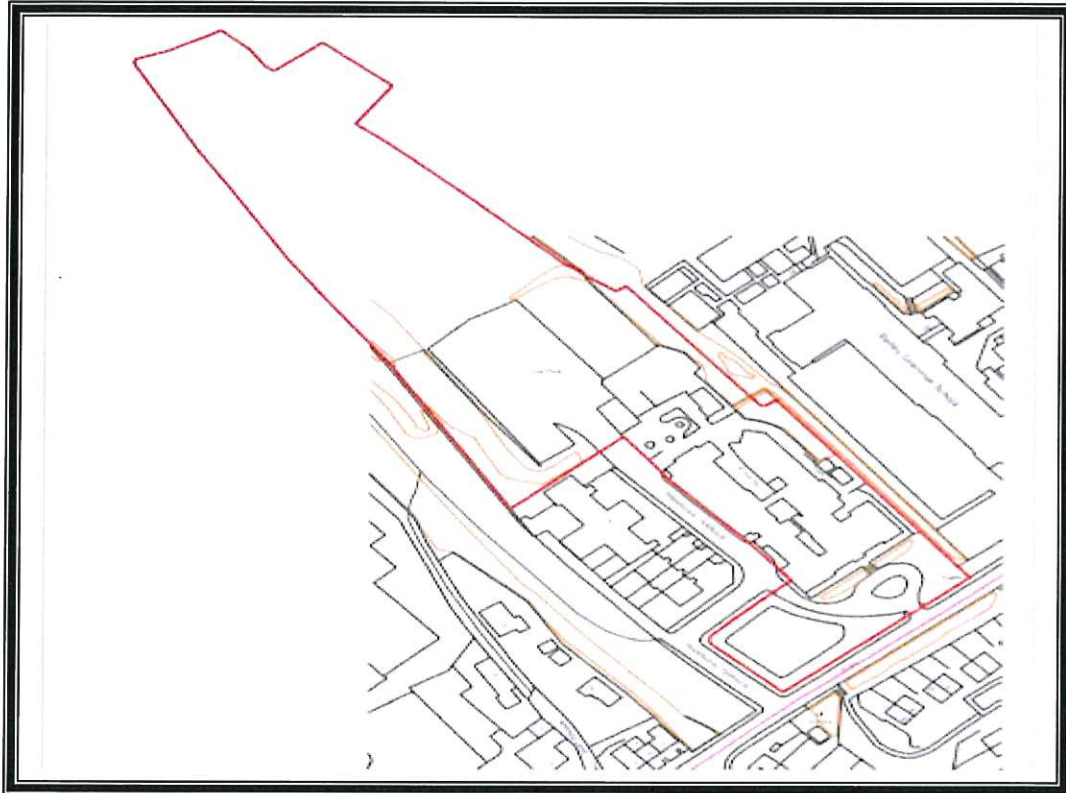


Report No: C316

Date: May 2019

COAL MINING RISK ASSESSMENT
For land at
CARLINGHOW HILL, BATLEY,
WEST YORKSHIRE



Prepared for

KUFIC

Prepared by

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





REPORT NUMBER:	C316	REPORT STATUS:	Final
REPORT TYPE:	Coal Mining Risk Assessment		
REPORT DATE:	May 2019		
SITE:	Land at Carlinghow Hill, Batley, West Yorkshire		
PREPARED FOR:	KUFIC		
PREPARED BY:	G Swinbourne BSc. (Hons) MSc. DIC, FGS		
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Introduction

G & M Consulting Ltd (G&M) were instructed by KUFIC Architects, to carry out a coal mining risk assessment (CMRA) for land off Carlinghow Hill, Batley WF17 0AA. It is understood that KUFIC are considering developing the land with a residential development comprising up to 27 semi detached and terraced houses and conversion of an existing hospital building.

A review of the Coal Authority (CA) Interactive Map (<http://mapaps2.bgs.co.uk/coalauthority/home.html>), shows the site to lie within a 'development high risk area' and an area of 'probable shallow coal mining'. Therefore, a CMRA has been undertaken in support of any submission.

