Coal Mining Risk Assessment
For
Mr Peter Dimberline
Knowles Quarry
Barnsley Road
Cudworth

Client:-
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Executive Summary

Proposal	2 or 3 no. blocks of 2 to 2.5 storey semi-detached or terraced housing.
Current land use	Former sandstone quarry with exposed faces up to 10m high. Average levels are approximately 47.0m AOD falling to the west.
Mining related site history	In addition to the site occupying a disused quarry, several former adits are recorded to the southwest and collieries were present locally. The site lies within an area affected by historic mining activities.
Geology	Directly underlain by the Glass Houghton sandstone of the Middle Coal Measures. The Sharlston Low coal seam outcrops just west of the site and lies beneath the site at shallow depth.
Mining history and context	The site lies within an area of probable past shallow coal mining and is within a Development High Risk Area as defined by the Coal Authority. The Sharlston Low coal seam has been historically worked by adits locally and mine workings have been confirmed by intrusive investigation.
Mining related risks	There is a potential for shallow mining beneath the site potentially leading to surface instability – **High**. Unrecorded former mine entries may be present on the site – **Moderate to High**. Historic non-coal surface mining/quarrying – **High**. Mine gases may be present on the site – **Moderate to High**.
Mitigation of risks	Trenching and proof drilling is recommended to confirm the status of the underlying Sharlston Low coal seam. If shallow mining is confirmed as potentially affecting surface stability, drill and grout may be required. Intrusive investigation to determine nature and depth of quarry backfill and presence of remnant sandstone. Vigilance during site enabling works to check for former unrecorded mine entries. Incorporation of protection measures for mine gases may be required within new development, subject to the advice of regulators.

1. Introduction

1.1 Design IT were appointed by Peter Dimberline to undertake a Coal Mining Risk Assessment (CMRA) for a site located at Knowles Quarry, Barnsley Road, Cudworth which is proposed for development with 6 no. 2 to 2.5 storey semi-detached and/or terraced residential properties. A pre-planning enquiry has been submitted (ref. 2019/ENQ/00116) to Barnsley Metropolitan Borough Council (BMBC) and the site is identified as lying within a Coal Authority (CA) Coal Mining Development Referral Area, thus necessitating the requirement for a CMRA in order to provide BMBC with information on historic coal mining and an assessment of its potential impact on land stability.

1.2 The purpose of this CMRA is to:

- Present a desk-based review of all available information on the coal mining issues which are relevant to the application site
- Use that information to identify and assess the risks to the proposed development from coal mining legacy, including the cumulative impact of issues
- Set out appropriate mitigation measures to address the coal mining legacy issues affecting the site, including any necessary remedial works and/or demonstrate how coal mining issues have influenced the proposed development, and
- Demonstrate to the Local Planning Authority that the application site is, or can be made, safe and stable to meet the requirements of national planning policy with regard to development on unstable land

1.3 To this end the study has included an inspection of published historical maps, published geological data, publicly available planning information and a review of a CA mining report, together with other sources as indicated within the report.

1.4 This report presents the factual information available during this appraisal, interpretation of the data obtained and recommendations relevant to the scope of works outlined above.

1.5 The comments and opinions presented in this report are based on the findings of the available desk study assessment carried out by Design IT. Responsibility cannot be accepted for

any conditions not revealed by this desk study and which have not been taken into account by this assessment.

1.6 This report has been prepared for the sole use of Peter Dimberline and his client. No other third party may rely upon or reproduce the contents of this report without written approval of Design IT. If any unauthorised third party comes into possession of this report, they rely on it entirely at their own risk and we do not owe them any Duty of Care or Skill.

2. Site location and description

2.1 The site is centred on National Grid Reference 438245mE 408705mN and located north of Barnsley Road and east of Pontefract Road (A628) roundabout junction within the western part of Cudworth. The site is located within a residential area and rural setting. A site location plan is included as **Appendix A.**

2.2 An inspection of a recent topographical survey of the site and recent aerial imagery indicates the site to comprise a disused former quarry. The quarry itself is almost entirely overgrown with coarse vegetation, immature and semi-mature trees. Derelict structures are evident. Existing levels across the quarry floor are approximately 47m AOD with the northern quarry face reaching a maximum height of around 10m and the western face varying between some 2 and 7m. Levels rise gently eastwards across the site, the eastern part approximately 2m higher. Locally, levels fall steadily to the west. A topographical survey is included as **Appendix A.**

Proposed development

2.3 It is proposed to construct 6 no. 2 to 2.5 storey properties as either a terrace of 4 dwellings and a pair of semi-detached properties or 3 pairs of semi-detached properties together with an access road, parking provision and gardens. Details of the proposal are included as **Appendix A.**

Site history

2.4 Historical maps for the site and its surroundings, available from internet based sources, have been reviewed and a summary of this information, specifically relating to mining related features, is provided below.

