

**Environmental
Geotechnical
Specialists**



COAL RISK ASSESSMENT

job number	date
site address	
written by	
checked by	
issued by	

Rogers Geotechnical Services Ltd

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GEOTECHNICAL
ENVIRONMENTAL



Contents

		Page
1.	Introduction	1
2.	Geological Desk Study	2
2.1	British Geological Survey Map Viewer	2
2.2	Coal Authority Mines Report	3
2.3	Geological Survey Borehole Records	4
3.	Risk Assessment	4
4.	Conclusions	5

Appendices

1.	Site Plan
2.	Coal Authority Report



Report on a Coal Mining Risk Assessment

Location: Land adjacent to 144 Weatherhill Road
Birchenccliffe, Huddersfield, HD3 3QY

For: Mr David Buckley

Report No. J4635/19/E/CRA

Date: May 2019

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

Charlotte Mason MSc FGS
Geo-environmental Engineer

Rob Palmer MSc FGS
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 77 ; Huddersfield 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: 51002106030001 dated 29th April 2019

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	Lower Coal Measures	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.

It should be appreciated that the site is situated on the flank of a hill; topographically the surrounding area slopes relatively steeply to the east.

In addition to the above, the site is situated on the undifferentiated strata of the Pennine Lower Coal Measures. Whilst there are no dip indicators relevant to the site (i.e. within 500m of the site or within the same fault block), based on the outcrop pattern and the topography of the local area, it can be assumed that the solid geology dips at shallow angles to the east. As such, it is anticipated that the stratum beneath the site is chronostratigraphically between the younger 48 Yard Rock, present to the west of the site (fine-grained sandstone) and the older 38 Yard Coal, present to the east.

Furthermore, the site is situated within a heavily faulted area, with a local fault trend pattern orientated north-east south-west. These faults are not anticipated to affect the proposed development.

Due to the nature of the faulting within the local area, there are limited coal outcrops within the vicinity of the site that are anticipated to be present within the stratum profile beneath the development. Therefore, consideration should be directed to the generalised vertical section provided on the BGS Map (Huddersfield – Map 77). The coal seams anticipated to be present beneath the site are summarised 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
36 Yard Coal	0.0 – 0.5	250m E	Within 12m bgl
Hard Bed	0.1 – 0.8	-	In excess of 30m bgl.

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

When taking into consideration the topography of the local area, and assuming a shallow dip of the solid geology (3° east, based on information within the Consultant mining report), it can be assumed that the 36 Yard Coal is likely to be present at a depth beneath the site of between 7m

⁵ Sources: British Geological Survey (NERC) Map Sheets 77; Huddersfield; 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]



and 12m bgl. The next coal seam within the sequence is the Hard Bed Coal, however, this seam is anticipated at a depth in excess of 30m bgl.

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:

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	Halifax Soft (Soft Bed Coal) – 80m depth – Beneath site – 0.8m thickness – last worked 1857.
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	The 36 Yard Bed is noted to outcrop on the site and has a bearing of 253°. No further details are offered.
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 51002106030001).
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 and Coal Authority Interactive Viewer

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.

Unfortunately in this instance, there are no borehole scans available within the vicinity of the site that will assist with this assessment. Whilst there are borehole scans present within 500m to the north, south and east of the site, these boreholes are situated within adjacent fault blocks and therefore are not anticipated to represent comparable ground conditions to those anticipated to be present below the site.

In addition, information provided by the Coal Authority Interactive Map Viewer⁷ has been reviewed. The viewer indicates that a linear feature bisects the site. This feature is comparable to the outcrop listed within the Consultants Mining Report. A summary of the data provided with regard to this feature is presented below:

Table 4: Coal Authority Interactive Map Viewer

Feature:	Outcrop
Seam Code:	NY425K
Conjectured:	True
Dip Side:	Right
Mineral Code:	Coal
Verified:	True
Thick Drift:	False

It should be noted that there are some significant differences between the map within the Coal Mining Consultants Report, which is believed to be based upon 1978 data, and the contemporary 2003 map sheet. In this regard, the Coal Mining Consultants Report indicates that the 36 Yard Coal Seam outcrops on site. However, the 2003 map indicates that this seam outcrops to the east of the site and is not outcropping on site.