The site location and its boundaries is shown below;



Figure 1

The proposed development is shown below;

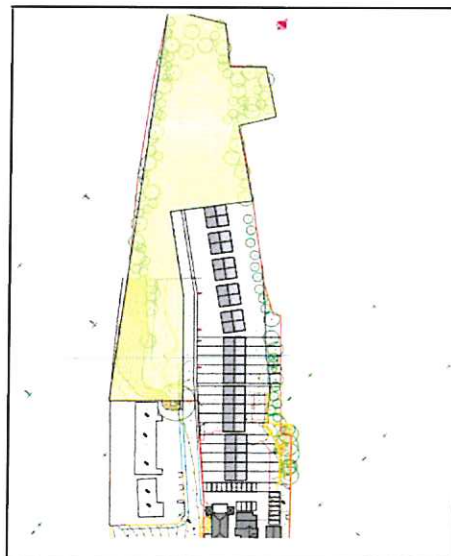


Figure 2

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*.

The above 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 lies approximately 1.5 km north west of Batley town centre, West Yorkshire. Carlinghow Hill forms the south eastern boundary to the site and Transvaal Terrace, from its junction with Carlinghow Hill, forms part of the south western boundary of the site.

The site is located on the north eastern side of the valley of Church Beck, a tributary to Howley Beck. The ground level therefore falls across the site from north east to south west.

The site is approximately 320 m long and 90 m wide at its widest point, with the long axis aligned north west south east along the valley side. It covers an area of approximately 15 hectares.

The south eastern part of the site is occupied by a derelict building, which was formerly a hospital, with associated landscaped areas. The central area of the site is the former car park to the hospital and the north west area is rough scrub land.

To the north east of the site is Batley Grammar School

The approximate National Grid Reference for the centre of the site is SE 237 251.

Sources of Information

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

- Historical Ordnance Survey Maps;
- British Geological Survey Records (BGS)
 - Geological Map 1:50,000 Scale Sheet 77 Huddersfield (2003)
 - Historical borehole records

- Coal Authority Consultants Coal Mining Report Ref 51002059539001
- 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) show the derelict building to have been the Batley and District Hospital. The area of the car park is identified as a quarry as early as 1854, when it is shown as “New Hall Quarry (Sandstone)” later maps show it disused and only show a break in slope, presumably associated with the quarry high wall, on the northern eastern boundary of the site. A tennis court is shown in this area on some later maps. The north west area of the site is shown as a field on all maps.

The Grammar school and Hospital are shown on the maps by 1894. The school records show it was opened in 1878 and the hospital appears to date from a similar time.

An air shaft / disused shaft is shown north of the site at estimated distance of 300m on the early historical maps.

A railway, later shown disused, is shown running north west south east along the south western boundary of the site. Transvaal Terrace appears to have been constructed parallel with the railway and a station is shown where the railway crosses Carlinghow Hill.

Published Geology

The geological records for the area, 1:50,000 scale geological map, show the site to be underlain by strata of the Pennine Lower 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, but there is an area of made ground shown, which presumably coincides with the former quarry.

Two coal seams are shown to out crop on or close to the site, the out crops are shown trending north west south east parallel with the valley side. No dip direction is shown but from the stratigraphic sequence it is inferred that the seams dip to the north east beneath the site i.e. the younger seam is further up the slope.

The two seams are the Flockton Thin and Flockton Thick. The seams are shown separated by a named sandstone unit, the Emley Rock. The stratigraphic sequence, together with recorded thickness is shown as follows:

Flockton Thick	0.3 – 1.5 m
Emley Rock	0.0 – 12.0 m
Flockton Thin	0.0 – 0.8 m

This sequence is underlain by further coals, the 1st, 2nd and 3rd Brown Metal Coals. These seams are shown discontinuous within the area of the 1:50,000 geological map, and are often replaced by the Birstall Rock, another named sandstone unit. The Birstall Rock is shown outcropping in the valley bottom suggesting that the Brown Metal coals are not present.

Assuming the quarry is associated with the Emley Rock and the high wall is close to the north eastern boundary then the outcrop of the Flockton Thick probably lies at shallow depth close to or along the north eastern boundary of the site and the out crop of the Flockton Thin, close to or along, the south western boundary.

The BGS web site contains records of previous investigations and boreholes. One such investigation was carried out on a site on the opposite side of Carlinghow Hill from the site in 1993 and comprised five boreholes drilled to a depth of 20m. The closest borehole to the site encountered coal from 3.2 m to 5.5 m identified by the BGS as the Flockton Thick and an area of broken ground with 90% flush loss from 15.0 m to 16.1 m identified by the BGS as the horizon of the Flockton Thin. Sandstone was proven from 5.9 m to 10.6 m, a thickness of 4.7 m presumed to be the Emley Rock. These records suggest that the distance between the two seams is of the order of 10m.

