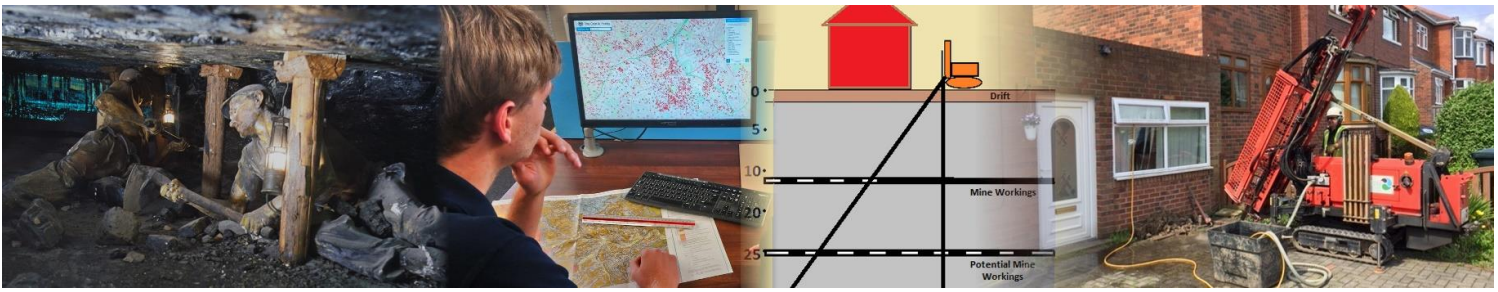
GEOLOGICAL
GEOTECHNICAL
GEOENVIRONMENTAL
CONSULTANCY
DRILLING & DATA ACQUISITION



GEOINVESTIGATE LIMITED

Coal Mining Risk Assessment (CMRA)

LOCATION	336 New Road, Staincross, Barnsley, S75 6ER
ISSUE DATE	6 August 2020
FOR	Philip Andrew Shaw
CLIENT REF.	
OUR REF.	G20260

Prepared by

Charlotte Campion MGeoSci (Hons) FGS
Senior Geo-environmental Engineer

Checked by

Ross Nicolson BSc(Hons) MSc(Eng) CEng MIMMM
Principal Geotechnical Engineer

SUMMARY FINDINGS	
OUTCOME (MITIGATION REQUIRED?)	*The proposed development is possibly underlain by very shallow or shallow mine working with the potential to significantly impact surface ground stability within the proposed building area. Whether it will impact the development depends on drift/bedrock depth, mine working depth and rock cover thickness. Intrusive ground investigation is required at the site to establish these parameters and enable further assessment of the risk.* *In addition, as a precaution, close trenching, or full strip of building footprints + margins may be carried out ahead of construction to check that mine entries are absent. This action is however optional. A watching brief should be maintained during the ground works phase to check for mine entries. If mine entries or anything unusual is found indicative of coal mining legacy hazards the Coal Authority and Geoinvestigate should be notified immediately.*
WHAT TO DO NEXT	***Obtain quotes** for the intrusive site investigation works (if considered appropriate). The cost of the SI works should be a **"lump sum" fixed price.** Geoinvestigate can provide advice and assistance with helping you find suitable site investigation & drilling contractors. Call us on 01642 713779 or email enquiries@geoinvestigate.co.uk*

1. CMRA INTRODUCTION

1.1 SITE LOCATION AND DESCRIPTION

The approximate centre of this site is at National Grid Reference E 432399 N 410628 with a ground height of about 154m AOD. It is proposed to erect a new detached house in the rear garden of 336 New Road, an existing bungalow. The boundary shown RED in the Coal Authority (CA) report provided in Appendix A corresponds with the planning application area. The site is located on steepish slope/hillside falling to the south and rising north.

The historical Ordnance Survey mapping from 1854 shows sandstone quarries nearby. 'Old Coal Pits', 'Coal Pits', 'Pit Lane' and collieries are shown in the vicinity to the south but not within the development area.

The site was undeveloped up to the establishment of the bungalow sometime between 1918 and 1938.

