



Barnsley Road, Goldthorpe,  
Barnsley

Coal Mining Risk Assessment

*Newlands Developments Limited*

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## 1. INTRODUCTION

### 1.1 Terms of reference

In July 2022, Hydrock Consultants Limited (Hydrock) was commissioned by Newlands Developments Limited (the Client) to complete a Coal Mining Risk Assessment for a proposed development site on Land south of Dearne Valley Parkway, Billingley, Bolton upon Dearne, Barnsley, Yorkshire, S72 0JE.

Hydrock understands the proposed development area is 85.31 ha and will comprise four warehouse structures with associated landscaping and access roads. A proposed development layout is shown on UMC Architects, drawing 2081 P0520 Rev E, date 07/11/2023, this drawing is presented in Appendix A.

This report provides a Coal Mining Risk Assessment (CMRA) for the proposed Barnsley Road, Goldthorpe development on the site.

### 1.2 Objectives

The objectives of this Coal Mining Risk Assessment are to:

- present a desk-based review of all available information on the coal mining issues which are relevant to the application site;
- to identify and assess the risks to the proposed development from the coal mining legacy, including the cumulative impact of issues;
- set out appropriate mitigation measures to address the coal mining legacy issues affecting the site, including any necessary remedial works and/or demonstrate how coal mining issues will influence the proposed development; and
- demonstrate to the Local Planning Authority that the application site is, or can be made, safe and stable to meet the requirements of National Planning Policy with regard to development on unstable land.

Where the above points cannot be fully satisfied by the desk-based data obtained to date, it will be necessary to undertake further works. Such works could consist of either intrusive ground investigation works or be incorporated into the design of stabilisation measures for the site.

### 1.3 Available information

The following information has been provided to Hydrock by the Client for use in the preparation of this report:

- JPG, 2017. Geoenvironmental Desk Study Report. Broomhill Goldthorpe, Barnsley, Ref. APN/DS/5064.v1, March 2017, JPG, Leeds.
- Newlands Developments Limited, Development south of Barnsley Road, Goldthorpe, UMC Architects drawing, 1:2500 scale, Ref. 22081 F0014 Rev. B, dated 10.06.2022
- UMC Architects, November 2023, Parameters Plan, Barnsley Road, Goldthorpe, ref. 2081 P0520 Rev E

## 2. DESK BASED INFORMATION REVIEW

### 2.1 Data Sources

The following sources of information have been consulted in the preparation of this CMRA:

- Publicly available online aerial photography;
- Published geological mapping (British Geological Survey);
- Historic England <https://historicengland.org.uk/images-books/archive/collections/aerial-photos/>
- The Coal Authority Interactive Mapping Viewer, available on the internet;
- The Coal Authority Consultants Coal Mining Report, Land South of Dearne Valley Parkway, Goldthorpe, Barnsley, South Yorkshire, S72 0JE, (Ref. 51003255641001, dated 20 July 2022.);
- The Coal Authority Mining Abandonment Plans for the site, Mining Records Office (Mansfield), please refer to Appendix C;
- The Coal Authority. 2019. Guidance on managing the risk of hazardous gases when drilling or piling near coal – Version 2.
- British Geological Survey, 2008. Barnsley. England and Wales Sheet 87. Bedrock and Superficial. 1:50,000 scale.
- JPG, 2017. Geo environmental Desk Study Report. Broomhill Goldthorpe, Barnsley, Ref. APN/DS/5064.v1, March 2017, JPG, Leeds.
- JPG Drawing No, 5064-SK2, Constraints Plan, showing recorded opencast mining areas and proposed building outline. Note the building outline shown is not currently proposed and site boundaries are different to the current site boundary (Appendix A).
- JPG Drawing No. 5064-JPG-XX-XX-DR-C-1202 S2 P01. Conceptual Ground Model, Site Constraints (Appendix A).
- Hydrock, August 2022. Ground Conditions Desk Study Report. Ref. 23451-HYD-XX-XX-RP-GE-0001-S2-P01.

The Coal Authority Consultants Coal Mining Report together with accompanying plan (Drawing Ref. HYD-8919599) is included in Appendix B.

### 2.2 Site Referencing

The site is referenced in Table 2.1 and the location is indicated in Figure 2.1 and Figure 2.2.

Table 2.1: Site referencing information

Item	Brief Description
Site name	Land south of Dearne Valley Parkway.
Site address	Billingley, Bolton upon Dearne, Barnsley, South Yorkshire, S72 0JE.
Site location and grid reference	The site is located directly south of the A635, 800m east of the A619 and 400m west of Goldthorpe Industrial Estate. The National Grid Reference of the approximate centre of the site is 444093E, 403622N.



Figure 2.1: Site location.  
(Reproduced with permission from Groundsure).

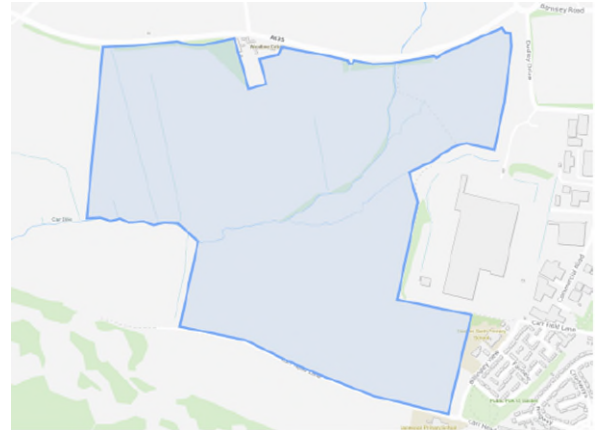


Figure 2.2: Extract from the Ordnance Survey Map.  
(Reproduced with permission from Groundsure).

A site location plan (Hydrock Drawing 21253-HYD-XX-XX-DR-GE-0001) is presented in Appendix A.

## 2.3 Site Description

The site is approximately rectangular in shape and covers an area of 85.31ha. The site boundary is generally unfenced. However, a section of post and wire fence is present along the western part of the southern boundary. A fence also surrounds the Aldi depot along the eastern boundary of the site. The site is bounded to the north by the A635 Barnsley Road and to the west by the A6195 road. The site is bounded to the east by Dudley Drive, an Aldi depot, and several buildings along Billingley View, including a Community Centre and some horse pens. The site is bounded to the south by Lacewood Primary School and a track opposite Carr Head Lane. The track stops in the middle of the southern boundary.

A coniferous wood stands along the western section of the southern boundary. The wood stands on the slopes of a small hill, which could be associated with the colliery spoil stockpile marked on the 1988 map.

Elevations generally fall toward Carr Dike in the centre of the site, which crosses the site from east to west. However, Carr Head Lane Track is much higher than the rest of the site.

Along the A635 road, elevations are higher near the north west and north east corner of the site and lower around Billingley Green and to the west of Billingley Green. Along the A6195 road, elevations fall to the south. These roads are generally higher than the site. A woodland area is located along the western boundary of Billingley Green. 5m tall trees line the northern boundary between Carr Dike and Billingley Green. A small wood was also located near the junction of Carr Dike and a north to south tributary. Some tall trees line the A6195 road. Several trees are also present along Carr Head Lane.

A site walkover was completed by Hydrock on Tuesday 2 August 2022. There was no obvious evidence identified at ground level of historical coal mining activities or mining features.

## 2.4 Proposed Development

Hydrock understands the proposed development area is 85.31 ha and will comprise four warehouse structures with associated landscaping and access roads. A proposed development layout is shown on UMC Architects drawing 22081 F0014 Rev B, dated 10.06.2022, this drawing is presented in Appendix A.

## 2.5 Site History

A study of historical Ordnance Survey maps has been undertaken to identify any former land uses at the site and surrounding areas which may have geotechnical or geo-environmental implications for the proposed development. The key findings are summarised in Table 2.2.

Table 2.2: Site history review

Reference	Key features on site	Key features off-site
OS Map 1850-1854 1:10,560	The site comprises fields and some trees, with Carr Dike flowing north to south-west, exiting the site in the west.  A Bindstone quarry is shown in the north-east corner of the site.  Salters Brook is shown flowing parallel to the eastern half of the northern site boundary.	Fields are present surrounding the site.  Bindstone and sandstone quarries are shown beyond the north-east and north-west corners of the site, 300m south of the western edge of the site, and 650m south-east.  Billingley is shown 500m north of the site and Bolton upon Dearne is shown 430m south-east of the site.  A public house is shown beyond the centre of the northern site boundary.  A railway line (London Midland & Scottish Railway) is shown 900m south-west of the site in a north-west to south-east orientation.
OS Map 1890 1:10,560 and 1892 1:2,500	Salters Brook is no longer shown.  The quarry is no longer shown (assumed to be backfilled).	The public house and surrounding buildings are now shown as cottages.  The quarries to the north-east, north-west and south-west are no longer shown (assumed to be backfilled).
OS Map 1893 and 1901-1904 1:10,560	No significant changes.	Goldthorpe Brick Works is now shown beyond the north-east site boundary.  Railway lines are now shown 80m south-east of the site in a north-east to south-west orientation and 760m north-east in a north-west to south-east orientation.
OS Map 1929 1:10,560	The field in the west of the site are now shown as rough pasture.	Goldthorpe Brick Works is now shown as disused.  A tank is shown 350m north-east of the site associated with an unspecified building (Holly Grove).  Sewage works are now shown 680m north-west of the site.  Wath Main Brick Works and allotment gardens are now shown 180m south of the south-east corner of the site.
OS Map 1948 1:10,560	Some buildings and an associated path are now shown on the western site boundary, with the path leading into the site.	No significant changes. It should be noted that the Bolton Upon Dearne opencast workings took place between 1948 and 1949 but are not shown on this particular edition of the OS map.
OS Map 1966 – 1967 1:10,560	Several drains are labelled in the northern half of the site.	Bolton upon Dearne has expanded up to the south-west railway line and includes an unspecified Works 295m to the south-east.

Reference	Key features on site	Key features off-site
		The Bolton upon Dearne opencast workings were backfilled and restored in 1950 and are therefore not shown on the 1966/1967 edition of the OS map. The quarry to the south-east appears to have been backfilled. The south-west railway line is now labelled as dismantled.
OS Map 1976 – 1977 1:10,000	No significant changes.	A refuse or slag heap is now shown 240m south of the site, extending over a former marsh. The dismantled railway line is no longer shown and Bolton upon Dearne has expanded to beyond the south-east site boundary, and includes Poultry Houses 560m to the south-east.
OS Map 1988 1:10,000	No significant changes.	An electricity substation is now shown 400m east of the site.
OS Map 2001 1:10,000	The northern half of the site is now labelled as a quarry.	The Woodbine Opencast and Woodbine Extension Opencast workings took place between 1996 and 1997. The site was restored by July 1997. Although the northern part of the site is labelled as a quarry the aerial extent of the former opencast workings is not shown on the 2001 OS map. The Poultry Houses to the south-east are no longer shown.
OS Map 2010 1:10,000	The northern half of the site is no longer labelled as a quarry.	The unspecified Works to the south-east are no longer shown.
OS Map 2022 1:10,000	No significant changes.	The Aldi distribution centre is now shown beyond the eastern site boundary.

Based on The Coal Authority mine abandonment plans, the site was subjected to extensive opencast mining in the northern part of the site between 1944 and 1997. The opencast workings were undertaken during three main phases: in 1944, 1948-49 and 1996-97. Two historical aerial images of the opencast mine have been sourced from Historic England and are provided in Appendix D.

Within each opencast working the Shafton Coal seam was mined, as shown on Hydrock drawing 23451-HYD-XX-XX-DR-GE-1005 (provided in Appendix A). Three opencast plans show the boundaries of the opencast mining area to extend from the site eastern boundary, up to approximately 80m east of Pasture Lane. The area extending between Pasture Lane and Cathill Road was mined in 1945. The plans also show that the 1997 opencast site southern boundary (Wooddbine opencast site), coincides approximately with the 1948-49 opencast site northern boundary (Bolton upon Dearne opencast site).

The area of opencast mining runs approximately east to west, south of the A635 Doncaster Barnsley Road. The opencast workings extend southwards, just north of the outcrop of the Shafton Coal seam outcrop. The thickness of the backfill is shown to range between 5m and 22.2m and to increase from south to north.

### 3. GEOLOGY

The geology of the site area is shown on the 1:10,000 British Geological Survey (BGS) map extract reproduced as part of the Groundsure report and is summarised in Table 3.1. Extracts from the map are shown in Figure 3.1 and Figure 3.2.

Table 3.1: Geology

Ref. for Figures	Location	Stratigraphic Name	Description
Artificial and Made Ground			
1	On site	Infilled Ground	Artificial deposits associated with the infilling of former opencast coal mine workings.
Superficial Deposits (Figure 3.1)			
1	On site	Alluvium	Clay, silt, sand and gravel.
Solid Geology (Figure 3.2)			
2 and 4	On site.	Pennine Middle Coal Measures	Mudstone, siltstone and sandstone.
8	On site.	Mexborough Rock	Sandstone.