Mining

An inspection of the CA interactive viewer shows the site to lie within a development high risk area and area of probable shallow coal mining. The boundary of the high risk area appears to follow the line of the outcrop of the Flockton Thin coal. Suggesting any deeper seams are outside the zone of influence for the site.

The interactive map shows three adits north and north west of the site, along with a number of shafts to the north.

A Consultants Coal Mining Report was obtained from the Coal Authority 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 Coal Authority.

Within the report the Coal Authority indicates that:

- The shallowest seam recorded to have been worked beneath the site is the Flockton Thin. There are two records for this one indicates a depth of 28 m and the second 37 m. Both record an extracted thickness of 91 cm (0.91 m) with a dip of 2.3° to the east and last worked in 1895
- The next seam recorded worked beneath the site is the Middleton Main at a depth of 86 m, last worked in 1905.
- The report also says “Yes” to probable unrecorded shallow workings and
- “No” to the presences of a spine roadway at shallow depth.
- An adit is shown recorded just north west of the site.

The report also states:

- *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.*

Risk Assessment

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

Table 1 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		High
Underground coal mining (probable at shallow depths <30m)	X		High
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 Flockton Thin coal is shown to out crop south west of the site and to dip to the east and will therefore underlie the site. There are records of workings within the seam beneath the site at a depth of 28 m with an extracted thickness of 0.91 m. The thickness of the seam extracted may place the seam outside the zone of influence of the site. But given that the site slopes and that there are two records giving different depths to the seam it can not be discounted based on records only.

The Flockton Thick coal is shown on or close to the north eastern boundary of the site, therefore crop workings could be expected. An adit is shown in the CA Consultants report north west of the site. The online CA records show a number of other adits further north and north west of the site. Adits as mine entries are a common method of working seams that outcrop in valley sides.

Further work

The risk from shallow workings is considered to be high. The CA records indicate the site to be in a development high risk area, and an area of probable shallow coal mining. The geological records show the Flockton Thick and Flockton Thin coals to be present

out cropping to the north east and south west of the site receptively. The CA hold records showing mining in the Flockton Thin has taken place beneath the site and historical boreholes on an adjacent site also show evidence of mining within the Flockton Thin. Crop workings may be associated with the Flockton Thick if the seam outcrops on the site.

It is therefore 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. Given the size of the site a minimum of twelve boreholes should be drilled, an initial borehole should be drilled to a maximum depth of 30m to confirm the descending sequence down to and intersect the Flockton Thin coal. All subsequent boreholes should target the Flockton Thin coal once its depth is known beneath the site. A number of boreholes should be drilled close to the north eastern boundary to intersect the Flockton Thick coal. A minimum number of three boreholes should be drilled in to the Flockton Thick coal to allow the dip and strike of the seam to be calculated and therefore the outcrop mapped.

It would also be prudent to carry out a site strip, once access allows to expose the edge of the former quarry and outcrop, if present, of the Flockton Thick coal. Any evidence of crop workings or adits etc should be examined by a suitable qualified person.

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

Remedial measures for the site, if required, would be dependent on the proven depth to coal seams, the overlying rock cover and also on the proposed construction methods for the development.

If the Flockton Thin coal is proved to be within influencing depth of the site then it is likely that a programme of drilling and grouting would be required. The grouting scheme should be designed by a qualified person following an assessment of the findings of the intrusive investigation but is likely to be carried out for an area that extends beyond the footprint of the proposed buildings and possibly beneath the highway.

Remediation of the area of the Flockton Thick coal would depend if it encroaches in to the area of the proposed buildings and at what depth it is proved. It may be that drilling and grouting is required, or if very shallow by excavation and re-engineering of materials to remove any soft spots.

Beneath the existing building it is thought unlikely that any workings associated with the Flockton Thick coal would affect the structure as they would most likely have been removed, if they had been present, during construction or given the age of the property any soft spots would most likely have consolidated under the load of the building. If the Flockton Thin coal is within influencing distance then it is suggested that an examination of the structure is made by a qualified person to determine if there is any evidence of historical movement associated with possible workings and whether this is detrimental, as drilling and grouting beneath an existing structure as large as the former hospital would be challenging.