The historical map record provides no evidence that the proposed building area has been subject to surface mining activity, clay pitting or quarrying though mine shafts presumably connected to underground workings as well as surface quarries are recorded in the nearby surrounding area.

Description & Layout of Proposed Development: It is proposed to erect a new detached dwelling in the rear garden of 336 New Road.

The approximate location of the new building is shown on the image in Appendix B.

Risk Methodology Applied: This document and the risk assessment methodology adopted herein is based on CA publication RISK BASED APPROACH TO DEVELOPMENT MANAGEMENT - GUIDANCE FOR DEVELOPERS Version 3, 2014 and Version 4 - 2017. The template contained therein is adopted with amendments made by Geoinvestigate Limited.

2. ASSESSMENT OF SITE-SPECIFIC COAL MINING ISSUES

The table below summarises the potential risks associated with coal mining legacy for the proposed development site identified from the CA report in Appendix A:

Coal Mining Issues	Yes	No	Risk Assessment/Remarks
Past underground coal mining	**Yes**		*2.1.1 (refer below)*
Probable unrecorded shallow workings	**Yes**		*2.1.2*
Spine roadways at shallow depth		**No**	
Mine entries		**No**	*2.1.4*
Outcrop	**Yes**		
Geological faults, fissures and breaklines		**No**	
Opencast Mines		**No**	*2.1.3*
Coal Mining Subsidence	**Yes**		*2.1.5*
Mine Gas		**No**	*2.1.6*
Site investigations		**No**	

Note: *For those coal mining issues above identified as "Yes" or highlighted "YELLOW" a more detailed discussion and assessment are made of the risks to the application site and the proposed development.*

2.1 DETAILED DISCUSSION & ASSESSMENT RESPONSE

2.1.1 Past Underground Mining

The Coal Authority report in Appendix A identifies past/recorded underground mining beneath the site in 8 seams of coal between depths of 142m and 473m. In our opinion, such working lies too deep to impact surface ground stability within the development area.

This does not mean that shallower unrecorded mine working does not exist beneath the site. Mine maps and other documents can get lost or destroyed over the years and if mining was very old there may be no records about it whatsoever and local memories fade quickly.

Strata and coal seam dip at 5.1 to 5.9 degs N or NE.

2.1.2 Probable Unrecorded Shallow Workings

According to the CA report the site falls within an area of probable unrecorded shallow mine working. The CA define Probable Unrecorded Shallow Workings as *"Areas where the Coal Authority believes there to be unrecorded coal working that exist at or close to the surface"* (i.e. less than 30m).

Extracts of the BGS geology map and vertical geology column are presented in Appendix C. The geology map and column suggest that the site is underlain at unknown depth by the Two-Foot Coal and the Abdy (Winter) Coal horizons.

The CA report identifies the outcrop of the Two-Foot Coal within the property and outcrop of the Winter Coal 12.3m to the SW of the development area on the slope below it. Both coals are workable.

The drift geology map indicates that the site is not covered by superficial deposits and bedrock lies at or near surface.

The Geological Memoir for Barnsley, available freely online, give seam thickness of between 10cm and 2.1m for the Two-Foot Coal and up to 1.9m for the Abdy Coal. These coal seams are indicated to dip to the north east in which case both underlie the site at very shallow to shallow depth (less than 10m depth).

The Geological Memoir suggests that both seams have been worked in the area and that the Abdy Coal particularly has in places been worked from outcrop and shallow shafts (bell pits). However, there is no evidence suggesting similar activity has occurred at the site.

Regrettably, there is no BGS borehole information available within or close to the new development that might otherwise provide the information needed to assess the stability of the ground with respect to shallow mining namely mine working depth, extraction height and rock cover thickness.

In the absence of this information and given the possible presence of shallow mine working beneath the new building as well as the occurrence of several adjacent coal mining subsidence claims (albeit rejected) it is our opinion that drilling has to be carried out to investigate the shallow mine working situation at this locality.

2.1.3 Opencast Mines

The CA record several opencast mine sites >250m to the NW of the site but not within it. The presence nearby of opencast raises further concern about shallow mine working at this locality.

