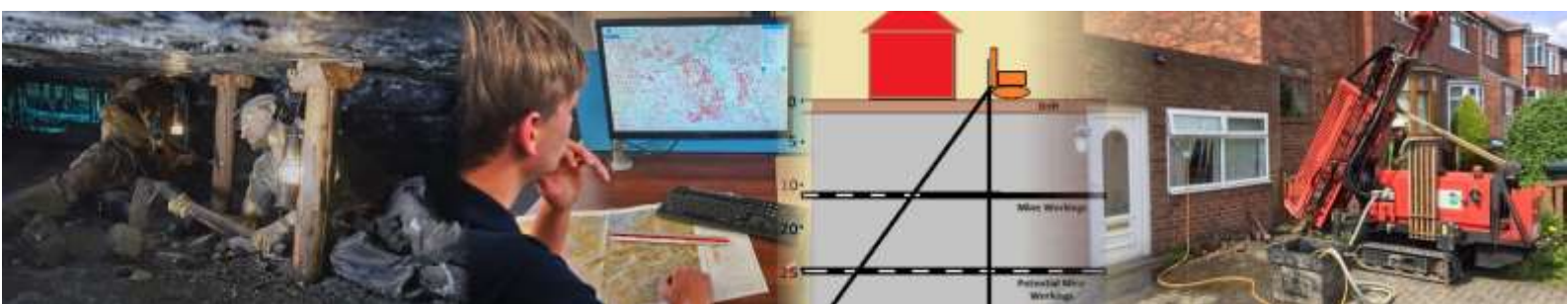




GEOLOGICAL  
GEOTECHNICAL  
GEOENVIRONMENTAL  
CONSULTANCY  
DRILLING & DATA ACQUISITION



## GEOINVESTIGATE LIMITED

### Coal Mining Risk Assessment (CMRA)

|                    |                                                 |
|--------------------|-------------------------------------------------|
| <b>LOCATION</b>    | 12 Riley Lane, Kirkburton, Huddersfield HD8 0RY |
| <b>ISSUE DATE</b>  | 24 <sup>th</sup> April 2019                     |
| <b>FOR</b>         | Rob Napier c/o Adam Knight                      |
| <b>CLIENT REF.</b> |                                                 |
| <b>OUR REF.</b>    | G19141                                          |

Prepared by

Jason Pratt BSc (Hons)  
Geo-environmental Engineer

Checked by

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

## SUMMARY FINDINGS – MITIGATION REQUIRED

The outcome of the CMRA report presented below is that **exploratory drilling is required** to investigate the probable presence of very shallow and shallow underground coal mine working beneath this site. In the meantime **this outcome should not prevent your project getting planning permission** conditional upon the work being carried out now, or at a later date but before site construction begins.

## WHAT TO DO NEXT

**Obtain quotes** for the intrusive site investigation works. The cost of the SI works should be a **“lump sum” fixed price** including supervision by a competent person & a final report. 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](mailto:enquiries@geoinvestigate.co.uk) This CMRA identifies the nature of the coal mining hazards beneath your site and the scope of safe SI works needed to investigate them further.

## 1. CMRA INTRODUCTION

**Site Location and Description:** The approximate centre of this site is at National Grid Reference E 419620 N 412768 with an elevation of about 126m AOD. The site is located on a gentle sloping hillside falling to the north and rising to the south. The immediate surrounding area is reasonably level. The boundary shown RED on the Coal Authority (CA) report provided in Appendix A corresponds with the planning application.

The site currently comprises the former garden of an adjacent property at 12 Riley Lane. A small building, possibly a garage is present within the site as well as access road/track. An image of the site is presented in Appendix B.

The OS map record dating back to 1854 shows the site as largely undeveloped and remaining so up to the present day. Netherfield House is shown to the north of the property on the map of 1893. Other more recent nearby housing was established post 1975.

Several quarries occur within 500m of the site suggesting bedrock may occur at shallow at this locality. This however is speculation. The map of 1893 shows an ‘old shaft’ some 140m to the southwest of the site and ‘Box Ing Colliery’ 500m to the southeast. Several ‘wells’ are also shown in the surrounding area.

The OS map record provides no evidence that the site itself has been subject to surface mining activity, clay or sand pitting or stone quarrying though coal mining has occurred in the distant surrounding area.

While the site itself and adjacent buildings are hidden from view, a brief, limited inspection of buildings, roads, walls and topography in the site vicinity using Google Street Satellite and Street View found no obvious visible evidence indicative of mining activity or mining subsidence.

**Description & Layout of Proposed Development:** It is proposed erect a new two storey dwelling at the site. The layout of the development is shown in Appendix C.