In general terms, the most recent data has been given greater credence as it most likely represents a revised understanding of the geological conditions. Therefore, it is anticipated that the seam listed above will outcrop to the east of the site.

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.

⁷ Sources: Coal Authority Interactive Map Viewer [online resource from <http://mapapps2.bgs.ac.uk/coalauthority/home.html>]



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 of Instability	Coal Seam(s) Considered	Risk Rating
1	Shallow coal seams	36 Yard Coal	Low
2	Coal workings at depth	The Coal Authority report indicates that there are recorded coal workings at 80m depth beneath the property.	Low

On the basis of all of the information provided above, one coal seam is anticipated to be present within 30m of the surface at the site. Whilst the seam may be of limited thickness, the possibility of it being worked below the site cannot be ruled out. Historic coal mining activity is evident in the nearby area, and therefore 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 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.
36 Yard Coal	0.0 – 0.5	Within 7m to 12m bgl	5.5m

Based on the above information, it is considered that there will be a sufficient thickness of competent overburden above the 36 Yard Coal in order to prevent the risk of instability posed by the presence of any illicit workings. Therefore, a low risk rating has been assigned to coal workings at depth.

In regard to deeper mining which could affect the site, the property is within a surface area that could be affected by past deep underground mining. However, any movement caused by such features is likely to have ceased.

4. Conclusions

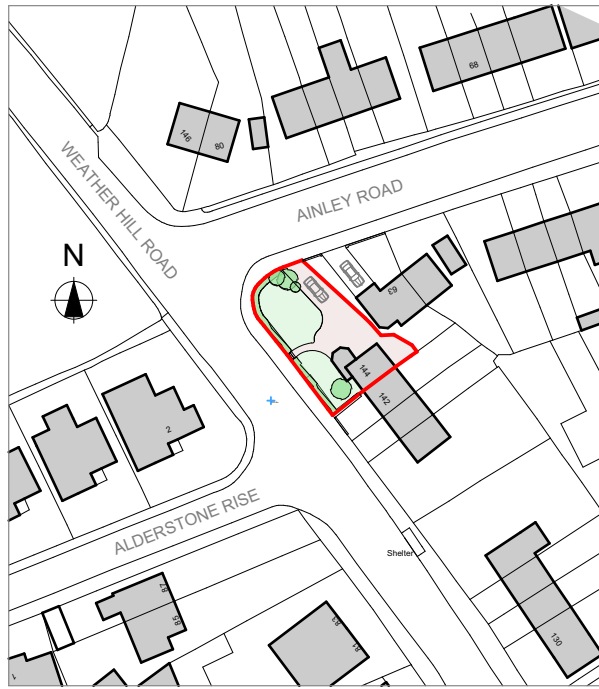
In light of the potential risks of instability at the site from the working of shallow coal, it can be concluded that any illicit coal voids within shallow coal workings below the site pose minimal risk to future developments.