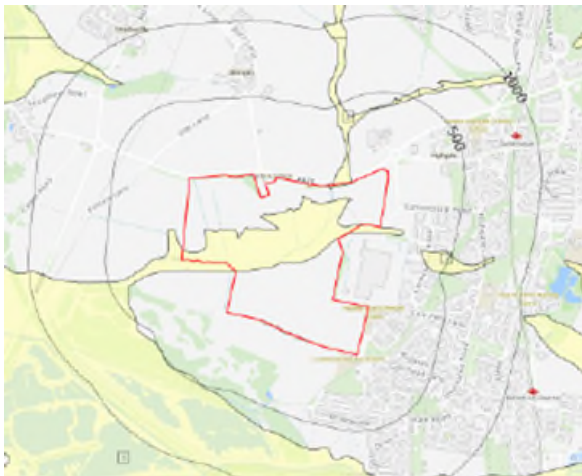


Figure 3.1: Superficial deposits.  
(Reproduced with permission from Groundsure)

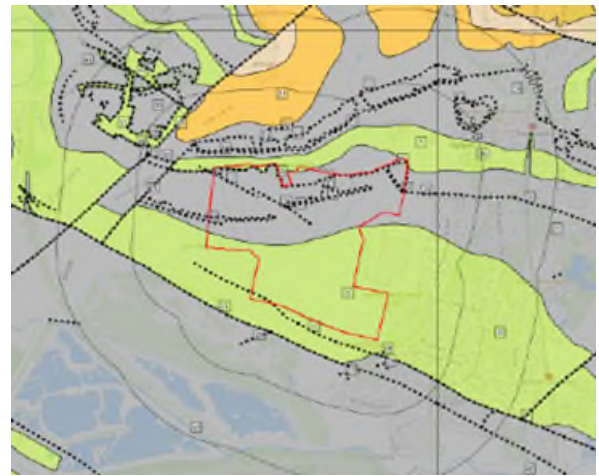


Figure 3.2: Solid geology.  
(Reproduced with permission from Groundsure)

In addition to the Groundsure report information the following geological publications have been reviewed:

- British Geological Survey. 1:50,000 Series. England and Wales Sheet 87. Barnsley. Bedrock and Superficial Geology. Dated 2008.
- British Geological Survey. 1:10,000 Series. Sheet SE40SW. Wath upon Dearne. Dated 2005.

### 3.1 Made Ground

The northern part of the site is shown to be part of a former opencast coal mining area. The 1:50,000 BGS map indicates that this part of the site is underlain by infilled ground of restored opencast coal sites, brick pits and quarries. The 1:50,000 BGS map also shows that the site is bounded by a landfill site (filled with Made Ground), along its southern boundary. The 1:10,000 BGS map shows the presence of Made Ground, associated with a landfill site and of worked ground, associated with a pit, at the location of Goldthorpe former brick works. This 1:10,000 geological map indicates that most of the former pit was either covered by Dudley Drive or backfilled. The 1:10,000 BGS map also shows the presence of Made Ground below most of the site western boundary; i.e., below and on each side of the A6195 road.

### 3.2 Bedrock

The northern half and south western parts of the site are underlain by Pennine Middle Coal Measures, which comprise mudstone, siltstone and sandstone with bands of coal.

A thin band of sandstone is shown to underlie the site below the central part of the A635 which forms the northern boundary of the site, as well as below the north eastern and north western corners of the site.

The southern half of the site is shown to be underlain by the Mexborough (Royston) Rock which is a band of sandstone. The Mexborough Rock outcrop is oriented from north west to south east, and is between 0m and 56m in thickness.

### 3.3 Superficial Deposits

An area of Alluvium is centred around Carr Dike; the Alluvium comprises silt, clay and sand with gravel and peat interbeds. The Alluvium is underlain by Pennine Middle Coal Measures, or by the Mexborough Rock.

Other than alluvium no other superficial deposits are shown to be present below the site.

### 3.4 Geological Structure

The site is crossed by the Watson Fault, which trends west to east in the south west part of the site, and down-throws to the north (displacement unknown). The Darfield Fault is shown to cross the midpoint of the southern boundary of the site (Carr Head Lane). This fault trends west to east and down-throws to the north (displacement unknown). The 1:10,000 BGS map also shows the presence of an underground fault starting from the south east corner of the site and oriented south east to north west. The fault down-throws to the north east, with a throw of 39m, within the Newhill Coal seam. Two other faults are shown to cross the site near the north west part of the site. Both faults trend south west to north east. The western fault is the Broomhill Fault and down-throws to the south east (displacement unknown). The eastern fault is unnamed and down-throws to the north west (displacement unknown). The 1:10,000 BGS map also shows the presence of two faults oriented north west to south east which down-throw to the south east (displacement unknown). These faults are marked between a point located south to Billingley Green and up to the A635 road, near Pasture Lane.

### 3.5 Coal Seams

The Shafton Coal is shown to outcrop along the northern and southern boundaries of the opencast area, along A635 Barnsley Road. The Shafton Coal seam is shown to dip by between 2 and 5 degrees to the north and is between 0.2m and 2.3m in thickness. The Shafton seam is split into two leaves, the Top Leaf is approximately 1.38m thick and the Bottom Leaf is approximately 0.15m thick. The Shafton seam has been worked by both underground drift mining from Billingley Drift Mine (1952) and by the Bolton on Dearn opencast (1948-1949) and Woodbine/Woodbine Extension opencast (1996-1997) workings in the northern part of the development site.

The Highgate Coal is shown to outcrop near the north western corner of the site, parallel to the Shafton Coal seam. This coal seam is shown to be between 0m and 0.7m in thickness. The Highgate Coal seam was worked by underground drift mining from the Highgate Colliery to the north of the proposed development site.

### 3.6 Historical Borehole Information

A number of borehole logs from the BGS archive have been reviewed. Selected records are summarised below.

#### *BH Ref. SE40SW33*

Borehole Ref. SE40SW33 is located on site (NGR 444594E, 403998N); this borehole was completed to a depth of 31.39m and recorded the following sequence:

- No recovery between ground level and 0.08m below ground level (bgl);
- Grey mudstone with ironstone, mussels, pyritised plant debris and ostracods between 0.08m and 0.23m bgl; over
- Carbonaceous shale with coal streaks between 0.23m and 0.26m bgl; over
- Grey mudstone-seatearth between 0.26m and 0.36m bgl; over
- Pale grey sandstone between 0.36m and 0.51m bgl; over
- Grey siltstone with finely comminuted plant debris and bands of silty mudstone between 0.51m and 1.27m bgl; over
- Grey silty mudstone between 1.27m and 4.62m bgl; over
- Grey mudstone between 4.62m and 6.28m bgl; over
- Interbedded coal/inferior coal, carbonaceous (mudstone) seatearth and pyrites between 6.28m and 31.39m bgl.

#### *BH Ref. SE40SW440*

Borehole Ref. SE40SW440 is located 12m east of the site at Bolton on Dearne Junior and Infants School (NGR 444680E, 403210N); this borehole was completed to a depth of 2.5m and recorded the following sequence:

- Topsoil between ground level and 0.30m bgl; over
- Sandy clay between 0.30m and 0.40m bgl; over
- Friable highly weathered sandstone between 0.40m and 2.50m bgl.

*BH Ref. SE40SW86*

Borehole Ref. SE40SW86 is located 67m north of the site at Billingley Green (NGR 443503E, 404149N); this borehole was completed to a depth of 32.31m and recorded the following sequence:

- Soil between ground level and 0.30m bgl; over
- Clay between 0.30m and 0.90m bgl; over
- Interbedded sandstone and grey bind between 0.90m and 29.87m bgl; over
- Coal between 29.87m and 31.39m bgl; over
- Grey bind between 31.39m and 32.31m bgl.

*BH Ref. SE40SW226*

Borehole Ref. SE40SW226 was completed next to the south western corner of the site. This borehole recorded the following sequence:

- Very soft to soft silty clay between 2m and 3.35m, with some bands of peat below 3m.
- Shaly weathered sandstone was encountered at 8.05m depth.

*BH Ref. SE40SW6*

Borehole Ref. SE40SW6 was completed next to the middle of the south eastern boundary of the site. The borehole log recorded the following sequence:

- Mudstone was encountered at ground level.
- Coal between 3.6m and 6.3m.

## 4. COAL AUTHORITY INTERACTIVE VIEWER INFORMATION

Hydrock has carried out a review of the information provided on The Coal Authority Interactive Viewer; the information provided on the interactive viewer is summarised in the following sections.

### 4.1 Coal Mining Reporting Area

The site is located in a Coal Mining Reporting area. The Coal Mining Reporting Area is used to determine whether a coal mining report is required for property transactions and the conveyance process.

### 4.2 Development High Risk Area

The northern part of the site is within a Development High Risk Area. The Development High Risk Area is the part of the Coal Mining Reporting Area which contains one or more recorded coal mining related features which have the potential for instability or a degree of risk to the surface from the legacy of coal mining operations. New development in the defined area needs to demonstrate that the development will be safe and stable taking full account of former coal mining activities.

### 4.3 Mine Entries

Two mine entries are indicated to be present within the site on The Coal Authority Interactive Viewer. The two mine shafts are located in the northern part of the site to the south of Barnsley Road and to the east of Woodbine Cottage. The mine entry further to the west is referenced 44403-008. The mine entry further east is referenced 444403-007. These two shafts fall within an area of opencast coal workings and therefore, will have been removed by the opencast workings.

### 4.4 Surface Coal Resource Area

Much of the central and southern part of the site lies within a Surface Coal Resource Area. The Surface Coal Resource Area define the coal resources capable of being extracted by surface mining methods, referred to as opencast. This information is used by Local Planning Authorities as part of the duty to safeguard minerals from unnecessary sterilisation.

### 4.5 Fissures and Break-lines

There are no fissures or break-lines shown to be present on the site by The Coal Authority interactive viewer.

### 4.6 Surface Mining

Surface mining (i.e., opencast coal workings) has taken place in the northern part of the site area. These areas of historical open-cast workings are broadly equivalent with the areas of infilled ground (hatched shading) as shown on the 1: 50,000 scale BGS geological map.

### 4.7 Past Shallow Coal Mine Workings

There are no areas of past shallow coal workings shown to be located on site. There are several areas of past shallow coal workings located just to the north of Barnsley Road. These areas of past shallow coal mine workings are based on The Coal Authority's records of underground workings, or parts thereof, whose depth is 30m or less from the ground surface.

#### 4.8 Probable Shallow Coal Mine Workings

Areas of probable shallow coal mine workings are shown in the northern part of the site and coincide with areas of opencast coal workings. Probable coal mine workings contain locations and estimated extents of probable shallow underground workings for which no recorded plans exist, but where it is likely that workable coal at shallow depth has been mined before records were kept (pre-1872). The data has been estimated from available mining records by qualified mining surveyors.

#### 4.9 Coal Outcrops

The Coal Authority Interactive Viewer shows one coal outcrop located on the site, trending west-east through the northern part of the site. According to the 1:50,000 geological map, this outcrop appears to be a thin unnamed seam above the Shafton Coal. Coal outcrops illustrate a location where a workable seam is present at or close to the surface. Coal outcrops identify where an underground seam reaches rockhead, indicating an area where coal may have been worked at some time in the past. Whilst this dataset highlights areas of probable underground workings at shallow depth, it may also indicate areas where un-viable seams of coal remain. This dataset contains a buffer of 50m on the dip side of the outcrop position as held by The Coal Authority.

## 5. HISTORICAL OPENCAST COAL WORKINGS

Copies of mine abandonment plans have been obtained from The Coal Authority (CA); these are discussed further in Section 8.0 of this report. The plans show that opencast coal mining took place on the proposed development site to the south of the A635 Doncaster Barnsley Road. The opencast workings were undertaken during three main phases: in 1944, 1948-49 and 1996-97. Two historical aerial images of the opencast mine have been sourced from Historic England and are provided in Appendix D.

Within each opencast working the Shafton Coal seam was mined. Three opencast plans show the boundaries of the opencast mining area to extend from the site eastern boundary, up to approximately 80m east of Pasture Lane. The area extending between Pasture Lane and Cathill Road was mined in 1945. The plans also show that the 1997 site southern boundary, coincides approximately with the 1948-49 site northern boundary.

The BGS 1:10,000 map shows an additional area of worked ground along the western margin of the opencast area. This is located between two faults, including the Broomhill Fault, but is not covered by any opencast mining abandonment plans. Two former mine adits were located within this area and were removed as part of the opencast workings. The 1946 map shows the thickness of the backfill ranges between 1.8m and 3.1m along the southern wall of the opencast area. Along the northern wall, it is shown to range between 4.6m and 8.3m. The 1949 map shows the thickness of the backfill ranges between 1.6m and 5.2m, along its southern wall and between 11.6m and 19.1m along its northern boundary. The 1997 map shows the thickness of the backfill ranges between 0m and 8.7m in the eastern section of the opencast area and between 8m and 22.2m in the western section of the opencast area. The highwall is 15.4m deep in the north east corner of the site.

Another small-scale excavation was carried out immediately to the south of the main opencast area, to depths of 0m to 3.2m.

Hydrock drawing reference 23451-HYD-XX-XX-DR-GE-1005 in Appendix A shows the extent of the recorded opencast mining areas and the approximate extent of worked ground. A full description of The Coal Authority mine abandonment plans is provided in Section 8.0 with the plans provided in Appendix C.

## 6. THE COAL AUTHORITY CONSULTANTS MINING REPORT

### 6.1 Data Summary

A Coal Authority Consultants Coal Mining report has been obtained for the site, Ref. 51003255641001, dated 20 July 2022. The report is provided in Appendix B and the key findings of this report are summarised in Table 6.1.

Table 6.1: Consultants Coal Mining Report Summary

Item	Has the Consultants Coal Mining Report highlighted evidence or potential of:	
1	<b>Past underground coal mining</b>	Yes
2	<b>Probable unrecorded shallow workings</b>	Yes
3	Spine roadways at shallow depth	No
4	<b>Mine entries</b>	Yes
5	<b>Abandoned mine plan catalogue numbers</b>	Yes
6	<b>Outcrops</b>	Yes
7	<b>Geological faults, fissures and break-lines</b>	Yes
8	<b>Opencast mines</b>	Yes
9	Coal Authority managed tips	No
10	Site investigations	No
11	Remediated sites	No
12	Coal mining subsidence	No
13	Stop Notices	No
14	Mine gas	No
15	Mine water treatment schemes	No
16	Future underground mining	No
17	Coal mining licensing	No
18	Court orders	No
19	Section 46 notices	No
20	Withdrawal of support notices	No
21	Payments to owners of former copyhold land	No

The detailed findings of The Coal Authority Consultants Mining Report are listed below.