2.1.4 Mine Entries

According to the CA report no recorded mine entries are identified within the site, or within 100m of it. However, owing to the presence of coal outcrop and very shallow coal seam at the site there is in our opinion the potential for unrecorded or hidden mine entries perhaps (bell pits) or adits to exist at this locality. Because of this it may be prudent to close trench or fully strip the building footprints (plus margins) to confirm that mine entries are absent from these areas ahead of the construction works. This action is however optional. A watching brief should be maintained during the groundworks phase to check for the absence of mine entries.

If mine entries or anything unusual is found indicative of mine working the Coal Authority and Geoinvestigate should be notified immediately.

2.1.5 Coal Mining Subsidence

The CA identify coal mining subsidence claims at 334, 336 and 338 New Road and a further claim nearby. All 3 claims including the claims made at the site and adjacent to it were rejected. The outcome of the 4th claim is unknown.

The nature of the individual claims is also unknown and if required further subsidence damage claims information can be obtained from the CA.

While the claims may have been rejected, their occurrence and number raise further concern about coal mining hazards at this locality.

2.1.6 Mine Gas

No mine gas incident or remediation is recorded within 500m of the proposed development and typically, in the UK mine gas is Low risk. Notwithstanding, given the possible presence of shallow mine working beneath the proposed development area and the serious nature of mine gas it is recommended that the risk is raised to **MODERATE** to perhaps High until proven otherwise by gas testing during drilling.

3. SUMMARY AND OUTCOME

This CMRA has identified the possible presence of coal seams and possible mine working within very shallow and shallow depth beneath the proposed new dwelling. Whether shallow mine working actually exists beneath this site and whether it poses a significant risk to the development cannot be properly assessed without additional information namely, coal seam depth, mine working (if any present) depth and rock cover thickness.

In our opinion exploratory drilling is required to obtain this information and enable further assessment of the risks posed by possible shallow mine working at this location.

Gas monitoring must be carried out during drilling.

4. MITIGATION STRATEGY PROPOSED AND CONCLUSION

To properly determine the coal mining risk at this site it is proposed to drill 2 or 3 boreholes to target depths up to 30m (but not necessarily reaching 30m) to locate shallow coal seams and mine working (if any) below the new development as well as establishing drift and bedrock depth. Alternatively, 4 shallower holes, 1 deeper hole may be sunk.

Gas monitoring MUST be carried out during drilling.

As a precaution consideration may be given to carrying out close trenching or site strip of building footprints + margins ahead of the construction works to check that mine entries are absent from these areas. This action is however optional.

A watching brief should be maintained during the groundworks phase to check for the absence of mine entries.

If during construction mine entries or anything unusual is found indicative of mine working the Coal Authority and Geoinvestigate should be notified immediately.

Risks for Different Drilling Scenarios

Air flush	Mist flush	Foam flush	Water flush	Mud flush	Additional controls
HIGH	HIGH / MED'M	HIGH / MED'M	LOW	LOW	• Monitoring at rig and other open holes. • Seal boreholes

A Coal Authority Permit needs to be obtained (ahead of) further intrusive exploratory drilling, excavation or trenching works. Water Drill Flush to be used when drilling. Permit application must state **WATER ONLY DRILL FLUSH** for the safety of the public and drill crew**.**

On the basis of the CMRA work to date, we are of the opinion that the mining stability and mine gas risks posed by the strata beneath this site from coal mining legacy can be mitigated by routinely adopted measures and should not preclude planning permission being registered with regard to coal mining legacy issues.

In conclusion we see no reason why Planning Permission should not be granted in the interim with respect to coal mining legacy issues and that these works form a condition on the planning approval.