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



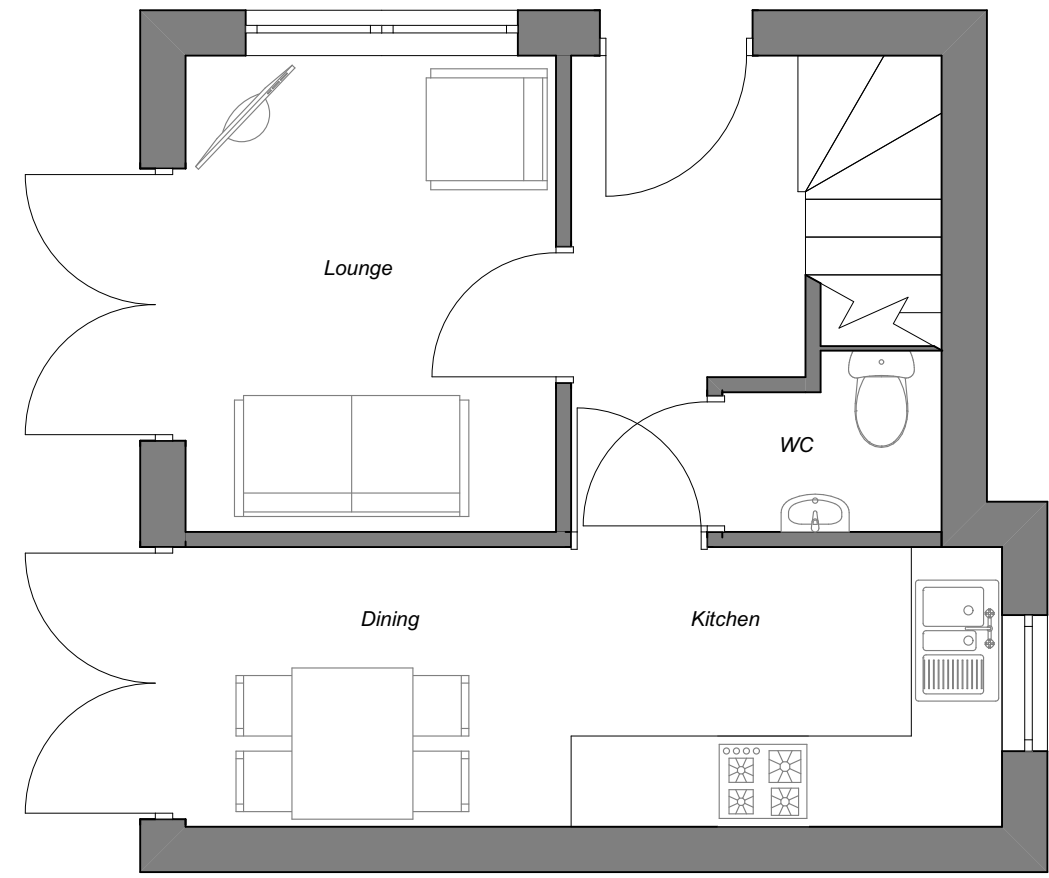
Appendix 1

Site Plan

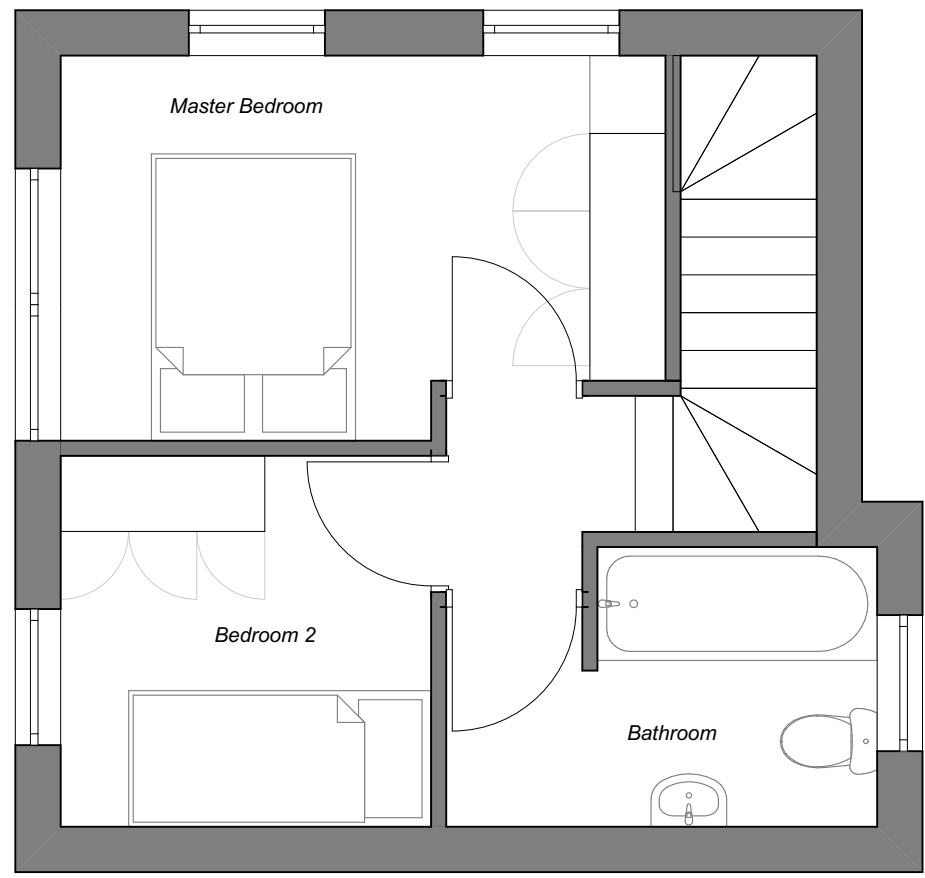


