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GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

MORGAN SINDALL

Star Academy, Radcliffe

Coal Mining Risk Assessment

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DRAWINGS

Drawing Number	Rev	Title
FS1013-REN-XX-XX-D-CS-5100-P02	P02	Site Constraints Plan
C5394/01	-	Site Location Plan
C5394/02	A	Proposed Exploratory Hole Location Plan
C5394/03	-	Coal Authority Interactive Map Extract
C5394/04	-	Geological Map Extract

APPENDICES

Appendix	Title
Appendix A	BGS Boreholes
Appendix B	Mining Searches
Appendix C	Abandonment Plans

1.0 INTRODUCTION

1.1 Context and Objectives

This report describes a Coal Mining Risk Assessment (CMRA) carried out by Brownfield Solutions Limited (BSL) for Morgan Sindall as instructed by Renaissance Associates Ltd on a site off Spring Lane, Radcliffe.

This report has been prepared in line with the gov.uk online guidance, 'Planning applications: Coal Mining Risk Assessments'. The purpose and objectives of this CMRA are as follows:

- Review of all available information on the coal mining issues which are relevant to the application site.
- Identify and assess the risks to the proposed development from coal mining, including the cumulative impact of issues.
- Recommend mitigation measures to address the coal mining issues affecting the site, including any necessary remedial works and/or demonstrate how coal mining issues have influenced the proposed development.
- 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 regards to development on unstable land.

1.2 Proposed Development

The proposed development involves the construction of a 'super teaching block' with a sports hall annexe and extensive MUGA / Sports Pitches as shown on the Site Constraints Plan, drawing No. FS1013-REN-XX-XX-D-CS-5100-P02 provided to BSL by Renaissance Associates Ltd.

1.3 Previous Reports

This report should be read in conjunction with Geotechnics Desk Study Report (PC228400) issued in May 2022.

1.4 Limitations

BSL have used reasonable skill, care and diligence for the investigation of the site and the production of this report. The findings and opinions conveyed via this report are based on information obtained from a number of sources as detailed within this report, BSL have assumed this information is correct and reliable. Nevertheless, BSL cannot and does not guarantee the authenticity or reliability of the information it has relied upon.

This report has been prepared for the sole use and reliance of the Client, Morgan Sindall. No other third parties may rely upon or reproduce the contents of this report without the written permission of Brownfield Solutions Ltd (BSL). If any unauthorised third party comes into possession of this report, they rely on it at their own risk and BSL do not owe them any Duty of Care.

Any recommendations made in this report should be confirmed with the Regulatory Authorities prior to implementation to ensure compliance.

This assessment has been based on the proposed planning layouts provided. Any subsequent change to the planning layout may have an impact on the validity of recommendations made within this report. Furthermore, new information, changed practices or new legislation may necessitate revised interpretation of the report after the date of its submission.

There may be other conditions prevailing on the site which are outside the scope of work and have not been highlighted by this assessment and therefore have not been taken into account by this report. Responsibility cannot be accepted for such site conditions not revealed by the assessment.

The site plans enclosed in this report should not be scaled off. Any site boundary line depicted on plans does not imply legal ownership of land.

2.0 THE SITE

2.1 Location

The site is located off Spring Lane, Radcliffe, M26 2SZ. It is situated approximately 0.5 km north of Radcliffe Town Centre, centred on National Grid Reference 378700, 407630 as shown on the Site Location Plan, Drawing No. C5394/01.

2.2 Site Description

The main site features and potential issues identified during this survey are detailed below:

Feature	Description
Site Area	The site covers approximately 6.4 hectares.
Site Access	Access to the site is gained off Spring Lane to the south.
Current Land Use and Site Features	The north section of the site consists of an overgrown playing field and a sports court surfaced in hardstanding in the north-easternmost section. The lower south section of the site is comprised of a secondary school (Spring Lane School) and leisure centre (Radcliffe Leisure Centre) with associated hardstanding car parking areas. A public footpath runs along the south-west border of the site (Banana Path). There are several manholes and services present in the proximity of the secondary school and leisure centre. Service plans provided by the client also show an unknown trend north-south across the derelict playing field. Multiple services are also shown to be present within the area of the old sports courts / new car parking areas in the north-east section of the site.
Potential Mining Related Features	No potential mining related features have been observed onsite.
Vegetation	Mature / semi-mature trees are present along the north and east borders of the site. Small clusters of trees are also present near the entrance to the site off Spring Lane, to the west of the school / leisure centre building and in the far north-west corner of the site.
Topography	The site generally appears to gently slope to the south-east.
Site Boundaries	The site is enclosed by steel palisade fencing along the eastern border of the site, a wooded area to the north of the site, steel railings to the west and Spring Lane to the south.
Surrounding Area	The site is set within a mixed commercial and residential area, with a park and ride car park present to the south, residential properties to the west, a railway to the east, the disused Manchester Bolton and Bury Canal to the north-west and a wooded area to the north.

3.0 SITE SETTING

3.1 Site History

In summary, the map evidence indicates that the site has previously been used mainly for industrial uses, with a goods yard being present onsite previously, associated with railway infrastructure. Multiple railway lines have been present across the site, concentrated more so in the east section of the site, including associated features such as sidings and goods sheds. Allotment gardens have also been present in the west section of the site. Historically the site has been surrounded by a mixture of both residential, commercial, and industrial development. Including multiple works and mills and Whittaker's Colliery (including a shaft, 60m west), and an electricity substation to the north.

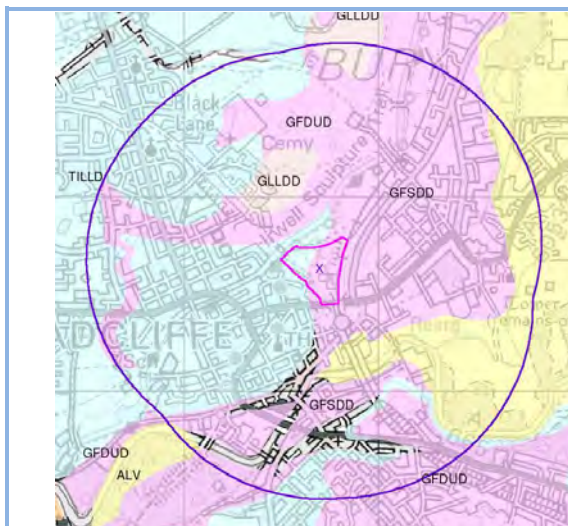
3.2 Published Geology

The following publications of the British Geological Survey (BGS) were examined in respect of the geology underlying the site:

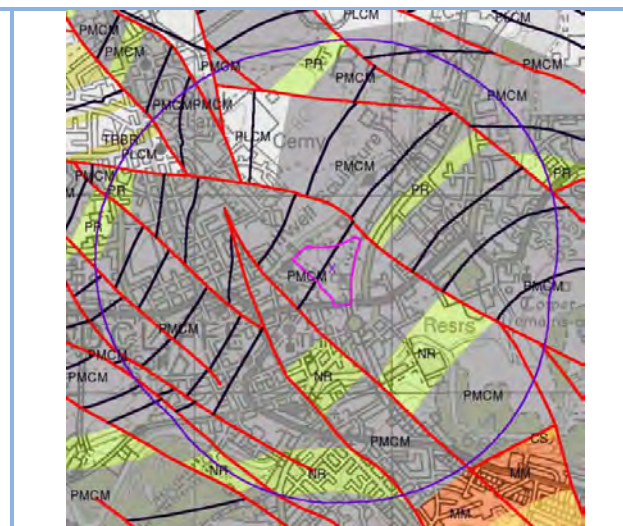
- BGS New Series 1:50,000 Map Sheet 85 Manchester. Solid Edition (1975)
- BGS County Series 1:10,000 Lancashire Sheet 95 NE Solid Edition.
- British Geological Survey (BGS) Geology of Britain Map Viewer.
- Memoir of the Geology of Manchester Sheet 85.
- Coal Authority Interactive Map.
- Coal Mining Abandonment Plans.