Appendices:

A. CA Consultants Coal Mining Report issued 3 August 2020 ref 51002292140001.
B. Site image & site.
C. Extracts of BGS Geology Map, Sheet 87 Barnsley at 1:50000 scale

APPENDIX A
COAL AUTHORITY REPORT

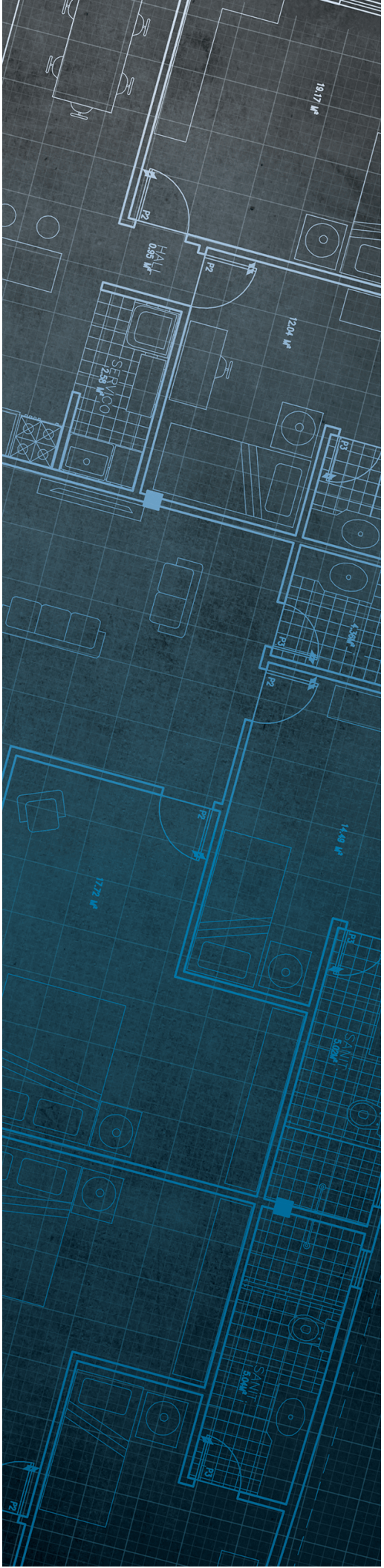
The Coal Authority

Consultants

Coal Mining Report

336 New Road
Staincross
Barnsley
S75 6ER

Date of enquiry:	**3 August 2020**
Date enquiry received:	**3 August 2020**
Issue date:	**3 August 2020**
Our reference:	**51002292140001**
Your reference:	**G20260**



Consultants

Coal Mining Report

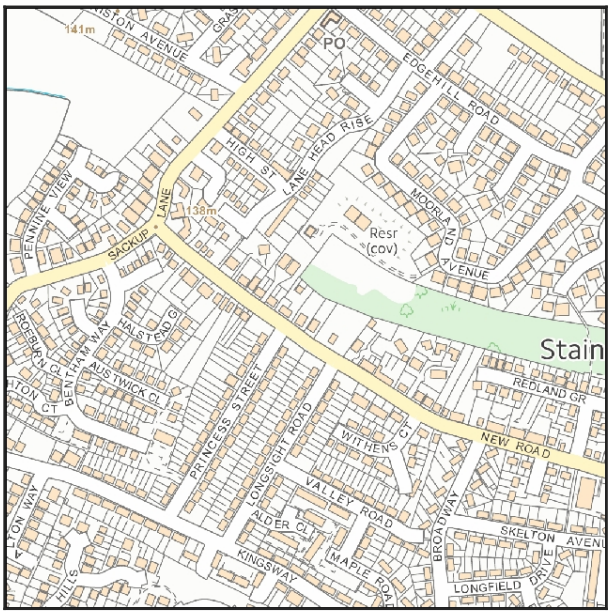
This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

GEOINVESTIGATE

Enquiry address

336 New Road
Staincross
Barnsley
S75 6ER



Approximate position of property

Map data

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How to contact us

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+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

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/company/the-coal-authority
/thecoalauthority
/thecoalauthority