Date	On site features	Off site features (coal mining related)
1854 – present	Knowles sandstone quarry (disused post 1893). Post 1962, several buildings are present in the northern, central and eastern parts of the site.	Quarries present between approximately 200 and 500m to the north, southeast and southwest. Monk Bretton colliery approximately 1,1km southwest and Carlton Main colliery approximately 1.3km northwest.

	Post 1984, building present in the south of the site.	Post 1906, clay pit and brickworks approximately 225m west.

3. Geological setting and historical mining context

3.1 Information obtained from various sources pertaining to the site's geology and historical mining perspective is summarised in the table below with information sources identified as appropriate.

Information sources	British Geological Survey (BGS) 1:10,000 scale, sheet SE30NE Monk Bretton Solid & Drift and 1:50,000 scale, sheet 87 Barnsley Solid and Drift Edition. BGS online Borehole Database. Geological Survey Memoir, Sheet 87 'Geology of the Country Around Barnsley', 1947. 'Sections of Strata of the Coal Measures of Yorkshire', W H Wilcockson, 1950 3rd Edition. 'The Geology of the Yorkshire Coalfield', 1878 Green et. al. BGS 'The Pennine Lower and Middle Coal Measures formations of the Barnsley District', Report IR/06/135. BMBC online Planning Applications Search. CA online Interactive Viewer. CA Consultants coal mining report, Ref. 51002230159001, February 2020 (included as **Appendix B**). Historic Ordnance Survey (OS) online mapping
Made ground	None shown on site, however given the historical development of the site (disused and possible infilled former quarry) some is expected.
Drift	None present.
Solid	Glass Houghton Rock sandstone unit of the Carboniferous Middle Coal Measures.
Dip of strata	4^0 to the east.
Faults	A fault is indicated in close proximity to the southtern site boundary trending west to east and downthrowing to the north. However, none are indicated to cross the site itself.
Coal seams	The Sharlston Low coal seam is shown as outcropping approximately 25 to 30m west of the site and is considered to underlie the site at shallow depth. Given that the topography falls westwards and the western quarry face is estimated to be between 2 and 7m in height, it is likely that the coal seam may daylight in the deeper northwestern corner of the quarry and be present at very shallow depth beneath the southern quarry floor. No other significant coal seams are present at

	shallow depth below the Sharlston Low coal within the stratigraphic section. Local BGS recorded thicknesses for the Sharlston Low coal seam is between 0.3 and 0.8m. Information presented on the 1:10K map recorded regional thicknesses of between 0.3 and 0.48m for the coal seam.
Shafts and collieries	Records for the Monckton Main colliery in Royston, approximately 3.2km north of the site, indicate the Sharlston Low coal seam to be approximately 0.9m thick.
Nearby intrusive information	Recent intrusive investigations for a site approximately 450m southeast confirmed the Sharlston Low coal seam as historically worked. Intact thicknesses for the coal seam varied between 0.1 and 1.2m (typically 0.5 to 0.8m) for the upper leaf and between 0.1 and 0.4m for the lower leaf. The separation of the leaves was approximately 0.5 to 1.4m with a total maximum thickness (including mudstone parting) of both coal seams as 1.3m. Evidence of past workings, as broken ground or voids, was proved at a typical thickness of 1.2m. Competent rockhead was approximately 1 to 2m depth. A borehole located approximately 1.2km north of the site recorded the Sharlston Low coal seam intact at a thickness of 0.83m.
Coal Authority Consultants coal mining report	The pertinent points presented in the CA consultants coal mining report are: A total of 1 seam of worked coal is recorded beneath the site at a depth of between 359m, last worked in 1900. The depth of this seam is such that there is considered to be no adverse effect upon the surface stability of the site. There are probable unrecorded shallow coal workings beneath the site, considered to be associated with the Sharlston Low coal seam. No spine roadways are recorded beneath the site at shallow depth. There are no known mine entries within 100m of the site. There are no recorded former opencast coal mines within 500m of thee site. There are no records of mining related subsidence claims within 50m of the site. There are no records of any mine gas emissions requiring action within 500m of the site.
Shallow mining	The CA Interactive Viewer indicates the site to lie within an area of probable shallow coal mining and is considered to be associated with the possible working of the Sharlston Low coal seam. The site is located within a CA designated Development High Risk Area. There are no nearby recorded former mine entries within close proximity of the site. However, several recorded former adits are