Location Plan
Scale 1:1250

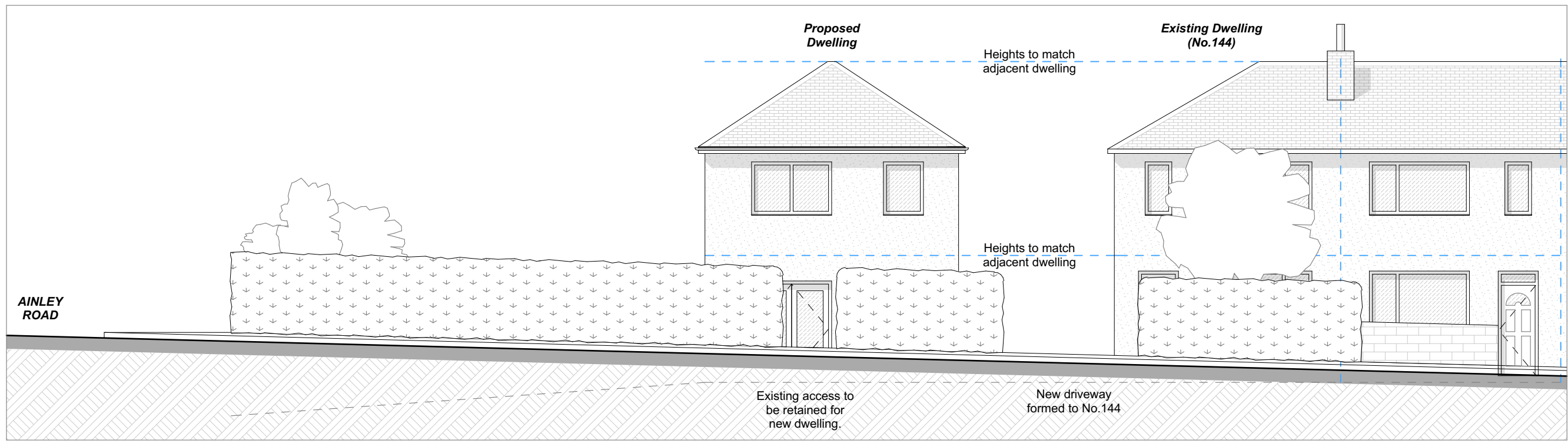
Legend
— Indicates extent of land to be considered under this application.