Extracts of the 1:50,000 geological mapping from the Geo-Environmental Data Report are presented below for reference:

BGS 1:50 000 Superficial Geology



BGS 1:50 000 Solid Geology



Made Ground

Information from the environmental data report indicates no artificial made ground is present onsite, with the nearest indicated on the BGS map to be 700m to the south-east of the site. However, it is likely made ground will be present onsite due to the historical developments that have taken place relating to railways and allotment gardens.

Superficial Deposits

The site is indicated to be underlain by Glacial Till in the north-west. This stratum typically comprises of clay to sandy clay with varying amounts of gravel, cobbles and boulders. The remainder of the site is indicated to be underlain by Glaciofluvial deposits which typically comprises of sand, gravels and lenses of clay.

Solid Geology

The deeper solid geology underlying the superficial deposits is indicated to be part of the Pennine Middle Coal Measures Formation, which typically comprises sandstone, siltstone and mudstone.

The site appears to be located within a fault block. The BGS mapping (1:50,000 Sheet 85 Manchester, Solid Edition) shows faults to be present to the north-east and south-west of the site, these faults are both indicated to be strike slip faults trending north-west to south-east and are shown to fault out the coal seams outcropping onsite. The BGS 1:10,000 Country Series Map for the site (Lancashire Sheet 95 NE) shows the position of a fault proved underground the site within the Ashclough Mine Seam (in yellow), trending north-west to south-east, down throwing to the south-west. The faults are represented by a white solid and dotted lines on drawing number C5394/04, Geological Map Extract.

Any movements associated with these faults should now have stopped. The number of continuing or new cases of fault reactivation has rapidly declined due to the overall reduction in deep mining in the UK and this trend is likely to continue. However, if a previously unrecorded or 'blind fault' in an area subjected to mining becomes exposed, for example in a deep engineering excavation or trench, this should be brought to the attention of a suitably qualified and experienced engineering geologist, subsidence engineer or geotechnical engineer for inspection.

The site is in an area where coal seams are abundant. The angle of dip in this area is between 9° and 24°. The nearest dip recorded on BGS mapping is onsite and is recorded to be 1 in 6 on the BGS 1:10,000 County Series Map (Sheet 95 NE, 1929), observed within the Top Three Yards Mine. This converts to an angle of 9°, corresponding to the BGS 1:50,000 map (1975). Further dip angles of 13° and 22° are recorded on the BGS 1:50,000 map to the north and south of the site respectively. However, these are located either side of the faults present offsite and may not be representative of the dip angle onsite due to the influence of being in a different fault block. Within the fault block on the site, the general direction of dip is indicated to be to the south-east. Offsite to the north-west of the site within the same fault block, the dip is indicated to be to the east south-east.

From the Consultants Mining Report and the BGS mapping, two coal seams are indicated to be outcropping onsite within the north-western section, trending north-east to south-west. The north-westernmost outcrop is indicated to be the Stonedelf Mine, with the second outcrop is indicated to be the Ashclough Mine. The Ashclough Mine is indicated to be overlain by a marine band of the same name. The Ashclough is recorded in the Manchester Coal Memoir as being encountered as two bands 0.84m and 0.71m thick respectively (2ft 9in and 2ft 4in) with a 0.46m to 0.91m thick (1ft 6in to 3 foot) 'dirt' parting present between the two bands, with a total thickness of up to 2.46m (8ft 1in). The Stonedelf Mine is also encountered as two bands, both 0.46m thick (1ft 6in), but in this case are typically separated by a band of fireclay 0.76m thick (2ft 6in), with the total thickness of the seam approximately 1.7m (5ft 6in) including the fire clay parting. The Geology of Manchester states that these two seams have been worked locally in the Radcliffe area but not much is known about their qualities. Although the memoir also states that to the west of Radcliffe to Farnworth, both of the above seams "appear to be of little or no economic value".

Based on geological mapping, information gained from the BGS maps, geological memoir and the Coal Authority Interactive Map, the following seams are shown to dip beneath the site. Depths shown are below rockhead and do not take into account superficial deposits at this point.

Seam	Approximate Distance from Site (m)	Thickness from Geological Memoir (m)	Thickness calculated from Within's Pit BGS Log (m)	Anticipated Depth from outcrop calculations (m)
St D M – Stonedelf Mine	Onsite NW	1.70	-	Subcropping – 28.5
As M – Ashclough Mine	Onsite NW	2.46	-	Subcropping – 39.6
T 5 QRS – Top Five Quarters (Bin)	152m NW	1.00	-	24-72
LYD – Lower Yard	863m NW	0.76	-	136-185
W M – White	95m N (Faulted)	1.00	1.50	164-207
BK M – Black	227m N (Faulted)	0.90	1.20	182-225
G M – Gingham	317m NW (Faulted)	1.20	0.80	203-246
5QRS – Five Quarters	444m NW (Faulted)	1.50	1.20	190-224

NB: The range of depths stated above refers to the west boundary depth and east boundary depth respectively.

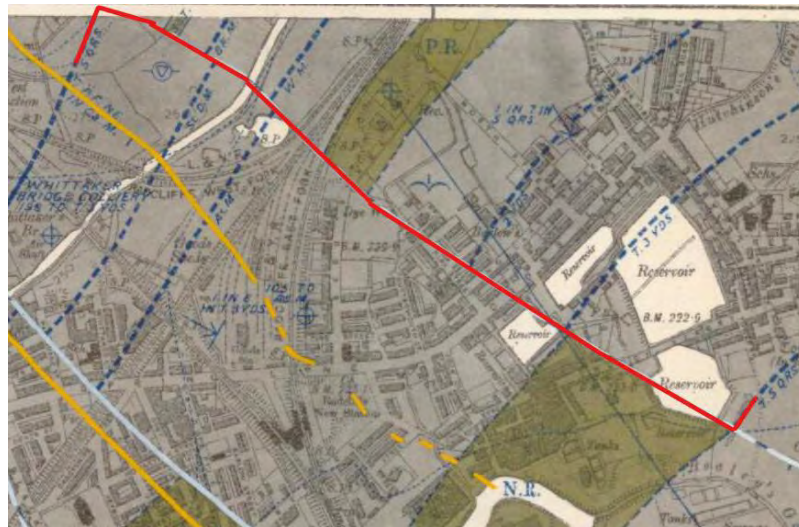
The following seams are interpreted to dip beneath the site as detailed in the Consultants Coal Mining Report.