### 6.2 Past underground mining

There are numerous records of past underground coal mining at the site from 21m depth to 788m depth below ground level. This conflicts with the information provided within The Coal Authority Interactive Viewer. The full list of recorded underground workings beneath the site is provided within The Coal Authority Consultants Mining Report. Table 6.2 lists recorded past underground workings beneath the property to a depth of 255m. The shallowest worked seam beneath the site is the Shafton seam (21m depth bgl), worked from the Billingley Colliery in 1951. The next shallowest seam worked beneath the site is the Newhill seam (231m depth bgl), worked from the Manvers Colliery in 1977. Please also refer to section 8.0 which provides details of the shallow underground mining based on mine abandonment plan information. Please also refer Hydrock drawing reference 23451-HYD-XX-XX-DR-GE-1005 in Appendix A, which shows the Conceptual Ground Model and Site Constraints. This drawing shows the location of recorded shallow underground coal mining present in the northern part of the site, which coincides with the more recent opencast mining.

Table 6.2: 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
BILLINGLEY	SHAFTON	Coal	5TXZ	21	Beneath Property	3.4	North	132	1951
unnamed	NEWHILL	Coal	5RV5	189	South	2.1	North-East	178	1965
CORTONWOOD	NEWHILL	Coal	4Q4H	206	South-West	3.6	North-East	183	1970
WATH	NEWHILL	Coal	4P4I	208	South-West	4.0	North-West	132	1970
BARNBURGH	MELTONFIELD	Coal	5RV1	217	South	2.7	North	112	1952
unnamed	MELTONFIELD	Coal	5NPU	226	South-West	3.2	North-West	125	1952
CORTONWOOD	MELTONFIELD	Coal	4Q4G	228	South-West	4.2	North-East	118	1956
MANVERS	NEWHILL	Coal	5NP8	231	Beneath Property	2.3	North	15	1977
WATH	MELTONFIELD	Coal	4P4B	232	South-West	3.5	North	123	1953
unnamed	MELTONFIELD	Coal	5NPW	252	Beneath Property	4.4	North	116	1977
MANVERS	NEWHILL	Coal	N29	255	Beneath Property	4.2	North-West	149	1980

### 6.3 Probable unrecorded shallow workings

Yes.

### 6.4 Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

### 6.5 Mine entries

Table 6.3 shows a list of mine shafts and mine adits which are located within or near to the site area. Three mine shafts (ref. 444403-007, ref. 444403-008 and ref. 444404-003) are shown on or near the site. Shaft refs. 444403-007 and 444403-008 are located within the proposed development area but have probably been totally removed by subsequent opencast mining in the Woodbine opencast site.

Mine shaft ref. 444404-003 is located to the north of the Doncaster Barnsley A635 road and is therefore outside the development boundary. No shaft treatment details are provided for shaft ref. 444404-003.

Table 6.3: Mine Entries

Entry type	Reference	Grid reference	Treatment description	Mineral	Conveyancing details
Shaft	444403-007	444337 403972	has probably been totally removed by opencast mining	Coal	
Shaft	444403-008	444184 403945	has probably been totally removed by opencast mining	Coal	
Shaft	444404-003	444156 404124		Coal	

Two former adits (Adit 1, ref. 44/43038 and Adit 2, ref. 44/4304/318004) associated with the Billingley Drift Mine and extend beneath the A635 are located beyond the western boundary of the proposed development site. Please refer to information on mining abandonment plan NE209-444203 – Billingley Drift Mine included in Appendix C and discussed in Section 8.0 of this report. Abandonment plan NE209-444204 of the Billingley Drift Mine records that both adits were infilled on abandonment on 07.09.1956.

## 6.6 Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary: NE825 NE262 NE965 NE54 16528 NE209 NE999 NE1065 and 16924. The Coal Authority hold other plans in addition to the ones listed which could affect the enquiry boundary.

Relevant mine abandonment plans have been sourced and are provided in Appendix C.

## 6.7 Outcrops

The Shafton Coal seam outcrops on the site, four records of the bearings of this seam at specific outcrops are listed in Table 6.4. The Shafton Coal is the shallowest workable seam present on site and has been extensively worked by opencast methods.

Table 6.4: Coal Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
SHAFTON	Coal	Yes	Within	N/A	70
SHAFTON	Coal	Yes	Within	N/A	76
SHAFTON	Coal	Yes	Within	N/A	109
SHAFTON	Coal	Yes	Within	N/A	111

## 6.8 Geological faults, fissures and break-lines

The large-scale Coal Authority Plan (HYD-8919599-Large-Plot in Appendix B) does not show any geological faults, fissures or break-lines to be present on site. However, refer to Section 3.4 which describes the faults present on the site based on published 1:50,000 and 1:10,000 geological maps. The Watson Fault trends east to west in the south west part of the site. The Broomhill Fault and an unnamed fault are located in the north western part of the site. The Darfield Fault is located in the

south of the site. There is also an underground fault starting at the south east corner of the site trending north west with a downthrow to the north east.

## 6.9 Opencast mines

The large-scale Coal Authority Plan (HYD-8919599-Large-Plot, Appendix B) shows an extensive area of opencast mine workings located to the south of Barnsley Road in the northern part of the site. The opencast site, located in the north east and central northern area of the site, is OP/95/0195/S Woodbine Open Cast Site. The open cast mine in the north western part of the site is the OP/96/0236/S Woodbine Extension Phase 1A.

Both these opencast sites form a long strip of workings in the northern part of the site, south of Barnsley Road. These workings are described further in Section 8.0.

## 6.10 Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

## 6.11 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 Coal Authority hold site investigation information for an area 39.7m east of the site. They do not hold any site investigation data within the site area.

An area of previous site investigation is shown on the large Coal Authority Plot (Ref. HYD-8919599, Appendix B). This investigation took place in the vicinity of mine shaft 444403-008 within the northern part of the Woodbine opencast site. The Coal Authority have advised they hold no information relating to this site investigation.

## 6.12 Remediated sites

None recorded within 50 metres of the enquiry boundary.

## 6.13 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.

## 6.14 Stop Notices

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.

## 6.15 Mine gas

None recorded within 500 metres of the enquiry boundary.

## 6.16 Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

6.17 Future underground mining

None recorded.

6.18 Coal mining licensing

None recorded within 200 metres of the enquiry boundary.

6.19 Court orders

None recorded.

6.20 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.

6.21 Withdrawal of support notices

The property is in an area where notices to withdraw support were given in 1942, 1946, 1980, 1982 and 1983.

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.

6.22 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.

## 7. SPONTANEOUS COMBUSTION

In order to identify if any of the coal seams beneath the site are prone to spontaneous combustion, reference has been made to The Coal Authority's 'Coal seams with a history of spontaneous combustion' register ([Coal seams with a history of spontaneous combustion - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/datasets/coal-seams-with-a-history-of-spontaneous-combustion)).

The Shafton Coal seam is listed on The Coal Authority's register as being known to experience from occurrences of spontaneous combustion, and consequently is regarded as at 'high risk' of succumbing to spontaneous combustion when being entered, worked or disturbed.

The Coal Authority's guidance document 'Guidance on managing the risk of hazardous gases when drilling or piling near coal – 2019 Version 2' provides further information on spontaneous combustion in coal seams.

Spontaneous combustion of coal is the process where coal catches fire without an external heat source. Spontaneous combustion usually occurs in coal as a result of air flowing over it. Coal will oxidise in the presence of air releasing carbon dioxide and, importantly, heat. Where the flow of air is insufficient to carry away the generated heat the coal will warm and increase the rate of oxidation. In this way the coal's temperature can increase until it auto-ignites. However, where the airflow is very low there will be insufficient oxygen for oxidation and the process will be stopped. The process of spontaneous combustion therefore requires sufficient air to allow oxidation/combustion, but not so much as to cool the coal.

Spontaneous combustion of coal is most often associated with former coal workings. In operating mines it is usually found in collapsed ground, which contains coal, or in fractured coal around roadways. In these situations it is the replenishment of potentially oxidising gas conditions by ventilation air in the workings which allows continued heating. It is also found where coal outcrops at the surface especially where it has been disturbed by mining or quarrying operations which allows air to come into close contact with the coal.

## 8. MINE ABANDONMENT PLANS

Six mining abandonment plans were obtained from The Coal Authority which are relevant to the proposed development site. These plans are described below in chronological order of their abandonment and are included in Appendix C.

### 8.1 NE54-999999-(Custom). Jpg. Abandonment Plan 7107 (Ref. YO.2.K022)

Abandonment Plan showing Bolton Upon Dearne opencast workings, dated 9.09.1949, Scale 1: 2500. The plan shows the extent of opencast workings on the northern and north eastern part of the development site, south of the Doncaster Barnsley Road. The opencast mine worked the Shafton coal seam between 12.04.1948 to 16.06.1949. The coal workings extended over an area of 51.73 acres and a total of 326.915 tons of coal was extracted from the opencast workings. The Shafton seam was worked to a depth of 28.05m depth bgl. The area of opencast extended between Pasture Lane in the west to Woodbine Cottages in the east. The workings are just to the south of the Doncaster Barnsley Road. The Opencast workings were backfilled in October 1950. No details of the backfilling/restoration are provided on the abandonment plan.

The abandonment plan shows the location of former shallow underground coal workings in the Shafton Coal seam to the south west of Woodbine Cottages. The plan shows the position of the outcrop of the Shafton Coal seam and also the change in direction of the down-throw of the NW-SW fault located to the south west of Woodbine Cottages.

### 8.2 NE209-444204 (Custom). Jpg. Billingley Drift Mine Abandonment Plan

Abandonment Plan showing the location of the Billingley Drift Mine in the northern part of the proposed Development site, just to the south of the Doncaster Barnsley Road. The plan was completed in 1952 at a scale of 1: 2500. The plan also shows the northern extent of the Bolton Upon Dearne opencast workings shown on Plan NE54-999999. The plan shows extensive underground drift workings relating to the Highgate Colliery to the north east of the Billingley Drift Mine with workings in the Shafton Coal seam. The plan also shows underground drift workings associated with the Dearne Valley Colliery further to the north of the Billingley and Highgate Collieries. The Dearne Valley Colliery also worked the Shafton Coal seam.

The plan shows two adits associated with the Billingley Drift Mine to extend north east, passing under the Doncaster Barnsley Road and trend further north east below the Billingley Drift Mine. It should be noted that the location of these two adits is beyond the western boundary of the proposed site development. The plan records that both adits 1 and 2 were filled solid to the extent shown on the plan on their abandonment on 07.09.1957.

### 8.3 NE209-444203 (Custom), jpg. Billingley Drift Mine Abandonment Plan

Abandonment Plan showing the southern extent of the Billingley Drift Mine which encroaches on the Bolton Upon Dearne opencast workings which were backfilled and restored in October 1950. The plan provides further details about the two adits relating to the Billingley Drift Mine which extend just within the Bolton Upon Dearne opencast workings described on plan NE2-444204. Note that these adits are located beyond the western boundary of the proposed development site. Details of the adits are as follows:

*No. 1 Adit 44/43038, (1:4 gradient to the NE).*

Surface Level – 27.18m OD.

Shafton Seam level – 2.01m OD.

*No. 2 Adit 44/4304/318003, (1:3 gradient to the NE)*

Surface Level – 26.30m OD.

Shafton Seam level – 2.01m OD

Note: Datum for levels 10,000ft below OD.

The plan shows the position of outcrop of the Shafton Coal seam. The plan also shows the changes in the direction of down-throw of faults. The plan also notes the presence of underground water at unknown depth and pressure within the backfill of the Bolton Upon Dearne opencast workings. The plan also notes unconsolidated backfill deposits within the restored Bolton Upon Dearne opencast workings to be present between 0 and 27.43m depth bgl. This suggests that the backfill restoration did not involve and engineering/compaction of the backfill material within the Bolton Upon Dearne opencast workings and was restored for agricultural use.

#### 8.4 16924-999999, 1 Of 3 (Custom), jpg. Woodbine and Woodbine Extension

Abandonment Plan showing Woodbine and Woodbine Extension opencast coal sites, scale 1: 2500, July 1997. These workings are located in the north/northeast part of the proposed site development. Opencast excavations started in January 1996 and finished in 1997. The total coal removed was 138.402 tonnes by Cobex Ltd. The Shafton Top Leaf (1.38m thick) and the Shafton Bottom leaf (0.15m thick) was worked.

The plan shows the location of the Shafton Old Workings and two former mine shafts within the opencast workings. The plan shows the location of a fault line and associated seam roll central to the Woodbine opencast site and also another fault to the south of the central Woodbine opencast site. Excavation depths were between 4.3m and 16.0m depth bgl in the west of the Woodbine opencast site. The central northern areas of the Woodbine opencast workings extended between 17.0 and 30.6m depth bgl. The Woodbine Extension opencast located further to the east extended between 17.7m and 30,0m depth bgl.

A north-south aligned sewer is shown to be present in the central part of the Woodbine Extension opencast. An overhead electricity line is shown crossing the western part of the Woodbine opencast. There is a separate opencast working to the south of the main Woodbine opencast workings, these workings extend to between 21.0m and 27.1m depth bgl.

#### 8.5 16924-999999, 2 of 3 (Custom). Jpg. Woodbine Extension Opencast site.

The plan shows the Woodbine Extension opencast, dated 22.05.1997, scale 1: 1250, worked by Cobex Ltd. Both the Shafton Top Leaf and Bottom Leaf were worked within these opencast workings. A sewer is shown running north-south through the centre of the Woodbine Extension opencast. Excavation depths west of the sewer ranged between 26.2m and 30,0m depth bgl and to the east of the sewer between 16.6m and 27.5m depth bgl.

A series of opencast spoil stockpiles are shown on the plan located to the south of the opencast workings.

#### 8.6 16924-999999, 3 of 3 (Custom), jpg. Woodbine Opencast site.

Plan showing the Woodbine opencast site, dated 26.02.1997, scale, 1: 1250 worked by Cobex Ltd. Both the Shafton Top Leaf and Bottom leaf were worked. The plan shows the spatial extent of opencast workings in the eastern part of the Woodbine Opencast site. The extent of workings was between 23.0m depth bgl in the south east and 29.1m depth bgl in the north of the workings.

