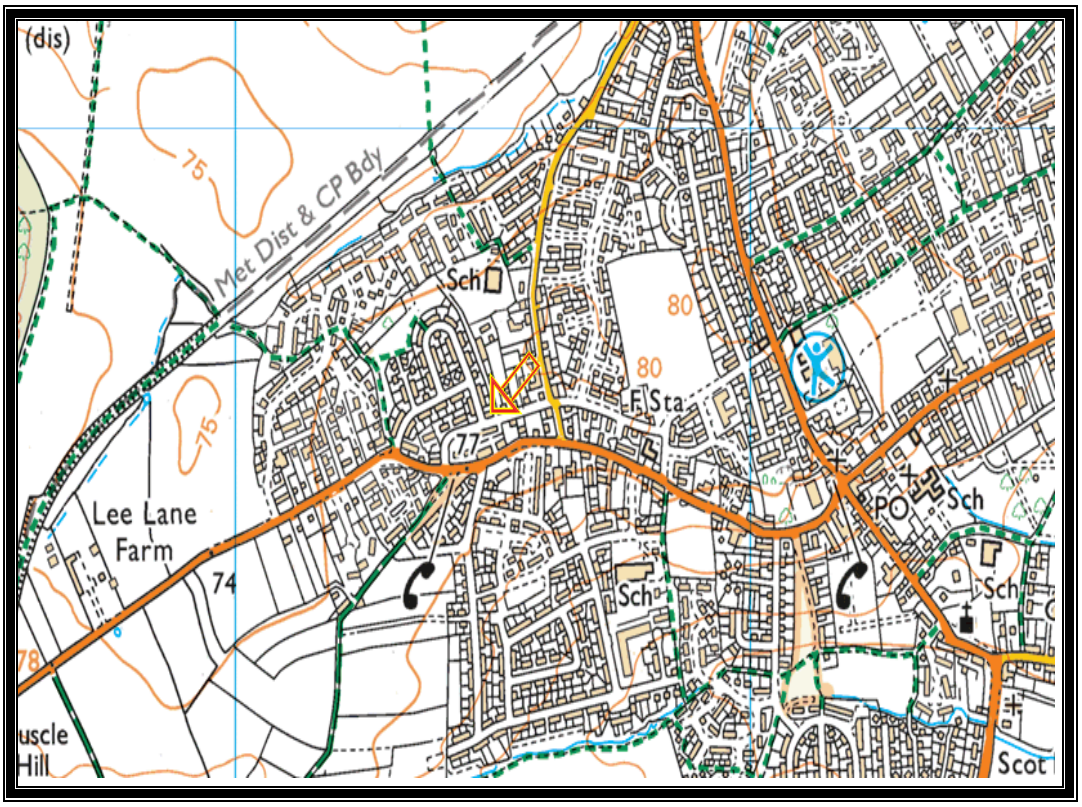
Report No: C290
Date: September 2018

COAL MINING RISK ASSESSMENT
For land at
5 BACK LANE WEST, ROYSTON, BARNSLEY, S71 4SB



Prepared for

Cape Site Services Ltd

Prepared by
G&M Consulting Ltd, The Chestnuts, Brackenhill Road, East Lound, Haxey, Doncaster, DN9 2LR

Introduction

G & M Consulting Ltd (G&M) were instructed by Cape Site Services on behalf of White Agus Partnership, to carry out a coal mining risk assessment for land at 5 Back Lane West, Royston, Barnsley S71 4SB. It is understood that consideration is being given to developing the land with a small residential development.

The site location and its boundaries is shown below.

Figure 1

Scope of the Coal Mining Risk Assessment

This coal mining risk assessment is compiled in accordance with the guidance given in the Coal Authority publication *Risk Based Approach to Development Management Guidance for Developers Version 3 2014*.

This publication sets out the scope for a CMRA as follows:

- Present a desk-based review of all available information on 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 cumulative impact of issues;
- Set out appropriate mitigation measures to address 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 requirements of national planning policy with regard to development on unstable land.

Site Location and Description

The site is located to the rear of the existing property, 5 Back Lane West, in the village of Royston; approximately 5km north of Barnsley town centre. The National Grid Reference for the site is SE 355 115.