	indicated further to the southwest and associated with the exploitation of the Sharlston Low coal seam at outcrop.
Surface mining	The site itself is located within a former sandstone quarry with several other former quarries and a clay pit recorded between 200 and 500m to the north, southeast, southwest and west. There are no CA recorded former surface opencast coal mines within the vicinity of the site.

4. Risk assessment

4.1 The potential risks to the redevelopment of the site associated with the coal mining legacy of the locality are summarised in the following table.

Coal mining issue	Risk		Risk assessment (Risk rating)
	Yes	No	
Underground coal mining (recorded at shallow depths)	-	**No**	However, nearby mine workings are confirmed within the Sharlston Low coal seam. The Sharlston Low coal seam is recorded as present at shallow depth beneath the site, outcropping close to the site's western boundary – **High**
Underground coal mining (probable at shallow depths)	**Yes**	-	The Sharlston Low coal seam outcrops just west of the site and is present beneath the site at shallow depth. The site lies within an area of probable shallow workings and within a Development High Risk Area. Evidence of historic coal mining and exploitation of the Sharlston Low coal seam in the locality would suggest potential shallow mining of this coal seam beneath the site – **High**
Mine entries (shafts and adits)	**Yes**	-	Former mine entries (adits) are recorded to the southwest of the site, associated with the outcropping Sharlston Low coal seam – **Moderate to High**
Coal mining geology (fissures)	-	**No**	CA information and published geology does not indicate any geological weaknesses on site as a consequence of mining related activities – **Low**
Record of past mine gas emissions	**Yes**	-	CA information states no mine gas related issues in the locality. However, potential for mine gas as shallow mining is probable beneath the site – **Moderate to High**
Recorded coal mining surface hazard	-	**No**	CA information does not record the presence of any mining surface hazards on site which have undergone remedial works – **Low**
Surface mining and quarrying (opencast workings)	**Yes**	-	A sandstone quarry previously occupied the site. No past surface opencast coal workings are recorded within the vicinity of the site – **High**

5. Discussion

5.1 The risk assessment above highlights several potential risks posed to the site during redevelopment, namely potential for shallow coal workings, potential for unrecorded mine entries, former surface non-coal mining/quarrying and associated mine gas emissions, cumulatively assessed as **moderate to high**. These risks are discussed in turn more fully below.

Shallow mine workings

5.2 The Sharlston Low coal seam is recorded as outcropping just beyond the western site boundary, underlying the site at shallow depth. It is estimated that the Sharlston Low coal seam is likely to be present beneath the site at up to approximately 5m below the surface. Given that the site occupies a former quarry excavated to a maximum depth of 10m along its northern face, it may be that the Sharlston Low coal seam is exposed in the northwestern corner of the site itself. Beneath the site, depth to rockhead is likely to be variable dependent upon the thickness of any quarry waste materials remaining. Nearby intrusive investigations indicate the Sharlston Low coal seam to be locally up to 1.3m thick, comprising 2 leaves. There is considered to be *insufficient* competent rock cover above the Sharlston Low coal seam to maintain surface stability in the event of the seam having been worked beneath the site. This assumption is based upon having a minimum of 10 times (10t) intact total seam thicknesses of competent rock strata present above the seam. However, the surface stability at the site can only be comprehensively determined through undertaking intrusive works. Such intrusive investigations will determine whether mine workings are present within the Sharlston Low coal seam and to what extent, as well as confirming the depth of this coal seam and its thicknesses beneath the site.

Mine entries

5.3 Several former mine entries (adits) are recorded as being present to the southwest of the site, associated with the exploitation of the Sharlston Low coal at outcrop. Also, as a consequence of the nearby outcrop of the Sharlston Low coal seam, the presence of other nearby unrecorded former mine entries associated with the exploitation of this coal seam cannot be discounted, as well as potential on-site unrecorded mine entries. Pre 1873, it was not a statutory requirement to record mine entries and mining plans.

Such features are considered as presenting a potential risk to development by way of instability and potential collapse. A zone of influence would be associated with any such mine entry whereby any proposed development within this zone would be affected by potential instability. Intrusive investigations would be required to locate past mine entries beneath the site.