#### 8.7 JPG Review of Mining Abandonment Plans

JPG completed a Geoenvironmental Desk Study Report for Broomhill Goldthorpe, Barnsley (Ref. APN/DS/5064.V1) in March 2017. This report covers much of the area of the proposed development site. As part of the desk study JPG carried out a review of three mining abandonment plans. The JPG Geoenvironmental Desk Study report included 'Notes on Coal Authority abandonment plans' in Appendix F of their report. These are included below for reference.

*Reference – Woodbine & Woodbine Extension Opencast Coal Site – Site Abandonment Plan. Drawing No. WBA01. Scale: 1 to 2500. Dated: July 1997.*

The plan shows that the former opencast mining area was located within the site along the southern side of the A635 road, along a 100-200m wide strip of land. A smaller excavation was also carried out approximately 300m south of Billingley Green. A representative section of the mined Shafton seam shows that the top leaf is 1.38m thickness and overlies a 0.11m parting followed by 0.15m of coal from the bottom leaf. The map shows that the Shafton coal seam dips to the north.

The eastern section of the southern highwall runs from the eastern boundary of the site to approximately 300m south of Billingley Green. The current thickness of the highwall was calculated by comparing the elevations at the bottom of the opencast site described on the abandonment plans to today's surveyed (2017) site elevations, which are included within Appendix A of the JPG Desk Study report. Following this method, the eastern section of the southern highwall is approximately between 0.0 and 1.1m wide. The eastern section of the northern highwall is approximately parallel to the eastern section of the southern highwall and runs along the southern boundary of the A 635 road. In this section, following the method described above, the highwall is approximately 6.1 to 8.7m wide. The highwall becomes deeper in the north eastern corner of the site and reaches a maximum depth of 15.4m bgl. The western section of the highwall extends approximately 450m west of Billingley Green and immediately south to the A635 road. The highwall becomes much deeper in this area and is recorded to lie at depths ranging between 8 and 22.2m bgl. A 150m long by 50m wide excavation was also carried out approximately 300m south of Billingley Green. The bottom of the highwall is recorded to lie at depths ranging between 0.0 and 3.2m bgl.

Mine workings were found in the north part of the opencast area eastern section. A 50m long fault, which is oriented north to south, is also shown in this section, approximately 200m east from its western boundary. The coal is much shallower along the fault.

Two mine shafts were located at surface level, during the works in 1997, at 25.2m and 25.3m AOD. The base levels of both mine shafts were approximately 18.5m AOD. The Coal Authority report says that both mine shafts were probably totally removed by opencast mining. The investigations for these shafts

probably relate to the 'Site investigation' shaded area shown on The Coal Authority Large Plot (Drawing Ref, HYD-8919599) provided in Appendix B.

*Reference – Opencast Plan - Abandonment Plan No. A 7053. Pasture Lane. Scale: 1 to 2500. Dated: August 1946.*

The plan shows that the former opencast mining area was located on part of the site south of the A635 road, between Cathill Road and Pasture Lane. A representative section of the underlying soils shows that the bottom of the Shafton Coal seam lies at around 27'9" (8.45m) depth and is approximately 4'9" (1.45m) in thickness. The plan shows that the Shafton seam dips to the north east with a gradient of 1 in 40. The current width of the highwall was calculated by comparing the elevations at the bottom of the opencast site described on the abandonment plans to today's surveyed site elevations, which are included within Appendix A within the JPG Desk Study report. Following this method, the bottom of the highwall is shown to lie at depths of 1.8 and 3.1m bgl along the southern wall of the excavation. Along the northern wall, it is shown to lie at depths of 4.6 and 8.3m bgl.

*Reference - Opencast Plan - Abandonment Plan No. 7107. Bolton upon Dearne, incorporating Billingley Green & Goldthorpe. Scale: 1 to 2500. Dated: 9th Feb. 1949.*

The plan shows that the former opencast mining area was located within the site south of the A635 road, between Billingley Green and Pasture Lane. The opencast site generally remains approximately 20 to 50m north of the Shafton Coal outcrop. A representative section of the underlying soils shows that the Shafton Coal is approximately 4.39' (1.34m) in thickness.

The Shafton seam is shown to dip to the north with a gradient of 1 in 25.5. The current width of the highwall was calculated by comparing the elevations at the bottom of the opencast site described on the abandonment plans to today's surveyed site elevations, which are included within Appendix A. Following this method, the bottom of the highwall is shown to lie at depths ranging between 1.6 and 5.2m bgl along the southern wall of the excavation. Along the northern wall, it is shown to lie at depths ranging between 11.6 and 19.1m bgl.

In addition to the main seam, an *in situ* thickness of 0.83ft and 0.92ft (0.25 and 0.28m) was recovered from two areas along the eastern boundary of the opencast mining area. An *in situ* thickness of 12.5ft (3.81m) was also recovered from an area located approximately 170m south of the junction between Pasture Lane and Barnsley Road, in the vicinity of the two adits mentioned in section 3.2 of the JPG Desk Study report. A total of 3,237 sq. yds of old workings were discovered along the eastern highwall by opencast mining. Five small areas containing old workings were also found along the southern boundary. Four faults, separated from each other by approximately 10-20m, were located approximately 270m south west of Billingley Green and are oriented south east to north west. This set of faults are shown as two faults on the BGS 1:10,000 geological maps. The northernmost fault is 270m long with a down-throw to the south west with a gradient ranging between 1:3 and 11:1. The next fault to the south is 450m long with down-throw to the south west with a recorded gradient of 11:1 and 16:1, in its northern section. In its southern section, the fault down-throw is to the north east and the gradient is recorded to be 2:1 and 1:1. Two 130m long faults are also shown immediately south to the previous fault, with a down-throw to the north east and gradients of 1:1 and 3:1.

## 9. IDENTIFICATION AND ASSESSMENT OF SITE-SPECIFIC COAL MINING RISKS

### 9.1 Risk Assessment of Mining Risks

The information collected from the desk-based sources has been collated and a site-specific coal mining risk assessment has been prepared for the Goldthorpe development site. Please refer to the Coal Mining Features Plan (Hydrock Drawing 23451-HYD-XX-XX-DR-GE-1005, presented in Appendix A) which provides information on development constraints. The risk assessment relating to each coal mining issue identified are summarised in Table 8.1.

### 9.2 Goldthorpe Development Site

Table 8.1 presents the coal mining risk assessment for the Goldthorpe development site.

Table 9.1: Coal Mining Risk Assessment

Coal Mining Issue	Y/N	Risk Assessment		
		Probability	Consequence	Comments
Recorded past shallow underground coal mining.	Y	Medium	Low/Medium	The site is in an area of recorded past shallow coal workings. These relate to underground workings in the Shafton seam in the northern part of the site. The areas of recorded shallow coal workings fall within areas which have been subsequently mined by opencast methods.
Unrecorded shallow underground coal mining.	Y	Medium	Low/Medium	The northern part of the site is in an area where probable unrecorded shallow coal workings (within 30m below ground level) may be present. These relate to possible workings within the Shafton Coal seam. Most of the area of probable shallow coal workings fall within areas which have been subsequently mined by opencast methods. However, there is an area between the outcrop of the Shafton Coal seam and the opencast workings to the north which may contain unrecorded shallow coal workings
Surface mining (opencast workings).	Y	High	High	There are records of past opencast coal mining within the northern part of the site, south of the A653 Barnsley Doncaster Road. The opencast workings have not been restored to an engineering specification. Highwalls will therefore be present around the former opencast working boundaries. Significant differential settlement may take place for structures located over the highwall and this risk should be considered in relation to the location of proposed warehouse plots.
Mine entries (shafts and adits).	Y	Medium	Medium	There are two recorded mine entries within the northern part of the site. These mine entries have been removed by opencast mining operations in the Woodbine opencast site. There may, however, be mine entries in the site area which The Coal Authority has no record of.
Coal Outcrops	Y	Medium/High	Medium to High	The Shafton Coal seam outcrops in an east-west alignment central to the northern part of the site. The Shafton Coal seam has been worked by shallow underground coal mining and more recently by opencast methods. There is a gap between the outcrop position and the opencast workings further north which may contain unrecorded shallow workings.
Spontaneous Combustion	Y	Medium/High	Medium to High	The Shafton Coal seam is listed on The Coal Authority's 'Coal seams with a history of spontaneous combustion' register. Spontaneous combustion of coal is most often associated with former coal workings when air is introduced to the seam. As such spontaneous combustion may become likely

Coal Mining Issue	Y/N	Risk Assessment		
		Probability	Consequence	Comments
				during intrusive activities such as drilling or piling through the seam. Although the Shafton Coal seam beneath the site is understood to be mostly extracted as part of the opencast mining, an area in the north east was not subject to opencast mining where unrecorded shallow workings may be present. On this basis there is a medium to high risk of spontaneous combustion where the Shafton Coal seam is present.
Coal mining geology (fissures/break-lines).	Y	Low	Low/Medium	The Coal Authority do not have any records of fissures or break-lines associated with underground coal mining. Surface faults and an underground fault are present on the site based on the 1:50,000 and 1:10,000 geological mapping. Several faults were recorded on the mining abandonment plans for the site area.
Record of past mine gas emissions.	N	Low	Medium	There are no Coal Authority records of mine gas emissions at the site.
Recorded coal mining surface hazard.	N	Low	Medium	The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50m of the enquiry boundary.

In summary, the following conclusions can be drawn from the Coal Mining Risk Assessment for the proposed development site.

- The site is in an area of recorded past shallow underground coal workings. These relate to workings in the Shafton Coal seam in the northern part of the site.
- The northern part of the site is in an area where probable unrecorded shallow coal workings (within 30m below ground level) may be present. These relate to possible workings within the Shafton Coal seam.
- There are records of past extensive opencast coal mining within the northern part of the site, south of the A635 Doncaster Barnsley Road and the outcrop of the Shafton Coal seam.
- There are two recorded mine entries within the northern part of the site. The two mine shafts located within the development site have been removed by subsequent opencast workings within the Woodbine opencast site.
- There may, however, be mine entries in the site area which The Coal Authority has no record of.
- The Shafton Coal seam outcrops in an east west alignment centrally within the northern part of the site.
- The Shafton Coal seam has been worked extensively by shallow underground coal mining and more recently by opencast methods.
- The Shafton Coal seam is listed as a seam which has a history of spontaneous combustion.
- Significant highwalls are present on the boundaries of the former opencast workings, these will represent significant high risk areas (i.e., excessive long-term settlement of unconsolidated backfill and differential settlement of structures) for any proposed development taking place over the high walls.
- The Coal Authority do not have any records of the occurrence of fissures or break-lines associated with the former underground coal mining.

- Surface faults and an underground fault are present on the site, based on the 1:50,000 and 1:10,000 geological mapping and are also shown on the abandonment plans relating to the site area.
- There are no records of mine gas emissions at the site.
- The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50m of the enquiry boundary.

Hydrock, concludes that recorded shallow underground coal mining has taken place in the Shafton coal seam to the north of the site and that probable unrecorded shallow underground coal workings may have also taken place in the Shafton Coal seam in the northern part of the site. In the areas where shallow underground workings are present the Shafton Coal seam is at high risk of spontaneous combustion.

There are records of past opencast coal mining across the northern part of the site, south of the A635 Barnsley Road and north of the outcrop of the Shafton Coal seam. These opencast areas have been restored for agricultural use and areas of backfill may still be subject to long-term settlement and potentially inundation settlement. Significant differential settlement may present a risk to any structures, hardstanding or access roads located over the former opencast highwalls. Much of the opencast workings coincide with the former recorded shallow underground workings within the Shafton Coal seam in the north of the site adjacent to the A635 Barnsley Doncaster Road.

There are two known coal mine entries within the boundary of the northern part of the site. The two mine entries within the site have been removed through subsequent opencast coal workings in the Woodbine opencast. Two mine adits associated with the Billingley Drift Mine are located beyond the western boundary of the proposed development site. There may however, be mine entries within the site area which The Coal Authority has no record of. It will therefore, be important to check that former mine entries do not pose a risk to the development and to observe any signs which may suggest the possible presence of unrecorded shafts.

The risk assessment above forms the basis of the proposed mitigation strategy developed further in Section 10.

## 10. PROPOSED MITIGATION STRATEGY

### 10.1 Mitigation Strategy

The mining risk assessment has identified several potential mining risks to the proposed development at Goldthorpe. The following mitigation strategy will require agreement with the Local Authority as part of the planning process, and The Coal Authority may require to be consulted where a significant risk is perceived or where filling and capping of any abandoned mineshafts that may be identified are proposed for subsequent conveyancing to the Client.

### 10.2 Former Opencast Mine Workings

The northern part of the site is affected by former opencast workings and the coal mining risk assessment has identified a high risk associated with the former licensed opencast workings in the northern part of the site (please refer to Hydrock Drawing 23451-HYD-XX-XX-DR-GE-1005 which shows the location of former opencast workings). Two historical aerial images of the opencast mine have been sourced from Historic England and are provided in Appendix D.

Parts of the proposed Goldthorpe development will be over former opencast workings and associated highwalls which may be associated with a potential risk of significant differential settlement. Parts of the development will be over former infilled opencast workings. The present condition of backfill in these areas is not fully understood and there may be potential risks associated with long term settlement, inundation settlement and also differential settlement.

It would appear that the former opencast workings were restored for agricultural use and that the backfill was not engineered. It will be important to understand the restoration of the former opencast workings and establish whether any settlement monitoring has been undertaken post-restoration.

Hydrock recommend that a lidar survey is undertaken to determine any signs of surface subsidence and differential settlement over former opencast workings and particularly above former highwall areas. Any potential signs of ground movement should be recorded in the proposed warehouse plots and along the alignment of proposed access roads and hardstanding areas particularly where these coincide with former opencast backfill and high walls.