Seam	Approximate Distance from Site (m)	Thickness from Geological Memoir (m)	Extraction Thickness from CA Consultants Report (m)	Thickness calculated from Within's Pit BGS Log (m)	Anticipated Depth from outcrop calculations (m)	Depth Provided by Coal Authority Report (m)
T3YDS – Top Three Yards (Top Yard, Shuttle and Crumbouke Mines, Brassey & Roger (in east of coal field)) – Possibly also Nine Feet Mine	584m NW	4.60*	1.90	-	92.5-141	65
2YDS – Two Yards (Rams & Six Feet)	711m NW	1.80	1.70	-	112-161	96
Doe – Doe (Dow)	419m NW (Faulted)	3.40	1.00	3.50	188-221	141-149

*This seam is encountered as two bands with up to 1.80m of fireclay between, this figure is based off the total thickness of both seams and fireclay.

NB: The range of depths stated above refers to the west boundary depth and east boundary depth respectively.

The anticipated depths of the seams below site were calculated using trigonometry, using the dips provided on both the geological mapping and present on the Coal Authority Consultants Report for specific seams. Although the outcrops for the White Mine and the seams below could not be traced within the same fault block, the outcrop distance was able to be calculated by using the fault offset distance, estimating the depth of the seam below the site. An extract is presented below to show how the seams were matched up either side of the fault to the north of the site (solid red line).



BGS 1:10 000 Solid Geology, showing fault offset to the north of the site used to calculate outcrop distance.

It should also be noted that due to the age of some of the workings, and the different areas where seams were worked, some seams indicated to be present below the site have different names, this can be seen from differences between the mapping, abandonment plans and coal authority records. Below is an extract from the geological memoir which gives the alternative names of the seams.

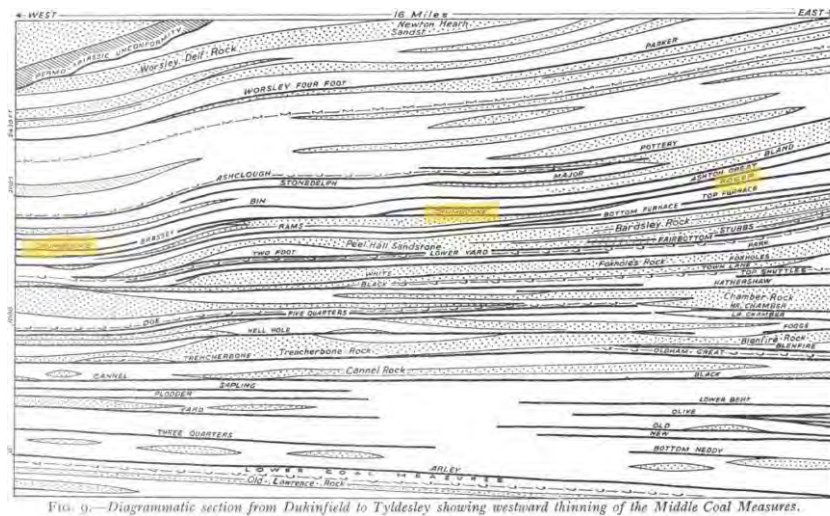
SEAM	WESTERN AREA	SYNONYMS
Arley Mine.	Daubhill (Bolton), Dogshaw (Bury).	
Three Quarters Mine.	Smith.	
Half Yard	Bone.	
Yard Mine.	Haigh Yard, Little (Yard Tops=Denner Main and Yard Bottoms=Dean Moor Coal).	
Plodder Mine.	Ravine.	
Cannel Mine.	King and Cannel, Dixon Green, Hines, Hinds, Hynes, Cockey Moor, Main Coal.	
Hell Hole Mine.	Victoria, Four Foot, Hells, Ellel, Hill Hole.	
Five Quarters Mine.	Yard, Lambwell, Three Foot, Quarters, Park.	
Doe Mine.	Dow, Yard (Tyldesley), Old Doe (Doe Tops= Bancroft).	
Black Mine.	Gingham, Four Foot.	} Seven Foot (Tyldesley)
White Mine.	Lower Three Yards, Ten Foot, Great.	
Windmill Mine.	Two Foot, Kays, Three Quarters, Little, Five Foot.	
Rams Mine.	Two Yards, Six Foot, Seven Foot.	
Crumbouke Mine.	Top Three Yards (Radcliffe), Four Foot.	
Shuttle Mine.	Top Yard (Radcliffe), Albert.	
Bin Mine.	Top Five Quarters (Radcliffe), Half Yard.	
Worsley Four Foot Mine.	Pendleton Four Foot, Ellam's.	

The word " Mine " has been omitted, for the sake of brevity, from the synonyms shown in the right hand column.

The closest seam outcropping offsite is shown to be the Top Five Quarters, located to the north-west of the site, striking NE-SW and is indicated to be present at a depth of 24m below rockhead on the north-west border of the site, increasing to a maximum depth of 75m to the east border of the site based on worst case dipping angle of 9°. The geological memoir states that this seam has been mined locally but little is known about its quality and is typically around 1.00m thick (3ft 5in) but is stated to split into two seams to the east of Farnworth (west of Radcliffe) and therefore may be present as two smaller seams below the site.