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	BARNSLEY	Coal	6Y52	142	Beneath Property	5.3	North-East	332	1926
unnamed	LOW HAIGH MOOR	Coal	6YA2	179	West	4.5	North	74	1959
unnamed	TOP HAIGH MOOR	Coal	6Y72	214	South-West	5.6	North-East	91	1943
unnamed	LIDGETT	Coal	6Y33	217	North-West	4.2	North	76	1945
unnamed	LOW HAIGH MOOR	Coal	6Y04	225	Beneath Property	5.1	North-East	69	1940
unnamed	LIDGETT	Coal	6Y43	255	Beneath Property	5.5	North-East	76	1935
unnamed	FENTON	Coal	6Y63	297	South-West	5.0	North-East	172	1961
WOOLLEY	FENTON	Coal	R71	348	South	5.9	North-East	199	1980
unnamed	MIDDLETON MAIN	Coal	6Y3B	368	North-West	5.1	North-East	128	1975
unnamed	WHEATLEY LIME	Coal	6Y24	381	South-West	5.8	North	79	1944
unnamed	MIDDLETON MAIN	Coal	6Y05	383	South-West	5.0	North-East	126	1950
unnamed	WHEATLEY LIME	Coal	6Y34	392	South	6.8	North-East	69	1958
WOOLLEY	WHINMOOR	Coal	Z01	473	Beneath Property	5.9	North-East	140	1986
WOOLLEY	WHINMOOR	Coal	Z02	484	North-West	5.9	North-East	134	1987

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:

2281	NE158	7649
NE1034	NE378	NE816
NE695	NE978	SCC1

Our records show we have more plans than those shown above which could affect the enquiry boundary.

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
TWO FOOT	Coal	Yes	Within	N/A	122
TWO FOOT	Coal	Yes	Within	N/A	137
WINTER	Coal	Yes	12.3	South-West	129

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

Please refer to the “Summary of findings” map (on separate sheet) for details of any opencast areas within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

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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
A damage notice or claim for alleged subsidence damage was made in May 2002 for 334 NEW ROAD, MAPPLEWELL, BARNSLEY, SOUTH YORKSHIRE, S75 6ER. However, the claim was rejected.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

A damage notice or claim for alleged subsidence damage was made in November 1995 for 336 NEW ROAD, STAINCROSS, BARNSLEY, SOUTH YORKSHIRE, S75 6ER. However, the claim was rejected.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

A damage notice or claim for alleged subsidence damage was made in September 1995 for 338 NEW ROAD, MAPPLEWELL, BARNSLEY, SOUTH YORKSHIRE, S75 6ER. However, the claim was rejected.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

There are a further 1 claim(s) within 50 metres of the property boundary that do not match the property address. These are shown on the enquiry boundary plot.

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.

If further subsidence damage claims information is required, please visit www.groundstability.com.

See Section 4 for further information.

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 1978.

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.

Coal mining subsidence

The site is within an area of previous interest. It is close to where the Coal Authority or licensed mine operator has investigated and where necessary remediated issues relating to coal mining subsidence.

The site requires further investigation and may influence your risk assessment. We recommend that you order the appropriate **Coal Authority Subsidence Claims Report**, which will include more information about the hazard.

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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VAT receipt

Issued by	The Coal Authority 200 Lichfield Lane Mansfield Nottinghamshire NG18 4RG
Tax point date	03 August 2020
Issued to	GEOINVESTIGATE TERRY DICKEN INDUSTRIAL ESTATE TERRY DICKEN INDUSTRIAL ESTATE, ELLERBECK WAY STOKESLEY NORTH YORKSHIRE TS9 7AE
Property search for	336 NEW ROAD STAINCROSS BARNSLEY S75 6ER
Reference number	51002292140001
Date of issue	03 August 2020
Cost	£112.13
VAT @ 20%	£22.43
Total received	£134.56
VAT registration	598 5850 68