A robust ground investigation will be required to further assess the risk associated with the backfilled opencast workings. Where structures cannot be cited a suitable distance from the opencast workings and highwalls structural loads may need to be transferred through the backfill to be supported by competent strata. Subject to further investigation and assessment ground improvement may be a potential mitigation strategy.

For any lightly loaded structures and pavement structures which encroach over former opencast workings and over former highwalls, further ground investigation will be required to design appropriate foundations and engineering mitigation measures to control potential long-term settlement of backfill and differential settlement over former highwall areas. These works will require to be designed and a specification for any treatment of former workings or opencast backfill to be completed for The Coal Authority and the Local Authority approval.

### 10.3 Former Recorded and Probable Areas of Shallow Mine Workings

The coal mining risk assessment has identified that both recorded and probable shallow mine workings (i.e., less than 30m depth below the ground surface) are present below the northern part of the site. Most of these areas coincide with the more recent opencast coal workings; however, some areas affected by probable shallow coal workings may be outside the recorded opencast boundaries. There is an area between the outcrop of the Shafton Coal seam and the opencast areas to the north which will require investigation to determine the presence of any unrecorded shallow mining. Please refer to Drawing 23451-HYD-XX-XX-DR-GE-1005 which shows the position of the Shafton Coal seam outcrop. Hydrock therefore, recommends that further ground investigation using rotary open-hole boreholes is undertaken below proposed structures and access roads which are located over any areas of recorded and probable shallow underground coal workings. These boreholes should target the area between the Shafton Coal seam outcrop and the opencast workings further north. These boreholes should be completed to sufficient depth to confirm the absence, presence and condition of the Shafton Coal seam.

### 10.4 Mine Entries

The Coal Authority hold records of three mine shafts within, or within 20m of, the boundary of the northern part of the site (please refer to Drawing 23451-HYD-XX-XX-DR-GE-1005 which shows the location of mine shafts recorded by The Coal Authority). Two of the former mine shafts are located within the site development area and have been removed through past opencast mining operations within the Woodbine opencast site. The third mineshaft is located north of the A653 Doncaster/Barnsley Road and is therefore, outside the site boundary. There may, however, be mine entries including adits within the site which The Coal Authority has no record of.

Hydrock recommend that a close watch for evidence of historical unrecorded mine entries should be kept during site investigation and subsequent site enabling groundworks. Evidence of unrecorded mine entries may include suspect depressions, unusual circular or square features in the soil, localised changes in colour or texture of soil, exposed brickwork or apparent circular or square features in intact bedrock. Any suspect features should be inspected by a suitably qualified engineering geologist or mining engineer to check for evidence of whether a mine entry is present.

### 10.5 Aggressive ground conditions

Any areas of colliery spoil that may be present on site can contain significantly elevated concentrations of sulphur and sulphate, leading to the formation of aggressive ground conditions for proposed buried concrete structures in certain circumstances. In such cases, buried concrete should be designed in accordance with BRE Special Digest 1 (2005) to ensure suitable protection is provided to concrete against aggressive ground conditions. Ground investigation with reference to BRE Digest 1 will be required in areas where foundations and buried structures are proposed.

### 10.6 Mine Gases

Although, elevated mine gases have not been recorded by The Coal Authority; it should be noted that no specific mine gas monitoring has been carried out. Hydrock recommends that ground gas monitoring installations are located where any enclosed buildings or structures are to be constructed on the site to

determine the ground gas regime and to establish the appropriate ground gas classification and any required gas protection measures required for these structures.

## 10.7 Spontaneous Combustion

In consideration of the high risk from spontaneous combustion The Coal Authority's guidance document 'Guidance on managing the risk of hazardous gases when drilling or piling near coal – 2019 Version 2' should be followed to mitigate risks which recommends using water as a flushing medium, monitoring, and communicating the risks with stake holders prior to the works.

## 11. RECOMMENDATIONS

Following the risk assessment the following recommendations can be made:

- Hydrock recommends that it will be important to understand the restoration of the former opencast workings and establish whether settlement monitoring has been undertaken post-restoration.
- Hydrock recommends that a lidar survey is undertaken to determine any evidence of surface subsidence and differential settlement over former opencast workings and particularly over former highwall areas. Any potential signs of ground movement should be recorded below proposed warehouse plots, hardstanding areas and access roads.
- To remove the risk of excessive total and differential settlement, warehouse units and other settlement sensitive structures should be located away from opencast areas and should be located a safe distance from opencast highwalls.
- Where warehouse units and other settlement sensitive structures cannot be located outside of the areas of backfilled opencast workings appropriate design of foundations and potentially ground improvement will be required to reduce the risk of excessive total and differential settlement.
- A robust ground investigation will be required to fully assess the risks posed by coal mining hazards and provide suitable information for design. A phased approach to ground investigation may be required depending on development proposals.
- Where associated lightly loaded structures, hardstanding areas and access roads encroach onto opencast sites, these areas will require intrusive ground investigation for the design of foundations ground improvement and any other engineering mitigation measures.
- The specification for any treatment of former shallow workings or opencast backfill should be completed for The Coal Authority and Local Authority approval.
- Two mine entries shown to be within the site boundary have been removed through opencast mining within the Woodbine Opencast site (Ref. 444403-007 and Ref. 444403-008). Mine shaft (Ref. 444404-003) is located to the north of the A653 Doncaster/Barnsley Road and is outside the boundary of the proposed development. The two adits associated with the Billingley Drift Mine are located beyond the western site boundary. These adits were infilled prior to abandonment in 1956. These adits have also been removed by subsequent opencast workings.
- Hydrock recommends that a close watch for evidence of historical unrecorded mine entries including adits should be kept during intrusive investigation and enabling groundworks. Evidence of unrecorded mine entries may include suspect depressions, unusual circular or square features in the soil, localised changes in colour or texture of soil, exposed brickwork or apparent circular or square features in intact bedrock. Any suspect features should be inspected by a suitably qualified engineering geologist or mining engineer to check for evidence of whether a mine entry is present.
- Any areas of colliery spoil that may be present on site can contain significantly elevated concentrations of sulphur and sulphate, leading to the formation of aggressive ground conditions for buried concrete in certain circumstances. In such cases buried concrete should be designed in accordance with BRE Special Digest 1 (2005) to ensure suitable protection is provided to concrete against aggressive ground conditions.
- Although, elevated mine gases have not been recorded by The Coal Authority, it should be noted that no specific mine gas monitoring has been carried out. Hydrock recommends that ground gas

monitoring installations are located where warehouses or other enclosed structures are to be constructed on the site to determine the ground gas regime and to establish the appropriate ground gas classification and gas protection measures for these structures.

- In consideration of the high risk from spontaneous combustion The Coal Authority's guidance document 'Guidance on managing the risk of hazardous gases when drilling or piling near coal – 2019 Version 2' should be followed to mitigate risks which recommends.
  - Air based flush should not be the primary method used to drill the holes; water flush should be used. There must be strict monitoring of the holes (along with any other precautions which the risk assessment determines) to determine if any signs of combustion or heating are apparent. If any such signs are noted then the holes must be sealed and to this end grout. Suitable equipment must be available on site to enable this to take place without delay.
  - Where conditions of a possible heating are detected management should be informed immediately. If still drilling, the drill flush should be switched off, and where it is safe to do so CO should be continuously monitored, the drill string should be removed and the rig moved off the borehole position. Open holes and any coal workings encountered should be grouted without delay to seal the fire from the air/oxygen. Consideration should be given to the inclusion of down hole temperature sensors to monitor the situation and ensure that the heating has been confined.
  - DO NOT INSTINCTIVELY INJECT WATER INTO A COAL SEAM WHICH IS ON FIRE. Water added to burning coals can dissociate, releasing oxygen and hydrogen leading to an uncontrolled and unpredictable explosion. No further drilling should be undertaken other than for controlling the fire/heating and this should only be undertaken following a specialist risk assessment.
  - The Site Manager/Engineer should arrange for a site meeting to inform all interested parties of the situation and co-ordinate an action plan to control the heating and assess the implications on properties adjacent the site, including hazardous gas migration, especially up dip from the incident. The Site Manager/Engineer should also ensure that the Fire Brigade has been notified and informed that water is unlikely to be an appropriate medium for extinguishing a coal seam fire.
  - Long term, monitoring will also be required to ascertain whether the heating has been controlled, which could involve the drilling of monitoring holes nearby. The Site Manager/Engineer must inform The Coal Authority of any incident at the earliest practicable opportunity.

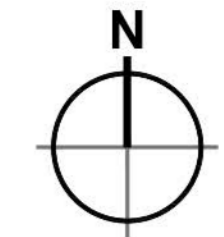
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# Appendix A

## Drawings

- Dimensions are in millimeters, unless stated otherwise.  
 - Scaling of this drawing is not recommended.  
 - It is the recipient's responsibility to print this document to the correct scale.  
 - All relevant drawings and specifications should be read in conjunction with this drawing.



**Key**  
 — Planning Application Boundary 210.81 ac 85.31 ha

**Parameters Key**  
 - - - Development Plot Boundary  
 ■ Green and Blue infrastructure  
 ■ Strategic Landscape screening  
 ■ Estate Road infrastructure  
 → Indicative access points (subject to reserved matters)  
 ▨ Safeguarded land

Development Schedule						
Zone	Plot Size NDA (ha)	Maximum GIA Floor Space (m <sup>2</sup> )	Plateau Height (in meters above ordnance datum)	Maximum Finished Floor Level (in meters above ordnance datum) (+1.000m above proposed plateau)	Maximum Building Height Measured to roof point (in meters above ordnance datum)	Ridge Height (above F.F.L. level)
Zone 1	11.35	204,000m <sup>2</sup> Total Area distributed across Zones 1, 2, 3 & 4	24.50	25.50	43.50	18.00
Zone 2	8.46		25.00	26.00	44.00	18.00
Zone 3	17.92		33.70	34.70	52.70	18.00
Zone 4	6.29		33.70	34.70	52.70	18.00
Total	44.02					

The use class applied for within each zone is primarily Class B8 with up to 30% of the floorspace being for Class B2 together with ancillary office space

For the avoidance of doubt, the information shown within the development plots is indicative only, and will be subject to subsequent Reserved Matters Applications



Roundabout delivered under a separate planning application [Ref. No. 2021/1511]

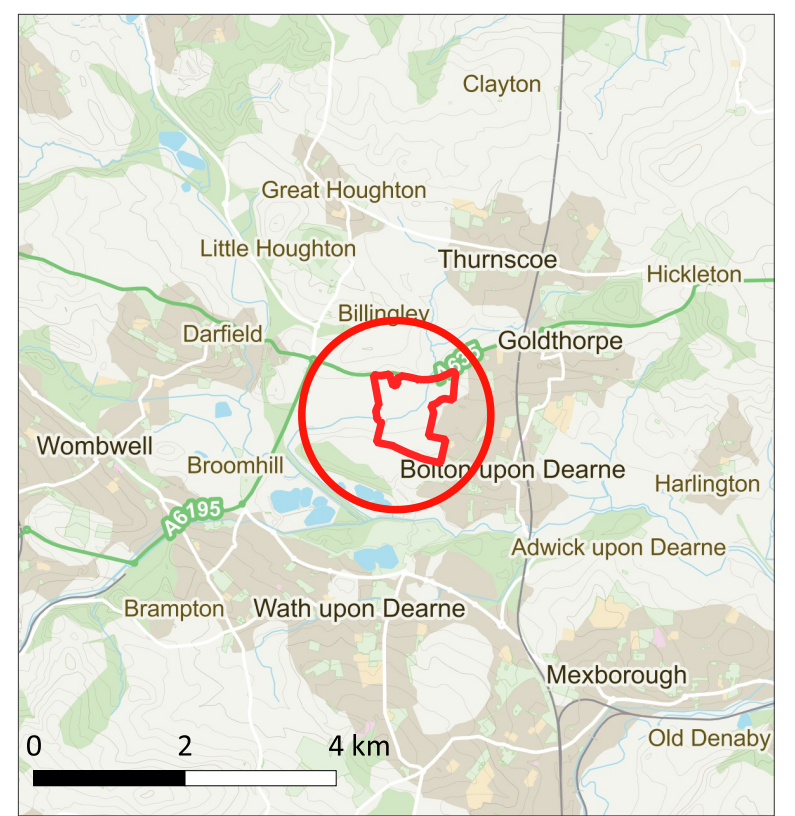
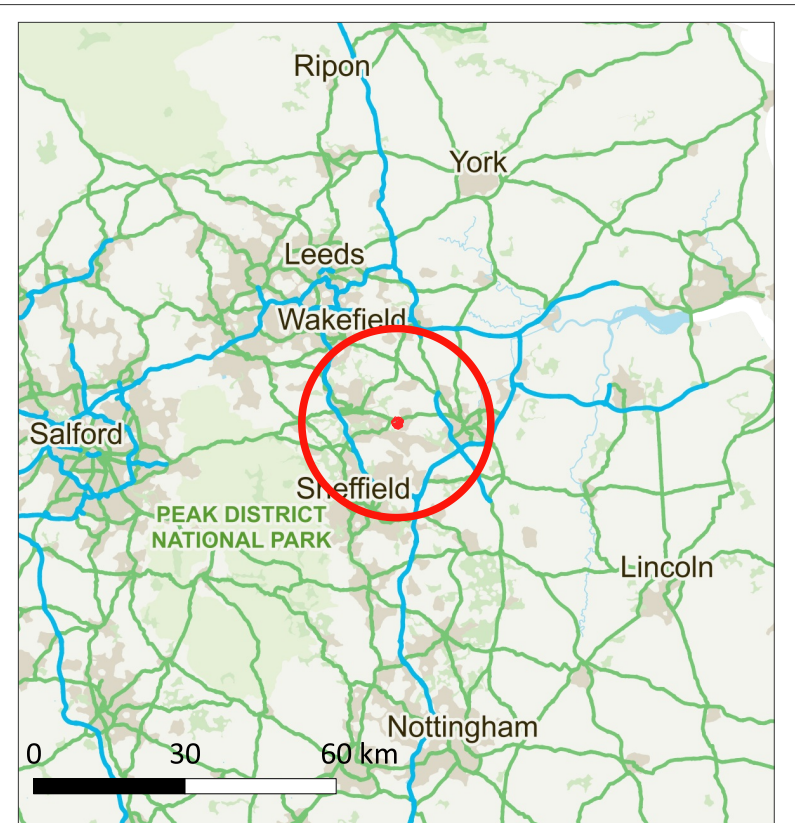
**PLANNING**  
 THIS DRAWING IS FOR PLANNING CONSIDERATION ONLY AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE

rev amendments by ckd date

Barnsley Road, Goldthorpe  
 Parameters Plan



Drawing Status: Planning  
 Drawn / Checked: SS / SM  
 Date: 07/11/2023  
 Scale: 1:2500 A1  
 Drawing no: 22081 P0520  
 Revision: E