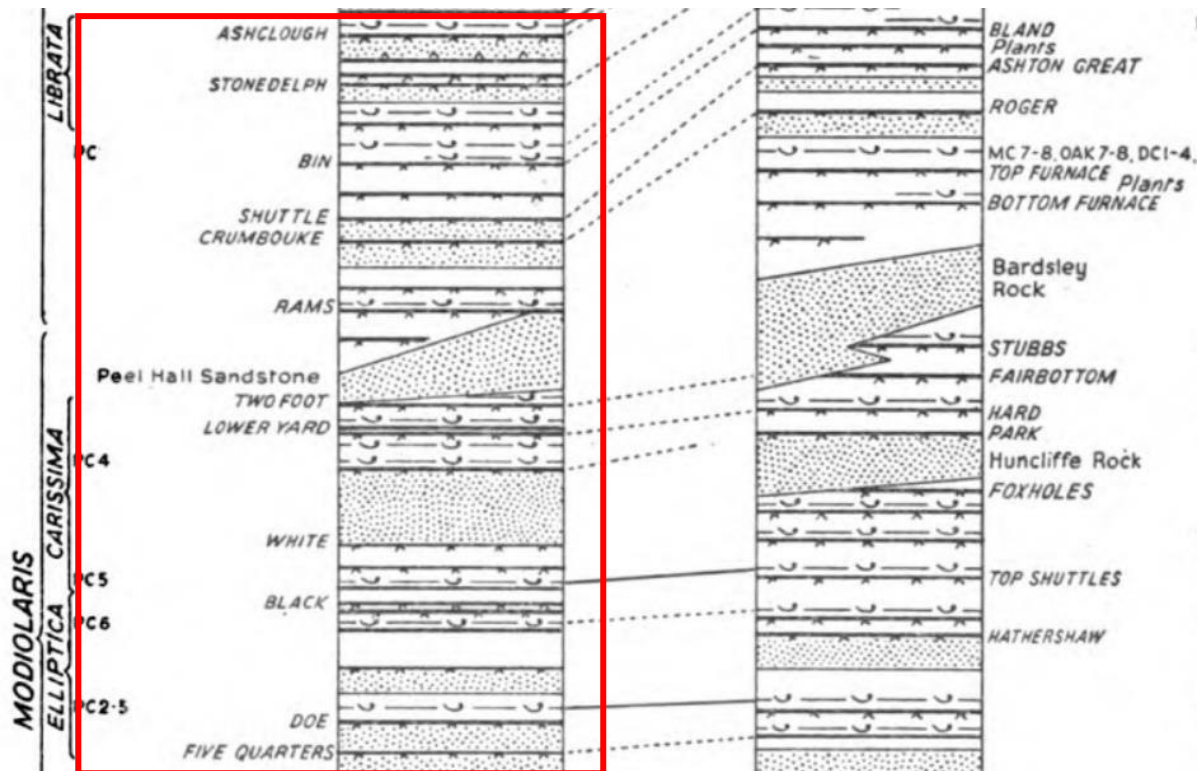
The next seam in the series is the Top Three Yards (Crumbouke), also known as the Roger in the Coal Authority Consultants Report. It is likely that the Roger is one and the same as the Top Three Yards shown on the geological mapping as it is typically called Roger in the east side of the coal field and the

Crumbouke (Top Three Quarters) in the west. This is shown in the yellow highlights in the below extract from the 1931 Geological Memoir of Manchester.



This seam may also be known as the Nine Feet Mine, as the Abandonment Plans for the site show working for the Nine Feet Mine present 60m (66 yards) below the site, and the Coal Authority Consultants Report records the Roger seam at 65m (71 yards), generally at similar depth, although this is not confirmed as there are no records of the Nine Feet within the Geological Memoir or any of the geological mapping. This seam is recorded as having been extensively worked or “got” within the area of Radcliffe and is normally present as two seams separated by 0.76m to 1.82m (2ft 6in to 6ft) of fireclay. The bottom coal varies from 0.68m to 1.44m (2ft 3in to 4ft 9in) while the top coal runs from 0.76m to 1.37m (2ft 6in to 4ft 6in).

The generalised section from the Geological Memoir of the seams present below the Top Three Quarters is highlighted in red below for reference.



3.3 BGS Boreholes

There is one BGS borehole record within a relevant distance of the site. This borehole (SD70NE25) details the geological section of the Within's Lane Pit to 304m bgl, which was historically present approximately 166m to the north-east of the site but lies to the north of a fault which is present to the north of the site. This means that the details of the borehole are not as relevant as it would be if was located within the same fault block. The Within's Pit is located between the Two Yard Mine and the White Mine outcrops, and therefore details the seams present below the Two Yard Mine, from the White Mine to the Cannel Mine.

The BGS Borehole Logs are presented in Appendix A.

3.4 Coal Authority Interactive Map

The online Coal Authority Interactive Map layers have been reviewed and the details are summarised in the table below:

Relevant Interactive Map Data	Details
Mine Entries	The closest mine shaft is approximately 40m east of the site.
Abandoned Mines Catalogue	The site is located within the abandoned mines catalogue and the closest mine shaft is approximately 40m east of the site.
High Risk Development Area	The majority of the site lies within the Development High Risk Area.
Surface Coal Resource Area	The site is located in a Surface Coal Resource Area.
Fissures and Break lines	No features displayed.
Surface Mining (Past and Current)	No features displayed.
Past Shallow Coal Mine Workings	No features displayed.
Probable Shallow Coal Mine Workings	The site is shown to be area underlain by Probable Shallow Coal Mine Workings.
Coal Outcrops	Two coal seams are indicated to be subcropping in the north-western section of the site, trending north-east to south-west.
Mining and Groundwater Constraints	No features displayed.

The location of the site in relation to the Probable Shallow Coal Mine Workings, coal seams and mine shafts is shown on Drawing C5394/03.

3.5 Mining Search

A search has been carried out with the Coal Authority at the property, which is presented in Appendix B, the main findings of which are presented below.

Highlighted Evidence from Coal Authority	Issue	Details
Past Underground Mining	Yes	The property is in a surface area that could be affected by underground mining in 5 seams of coal at 65m to 265m depth, last worked in 1893. Any movement in the ground due to coal mining activity should have stopped. The property is in an area where the Authority believe there is coal at or close to the surface and may have been worked at some time in the past.
Present Underground Mining	No	
Future Underground Mining	No	
Mine Entries	Yes	There are two known mine entries highlighted on the Coal Authority report, located approximately 40m east and 85m west of the site. No known coal mine entries are located within, or within 20 metres of, the boundary of the property. There may however be mine entries/additional mine entries in the local area which the Coal Authority has no knowledge of.
Past, present and future opencast coal mining	No	
Coal mining subsidence	No	
Mine gas	No	
Withdrawal of support	No	
Information from the Cheshire Brine Subsidence Compensation Board	No	

3.6 Coal Authority Archives

BSL have also reviewed The Coal Authority Abandonment Plans for the collieries in the local area, from The Coal Authority archives.

Specifically, there are four abandonment records of interest:

- Within's Lane Pit, Dow Coal Workings, date unknown.
- Within's Lane Pit, Five Quarters Coal Workings, date unknown.
- Whittaker Bridge Pit, Nine Feet Coal Workings, dated 1896.
- Whittaker Bridge Pit, Six Feet Coal Workings, dated 1896.

One other abandonment plan was available but did not detail the colliery / pit, seam workings or date recorded and therefore has not been considered in this report.

Copies of the abandonment plans are provided in Appendix C (digital format only).

All four of the abandonment plans listed above show working present below the site, the depths at which the seams are recorded to have been worked are presented in the table below.

Colliery / Pit	Approximate distance of Colliery / Pit from site (m)	Seam	Depth to workings beneath site (yards)	Depth to workings beneath site (m)
Whittaker Bridge Pit	85m W	Nine Feet (Top Three Yards etc.)	66	60
Whittaker Bridge Pit	85m W	Six Feet (Rams & Two Yards)	100	91
Within's Lane Pit	166m NE	Dow (Doe)	174	159
Within's Lane Pit	166m NE	Five Quarters	178	163

3.7 Historical Ground Investigations

A summary of the relevant points from the previous ground investigation (reference FS1013-GEO-XX-XX-T-G-0002-Phase2-S5-P01) completed by Geotechnics is presented below:

- 4 No. rotary core boreholes were extended into the Pennine Middle Coal Measures onsite to investigate the potential for shallow mine working beneath the proposed development area as part of a wider site investigation.
- Depth to rockhead ranged from 12.60-20.50m bgl, ranging from mudstone, siltstone and sandstone.
- Weak to very weak coal was encountered within all of the boreholes with top depths ranging from 16.40-26.80m bgl. The base of the coal seams ranged in depth from 31.26-48.00m bgl.
- The thickness of the coal seams ranged from 0.15-1.58m thick.
- No evidence of workings was encountered during the ground investigation.