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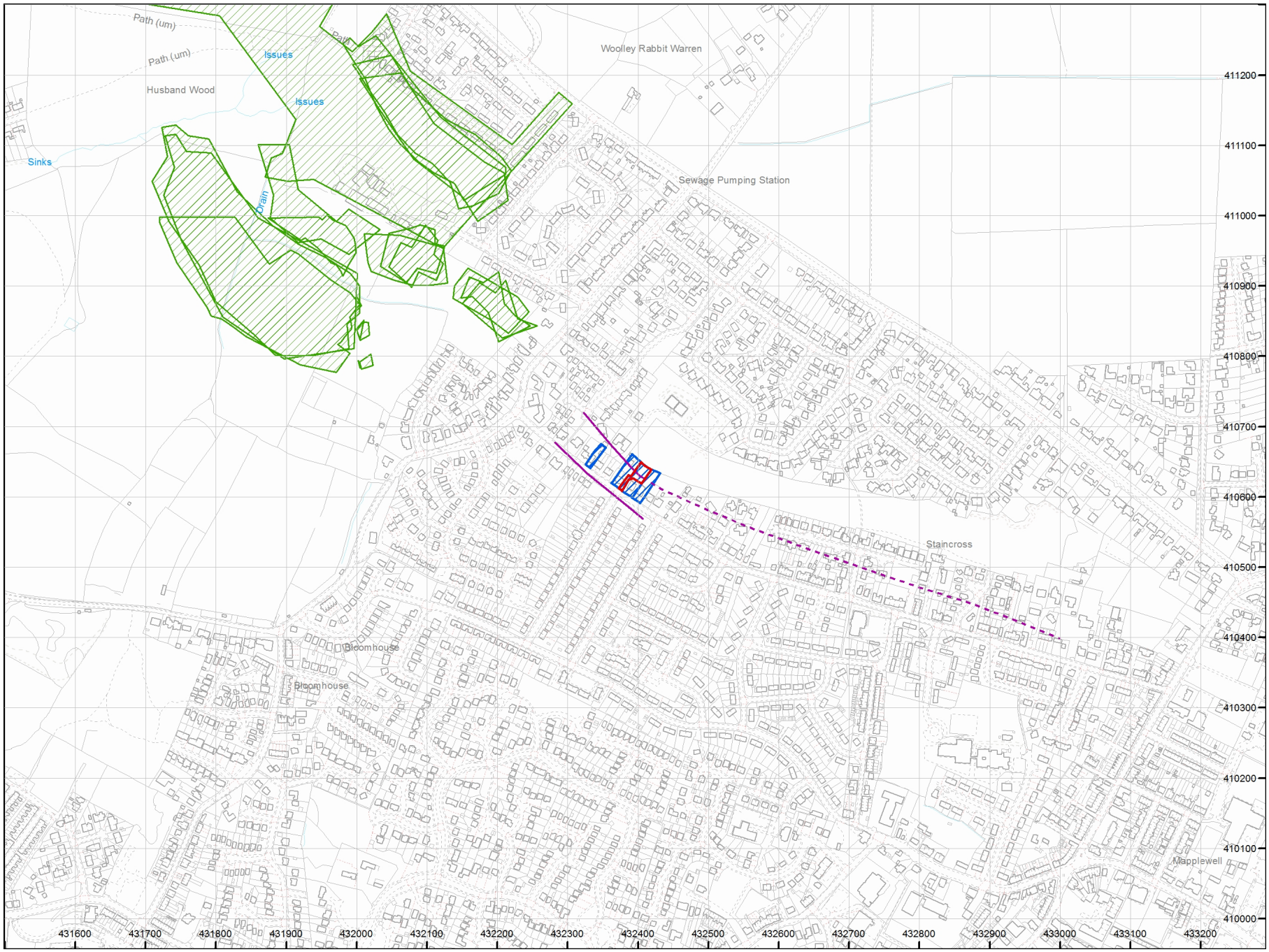
e Coal Authority