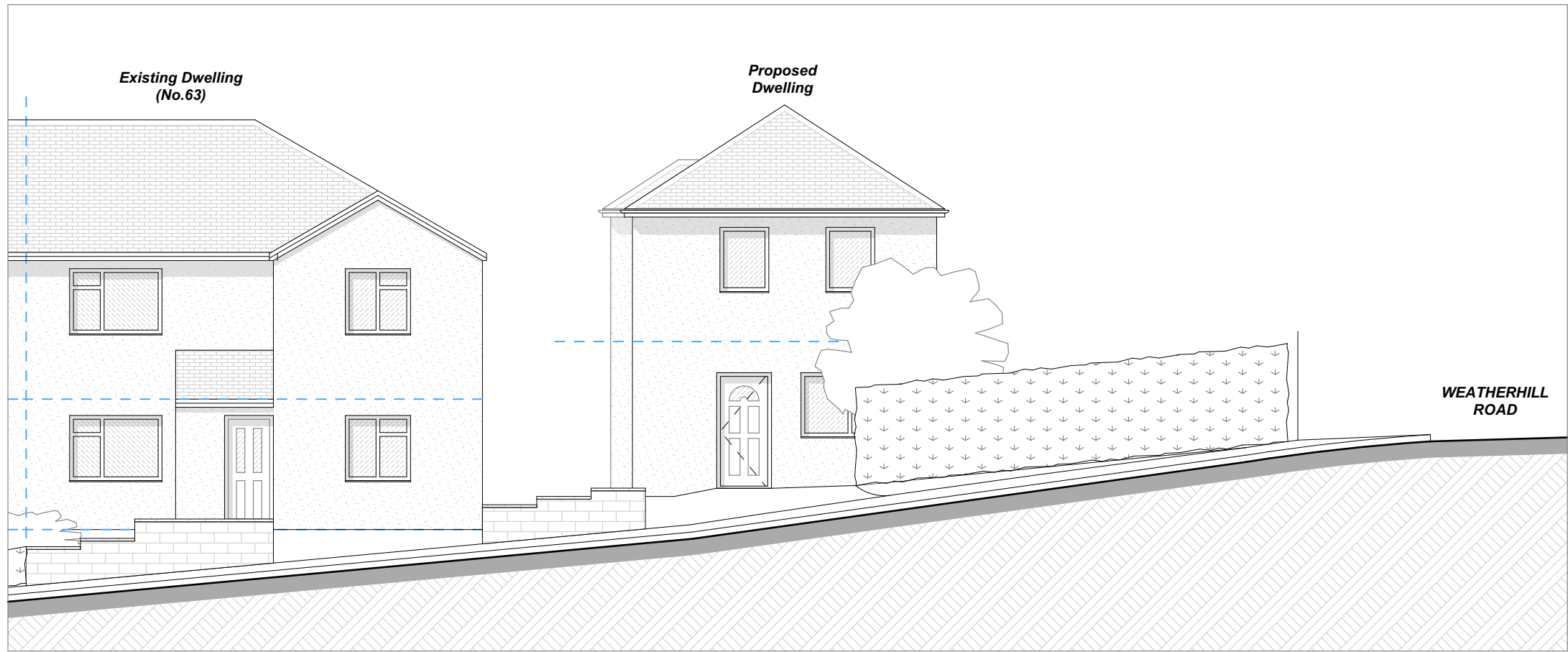
Proposed Ground Floor Plan
Scale 1:50



Proposed First Floor Plan
Scale 1:50



Street Elevation - Weatherhill Road
Scale 1:100



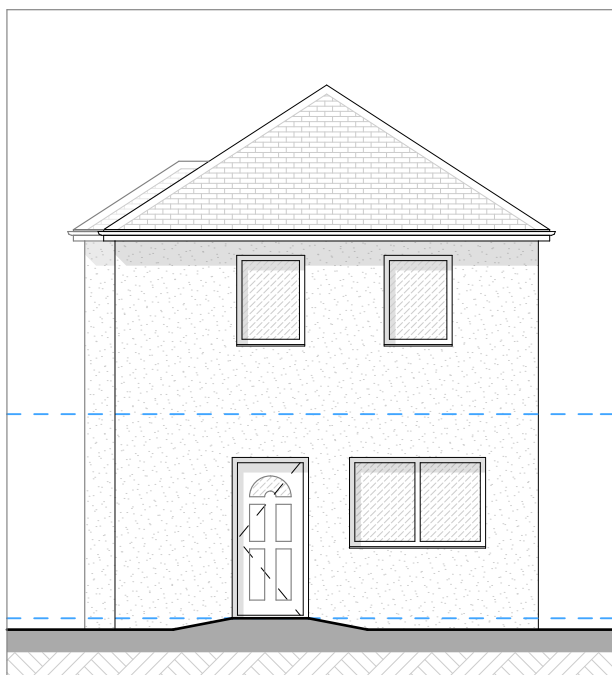
Street Elevation - Ainley Road
Scale 1:100