APPENDIX A



The Coal
Authority

Consultants Coal Mining Report

1 Transvaal Terrace
Batley
Kirklees
WF17 0AA

Date of enquiry: 21 March 2019
Date enquiry received: 21 March 2019
Issue date: 21 March 2019

Our reference: 51002059539001
Your reference: C316



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

Graeme Swinbourne

Enquiry address

1 Transvaal Terrace
Batley
Kirklees
WF17 0AA

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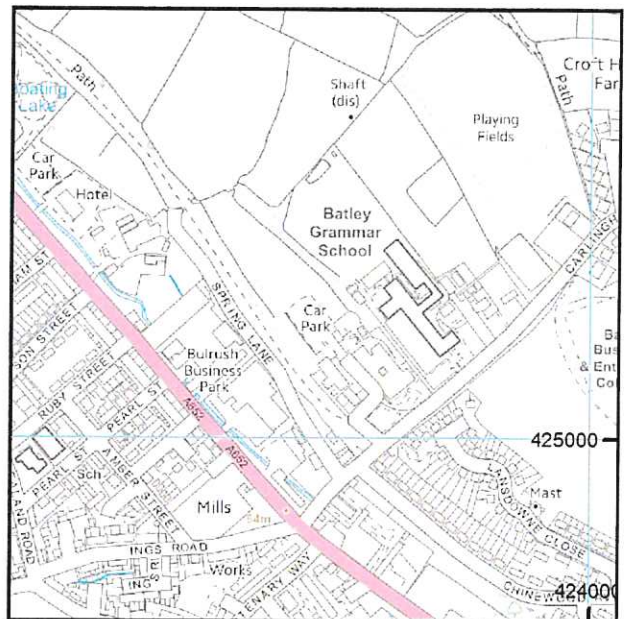
www.groundstability.com

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



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Section 1 – Mining activity and geology

Past underground mining

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	FLOCKTON THIN	Coal	6ZLF	27	South	2.3	East	91	1852
unnamed	FLOCKTON THIN	Coal	62NU	28	Beneath Property	2.3	East	91	1895
unnamed	FLOCKTON THIN	Coal	62NV	37	Beneath Property	2.3	East	91	1895
unnamed	MIDDLETON MAIN	Coal	62NX	77	West	6.9	North-East	160	1902
unnamed	MIDDLETON MAIN	Coal	62NT	86	Beneath Property	7.0	North-East	160	1896
unnamed	MIDDLETON MAIN	Coal	6ZLH	87	South	1.6	North-East	160	1898
unnamed	MIDDLETON MAIN	Coal	62NS	91	Beneath Property	6.7	North-East	160	1905
unnamed	MIDDLETON MAIN	Coal	6ZLI	99	South-East	1.6	East	160	1899
unnamed	SILKSTONE	Coal	62NF	131	Beneath Property	2.3	East	43	1924
unnamed	SILKSTONE	Coal	6ZLM	139	South-East	2.3	East	43	1919
unnamed	BLACK BED	Coal	62NA	256	Beneath Property	1.7	East	66	1926

Probable unrecorded shallow workings

Yes.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

Entry type	Reference	Grid reference	Treatment description	Mineral	Conveyancing details
Adit	423425-006	423551 425290		Coal	

Abandoned mine plan catalogue numbers

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

M522	3105	12199
12673	FGB415	8417
8420	9724	12675

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
FLOCKTON THICK	Coal	Yes	Within	N/A	95
FLOCKTON THIN	Coal	Yes	30.4	South-West	165
FLOCKTON THIN	Coal	Yes	Within	N/A	185

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations

None recorded within 50 metres of the enquiry boundary.

Remediated sites

None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

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

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

Mine gas

None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

Section 3 – Licensing and future mining activity

Future underground mining

None recorded.

Coal mining licensing

None recorded within 200 metres of the enquiry boundary.

Court orders

None recorded.