Summary of findings

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

f the enquiry
ndary shown
rop (Proven)
Conjectured)
pencast site
Coal claim



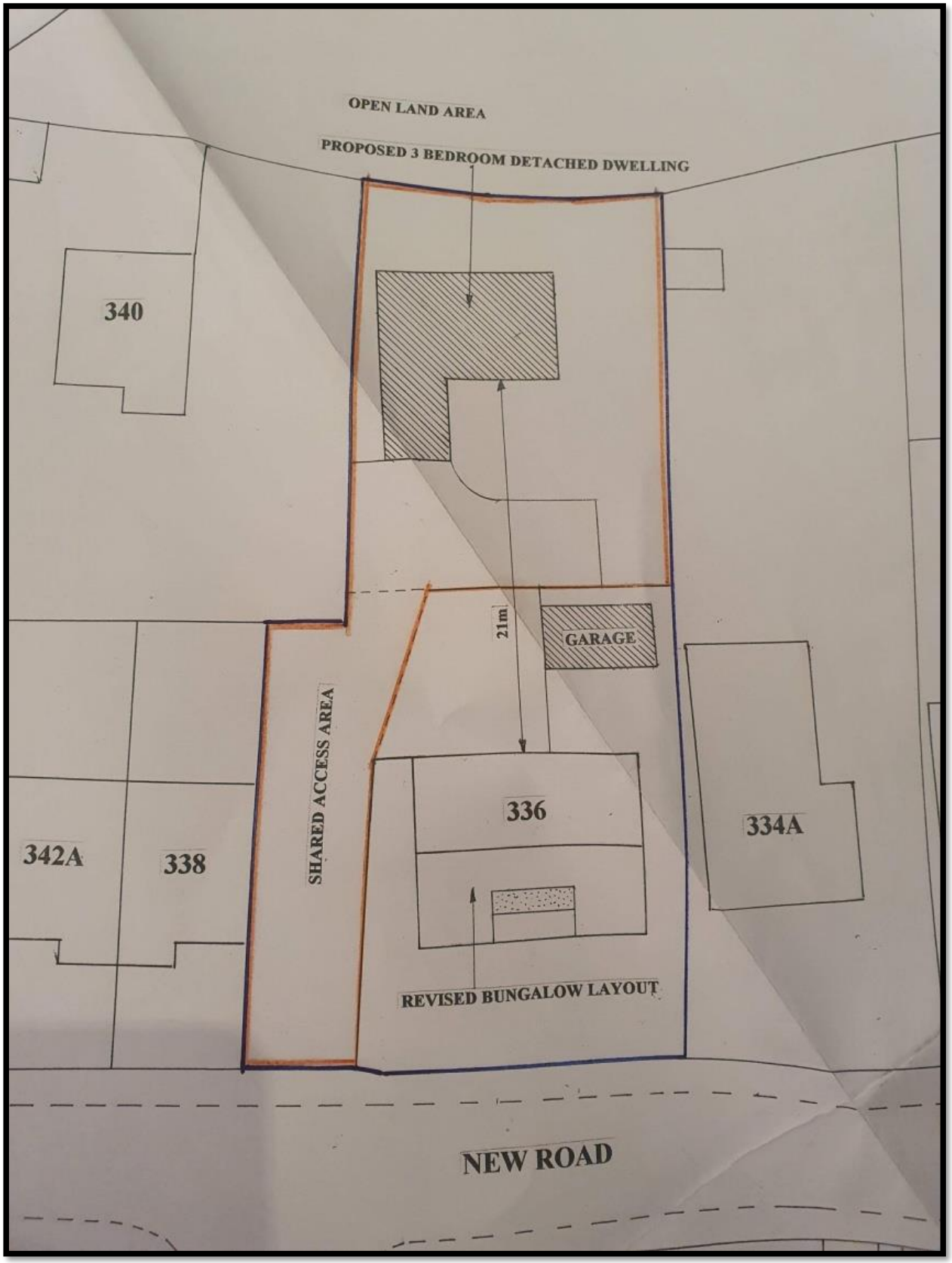
ct us

(International)
.com

APPENDIX B

SITE IMAGES & PLAN




OPEN LAND AREA
PROPOSED 3 BEDROOM DETACHED DWELLING
340
21m
GARAGE
SHARED ACCESS AREA
336
334A
342A
338
REVISED BUNGALOW LAYOUT
NEW ROAD

APPENDIX C

EXTRACTS BGS GEOLOGY MAP