The site is on the south side of Back Lane West and fronts on to the B6428, Lee Lane; both roads are parallel and run east west. The site currently comprises gardens to the rear of 5 Back Lane West. It is a rectangular shaped piece of land approximately 23 m by 13 m with the long access running north south and approximately 0.3 Ha is area.

Sources of Information

In compiling the CMRA information has been obtain from various sources:

- Historical Ordnance Survey Maps;
- Geological maps
    - 1:50,000 Scale Sheet 87 Barnsley (2008)
- Geological Memoir for Sheet 87 Barnsley (1947)
- Coal Authority Consultants Coal Mining Report
- Coal Authority interactive Viewer http://mapapps2.bgs.ac.uk/coalauthority/home.html
- General Internet Search

Historical Development

Historical Ordnance Survey plans examined (1854 to 1991) for the area show the site to have been undeveloped until the present day (1991). The earliest historical map shows Back Lane West and Lee Lane to exist as part of Royston, with scattered housing / small holdings / paddocks present along the roads. The site is shown as orchards on the earliest maps.

Major housing development is shown on the maps between 1956 and 1962 with development on the south side of Back Lane West not until 1980/1981.

There are no indications of historical mining i.e. “old coal pits” or spoil heaps in the area. The earliest maps do record a number of wells in the general area.

Published Geology

The geological records for the area,1:50,000 scale geological maps show the site to be underlain by strata of the Pennine Middle Coal Measures Formation which comprise interbedded mudstone, siltstone and sandstone with subordinate beds of coal, ironstone and seatearth, No superficial deposits are shown to be present on site.

From the geological records, the site is shown to be directly underlain by the Mexborough Rock, a named sandstone within the Coal Measures formation. Locally it is also known as the Royston Rock. The Mexborough Rock varies in thickness across the region from 0 to 56m. It is described in the geological memoir as *“variable in thickness, yellow or brown in colour, flaggy by nature and with numerous sandy shale partings”.*

The Royston Coal, which is associated with the Mexborough Rock is shown to outcrop approximately 150m south west of the site.

The Royston coal varies in thickness across the area from 0 m to 0.8 m. The 1947 geological memoir for the area only references the Royston Coal once, as a seam associated with the base of the Mexborough Rock.

There are no details in the memoir of the Royston Coal having been worked, even locally. Neither is there any discussions on the quality of the coal, which is suggestive that it has not been worked.

The memoir does contain a second reference to a Royston Coal but this is another seam in a different part of the geological sequence. It is not uncommon for the same name to be used for different coal seams in different areas.

The geological map shows the sequence in the general area of the site to dip to the north east at about 5°.

The site lies within a faulted block, formed by two parallel faults trending north east south west with down throws to the south east. The fault to the west of the site has a significant down throw as it brings in the Mexborough Rock i.e. the Mexborough Rock is not present west of the fault. The down throw of the fault to the east is small as it only displaces the Mexborough Rock and Royston Coal by a small amount. This fault is also shown to die out to the south and north of the site.

From the stratigraphical column of the 1:50,000 scale geological map it can be seen that the next named seam that underlies the Royston Coal is the Sharlston Top Coal. This seam is recorded to be between 0 and 1.9 m thick and is indicated to be approximately 10m below the Royston Coal. The geological memoir states the Sharlston Top Coal to be 67ft (20m) below the base of the Mexborough Rock.

Mining

A Consultants Coal Mining Report was obtained from the Coal Authority (CA) by G&M, a copy of which is included in Appendix A of this assessment. The Consultants report details information available from records held by the CA.

Within the report, the CA indicates that:

- The shallowest seam recorded to have been worked beneath the site is the Lidgett Coal at a depth of 419 m. The thickness worked is recorded as 0.82m and with a dip of 4.6° to the north east. Last worked in 1944.

- The shallowest seam worked adjacent to the site is the Low Barnsley Coal at a depth of 278m with an extracted thickness of 1.57 m. Last worked in 1919.

- The report also states “Yes” to probable unrecorded shallow workings and

- “No” to the presences of a spine roadway at shallow depth.

