Time	Oxygen	Carbon Dioxide	Methane	Carbon Monoxide	Hydrogen Sulphide

Rotary Flush			
From	To	Type	Returns

GENERAL REMARKS

The descriptions are based on the drillers interpretation of the cuttings brought to the surface and the drilling rates maintained during the drilling process.

All dimensions in metres Scale 1:150	Client Mr. Keith Thompson	Method/ Plant Used Rotary Open Hole	Logged By TMc

GEOL ROTARY WITH GAS LOGS.GPJ GINT STD AGS 3_1.GDT 7/3/21

Geol Consultants Limited
3 Gladstone Terrace
Gateshead
NE8 4DY
0191 477 2020
enquiries@geolconsultants.co.uk

ROTARY BOREHOLE LOG

Project				DRILLHOLE No
25 Moore Avenue, South Shields, NE34 6AA				RBH02
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEOL20-9383	02-02-21			
Contractor				Sheet
Geol Consultants Limited				1 of 2

RUN DETAILS				STRATA					
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION Main		Geology	Instrument/ Backfill
					0.30	Grass overlying dark brown soil (drillers description).			
					(3.50)	Medium brown sandy gravelly CLAY (drillers description).			
					3.80				
					(5.45)	Light brown sandy LIMESTONE (drillers description).			
					9.25				
					9.75	Medium brown SANDSTONE (drillers description).			
					(17.65)	Dark brown silty MUDSTONE (drillers description).			

Gas Monitoring During Drilling						
Date	Time	Oxygen	Carbon Dioxide	Methane	Carbon Monoxide	Hydrogen Sulphide

Rotary Flush			
From	To	Type	Returns
0	35.00	Water	100%

GENERAL REMARKS

The descriptions are based on the drillers interpretation of the cuttings brought to the surface and the drilling rates maintained during the drilling process.

All dimensions in metres Scale 1:150	Client Mr. Keith Thompson	Method/ Plant Used Rotary Open Hole	Logged By TMc

GEOL ROTARY WITH GAS LOGS.GPJ GINT STD AGS 3_1.GDT 7/3/21

Geol Consultants Limited
3 Gladstone Terrace
Gateshead
NE8 4DY
0191 477 2020
enquiries@geolconsultants.co.uk

ROTARY BOREHOLE LOG

Project				DRILLHOLE No
25 Moore Avenue, South Shields, NE34 6AA				**RBH02**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
GEOL20-9383	02-02-21			
Contractor				Sheet
Geol Consultants Limited				2 of 2

RUN DETAILS						STRATA		
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION Main	Geology	Instrument/ Backfill
					27.40	Dark brown silty MUDSTONE (drillers description). *(continued)*		
					(7.60) 35.00	Light grey SILTSTONE with MUDSTONE interbeds (drillers description).		
						Borehole terminated at a depth of 35.00m. No ground gases detected during the investigation period.		

Gas Monitoring During Drilling						
Date	Time	Oxygen	Carbon Dioxide	Methane	Carbon Monoxide	Hydrogen Sulphide

Rotary Flush			
From	To	Type	Returns

GENERAL REMARKS

The descriptions are based on the drillers interpretation of the cuttings brought to the surface and the drilling rates maintained during the drilling process.

All dimensions in metres Scale 1:150	Client Mr. Keith Thompson	Method/ Plant Used Rotary Open Hole	Logged By TMc

GEOL ROTARY WITH GAS LOGS.GPJ GINT STD AGS 3_1.GDT 7/3/21

The Coal Authority

Permit to Enter or Disturb Coal Authority Interests

Permit 21330

Name and Address of Permit Holder:

Geol Consultants
3 Gladstone Terrace
Gateshead
Tyne and Wear
NE8 4DY

Site Location:

Land to rear of
25 Moore Avenue
South Shields
Tyne & Wear
NE34 6AA

This certificate hereby grants the above named Permit Holder a Permit to carry out:-

Ground investigation into possible unrecorded shallow workings by two boreholes to a target depth of 30m to determine ground conditions all within the Authority's interests at the identified site location above as shown on the Grant Permit Boundary (overleaf) for the period of 12 months from the granted date shown below. *The granting of this Permit does not constitute advice given by the Authority in relation to the proposed operations. It is the Permit Holder's responsibility to obtain appropriate health, safety, environmental, technical and legal advice.*

Conditions:

- *Water flush drilling only*
- *Gas Monitoring for CO, CH_4, CO_2, O_2, H_2S at the boreholes and rig*
- *Operators undertaking the work must be in possession of this certificate and the Permit boundary plan at the time of works*
- *Appropriate borehole sealing without delay and to withstand site level changes*

Signed: [redacted] Granted Date: ***26/01/2021***

For and on behalf of The Coal Authority

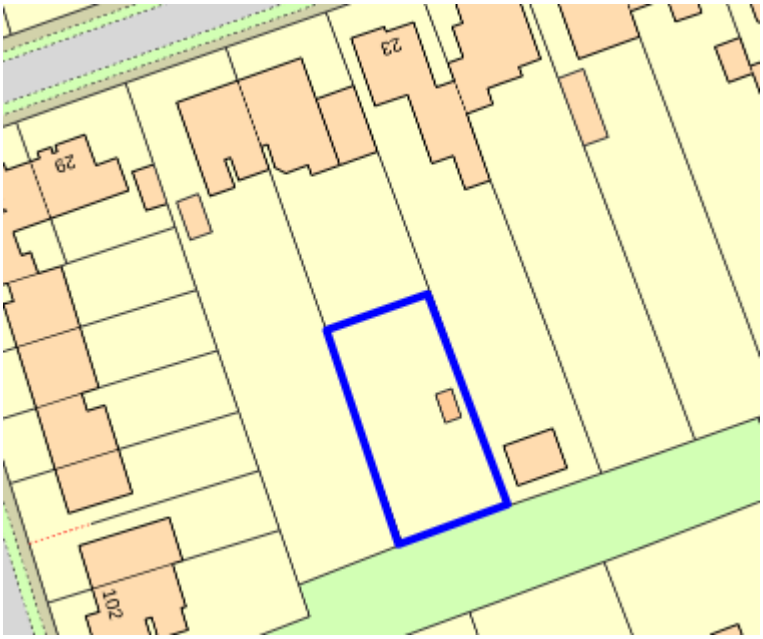
Nominated Representative: Leigh Sharpe, Permitting Manager;
The Coal Authority, Permitting Office, 200 Lichfield Lane, Mansfield, Notts, NG18 4RG
Tel: 01623 637450; E-Mail: permissions@coal.gov.uk

The Coal Authority

Granted Permit Boundary

Permit Ref: 21330

Permit Boundary:



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