**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 minor amendments made by Geoinvestigate Limited.

## 2. SOURCES OF INFORMATION USED TO INFORM THIS REPORT

- An up-to-date Coal Mining Report from the CA dated 10 April 2019 ref. 51002075163001
- Geological information from the British Geological Survey (BGS) Sheet 86 - Glossop at 1:50000 scale
- The Coal Authority’s online interactive map viewer.
- A site history based on limited Ordnance Survey map records of the area dating back to 1854
- BGS historic borehole logs
- Google Street View and Satellite imagery
- Other web sourced information

### 3. 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 list sources of information.

| Coal Mining Issues                         | Yes | No | Risk Assessment/Remarks                                                                                               |
|--------------------------------------------|-----|----|-----------------------------------------------------------------------------------------------------------------------|
| Past underground coal mining               |     | No | The CA report states No past underground mining recorded.                                                             |
| Probable unrecorded shallow workings       | Yes |    | According to the CA report the site lies within an area of probable unrecorded shallow working.                       |
| Spine roadways at shallow depth            |     | No | None recorded.                                                                                                        |
| Mine entries                               |     | No | None recorded within 100m of the property                                                                             |
| Outcrops                                   | Yes |    | Outcrop of the Black Bed Seam lies 38.5m northeast of site. The seam is workable                                      |
| Geological faults, fissures and breaklines |     | No | The CA reports records No faults, fissures or break lines.                                                            |
| Opencast Mines                             |     | No | None recorded within 500m of the enquiry boundary                                                                     |
| Coal mining subsidence                     |     | No | According to the CA there has been no subsidence claim at the property itself or within 50m of it since October 1994. |
| Mine Gas                                   |     | No | None recorded within 500m of the enquiry boundary.                                                                    |

**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.

1. The site is not in an area of recorded past mine working
2. According to the CA report the site is located within a Development High Risk Area (DHRA).
3. According to the CA report the site is located within an area of probable shallow coal mine workings.
4. 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).
5. The location of the site is shown on the extracts of the BGS geology map presented in Appendix D. The vertical geology column is shown below the map.
6. Drift depth at the site is unknown.
7. BGS borehole logs SE11SE/11, '12, '13 and '15 record drift/bedrock depth between 3.15m and 3.90m and similar drift depth is expected at the site. The locations of these boreholes are shown on the geology map. Their logs are not included in this report.
8. The CA report records outcrop of the Black Bed Coal Seam 38.5m northeast of site. The outcrop is workable.
9. The CA interactive map records underground working nearby dipping southeast at a low angle of between 2.7 deg. and 3.3 deg.
10. Based on this dip it is estimated that the Black Bed Coal seam potentially occur within the site at a depth of up to 7.5m below bedrock and perhaps 11m depth below ground surface.
11. The BGS map extract records the potential thickness of the Black Bed Coal seam as up to 0.30m while BGS report CR/04/015N 'UK Coal Resource for New Exploitation Technologies Final Report' records thicknesses between 0.56m and 0.91m.
12. In summary this CMRA has indicated that the new development may be underlain by one level of probable coal seam mine working in the Black Bed Coal at very shallow or shallow depth.
13. While it is our opinion that the evidence perhaps suggests that the Black Bed Coal seam is perhaps thin at this locality and is therefore unlikely to have been worked, this remains uncertain. In light of this and because the Coal Authority give a clear warning that the site falls in an area of probable shallow working, it is our opinion that exploratory drilling should be carried out to resolve this uncertainty.
14. Whether mining legacy will impact the stability of the development area depends on drift depth/bedrock depth, and mine working depth & thickness/size, all of which require to be established beneath this site. Exploratory drilling will be required to do this.
15. The risk of encountering hidden or unrecorded mine shafts within the property is considered LOW but not negligible because of the possible presence of very shallow coal and mine working beneath the site.
16. Hazardous gases associated with underground coal seams and workings are unlikely to pose significant risk to the development in this instance because; firstly, typically across the UK coalfields gas is rarely a problem and secondly, with regard to this property there is no record of a site specific mine gas problem.

17. However, given the possible occurrence of very shallow coal and mine working beneath the property it is our opinion that the gas risk in this instance should be raised to **HIGH until proven otherwise** by drilling and gas monitoring.
18. Further exploratory coal legacy drilling together with gas monitoring and perhaps other mitigation measures may be required to properly assess ground stability, mine gas hazards, drift depth and other concerns at this site and make it safe for development.