Section 46 notices

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices

The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land

The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Section 4 – Further information

The following potential risks have been identified and as part of your risk assessment should be investigated further.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

Section 5 – Data definitions

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

Past underground coal mining

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

Probable unrecorded shallow workings

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

Spine roadways at shallow depth

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

Mine entries

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

Abandoned mine plan catalogue numbers

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

Outcrops

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

Geological faults, fissures and breaklines

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

Opencast mines

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

Coal Authority managed tips

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

Site investigations

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

Remediated sites

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

Coal mining subsidence

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

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

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

Mine gas

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

Mine water treatment schemes

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

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

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

Future underground mining

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

Coal mining licensing

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

Court orders

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

Section 46 notices

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

Withdrawal of support notices

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

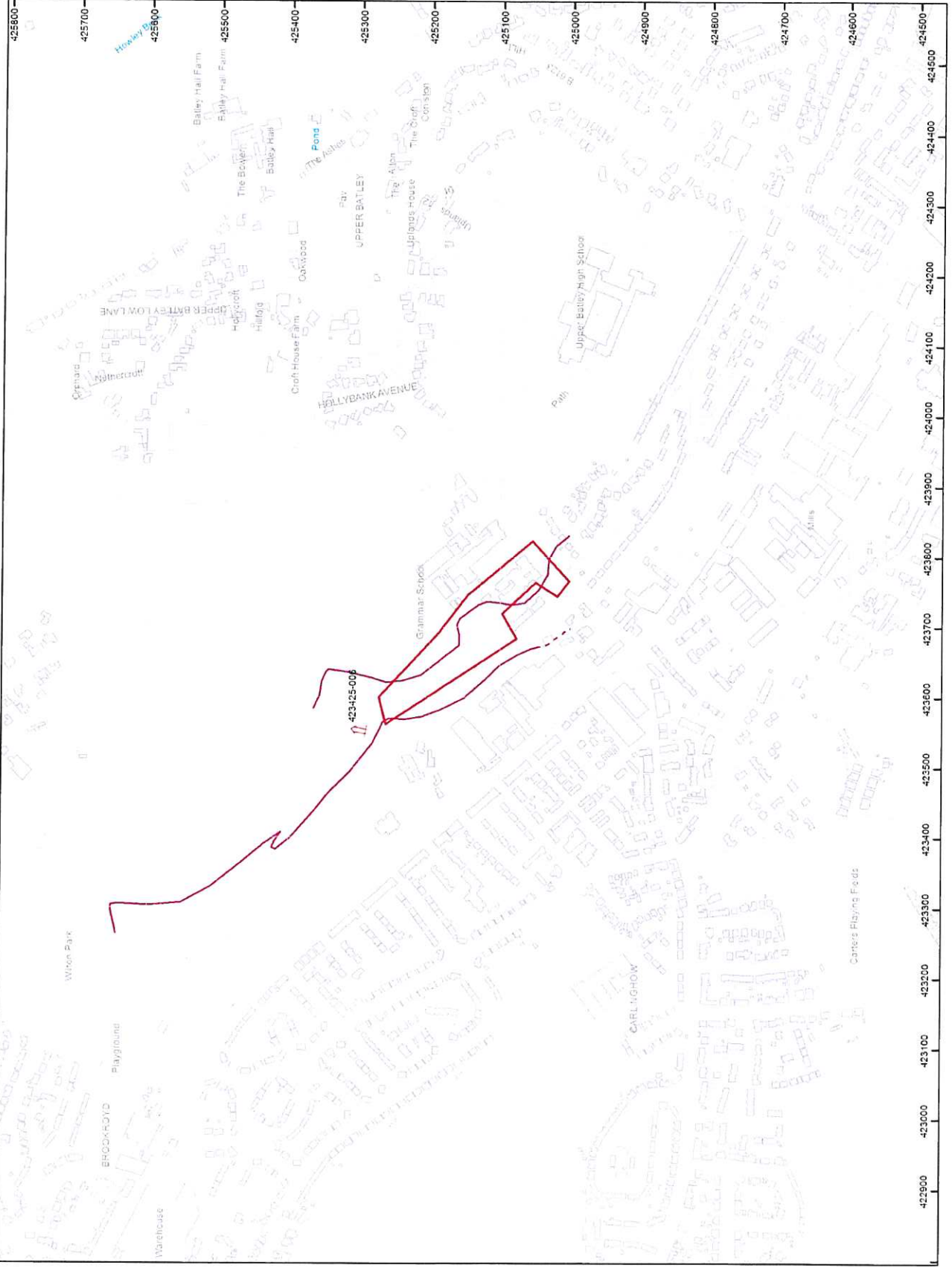
Payment to owners of former copyhold land

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

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Summary of findings

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



Key

- Approximate outline of the enquiry boundary shown
- Proposed site
- Subsoil Features
- Subsoil (unproven)

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