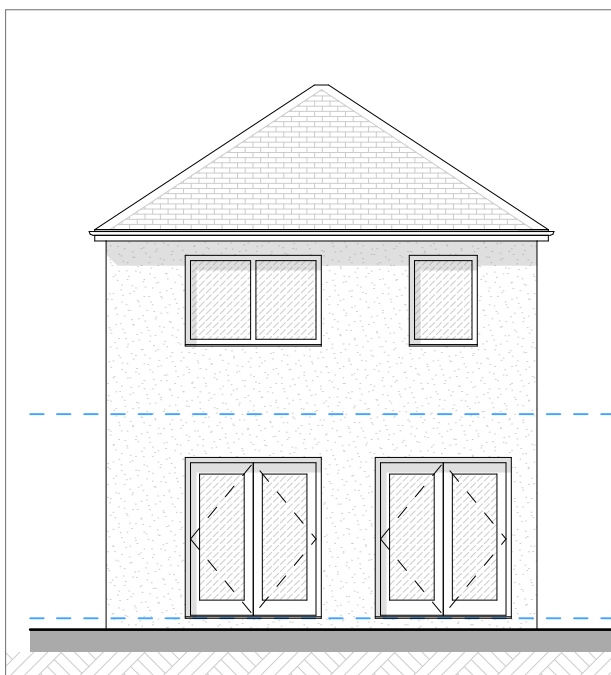
Existing Site Plan
Scale 1:100



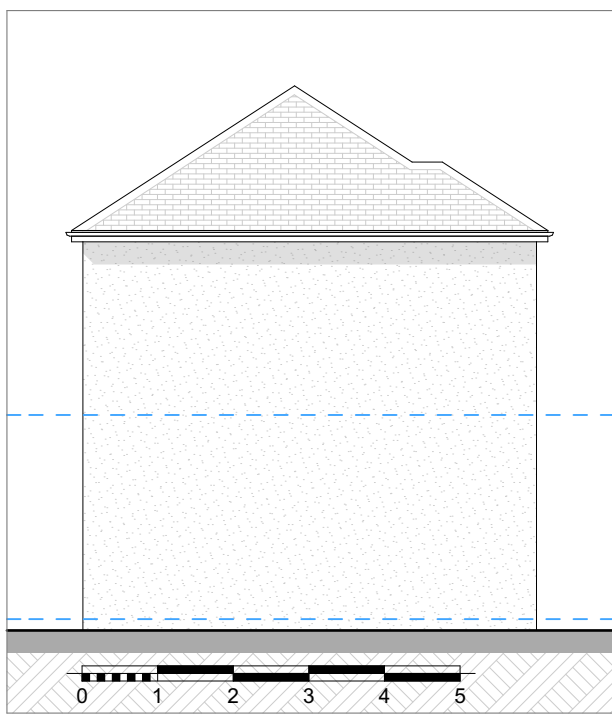
Proposed Site Plan
Scale 1:100



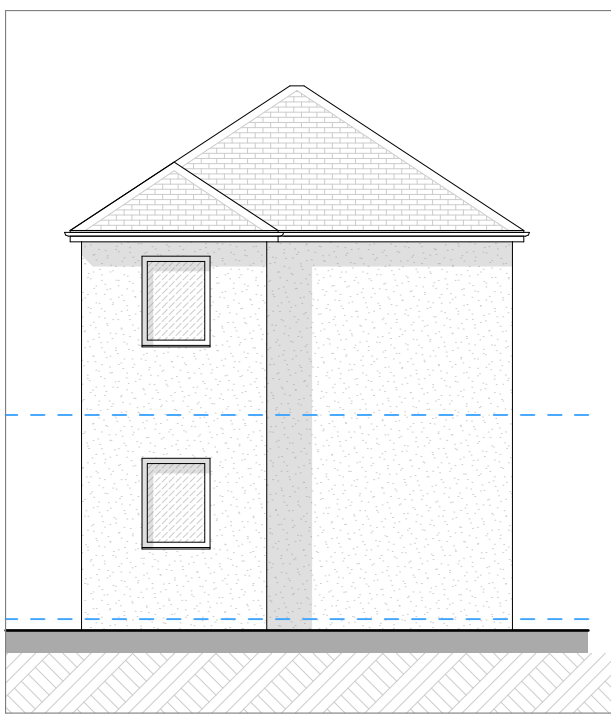
North West Elevation
Scale 1:100



South West Elevation
Scale 1:100



South East Elevation
Scale 1:100



North East Elevation
Scale 1:100

Revision	Description	Date
001	Approved	July '18
002	Planning	July '18
003	1:1250, 1:100	A1
004	002	-