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<b>KEY PLAN</b>	
	Site Boundary

**NOTES**

1. Contains OS data © Crown copyright and database right (2022)

REVISIONS				
REV.	DRAWN BY INITIALS	CHECKED BY INITIALS	DATE	REVISION NOTES/COMMENTS
P01	GE	AC	25/07/22	First Issue
P02	AL	JB	28/11/2022	Second Issue

**Hydrock**

**CLIENT**  
Newlands Developments

**PROJECT**  
Barnsley Road, Goldthorpe

<b>TITLE</b> SITE LOCATION PLAN		
<b>HYDROCK PROJECT</b> 23451	<b>SCALE @ A3</b> 1:10,000	
<b>PURPOSE OF ISSUE</b> SUITABLE FOR INFORMATION	<b>STATUS</b> S2	
<b>DRAWING NO.</b> 23451-HYD-XX-XX-DR-GE-1001	<b>REVISION</b> P02	



## Appendix B

# The Coal Authority Consultants Coal Mining Report



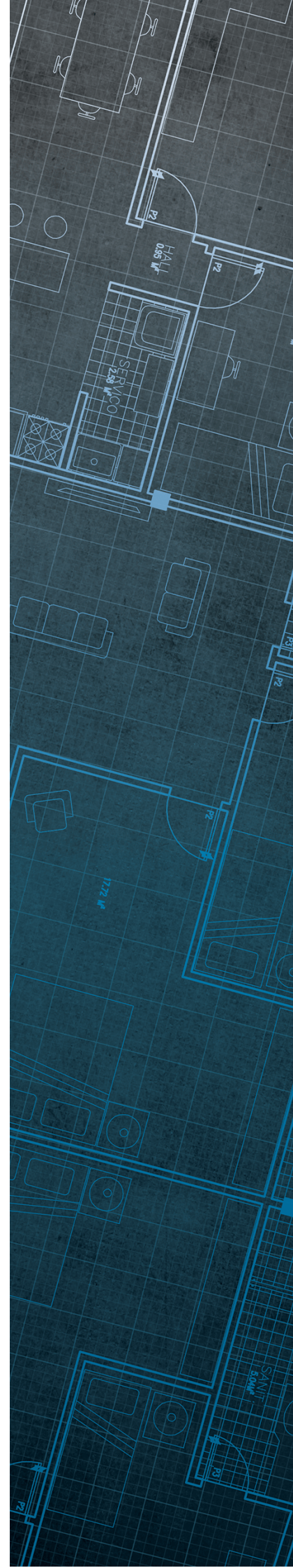
The Coal  
Authority

# Consultants Coal Mining Report

Land South Of Dearne Valley  
Parkway, Goldthorpe, Barnsley  
South Yorkshire  
S72 0JE

Date of enquiry: 20 July 2022  
Date enquiry received: 20 July 2022  
Issue date: 20 July 2022

Our reference: 51003255641001  
Your reference: HYD-8919599



# 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

GROUNDSURE LIMITED

## Enquiry address

Land South Of Dearne Valley Parkway, Goldthorpe,  
Barnsley  
South Yorkshire  
S72 0JE

## How to contact us

0345 762 6848 (UK)  
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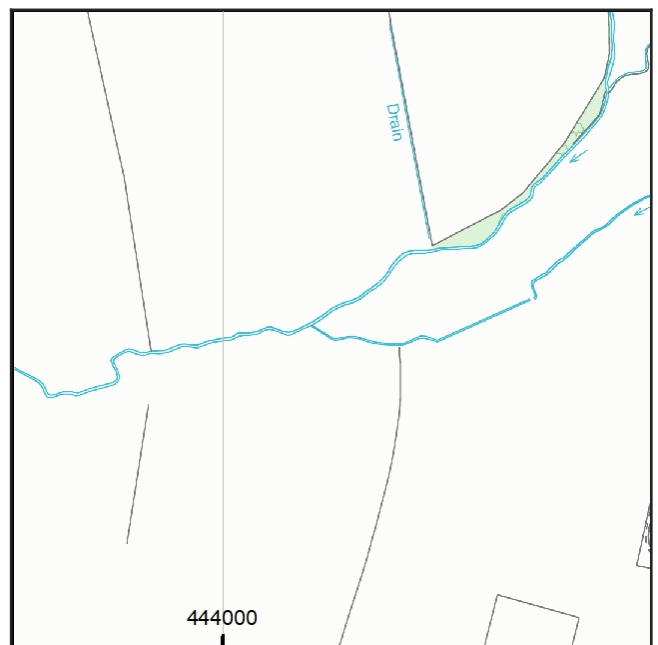
[www.groundstability.com](http://www.groundstability.com)

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



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# Section 1 – Mining activity and geology

## Past underground mining

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
BILLINGLEY	SHAFTON	Coal	5TXZ	21	Beneath Property	3.4	North	132	1951
unnamed	NEWHILL	Coal	5RV5	189	South	2.1	North-East	178	1965
CORTONWOOD	NEWHILL	Coal	4Q4H	206	South-West	3.6	North-East	183	1970
WATH	NEWHILL	Coal	4P4I	208	South-West	4.0	North-West	132	1970
BARNBURGH	MELTONFIE LD	Coal	5RV1	217	South	2.7	North	112	1952
unnamed	MELTONFIE LD	Coal	5NPU	226	South-West	3.2	North-West	125	1952
CORTONWOOD	MELTONFIE LD	Coal	4Q4G	228	South-West	4.2	North-East	118	1956
MANVERS	NEWHILL	Coal	5NP8	231	Beneath Property	2.3	North	15	1977
WATH	MELTONFIE LD	Coal	4P4B	232	South-West	3.5	North	123	1953
unnamed	MELTONFIE LD	Coal	5NPW	252	Beneath Property	4.4	North	116	1977
MANVERS	NEWHILL	Coal	N29	255	Beneath Property	4.2	North-West	149	1980
MANVERS	NEWHILL	Coal	7NXN	262	Beneath Property	2.7	North-West	147	1973
WATH	NEWHILL	Coal	5R1H	268	Beneath Property	4.2	North	152	1978
WATH	NEWHILL	Coal	N53	269	Beneath Property	2.8	North	152	1986
WATH	NEWHILL	Coal	N27	283	Beneath Property	4.5	North	152	1981
WATH	NEWHILL	Coal	N29	283	Beneath Property	3.8	North-West	152	1980
unnamed	MELTONFIE LD	Coal	5NPX	283	Beneath Property	2.4	North-West	110	1969
MANVERS	NEWHILL	Coal	N27	286	Beneath Property	4.2	North-West	149	1981
WATH	NEWHILL	Coal	5TY4	291	Beneath Property	3.4	North	152	1979
WATH	NEWHILL	Coal	N27	292	Beneath Property	3.4	North	152	1981
WATH	NEWHILL	Coal	5TY3	292	Beneath Property	3.9	North	152	1979
BARNBURGH	MELTONFIE LD	Coal	5RAG	294	Beneath Property	4.0	North-West	116	1977

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
WATH	NEWHILL	Coal	4P4K	300	Beneath Property	0.0	East	152	1978
WATH	NEWHILL	Coal	5TY5	303	Beneath Property	2.8	North	147	1978
unnamed	MELTONFIE LD	Coal	5NPW	306	Beneath Property	5.0	North-West	110	1977
DARFIELD	MELTONFIE LD	Coal	4P4G	312	Beneath Property	4.0	North	128	1976
WATH	MELTONFIE LD	Coal	5TYF	314	Beneath Property	3.2	North	117	1976
unnamed	TOP HARD BARNSELEY	Coal	5RV6	364	South-East	2.0	North-East	195	1922
unnamed	TOP HARD BARNSELEY	Coal	5RV8	365	Beneath Property	5.4	N/A	195	1896
unnamed	TOP HARD BARNSELEY	Coal	5RV9	368	South	2.3	North	195	1896
CORTONWOOD	TOP HARD BARNSELEY	Coal	4Q4S	376	South-West	4.0	North-East	195	1886
unnamed	TOP HARD BARNSELEY	Coal	5NPD	377	Beneath Property	5.8	North	183	1929
WATH	TOP HARD BARNSELEY	Coal	4P46	381	Beneath Property	3.8	North	181	1898
unnamed	TOP HARD BARNSELEY	Coal	5RV7	392	Beneath Property	0.5	North-East	195	1908
DARFIELD	TOP HARD BARNSELEY	Coal	4P44	409	Beneath Property	4.0	North-West	181	1891
SWALLOW WOOD	SWALLOW WOOD	Coal	5RUQ	416	South-East	3.0	North	118	1941
WATH WOOD	TOP HARD BARNSELEY	Coal	4P45	419	Beneath Property	2.1	North	181	1915
unnamed	SWALLOW WOOD	Coal	5NPE	421	South-West	0.0	East	140	1940
CORTONWOOD / WATH	SWALLOW WOOD	Coal	4Q4T	429	South-West	3.7	North-East	140	1942
unnamed	SWALLOW WOOD	Coal	4P4A	430	South-West	4.3	North	145	1951
HOUGHTON MAIN	TOP HARD BARNSELEY	Coal	5R4H	442	Beneath Property	4.0	North-West	183	1904
WATH	TOP HARD BARNSELEY	Coal	5TYB	460	North-West	1.9	North-East	206	1932
WATH	TOP HARD BARNSELEY	Coal	5TYA	463	Beneath Property	3.5	North	206	1911
unnamed	PARKGATE	Coal	5RUZ	593	South	3.4	South-East	173	1933
unnamed	PARKGATE	Coal	5NPF	599	Beneath Property	7.6	North	160	1935
WATH	PARKGATE	Coal	4PAW	615	Beneath Property	3.9	North	160	1930
unnamed	PARKGATE	Coal	4MRK	615	South-West	2.2	North-West	168	1929
unnamed	PARKGATE	Coal	5RUUY	622	South-West	0.0	East	152	1935

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
WATH	PARKGATE	Coal	4PAV	640	Beneath Property	5.4	North	166	1941
unnamed	PARKGATE	Coal	5NPG	643	Beneath Property	2.8	North-West	160	1946
HOUGHTON	PARKGATE	Coal	5R5H	676	Beneath Property	4.2	North-West	198	1956
unnamed	PARKGATE	Coal	4PAY	689	West	6.0	North-East	142	1948
MITCHELL	PARKGATE	Coal	5TY8	689	West	3.7	North-East	142	1942
HOUGHTON	PARKGATE	Coal	5TY7	696	North	2.0	North-East	180	1969
WATH	PARKGATE	Coal	5TY6	698	Beneath Property	3.5	North	160	1947
CORTONWOOD	SILKSTONE	Coal	4MRX	705	South-West	3.3	North-East	96	1975
CORTENWOOD	SILKSTONE	Coal	4PA7	708	South-West	3.0	North-East	110	1978
CORTONWOOD	SILKSTONE	Coal	X54	718	West	2.8	North	110	1986
HOUGHTON / DARFIELD	SILKSTONE	Coal	X53	749	Beneath Property	4.8	North-West	128	1990
HOUGHTON	SILKSTONE	Coal	X52	771	Beneath Property	4.7	North-West	120	1990
HOUGHTON	SILKSTONE	Coal	X51	773	Beneath Property	2.5	North	111	1988
HOUGHTON	SILKSTONE	Coal	X50	773	North-East	5.5	North-West	124	1986
HOUGHTON	SILKSTONE	Coal	X52	775	Beneath Property	4.6	North-West	121	1990
HOUGHTON	SILKSTONE	Coal	X51	777	Beneath Property	3.5	North	116	1988
HOUGHTON	SILKSTONE	Coal	5OVM	780	North	2.0	North-East	112	1979
HOUGHTON	SILKSTONE	Coal	X51	782	Beneath Property	4.4	North-West	119	1988
HOUGHTON	SILKSTONE	Coal	X15	788	North	1.2	East	100	1986

### 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
Shaft	444403-007	444337 403972	has probably been totally removed by opencast mining	Coal	
Shaft	444403-008	444184 403945	has probably been totally removed by opencast mining	Coal	
Shaft	444404-003	444156 404124		Coal	

## Abandoned mine plan catalogue numbers

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

NE825	NE262	NE965
NE54	16528	NE209
NE999	NE1065	16924

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
SHAFTON	Coal	Yes	Within	N/A	70
SHAFTON	Coal	Yes	Within	N/A	76
SHAFTON	Coal	Yes	Within	N/A	109
SHAFTON	Coal	Yes	Within	N/A	111

## Geological faults, fissures and breaklines

Please refer to the 'Summary of findings' map (on separate sheet) for details of any geological faults, fissures or breaklines either within or intersecting the enquiry boundary.

Fault under or close to the property 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.

## 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
39.7	East
Within	N/A

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 in an area where notices to withdraw support were given in 1942, 1946, 1980, 1982 and 1983.

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](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.