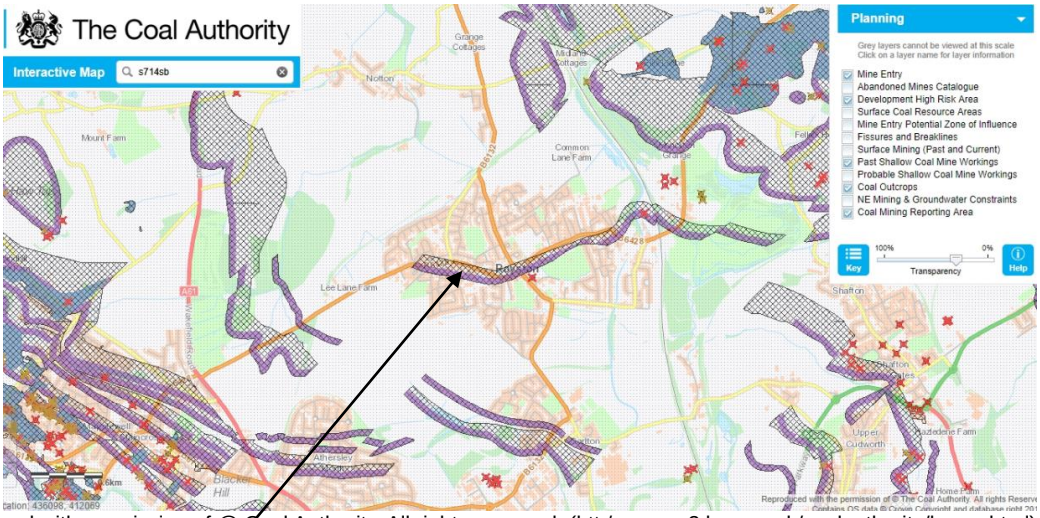
The report also details:

- *The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31st October 1994*
  .
- *There is no current Stop Notice delaying the start of remedial works or repairs to the property.*

- *The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.*

- Mine gas: *None recorded within 500 metres of the enquiry boundary.*

An inspection of the Coal Authority interactive viewer shows that the site to lie within a "development high risk area", although it does lie close to the northern edge of the area. The area appears to be associated with a coal out crop (presumed to be the Royston Coal) shown on the southern edge of the area.



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The Site

Risk Assessment

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

Table 2 Risk Assessment

Coal Mining Issue	Yes	No	Risk
Underground coal mining (recorded at deep depths >30m)	X		Low
Underground coal mining (recorded at shallow depths <30m)		X	
Underground coal mining (probable at shallow depths <30m)	X		Low
Mine entries (shafts and adits within 20m)		X	
Coal mining geology (fissures)		X	
Record of past mine gas emissions		X	
Recorded coal mining surface hazard		X	
Surface mining (opencast workings)		X	

The risk from shallow unrecorded coal mining is considered to be low, based initially on the absence of any indication on the historical maps. Coal mining, pre the first published Ordnance Survey maps, generally leave some evidence which is recorded on the map as “old shaft” or spoil heaps. No such features are present in the vicinity of the site or the wider area. The historical maps show orchards / paddocks on the earliest maps, with subsequent housing development over the years. The site itself appears to have remained undeveloped.

Based on the estimated distance to the outcrop of the Royston Coal of 150 m to the south west and a dip of 4.6° (from CA records), the Royston Coal would be at an estimated depth of 12m below the site. This assumes no variation in the topography between the outcrop and site.

The general rule of thumb for assessing the risk from shallow coal mining is the presence of competent rock cover over the seam equal to or greater than 10 x the seam thickness. Given the maximum thickness of the Royston Coal as 0.8 m a rock cover of 8 m below foundation depth would be required. The above information on dip and depth, suggests that the site is in excess of this limit. Also much of the overlying rock is likely to be sandstone, which generally reduces the amount of rock cover required. The risk from workings within the Royston Coal is therefore considered low.

The underlying Sharlston Top Coal can be up to 1.9 m thick and would therefore require a cover of 19 m. The thickness of strata between the Royston and Sharlston Top Coal is indicated to be 8 m (based on the geological map) and therefore the seam would be at a depth of approximately 20 m. Again on the limit of the above rule of thumb, and given the presence of the sandstone considered to be a low risk.

However, the above calculations are based on a number of assumptions any of which, if changed, would affect the conclusions and could place the seams at shallower depth and therefore the possibility of the presence of workings at shallow depth which could affect the site cannot be wholly discounted at this stage.