4.0 RISK ASSESSMENT

4.1 Basis of Risk Assessment

Guidance from CIRIA C758 'Abandoned Mine Workings Manual' has been drawn upon in order to develop a risk-based approach to the mining related risks at the property.

The risks from the following coal mining issues are presented in detail in the subsequent sections, and in a summary table at the end of the section.

A moderate risk or greater should be considered as requiring further investigation or remedial action.

4.2 Recorded Coal Workings

Information from the Coal Authority Report [51003367400001] indicates the presence of mine workings within seven seams of coal from 65m to 365m bgl, and last worked in 1893. The noted thicknesses varied between 1.00m and 1.90m. The Coal Authority also note that any movement in the ground due to coal mining activity associated with these workings should have stopped by now.

The shallowest record on the report is the Roger Seam, identified to be part of the Top Three Yards, as detailed in section 3.2. The seam outcrops approximately 584m north-west of the site and is indicated to dip towards the site at approximately 9°. By using trigonometry, the seam was calculated to dip below the site from 92.5m below rockhead at the western site boundary to 141m below rockhead at the eastern site boundary. For the purpose of this assessment, the Coal Authority recorded depth of 65m has been adopted as a worst-case scenario.

The abandonment plans provided by the Coal Authority have also been consulted in respect to this assessment, the Whittaker's Bridge Pit (1896) plan shows the 'Nine Feet' seam present approximately 60m (66 yards) below the site, it is likely that this seam refers to the Roger / Top Three Yards due to the recorded depths. Furthermore, the 'Nine Feet' seam cannot be attributed to any other seam as the location of the pit on the abandonment plan is within the same fault block as the site, therefore it is not likely to have been displaced. No reference to the 'Nine Feet' seam has been observed anywhere within the geological memoir or geological maps and therefore it is likely a local name specific to the Radcliffe area for the Roger / Top Three Yards seam. The coal is normally present as two seams separated by 0.76m to 1.82m (2ft 6in to 6ft) of fireclay. The bottom coal varies from 0.68m to 1.44m (2ft 3in to 4ft 9in) while the top coal runs from 0.76m to 1.37m (2ft 6in to 4ft 6in). The consultants mining report states a maximum extraction thickness of 1.90m which will be used for the purpose of this assessment.

Guidance within CIRIA C758 'Abandoned Mine Workings Manual' indicates that a void will not migrate to the surface where there is more than ten times the seam thickness of rock cover (10t criterion, Piggott and Eynon 1978; Wardell and Eynon 1968). Up to this depth, the void will begin to choke with rock from the roof, which is represented by broken ground. Sands and clays of superficial deposits are considered to have minimal bulking because of their plastic and mobile nature and their propensity to be influenced by groundwater flows to a greater extent. Therefore, as the maximum seam thickness of the Top Three Yards/Roger is considered to be 1.90m, a rock cover of 19.00m is required to meet the 10t criterion. From assessing the previous ground investigation from Geotechnics, the average depth to rockhead was 16m, therefore if the depth to the Top Three Yard/Roger is 65m, there will be approximately 49m of rock cover above the seam.

Based on CIRIA guidance, there is sufficient solid rock cover for the shallowest seam to prevent upward migration of collapses affecting the future development.

The risk to the proposed development is therefore considered to be **low** in relation to recorded coal workings.

4.3 Unrecorded Workings

Before 1850 there was no statutory requirement to record the extent of abandoned mine workings in the UK and only after the enactment of the Coal Mines Regulation Act (1872) were mine owners obliged to deposit accurate plans of abandoned mines, but prior to this date many thousands of workings had been abandoned without accurate records kept. As such, there are extensive unrecorded workings within coal measures strata throughout the UK where shallow workings are present at a depth which could impact surface developments.

In addition, other examples of illicit workings that may not appear on plans include workings carried out during miners strikes or where accessible coal seams were subject to plunder during times of privation such as the First and Second World Wars.

Based on the available information, the Coal Authority believe there is coal at or close to the surface which may have been worked at some time in the past.

The Coal Authority online mapping data also shows two seams subcropping onsite and is indicated to be within an area of probable shallow coal mine workings as shown on the Coal Authority Interactive Map Extract (drawing ref. C5394/03). These seams relate to the Ashclough and Stonedelph, as described in section 3.2 and on the Geological Map Extract (C5394/04). The geological memoir for Manchester states that these seams have been worked locally within the Manchester coalfield but not much is known about their quality. The two seams outcropping onsite are both trending NE-SW and are indicated to dip 9° to the south-east. Therefore, as the outcrops are located in the north-west of the site, if they have been worked, the workings are likely to follow the dip direction south-east and be present below the wider site at shallow depth. The Ashclough seam is recorded to have a thickness of up to 2.46m, with the Stonedelph having a thickness of up to 1.70m, both of these are considered to be of workable thickness.

Using trigonometry, the Ashclough seam is indicated to be present from 0m (west boundary) to 28.5m (east boundary) below rockhead beneath the site, dipping to the south-east. Guidance within CIRIA C758 'Abandoned Mine Workings Manual' indicates that a void will not migrate to the surface where there is more than ten times the seam thickness of rock cover (10t criterion, Piggott and Eynon 1978; Wardell and Eynon 1968). As the thickness of the Ashclough is considered to be up to 2.46m, there likely to be insufficient solid rock cover for the seam to prevent upward migration of collapses from the location of the outcrop to the east border of the site.

Furthermore, the Stonedelph seam has been calculated as being present from 0m (west boundary) to 39m (east boundary) from the outcrop to the east border of the site (direction of dip). Therefore, in line with the above, the eastern section of the site is likely to meet the 10t criterion for the Stonedelph seam, however, the remainder of the site (approximately up to 110m away from the coal sub-crop) is not likely to meet the 10t criterion due to the anticipated thickness of 1.70m.

Although the seams are indicated to sub-crop onsite, the borehole records from the previous ground investigation by Geotechnics (reference FS1013-GEO-XX-XX-T-G-0002-Phase2-S5-P01) shows that the average thickness of superficial deposits encountered below the site is 16m, this means that it is unlikely that methods using the equipment and technology available prior to records being kept (e.g. bell pits), will have been utilised onsite, due to the depth to bedrock making these methods unfeasible.