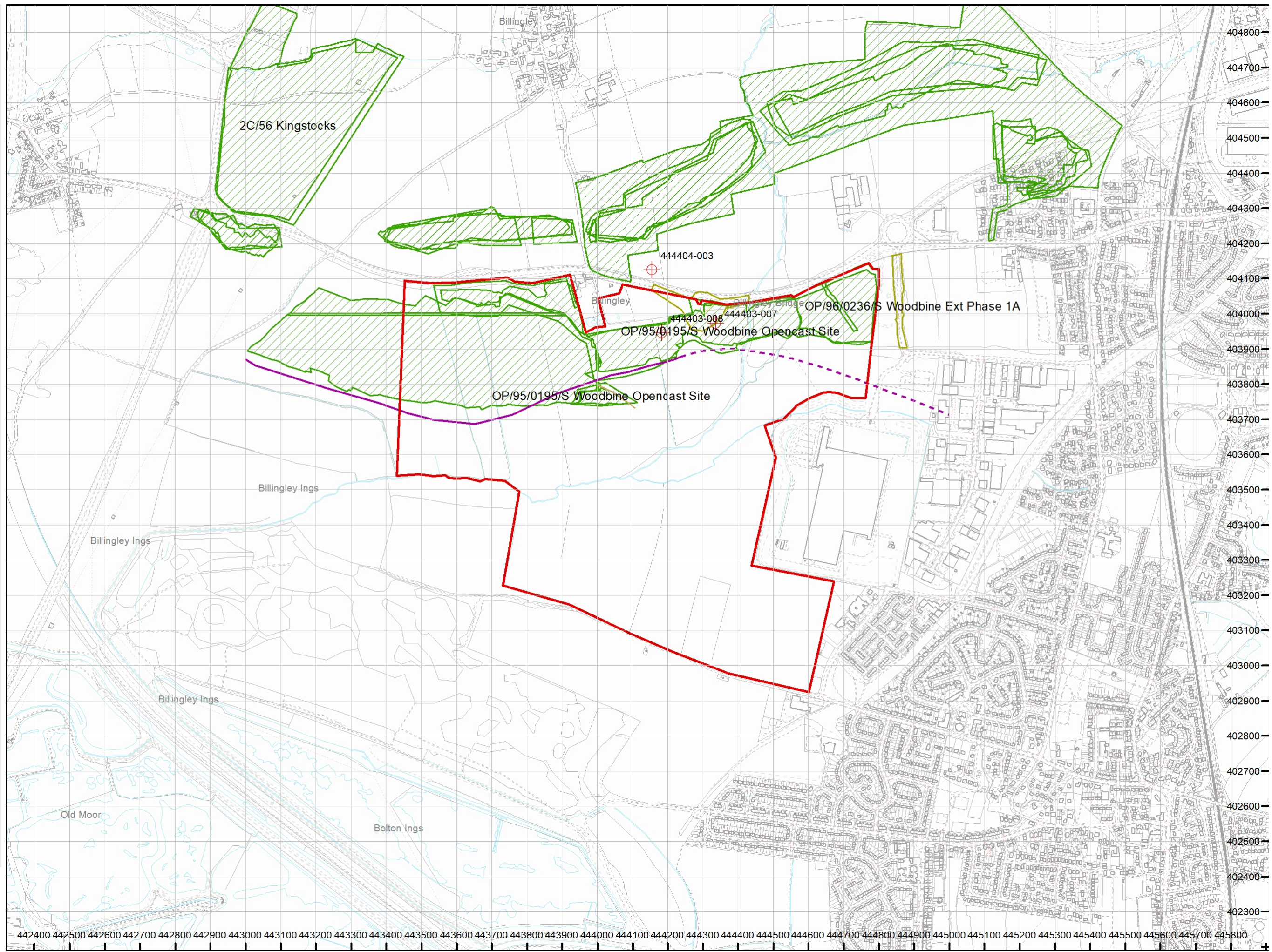
### **Payment to owners of former copyhold land**

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.

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

**Key**

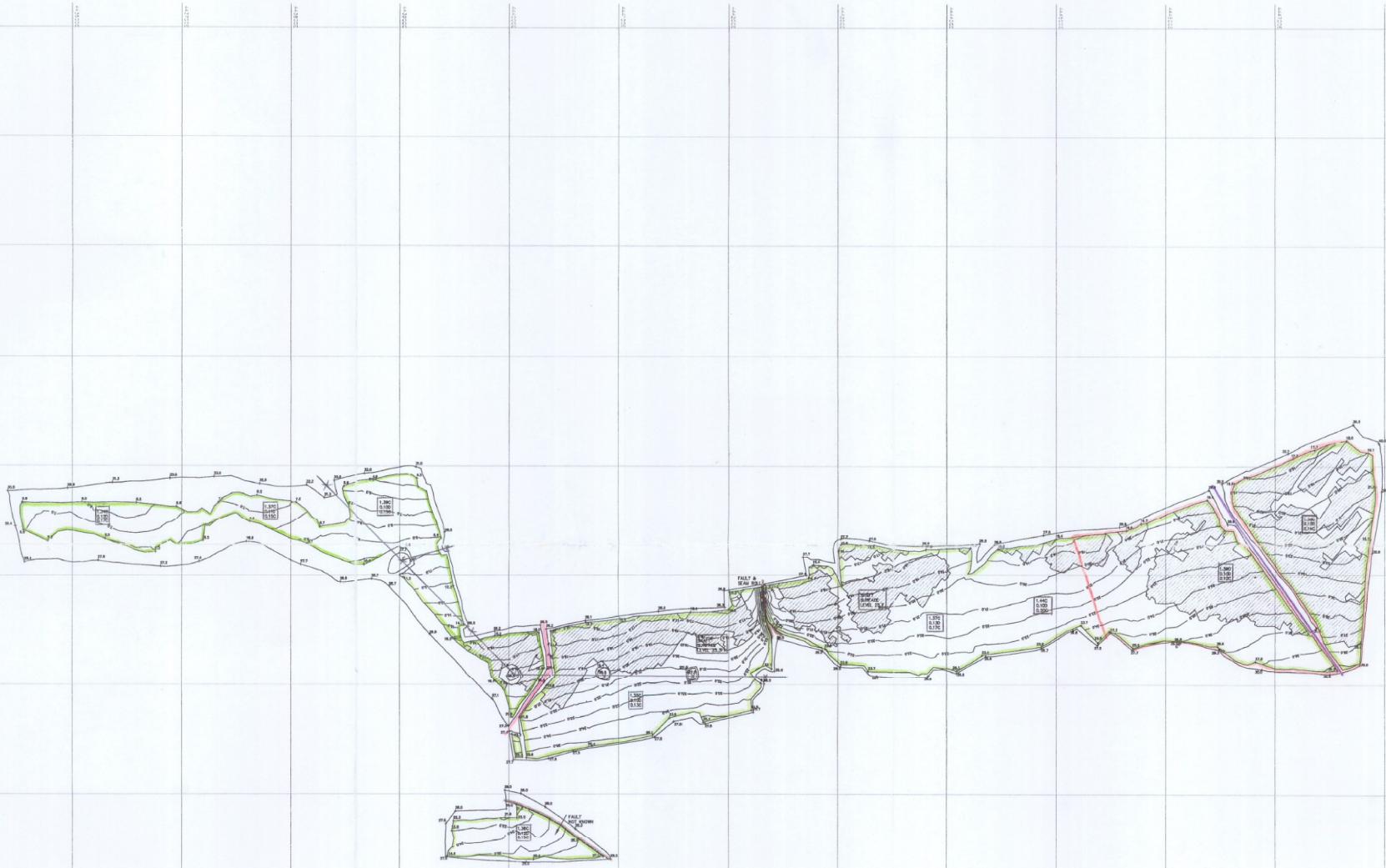
- Approximate position of the enquiry boundary shown 
- Disused mine shaft 
- Outcrop (Proven) 
- Outcrop (Conjectured) 
- Geological faults 
- Opencast mine licence area 
- Uncensored opencast site 
- Site investigations 



**How to contact us**  
0345 762 6848 (UK)  
+44 (0)1623 637 000 (International)  
[www.groundstability.com](http://www.groundstability.com)

## Appendix C

# Mining Abandonment Plans

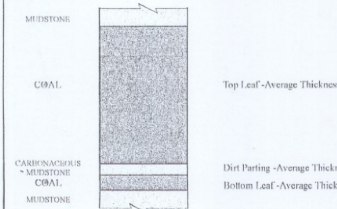


16924

**Site Characteristics**

Site Start Date - January 1996  
 Site Finish Date - June 1997  
 Total Coal Recovery - 138,402 tonnes

**Representative Seam Section - Shafton Seam**



**Legend**

- Limit of Extension Area
- Seam Thickness (Coal-Dirt Parting-Coal)
- Location of Mine Shaft with Surface Level (Shaft located under cross)
- Area of Shafton Old Workings
- Fault Line with associated Seam Roll
- Shafton Seam Excavation Boundary (Colour to inside of Excavation)
- Line of Surface Water Drain
- Line of Sewer
- Above ground Electricity Supply Line with Pole or Pylon

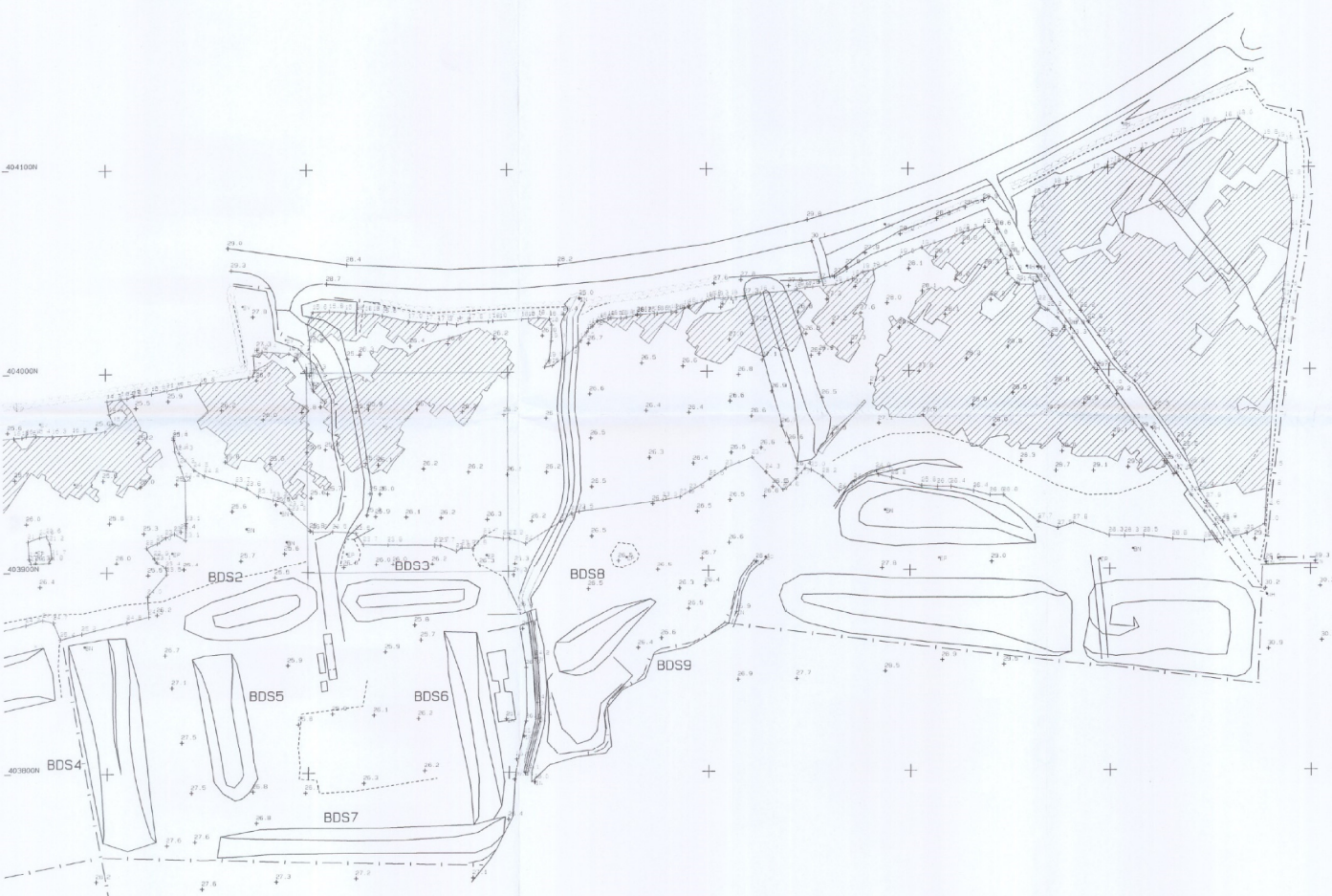
Project  
**WOODBINE & WOODBINE EXTENS  
 OPENCAST COAL SITE**

Title  
**SITE ABANDONMENT PLAN**

Scale	1:2500	Drawing No.	WBAB01
Date	July 1997		



4 WEST PARADE  
 WAKEFIELD  
 W. YORKS.  
 WF1 1LT  
 Tel: (01924) 3718  
 Fax: (01924) 3866



- KEY -

- SPOT LEVELS (metres AOD) (BLACK) ..... 28.0
- MANHOLES (BLUE) ..... MH
- ELECTRICITY PYLONS (RED) ..... EP
- INVERT LEVELS (BLUE) ..... IN

COALING AREAS: -  
BLUE LINES INDICATE TOP OF SEAM  
RED LINES INDICATE BASE OF SEAM

NOTES: -  
ALL LEVELS AND CONTOUR VALUES ARE METRES UNLESS STATED OTHERWISE  
ALL LEVELS AND CONTOURS ARE RELATIVE TO OS BM ON ROSE COTTAGE  
ALL CO-ORDINATES ARE RELATIVE TO OS NATIONAL GRID