Surface non-coal mining/quarrying

5.4 The site occupies a former sandstone quarry. This may have been backfilled with sandstone waste and other unknown materials following the cessation of quarrying operations. The presence of such backfill presents a stability hazard in that it is often inadequately engineered resulting in excessive settlement beneath structures founded on such material without the incorporation of adequate mitigation measures. In addition, if structures straddle a buried intact area of sandstone as part of the former backfilled workings then differential settlement across such a feature could adversely affect any structures.

Mine gas

5.5 The potential for upward migration of mine gases beneath the site cannot be discounted. Such gases are particularly prevalent in former pillar and stall workings that remain open and allow them to build up over time. Mine gases pose a potential significant human health risk to the future occupants of dwellings and existing occupants of adjacent dwellings. Deep made ground may potentially present a ground gas source.

6. Proposed mitigation strategy

6.1 A review of geological and historical mining information at the site has shown that there is a risk to surface stability from shallow mine workings that may be present within the Sharlston Low coal seam. Additionally, the site's surface stability is at risk from unrecorded former mine entries on or off site, from past surface non-coal mining/quarrying at the site together with a potential risk posed by upward migration of mine gases.

Shallow mine workings

6.2 Geological and CA mapping together with nearby intrusive information all demonstrate there to be a plausible risk presented by shallow mine workings within the Sharlston Low coal seam present beneath the site. It would be prudent, therefore, to undertake proof drilling across the site to confirm the depth to rockhead and depth to/nature of the underlying coal seam. Boreholes should be put down to 30m below existing ground levels with appropriate permission and licences obtained from the Coal Authority prior to commencing any such works. If shallow mining of the above is proved as presenting a risk to the surface stability of the site, then drilling and grouting works may be required to consolidate the workings.

Prior to undertaking any drilling at the site, it is recommended that the quarry faces are examined to determine whether the Sharlston Low coal seam is exposed. Should the coal seam be confirmed, then the borehole investigation can be targeted across the areas of the site where it will be most effective.

Mine entries

6.3 The presence of any unrecorded mine entries should be confirmed. During site enabling works and a site strip the exposed sub soils should be checked for the presence of disturbed and potentially unstable ground associated with backfilling of such features. However, if deep made ground is present this may make the identification of any such features difficult. A combination of trenching and drilling may be the only feasible way of identification and vigilance should be taken during these works with respect to any anomalous findings. If mine entries are identified on the site, then these will require treatment by grouting and capping at the surface and the siting of any new development footprint over these features or within influencing distance should be avoided.

Surface non-coal mining/quarrying

6.4 Deep made ground associated with backfilling of the former sandstone quarry using unknown materials may underlie the site. Site investigation by either trial pitting or drilling should be undertaken to determine the nature of the sub soils and whether any remnant sandstone pillars are present. If the above are present, then advice should be sought as to adopting an appropriate foundation solution, which may involve piling or a use of a raft foundation.

Mine gas

6.5 The incorporation of robust gas protection measures during construction are considered likely within the new development. However, such measures are inherently incorporated within the construction of new buildings by way of use of a suspended floor slab offering a passively vented underfloor void, incorporation of a radon protection membrane (if appropriate) and a damp proof membrane together with the sealing of service entries. The requirement for a gas monitoring programme is considered warranted, subject to the results of an intrusive investigation. It is recommended that advice and approval is sought from regulators at an early stage.