#### 4. MITIGATION STRATEGY PROPOSED

##### MITIGATION RESPONSE

1. To properly determine the coal mining risk at this site it is proposed to drill a minimum of 3 boreholes to target depths up to 30m (but not necessarily reaching 30m) adjacent to the development to locate possible mine workings within shallow depth as well as drift and bedrock depth.
2. Borehole depths and numbers will be subject to adjustment by the supervising Competent Person on-site and depending on the geological conditions encountered (namely depth to rock head, seam thickness and ratio of rock cover to seam thickness) found during drilling.
3. If mine shafts are found during the intrusive site exploration works or during the subsequent construction groundworks, then appropriate remedial action can be taken plus the CA should be notified.
4. If mine workings are clearly confirmed to be absent, or beyond an influencing depth of the surface development it is unlikely that ground treatment/stabilisation by injection grouting or special foundation design measures will be required in respect of coal mining legacy.
5. The requirement for gas protection measures and the level of gas protection will be determined by a risk assessment based on a source - pathway - receptor model. This will depend on the gas concentrations found during follow on coal legacy drilling together with the configuration of the site geology - particularly the nature and thickness of the drift/soil cover and the presence (or potential) for fissures or other pathways to exist.
6. A second specialist report will be required on the findings of the coal drilling investigation finalising the scope of the mitigation measures needed (if any) to safeguard the development from coal mining related ground instability and hazardous mine gases.
7. **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 the planning permission being registered.**

#### The Coal Authority Permit

A Coal Authority Permit needs to be obtained (ahead of) further intrusive exploratory drilling or excavation/trenching work (if carried out) which will disturb or enter any coal seams or coal mine workings present beneath the site. A standard permit can take 4 to 6 weeks to obtain, less for an expedited permit.

**6.2.7 Table of Risks for Different Drilling Scenarios**

| Situation                                                                                                                                                                                             | Air flush | Mist flush   | Foam flush   | Water flush | Mud flush | Additional controls                                                                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------|--------------|-------------|-----------|----------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Unworked coal or coal workings</li> <li>High or unknown risk of hazardous gases being present / created</li> <li>Occupied property within risk area</li> </ul> | HIGH      | HIGH / MED'M | HIGH / MED'M | LOW         | LOW       | <ul style="list-style-type: none"> <li>Monitoring at rig and other open holes.</li> <li>Seal boreholes as soon as possible.</li> </ul> |

**Drill Flush to be used when drilling:** Permit application must state WATER only drill flush, as mud though safe is too messy.

**Other precautions:** Gas monitoring to be carried out during drilling. Boreholes to be sealed as soon as possible.

## 5. CONCLUSION

The Coal Authority (CA) has identified the development site as falling within a Development High Risk Area (DHRA).

The CA report identifies the site as falling within an area of probable unrecorded shallow working and outcrop of workable coal seam is present nearby to the site.

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).

Whether mine working exists beneath the site is uncertain. Because of this it is our opinion that further intrusive investigation is required.

Whether mining legacy will impact the stability of the new development depends on drift depth/bedrock depth, and mine working depth & thickness, all of which require to be established beneath this site. Exploratory drilling will be required to do this.

Gas monitoring must be carried out during drilling.

The likelihood of encountering hidden unrecorded mine shafts within the site is LOW but not negligible because of possible shallow mining.

If mine shafts are discovered during drilling or subsequently during the ground works, the appropriate remedial action can be taken then as well as notifying the Coal Authority.

A safe method of sinking boreholes which will reduce the risk to drill operators and the public has been assessed. A Coal Authority Permit will be required before drilling takes place. This must state that only WATER FLUSH will be used for drilling. The CA permit must also cover surface excavation/trenching to locate mine shafts or coal outcrop if these activities are also carried out.

Depending on the outcome of the additional mining legacy investigation it may be necessary to stabilise mine workings using routine drilling and grouting techniques and/or adopt special foundation design measures and perhaps install gas protection measures.

If drilling confirms that hazardous mine gas is absent and that either no coal or mine working exists beneath the site, or shallow workings are present, but rock cover is of adequate thickness no further investigation or mitigation would be required.

In conclusion we see no reason why Planning Permission should not be granted in the interim and that these works form a condition on the planning approval.

### Appendices:

- A. CA Report dated 10 April 2019 ref. 51002075163001.
- B. Google Satellite images of the site
- C. Proposed development layout.
- D. Extract of BGS Solid Geology Map, Sheet 86 - Glossop at 1:50000

Other historical OS maps, borehole logs, site images and photographs have not been included because it was considered that they did not provide significant useful additional information.