Appendix 2

Coal Authority Report

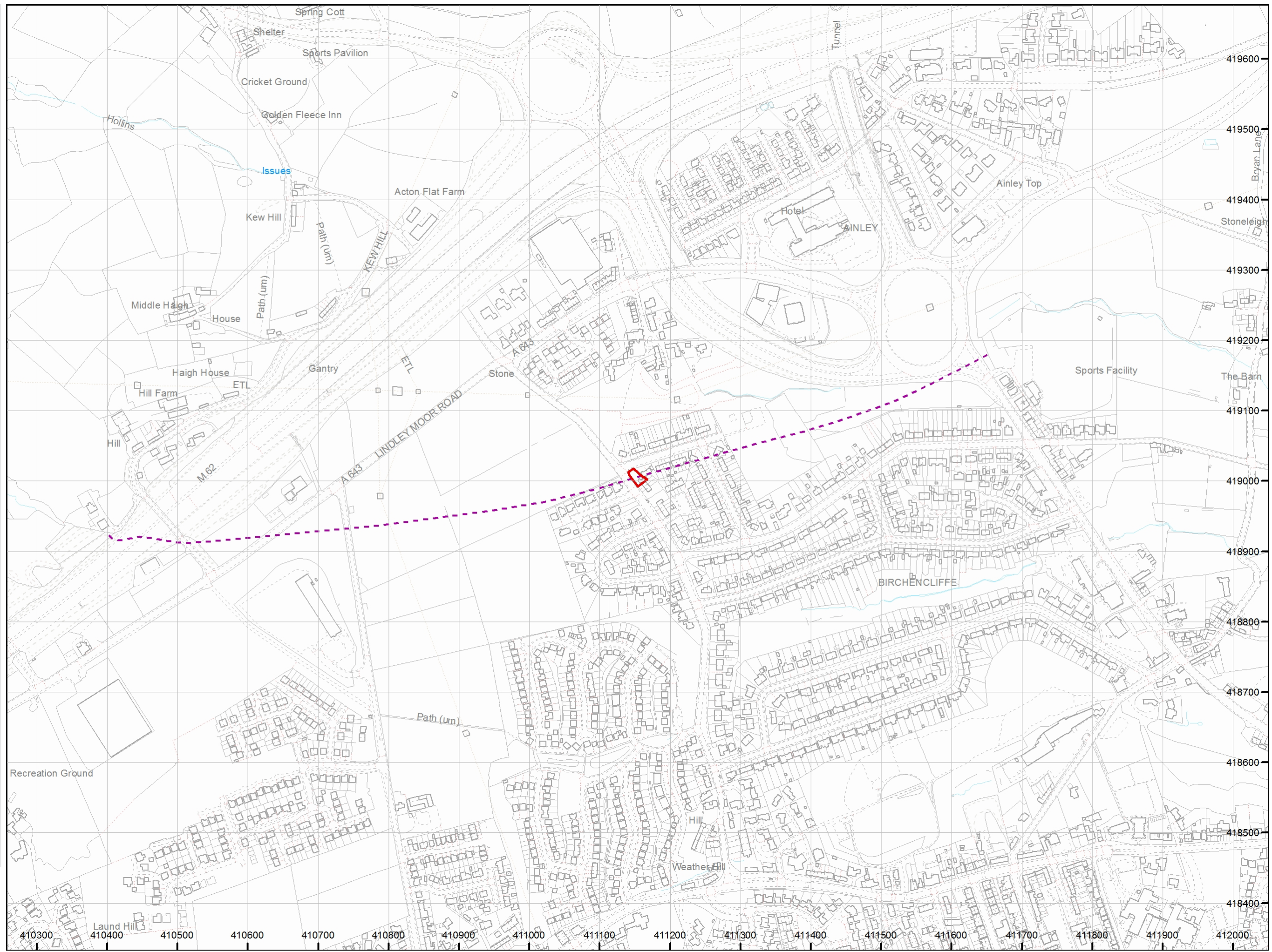
The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