7. Conclusions

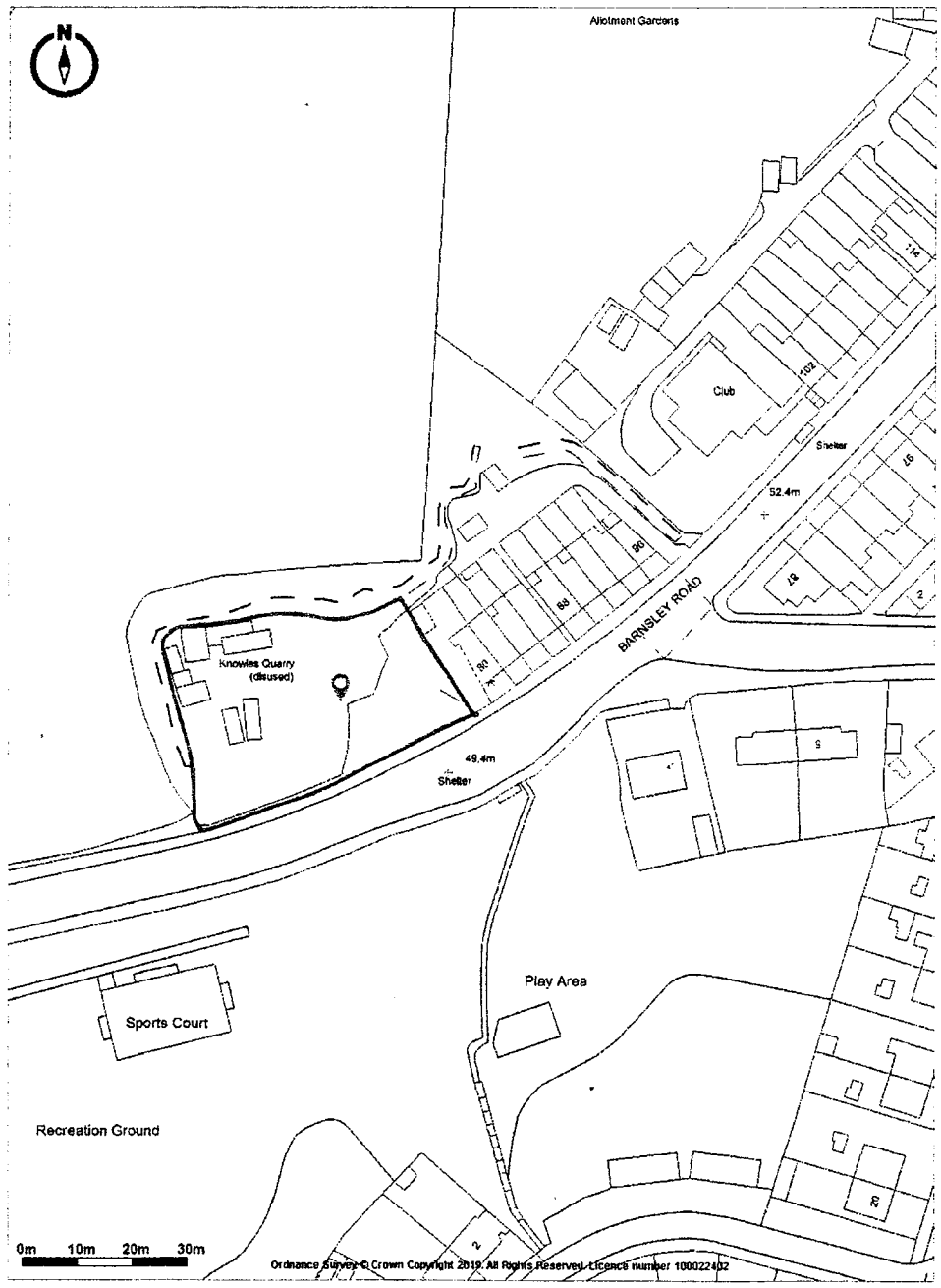
7.1 There is a potential risk posed to the redevelopment of the site from shallow mine workings that may be present in the underlying Sharlston Low coal seam. Such risks comprise surface instability from collapse of past shallow mine workings and former mine entries. Additionally, infilling of the former quarry on the site presents a potential instability risk to redevelopment. Trenching and proof drilling is recommended to better understand these risks.

7.2 In addition, as there can never be total certainty with regard to unrecorded mine entries, the developer should be made aware of this possibility during site stripping and excavation for foundations. Any evidence of the suspected presence of former mine entries should be investigated further.

7.3 Advice should be sought from regulators as to adoption of appropriate measures to protect against ground (mine) gases within the new development.