Further work

Whilst the risk from shallow workings is considered to be low, given that assumptions that have been made in the assessment and also the Coal Authority records, which indicate the site to be in a development high risk area, it is considered prudent to carry out an intrusive site investigation by means of rotary open hole boreholes to

assess the depth and quality of any coal seams and the possible presence of any workings. A minimum of three boreholes should be drilled, an initial borehole should be drilled to a maximum depth of 30m or to intersect the Sharlston Top Coal if shallower to determine the geological sequence. The subsequent boreholes should target coal seams or anomalies encountered in the first borehole.

A permit is required from the Coal Authority giving permission to drill prior to carrying out any intrusive investigation.

APPENDIX A

COAL AUTHORITY REPORT

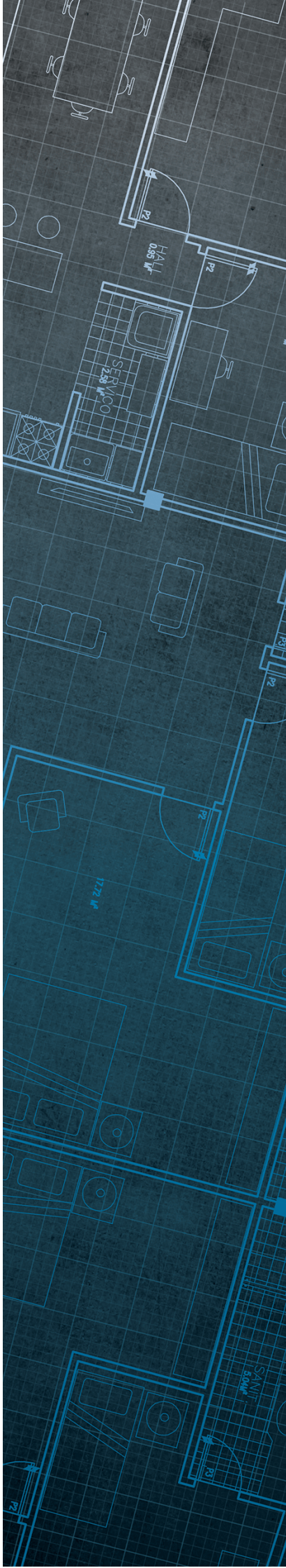
The Coal Authority

Consultants

Coal Mining Report

5 Back Lane West
Royston
Barnsley
S71 4SB

Date of enquiry:	**16 August 2018**
Date enquiry received:	**16 August 2018**
Issue date:	**16 August 2018**
Our reference:	**51001917103001**
Your reference:	**C290**



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

Benjamin Swinbourne

Enquiry address

5 Back Lane West
Royston
Barnsley
S71 4SB

Approximate position of property

How to contact us

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

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

@coalauthority
/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	LOW BARNSLEY	Coal	652K	278	North-West	1.2	East	157	1916
unnamed	WARREN HOUSE	Coal	652E	314	South-West	5.1	South-East	144	1921
unnamed	LOW HAIGH MOOR	Coal	652V	382	North-West	4.3	East	79	1965
unnamed	LOW BARNSLEY	Coal	652J	406	East	4.9	North-East	161	1908
unnamed	LIDGETT	Coal	6530	419	Beneath Property	4.6	North-East	82	1944
unnamed	LIDGETT	Coal	6531	426	North-East	5.0	East	79	1950
unnamed	LIDGETT	Coal	6532	429	North	5.0	South-East	82	1946
unnamed	FENTON	Coal	6533	514	West	4.1	North	180	1977
WOOLLEY	FENTON	Coal	R47	525	North-East	4.1	South-East	161	1980
WOOLLEY	FENTON	Coal	R46	530	North-West	4.1	South-East	185	1980
unnamed	MIDDLETON MAIN	Coal	6535	566	North-West	6.1	South-East	84	1972

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:

NE158	SY69	NE695
NE1033	NE996	NE190
NE979	NE1037	

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

No outcrops recorded.

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

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
35.2	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 31st October 1994.

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

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

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 in an area where notices to withdraw support were given in 1947 and 1977.

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.

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.

Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk.**

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

Opencast mines
Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips
Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations
Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites
Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence
Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas
Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission.

Mine water treatment schemes
Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining
Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing
Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders
Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices
Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices
Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

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The Coal Authority

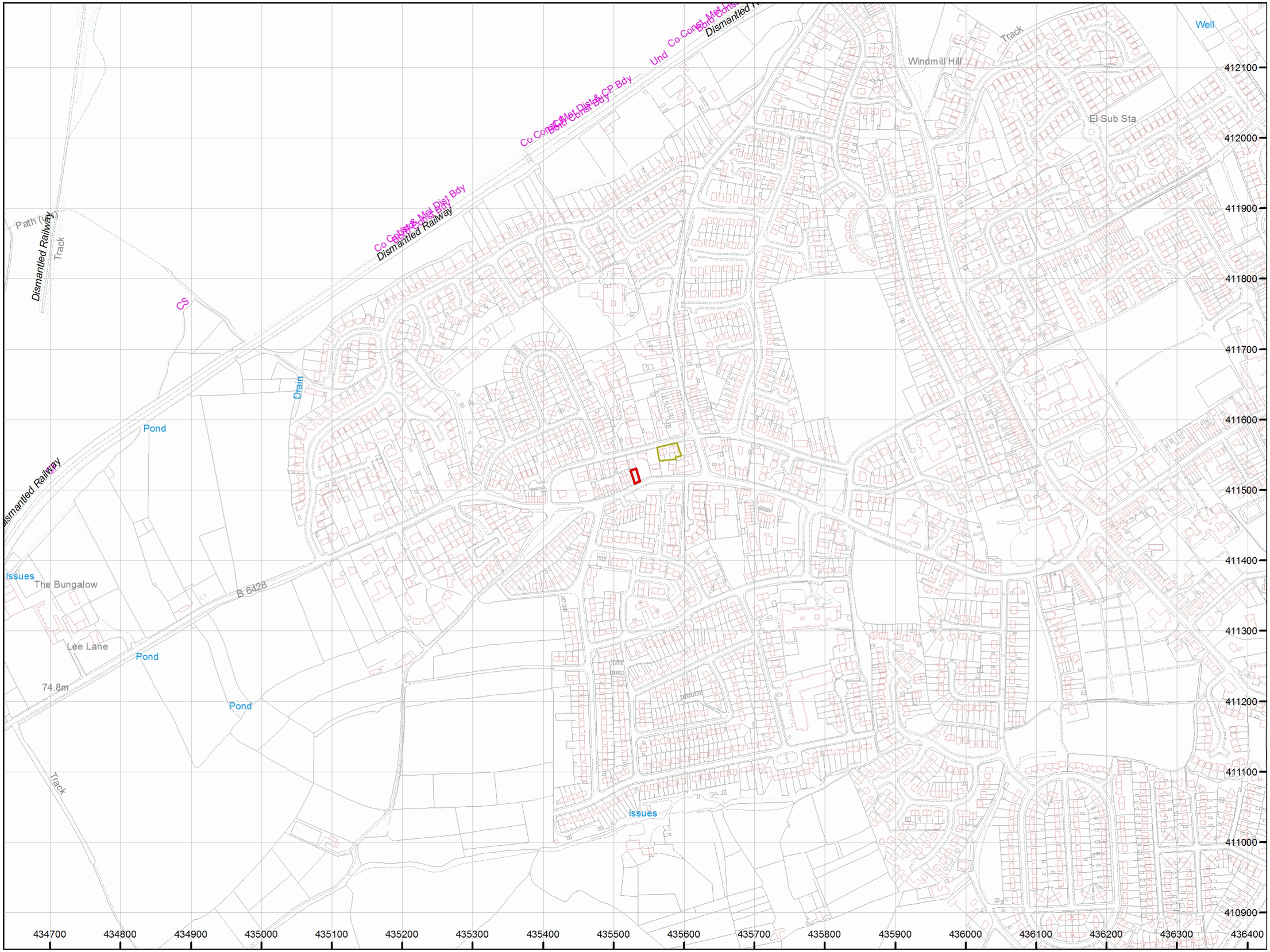
Summary of findings

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

Key

Approximate position of the enquiry boundary shown

Site investigations



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