Consideration has also been given to the closest outcrop to the site, in this case the Top Five Quarters located approximately 152m north-west of the site, dipping 9° to the south-east with a thickness of

1.00m. Utilising trigonometry, the seam is present at depths between 24m (west boundary) and 72m (east boundary) below rockhead. Based on CIRIA guidance, there is sufficient solid rock cover for the Top Five Quarters seam to prevent upward migration of collapses affecting the future development.

The risk from unrecorded mine workings is therefore considered to be **high**.

4.4 Recorded Mine Entries

There are no records of recorded mine entries on site or within 20m of the site boundary. However, there are two recorded mine entries shown 40m east and 85m west of the site, as shown on the Coal Authority Consultants Report Map. One of the recorded mine entries is shown to be 40m east of the site (unnamed), the other is recorded 85 west of the north-west corner of the site (Whittaker Bridge Pit). The unnamed shaft is stated to have been filled and capped to an unknown specification to the requirements of the local authority. The treatment details of the Whittaker Bridge Pit are unknown.

The site is considered to be outside the zone of influence for these shafts. The risk from known mine entries is considered to be **low**.

4.5 Unrecorded Mine Entries

Given the Ashclough and Stonedelph seam both subcrop onsite and the potential shallow depth of the Top Five Quarters seam, as well as further workable seams at depth below the site as discussed in section 3.2, it is possible that un-recorded mine entries may exist on the site. The risk from recorded mine entries is therefore considered to be **moderate**.

4.6 Mine Gas

The Coal Authority does not have any records of mine gas emissions at the site. However, the presence of coal seams and probable shallow mine workings presents a potential risk as they are a potential source and pathway for ground gases, particularly given the often granular nature of the superficial deposits underlying the site based on the available BGS information and borehole records. The risk from ground gases including mine gases should be assessed as part of an appropriate Phase II Ground Investigation. The risk at this stage is considered to be **moderate**.

4.7 Other Mining Related Issues

The Coal Authority does not have any records of coal related fissures. An underground fault runs through the centre of the site (trending NW-SE); however, given the time since mining activities ceased in the coal seams identified to extend beneath the site, any further displacement along the fault related to coal mining is considered unlikely. Therefore, the risk from Coal Mining Geology is considered to the **low**.

The Coal Authority report indicates that the site is not in the vicinity of an opencast site from which coal has been extracted. Therefore, the risk from opencast mining is considered to be **low**.

4.8 Summary

A summary of the assessment of the risks detailed above is presented in the table below. A moderate risk or greater should be considered as requiring further investigation or remedial action.

Coal Mining Issue	Documented Issue	Risk Assessment
Recorded Coal Workings	Yes	Low
Unrecorded Coal Workings	No	High

Coal Mining Issue	Documented Issue	Risk Assessment
Recorded Mine Entries	No	Low
Unrecorded Mine Entries	No	Moderate
Coal Mining Geology (fissures)	No	Low
Mine Gas	No	Moderate
Recorded Coal Mining Surface Hazards	No	Low
Surface Mining (opencast workings)	No	Low

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Identified Coal Mining Issues

From the assessment carried out above, the risks from recorded historic coal mining activities are generally considered to be low, however a high risk is present from unrecorded features and a moderate risk has been assigned to potential mine gas emissions and unrecorded mine entries.

5.2 Recommendations

It is recommended that a series of rotary openholes to depths of 30 to 40m are drilled across the site to confirm or otherwise the presence of the coal seams or workings within the identified seam that dips beneath the subject site. It should be noted that a sufficient number of holes should be drilled to gain representative information on ground conditions, as typically within pillar and stall type workings up to 50-60% of the coal may remain intact.

Boreholes should be extended as necessary to ensure at least a 20m cover of rock is present above the potential workings from the Roger Seam.

In respect to mine gas, an appropriate ground gas monitoring programme should be incorporated into any Phase II Intrusive investigations at the site, with assessment of the data and recommendations for remedial measures, if any, based on current relevant guidance such as BS8485:2015+A1:2019. Shallow near surface wells, in addition to monitoring during treatment of the recorded shafts should suffice to comprise a ground gas assessment.

If any additional existing ground investigation data or information of past treatment of workings is known to be available, this should be provided to BSL, so this assessment can be revised.

Once information from boreholes is available, the mining risk should be re-assessed based on the available data by a suitably competent geotechnical engineer, such as BSL.

5.3 Remediation

If mine workings are found to be present underlying the site, the proposed new development may require treatment unless a suitable thickness of competent bedrock is encountered above the workings.

Appropriate geotechnical design will be necessary for the development, notwithstanding any potential stabilisation works required, if voiding/broken ground is encountered within influencing depth.

If workings are encountered that require treatment, the remedial works would be likely to comprise:

-
- Drilling and grouting of building footprints and highways / infrastructure as necessary.
 - Potential installation of geogrid reinforcement beneath any areas of hardstanding (i.e. car parks and walkways)
 - Investigation of any potential shaft features identified and treatment by filling and capping, if required.
-

Guidance on foundation, floor slab and pavement design in respect of mining stability is given in CIRIA C758 and CIRIA publication SP32 'Construction Over Abandoned Mineworkings', 'Structural Foundations Manual for Low Rise Buildings' (Atkinson) and the NCB publication, 'Subsidence Engineers Handbook'. Note it is generally desirable to limit stresses transferred to any grouted horizons to <160kN/m².

It is cautioned that colliery spoil can contain significantly elevated sulphur and sulphate concentrations leading to the formation of aggressive ground conditions for concrete in certain circumstances. 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.

If evidence of potential influence from mine entries or coal workings is identified during construction, BSL should be consulted to provide suitable recommendations for remedial measures, if required.