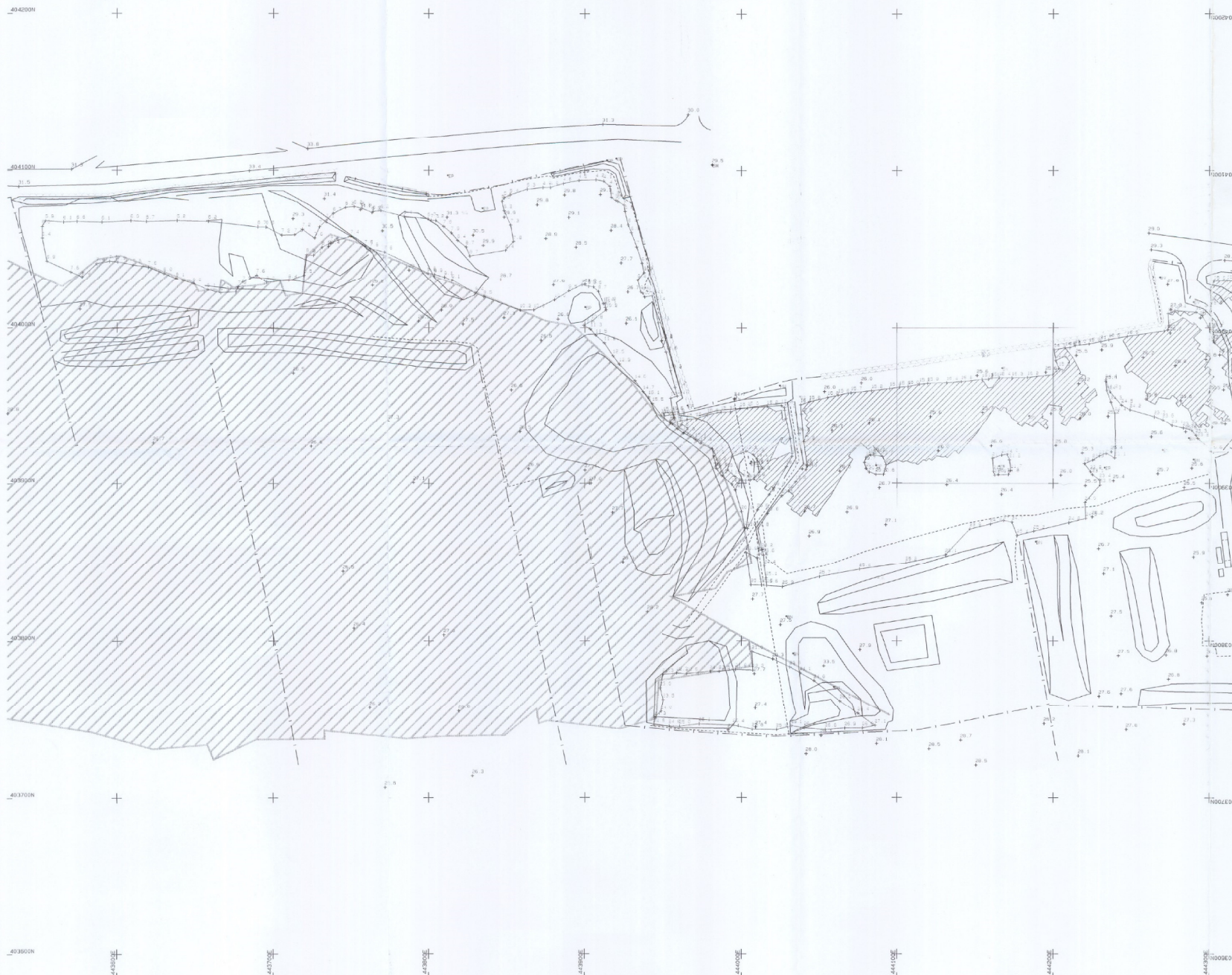
# 16924

COBEX LIMITED  
4 WEST PARADE  
WAKEFIELD  
WEST YORKSHIRE  
TEL. 01924-371898

WOODBINE EXTENSION O/C SITE

SCALE 1/1250

22ND MAY 1997



- KEY -

- SPOT LEVELS (metres AOD) (BLACK) ..... 25.0
- MANHOLES (BLUE) ..... MH
- ELECTRICITY PYLONS (RED) ..... EP
- INVERT LEVELS (BLUE) ..... IN

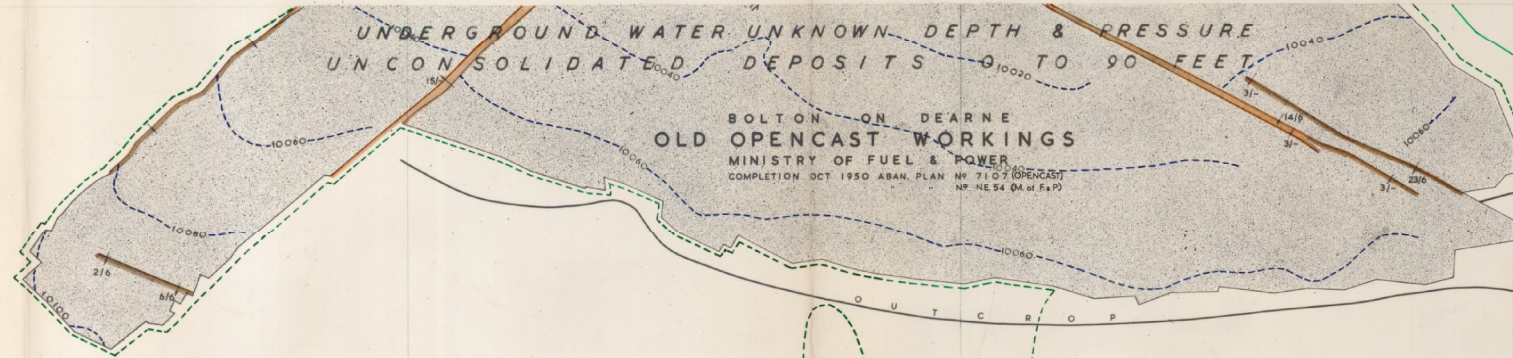
COALING AREAS:-  
BLUE LINES INDICATE TOP OF SEAM  
RED LINES INDICATE BASE OF SEAM

NOTES:-  
ALL LEVELS AND CONTOUR VALUES ARE METRES UNLESS STATED OTHERWISE  
ALL LEVELS AND CONTOURS ARE RELATIVE TO CS BM ON ROSE COTTAGE  
ALL CO-ORDINATES ARE RELATIVE TO OS NATIONAL GRID  
BOLTON ON DEARNE O/C WORKINGS SHOWN GREY

# 16924

COBEX LIMITED  
4 WEST PARADE  
WAKEFIELD  
WEST YORKSHIRE  
TEL. 01924-371898  
WOODBINE O/C SITE  
SCALE 1/1250  
26TH FEBRUARY 1997





N 3  
442 Km. E

5

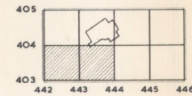
443

5

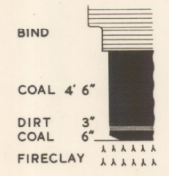
444

BILLINGLEY DRIFT MINE	
No.1 ADIT 44/4304/334038	No.2 ADIT 44/4304/318003
SURFACE LEVEL 10,089.20 SHAFTON SEAM LEVEL 10,016.60	SURFACE LEVEL 10,086.30 SHAFTON SEAM LEVEL 10,006.60

- SCALE - 1/2500 -  
DATUM FOR LEVELS  
10000 feet below ORDNANCE DATUM



SECTION OF SEAM



SHAFTON SEAM

DATE OF CONSTRUCTION. NOV. 1952

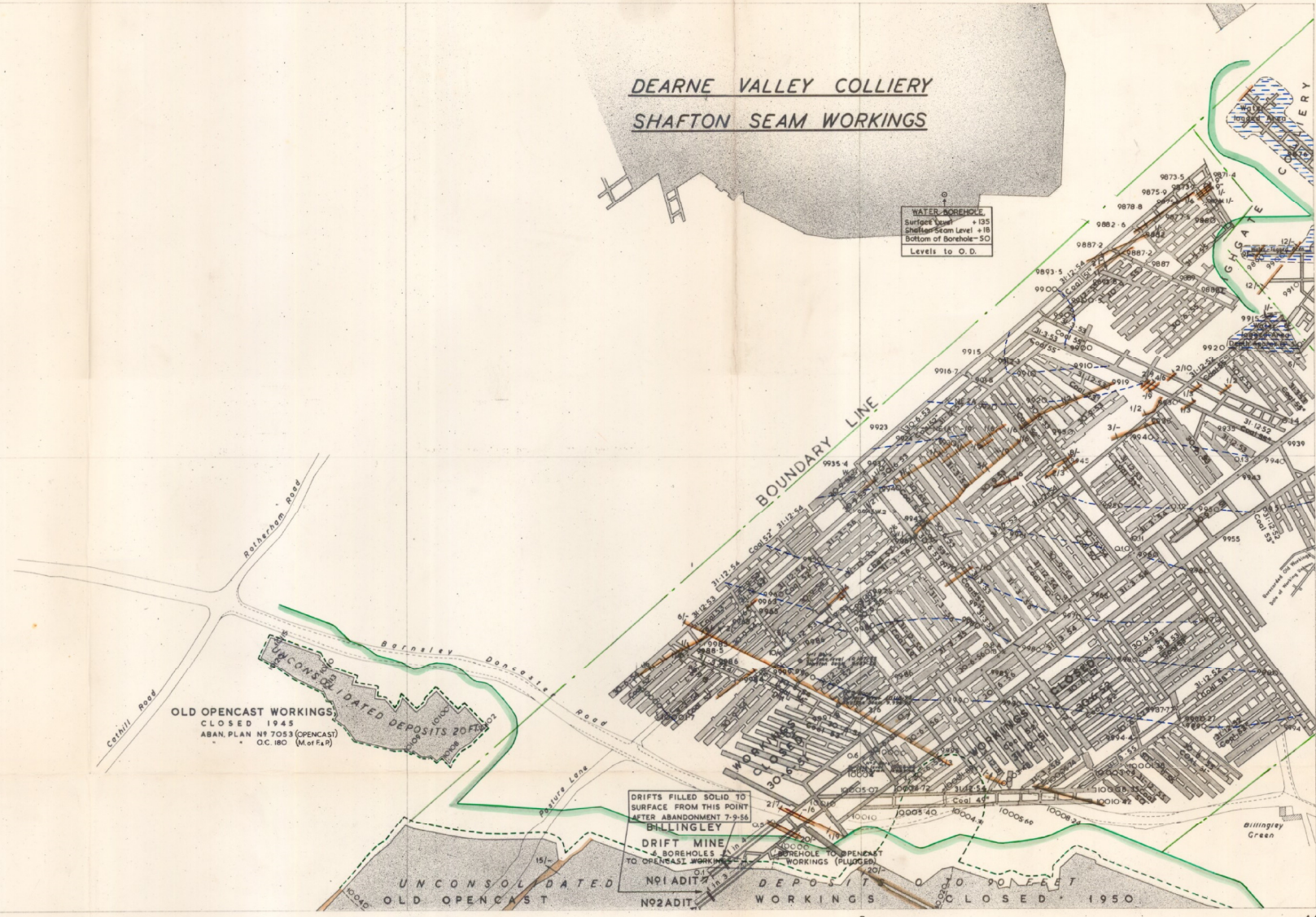
I hereby certify that this is an accurate copy of a section of the Statutory Working Plan of the mine  
Signed *C. H. G. G.* Surveyor  
Date 7-11-1956  
Certificate No. 1841  
Dated 20-3-1947

I hereby certify that no further work has been carried out after the date of abandonment which would affect the accuracy of this plan  
Signed *R. H. G. G.*  
Date 22-1-1956  
GROUP MANAGER

44/4203

DEARNE VALLEY COLLIERY  
SHAFTON SEAM WORKINGS

WATER BOREHOLE  
Surface Level +135  
Shafton Seam Level +18  
Bottom of borehole -50  
Levels to O.D.



OLD OPENCAST WORKINGS  
CLOSED 1945  
ABAN. PLAN N° 7053 (OPENCAST)  
O.C. 180 (M. of F.R.)

DRIFTS FILLED SOLID TO SURFACE FROM THIS POINT AFTER ABANDONMENT 7-9-56

BILLINGLEY DRIFT MINE & BOREHOLES TO OPENCAST WORKINGS (PLUGGED)

UNCONSOLIDATED DEPOSIT OLD OPENCAST WORKINGS NO1 ADIT NO2 ADIT

© DENOTES BOREHOLE FROM SURFACE

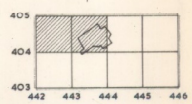
42 Km. E 5 443 5 444

**BILLINGLEY DRIFT MINE**

No.1 ADIT 44/4304/334038	No.2 ADIT 44/4304/318003
SURFACE LEVEL 10,089.20 SHAFTON SEAM LEVEL 10,016.60	SURFACE LEVEL 10,086.30 SHAFTON SEAM LEVEL 10,006.60

- SCALE - 1/2500 -

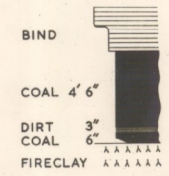
DATUM FOR LEVELS  
10,000 feet below ORDNANCE DATUM



I hereby certify that this is an accurate copy of a section of the Statutory Working Plan of the mine  
Signed *[Signature]* Surveyor  
Date 7-11-1956  
Certificate No. 1841  
Dated 20-3-1947

I hereby certify that no further work has been carried out after the date of abandonment which would affect the accuracy of this plan  
Signed *[Signature]* GROUP MANAGER  
Date *[Signature]*

SECTION OF SEAM



**SHAFTON SEAM**

DATE OF CONSTRUCTION, NOV. 1952

44/4204

## Appendix D

# Historical Aerial Imagery



Figure 1 Aerial Image of OP/95/0195/S Woodbine Opencast Site (1949). Sourced from Historic England, Ref EAW015489.



Figure 2 Aerial image of OP/95/0195/S Woodbine Opencast Site (1949) Sourced from Historic England Ref. EAW015494.