Appendix A

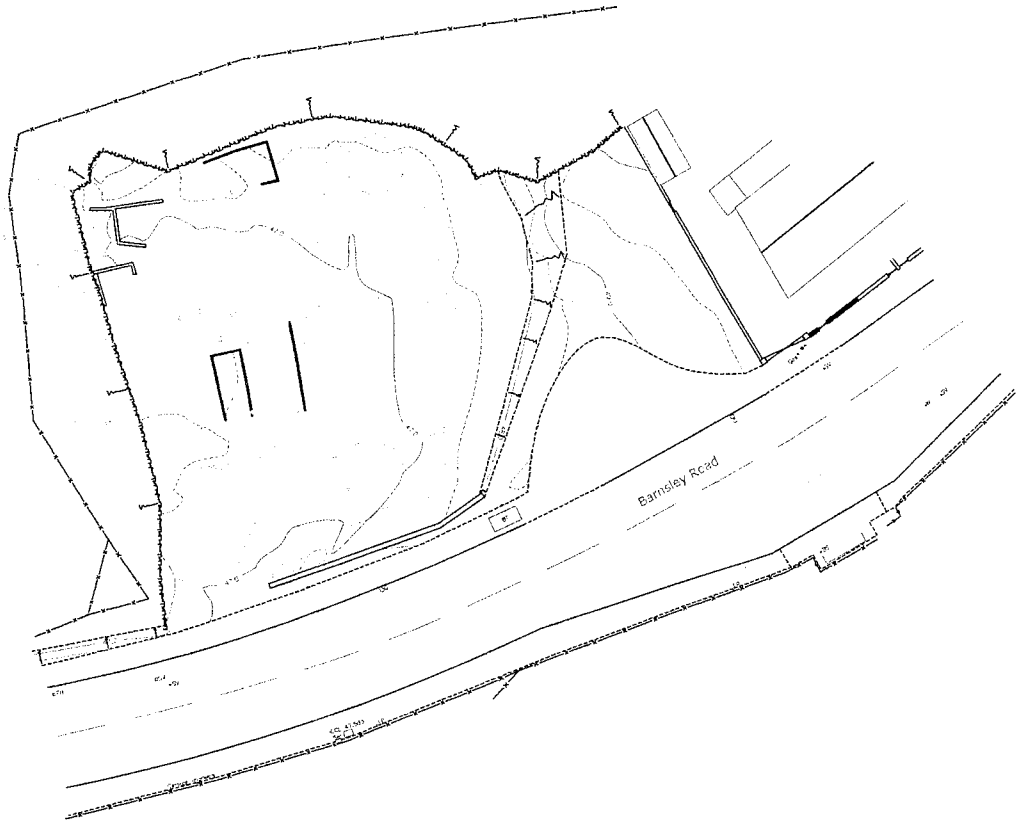
Site location plan, topographical survey and proposed development