APPENDIX A  
COAL AUTHORITY REPORT





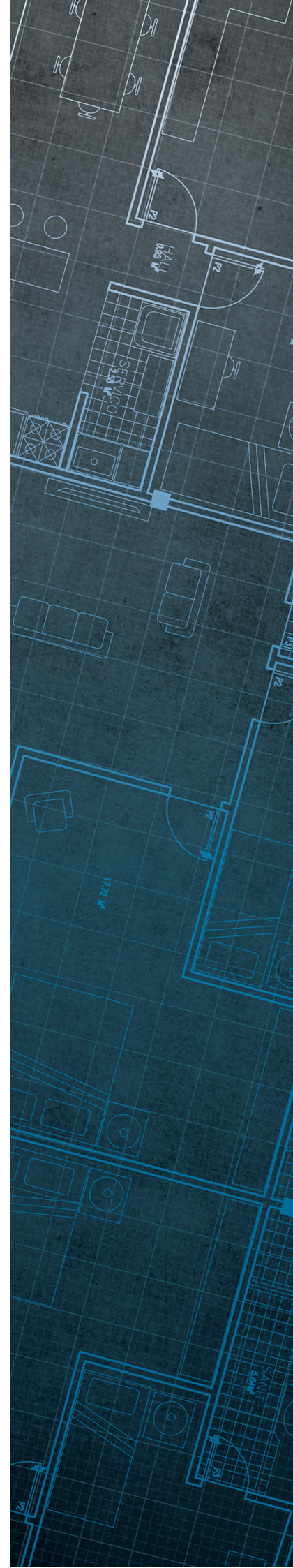
The Coal  
Authority

# Consultants Coal Mining Report

12 Riley Lane  
Kirkburton  
Huddersfield  
Kirklees  
HD8 0RY

|                        |               |
|------------------------|---------------|
| Date of enquiry:       | 10 April 2019 |
| Date enquiry received: | 10 April 2019 |
| Issue date:            | 10 April 2019 |

|                 |                |
|-----------------|----------------|
| Our reference:  | 51002075163001 |
| Your reference: | G19141         |



# 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

12 Riley Lane  
Kirkburton  
Huddersfield  
Kirklees  
HD8 0RY

### How to contact us

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

200 Lichfield Lane  
Mansfield  
Nottinghamshire  
NG18 4RG

[www.groundstability.com](http://www.groundstability.com)

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



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# Section 1 – Mining activity and geology

## Past underground mining

No past mining recorded.

## Probable unrecorded shallow workings

Yes.

## Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

## Mine entries

None recorded within 100 metres of the enquiry boundary.

## Abandoned mine plan catalogue numbers

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

|      |  |  |
|------|--|--|
| 4499 |  |  |
|------|--|--|

**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 |
|-----------|---------|---------------|-------------------------|----------------------|--------------------|
| BLACK BED | Coal    | Yes           | 38.5                    | North-East           | 119                |
| BLACK BED | Coal    | Yes           | 40.4                    | North-East           | 140                |

## 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

| Distance to site investigation (m) | Direction |
|------------------------------------|-----------|
| 22.2                               | East      |

See Section 4 for further information.

### 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.

### Site investigations

The site is within an area of previous interest. It is close to where the Coal Authority has received information relating to past site investigations.

The site requires further investigation and may influence how you approach your risk assessment.

**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](mailto: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](mailto: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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## VAT receipt

|                            |                                                                                                                                                 |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Issued by</b>           | The Coal Authority<br>200 Lichfield Lane<br>Mansfield<br>Nottinghamshire<br>NG18 4RG                                                            |
| <b>Tax point date</b>      | 10 April 2019                                                                                                                                   |
| <b>Issued to</b>           | GEOINVESTIGATE<br>TERRY DICKEN INDUSTRIAL ESTATE<br>TERRY DICKEN INDUSTRIAL ESTATE,<br>ELLERBECK WAY<br>STOKESLEY<br>NORTH YORKSHIRE<br>TS9 7AE |
| <b>Property search for</b> | 12 RILEY LANE<br>KIRKBURTON<br>HUDDERSFIELD<br>KIRKLEES<br>HD8 0RY                                                                              |
| <b>Reference number</b>    | 51002075163001                                                                                                                                  |
| <b>Date of issue</b>       | 10 April 2019                                                                                                                                   |
| <b>Cost</b>                | £112.13                                                                                                                                         |
| <b>VAT @ 20%</b>           | £22.43                                                                                                                                          |
| <b>Total received</b>      | £134.56                                                                                                                                         |
| <b>VAT registration</b>    | 598 5850 68                                                                                                                                     |

345 762 6848 (UK)  
44 (0)1623 637 000 (International)  
[www.groundstability.com](http://www.groundstability.com)



APPENDIX B  
SITE IMAGE



## APPENDIX C

### DEVELOPMENT LAYOUT





# APPENDIX D

## EXTRACTS OF BGS GEOLOGY MAP