Approximate position of the enquiry boundary shown 

Outcrop (Conjectured) 

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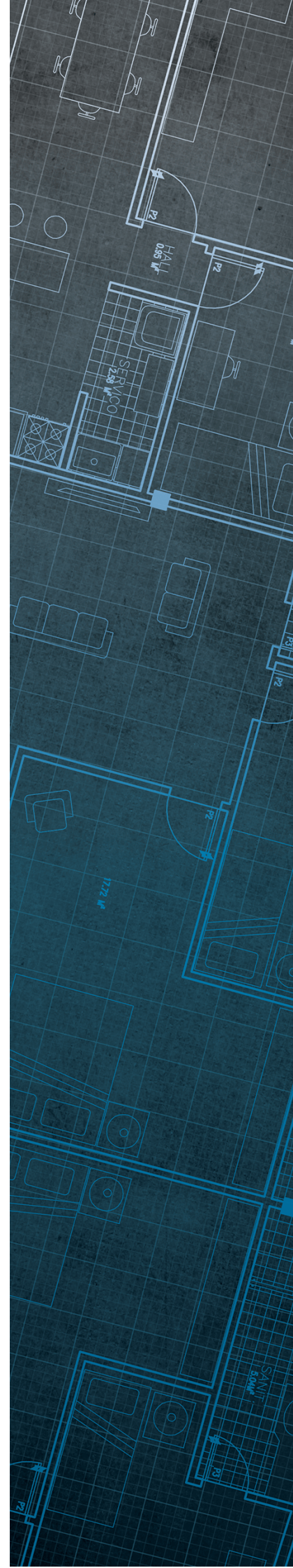
The Coal
Authority

Consultants Coal Mining Report

144 Weatherhill Road
Birchcliffe
Huddersfield
Kirklees
HD3 3QY

Date of enquiry: 29 April 2019
Date enquiry received: 29 April 2019
Issue date: 29 April 2019

Our reference: 51002106030001
Your reference: J4635/19/EDS PO-0089



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

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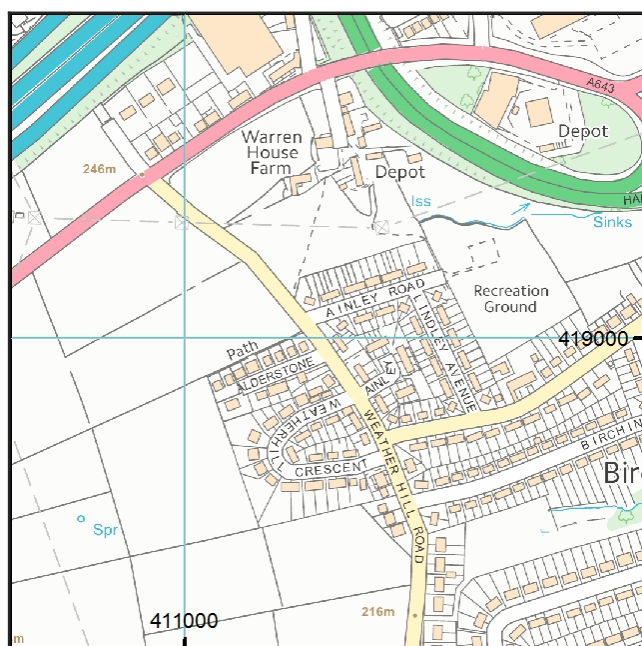
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 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



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Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	HALIFAX SOFT	Coal	6HCJ	80	Beneath Property	3.3	North	80	1857

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:

RC5	RC6	RC7
-----	-----	-----

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
36 YARDS BAND	Coal	Yes	Within	N/A	253

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.

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

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.

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.

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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