Promap V2
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LEGEND

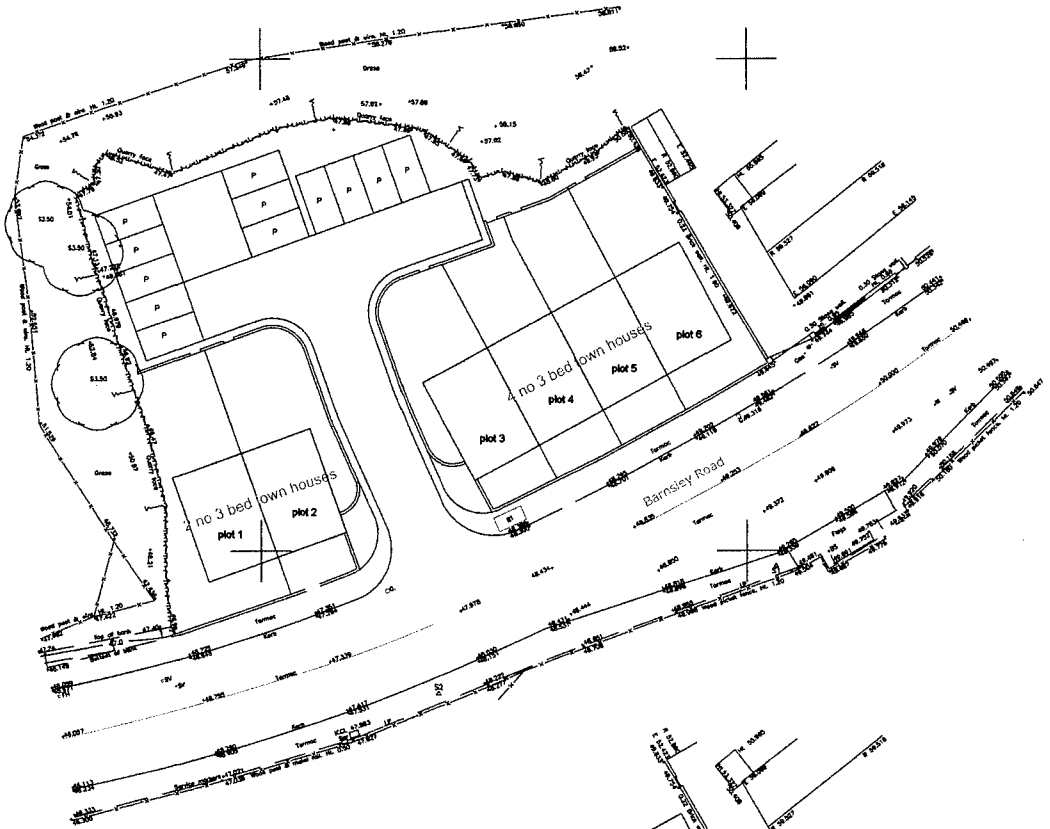
SITE SURVEY

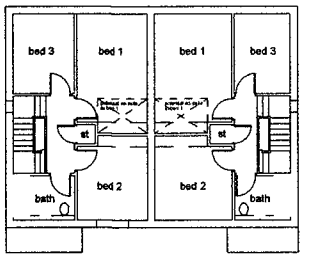
KNOWLES QUARRY
BARNSLEY ROAD, CUDWORTH.

Sheet Diagram

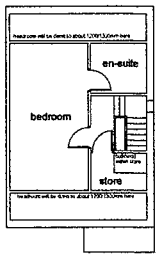
Datum	Sheet 1 of 1	Survey Job No. S9183	Scale 1/200
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LEVEL– Related to Ordnance Survey by connection to the OS Active Network by G.P.S.	Drawn by RF		
	Checked by PBT		

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2) All dimensions on this drawing are to be checked by the Contractor and any discrepancies are to be reported to the Architect.
3) Do not scale critical dimensions off this drawing.
4) Contractor to ensure that all Health & Safety requirements (CDM Regulations) in relation to this project will be complied with.

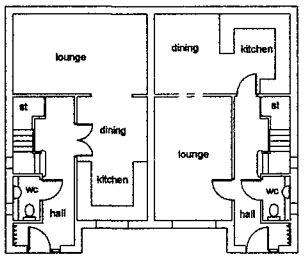




first floor first floor

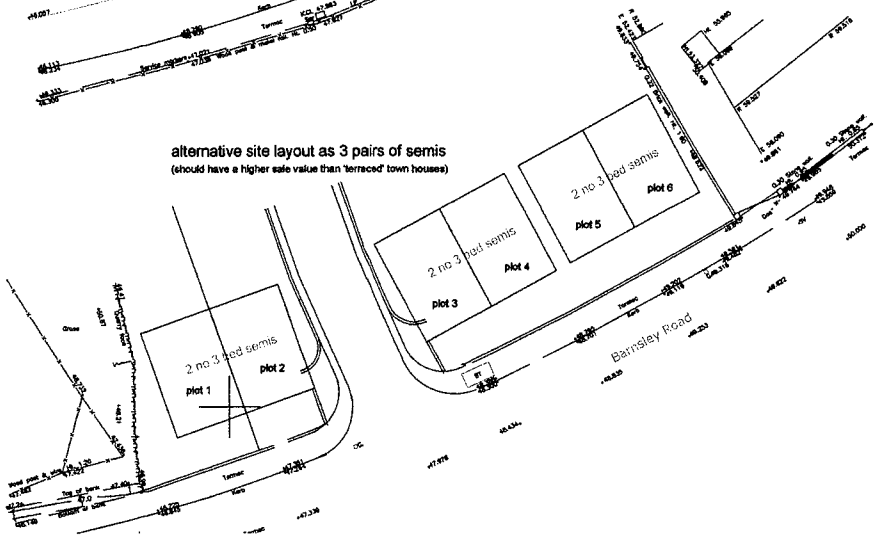


potential roof void plan
suggestion only



ground floor ground floor

alternative 1 alternative 2
suggested dwelling layouts



alternative site layout as 3 pairs of semis
(should have a higher sale value than 'terraced' town houses)

REVISIONS

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CLIENT
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PROJECT
Proposed residential development

LOCATION
Knowles Quarry, Barnsley Road,
Cudworth, Barnsley

DRAWING
Proposed site plan

SCALES 1:200 and 1:100 DATE Aug' '18

DRWG No. 2018/15/01 DRAWN BY
REV. A PD

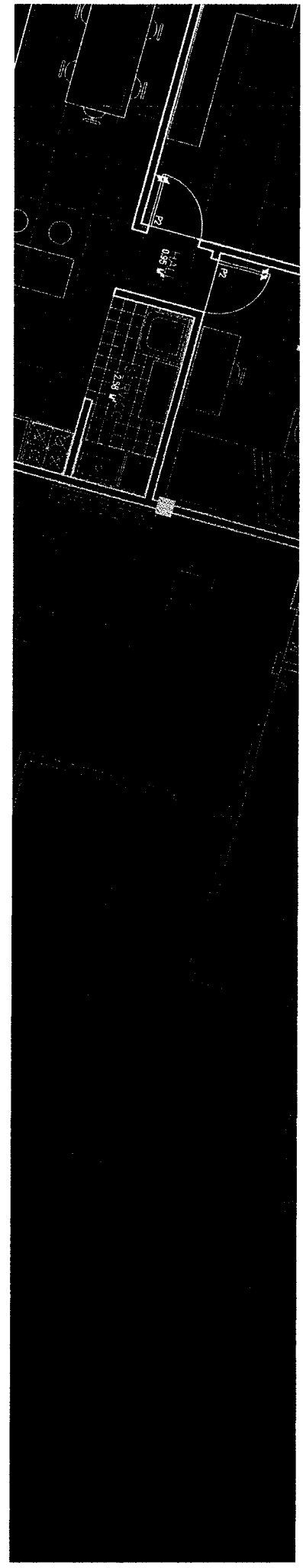
Appendix B

Coal Authority Consultants coal mining report

The Coal Authority

Consultants

Coal Mining Report



80 Barnsley Road
Cudworth
Barnsley
S72 8UU

Date of enquiry:	26 February 2020
Date enquiry received:	26 February 2020
Issue date:	26 February 2020
Our reference:	51002230159001
Your reference:	Land Adjacent

Consultants
Coal Mining Report

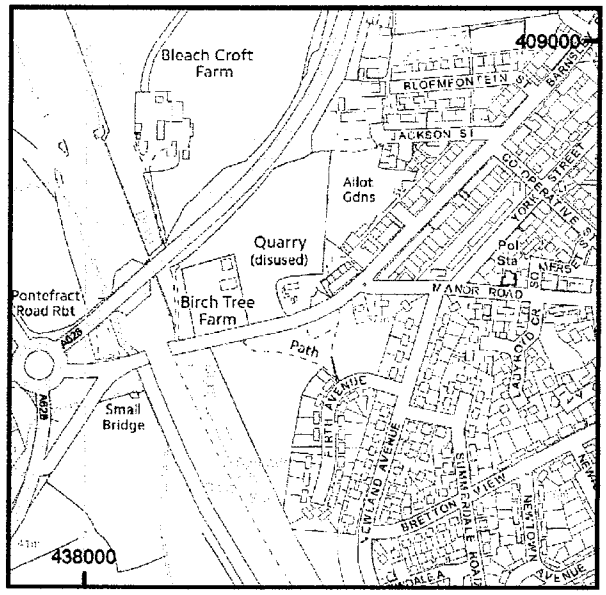
This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

Ian Thorpe

Enquiry address

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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
MONK BRETTON	WINTER	Coal	64WN	224	South	7.9	South-East	81	1954
WHARNCLIFFE / WOODMOOR	WINTER	Coal	64WO	251	North-East	7.6	South-East	81	1955
MONK BRETTON	KENT THICK	Coal	64WV	272	West	7.7	South-East	96	1962
WHARNCLIFFE	KENT THICK	Coal	64WJ	311	North-East	8.5	South-East	102	1968
MONK BRETTON	BARNSLEY	Coal	64JU	322	West	7.5	South-East	177	1933
MONK BRETTON	BARNSLEY	Coal	64WY	359	Beneath Property	8.5	East	213	1900
MONK BRETTON	BARNSLEY	Coal	64WZ	377	East	8.7	South-East	213	1900
WHARNCLIFFE	TOP HAIGH MOOR	Coal	64Y0	390	North	6.5	South-East	102	1933
WHARNCLIFFE	TOP HAIGH MOOR	Coal	64X3	404	North-West	10.7	South-East	107	1938
WHARNCLIFFE	TOP HAIGH MOOR	Coal	64X4	442	North-East	10.3	South-East	130	1941
BARNSLEY MAIN	FENTON	Coal	R26	548	South-West	8.0	South-East	167	1989

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:

NE522	NE688	13347
M697	NE527	NE747
NE689		

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
SHARLSTON LOW	Coal	Yes	22.2	South-West	331

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.

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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 in an area where a notice to withdraw support was given in 1986.

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.

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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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