5.4 Compliance

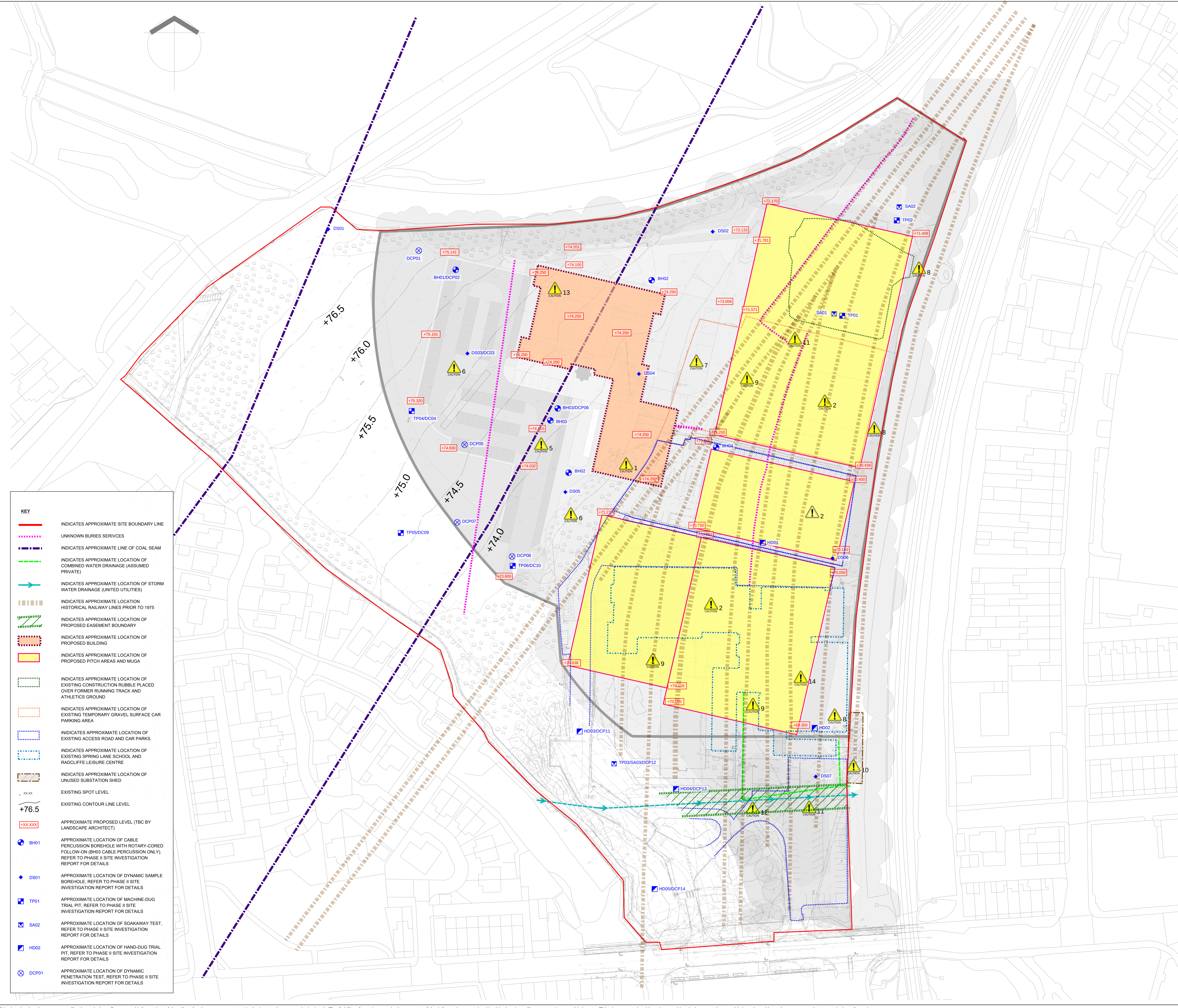
As part of the site lies within a High-Risk Development Area, the Coal Authority may be statutory consultee as part of the planning process or may be consulted by the Local Authority. The findings of this assessment should be confirmed with the Local Authority, and Coal Authority if necessary, prior to any irrevocable action at the site.

A permit will be required from the Coal Authority prior to commencement of any intrusive investigation that would disturb a coal seam or mine entries, including shafts and adits. This is unlikely to be required for a standard intrusive investigation for the proposed development as exploratory locations would not be expected to be advanced into bedrock.

6.0 REFERENCES

- Atkinson, M. F. Structural Foundations Manual for Low Rise Buildings. Second Edition. 2004.
- BRE. 2005. Concrete in aggressive ground. BRE Special Digest 1, 3rd Edition. BRE, Garston.
- CIRIA Special Publication SP32, PSA Civil Engineering Technical Guide 34, 'Construction over abandoned mine workings'. 1984.
- CIRIA C758 'Abandoned Mine Workings Manual'. 2019.
- National Coal Board. Subsidence Engineers' Handbook. Revised Edition. 1975.
- National Planning Policy Framework (NPPF) - Technical Guidance. March 2012.
- National Planning Policy Framework (NPPF). July 2018.

DRAWINGS



KEY

INDICATES APPROXIMATE SITE BOUNDARY LINE

UNKNOWN BURIES SERVICES

INDICATES APPROXIMATE LINE OF COAL SEAM

INDICATES APPROXIMATE LOCATION OF COMBINED WATER DRAINAGE (ASSUMED PRIVATE)

INDICATES APPROXIMATE LOCATION OF STORM WATER DRAINAGE (UNITED UTILITIES)

INDICATES APPROXIMATE LOCATION HISTORICAL RAILWAY LINES PRIOR TO 1975

INDICATES APPROXIMATE LOCATION OF PROPOSED EASEMENT BOUNDARY

INDICATES APPROXIMATE LOCATION OF PROPOSED BUILDING

INDICATES APPROXIMATE LOCATION OF PROPOSED PITCH AREAS AND MUGA

INDICATES APPROXIMATE LOCATION OF EXISTING CONSTRUCTION RUBBLE PLACED OVER FORMER RUNNING TRACK AND ATHLETICS GROUND

INDICATES APPROXIMATE LOCATION OF EXISTING TEMPORARY GRAVEL SURFACE CAR PARKING AREA

INDICATES APPROXIMATE LOCATION OF EXISTING ACCESS ROAD AND CAR PARKS

INDICATES APPROXIMATE LOCATION OF EXISTING SPRING LANE SCHOOL AND RADCLIFFE LEISURE CENTRE

INDICATES APPROXIMATE LOCATION OF UNUSED SUBSTATION SHED

EXISTING SPOT LEVEL

EXISTING CONTOUR LINE LEVEL

APPROXIMATE PROPOSED LEVEL (TBC BY LANDSCAPE ARCHITECT)

BH01
APPROXIMATE LOCATION OF CABLE PERCUSSION BOREHOLE WITH ROTARY-CORED FOLLOW-ON (BH03 CABLE PERCUSSION ONLY). REFER TO PHASE II SITE INVESTIGATION REPORT FOR DETAILS

DS01
APPROXIMATE LOCATION OF DYNAMIC SAMPLE BOREHOLE, REFER TO PHASE II SITE INVESTIGATION REPORT FOR DETAILS

TP01
APPROXIMATE LOCATION OF MACHINE-DUG TRIAL PIT, REFER TO PHASE II SITE INVESTIGATION REPORT FOR DETAILS

SA02
APPROXIMATE LOCATION OF SOAKAWAY TEST, REFER TO PHASE II SITE INVESTIGATION REPORT FOR DETAILS

HD02
APPROXIMATE LOCATION OF HAND-DUG TRIAL PIT, REFER TO PHASE II SITE INVESTIGATION REPORT FOR DETAILS

DCP01
APPROXIMATE LOCATION OF DYNAMIC PENETRATION TEST, REFER TO PHASE II SITE INVESTIGATION REPORT FOR DETAILS

GENERAL NOTES:

1. THIS DRAWING IS INTENDED TO OUTLINE THE KNOWN CIVIL AND STRUCTURAL ENGINEERING SITE CONSTRAINTS.

2. DO NOT SCALE FROM THIS DRAWING.

3. REFER TO THE FOLLOWING DOCUMENTS FOR FURTHER INFORMATION AND DETAILS:

- PHASE I GEO-ENVIRONMENTAL SITE ASSESSMENT REPORT REF: FS1013-GE0-XX-XX-T-G-0001-PHASE1DESKSTUDY-S5-P01
- ISSUE MAY 2022 BY GEOTECHNICS
- PHASE II GEO-ENVIRONMENTAL SITE ASSESSMENT REPORT REF: FS1013-GE0-XX-XX-T-G-0002-PHASE2-S5-P01
- ISSUE AUGUST 2022 BY GEOTECHNICS
- SITE TOPOGRAPHICAL SURVEY REF: FS1013-GNG-XX-XX-D-U-0002-TOPO_GPR_2D-S5-P01
- DRAWING NO. 42645_T1 ISSUED 21.01.2022 BY GREENHATCH GROUP
- UNDERGROUND UTILITY SURVEY REF: FS1013-GNG-XX-XX-D-U-0002-TOPO_GPR_2D-S5-P01
- DRAWING NO. 42645_UG ISSUED 21.01.2022 BY GREENHATCH
- PRELIMINARY ARCHITECT DRAWING FS 1013-AHR-V1-00-DR-A-20001_REV P01 ISSUED 05.06.2023 BY AHR ARCHITECTS LTD
- PRELIMINARY LANDSCAPE ARCHITECT DRAWING REF: 905-ALA-ZZ-ZZ-SK-L-0004 REVISION P01 ISSUED 30.06.2023 BY AREL LANDSCAPE ARCHITECTS LTD

CAUTION

1

ALL EXISTING BURIED SERVICES BELOW PROPOSED BUILDING TO BE IDENTIFIED AND GRUBBED OUT WITH EXCAVATIONS BACKFILLED WITH SUITABLE WELL-COMPACTED MATERIAL BEFORE COMMENCING CONSTRUCTION WORK.

CAUTION

2

ALL EXISTING FOUNDATIONS AND HARDSTANDING TO BE GRUBBED OUT WITH EXCAVATIONS BACKFILLED WITH SUITABLE WELL-COMPACTED MATERIAL PRIOR TO CONSTRUCTION OF NEW PITCHES AND MUGA.

CAUTION

3

AN ASBESTOS SURVEY CARRIED OUT BY ETON ENVIRONMENTAL GROUP IN MAY 2022 IDENTIFIED THE PRESENCE OF ASBESTOS WITHIN THE EXISTING BUILDINGS. THIS WILL NEED TO BE CAREFULLY REMOVED BY A SPECIALIST PRIOR TO DEMOLITION WORKS.

CAUTION

4

THE GPR SURVEY INDICATES SEVERAL BURIED SERVICES SERVING THE EXISTING BUILDINGS TO THE SOUTH OF THE SITE. ALL APPROPRIATE ALLOWANCES TO BE CONSIDERED FOR DECOMMISSIONING AND REMOVING BURIED SERVICES WHERE NECESSARY.

CAUTION

5

THE PHASE I AND II GEO-ENVIRONMENTAL SURVEYS HAVE INDICATED THE PRESENCE OF COAL BENEATH THE SITE. A MORE EXTENSIVE GROUND INVESTIGATION IS REQUIRED TO VALIDATE THE PRESENCE OF ANY SHALLOW MINE WORKINGS.

CAUTION

6

THE TOPOGRAPHICAL SURVEY SHOWS THAT THERE IS A 1.7M LEVEL DIFFERENCE FROM ONE SIDE OF THE SITE TO THE OTHER. A CUT-AND-FILL EXERCISE WILL NEED TO BE CARRIED OUT TO DETERMINE THE PROPOSED LEVELS FOR THE SITE.

CAUTION

7

THE GROUND INVESTIGATION REPORTS INDICATE HIGH GROUNDWATER LEVELS, WHICH ARE AS SHALLOW AS 0.85M BGL IN PLACES. RELATED RISKS INCLUDE INSTABILITY OF FOUNDATION EXCAVATIONS AND ADDITIONAL MEASURES BEING IMPLEMENTED IN THE DESIGN OF FOUNDATIONS AND GROUND SLABS TO RESIST UPLIFT. CONTRACTOR IS TO MAKE AN ADEQUATE ALLOWANCE FOR MANAGING THE GROUNDWATER DURING THE CONSTRUCTION STAGE.

CAUTION

8

AN OPERATIONAL TRAM LINE IS PRESENT DIRECTLY ADJACENT TO THE EAST SIDE OF THE SITE. THE CONTRACTOR IS TO PUT IN PLACE SUITABLE MEASURES FOR WORKING IN PROXIMITY TO THE TRAM LINE AND LIAISING WITH TGM WHERE NECESSARY.

CAUTION

9

THE HISTORICAL MAPS INDICATE RAILWAY LINES PREVIOUSLY RUNNING ACROSS THE SITE, WHERE ENCOUNTERED, THESE WILL NEED TO BE GRUBBED OUT WITH EXCAVATIONS BACKFILLED WITH SUITABLE WELL-COMPACTED MATERIAL.

CAUTION

10

PURPOSE AND OWNERSHIP OF SUB-STATION TO BE DETERMINED AND PROTECTION MEASURES PUT IN PLACE IF NECESSARY, DURING DEMOLITION/CONSTRUCTION WORKS.

CAUTION

11

LINE OF EXISTING DRAINAGE RUNS IS UNKNOWN. ADDITIONAL CCTV AND SOND SURVEYS TO BE CARRIED OUT TO DETERMINE WHERE THE DRAINAGE SITS UNDER THE SITE TO ALLOW FOR SUITABLE PROTECTION MEASURES TO BE IMPLEMENTED BY THE CONTRACTOR AND ENSURE THAT A NEW DRAINAGE CONNECTION IS FEASIBLE.

CAUTION

12

THE EASEMENT TO THE PUBLIC SEWER WILL NEED TO BE CONFIRMED WITH UNITED UTILITIES TO ENSURE THAT THE LANDSCAPE ARCHITECT'S PROPOSALS AND CONSTRUCTION METHODOLOGY WILL NOT IMPACT ON THE OPERATION OF THE SEWER.

CAUTION

13

EXISTING TREES TO BE REMOVED AS PART OF THE PROPOSED DEVELOPMENT. THE EFFECTS THAT THIS HAS ON THE GROUND WITHIN THE INFLUENCE ZONE ON THE PROPOSED FOUNDATIONS WILL NEED TO BE FACTORED INTO THE DESIGN.

CAUTION

14

EXISTING SUBSTATION WITHIN INSURE CENTRE CONTRACTOR WILL NEED TO DEVELOP METHODOLOGY TO ENSURE THAT THIS IS RETAINED AND KEPT IN OPERATION AFTER THE REST OF THE EXISTING BUILDING IS DEMOLISHED.

Rev

04.07.23

VN

PW

Rev

30.06.23

VN

PW

Rev

04.07.23

VN

PW

Rev

30.06.23

VN

PW

renaissance

Renaissance Associates Ltd
Carvers Warehouse
77 Dale Street
Manchester
M1 2HG

STAR RADCLIFFE ACADEMY

Working Title:

SITE CONSTRAINTS PLAN

FOR INFORMATION

Scale: 1:500

Project No: 2303-02

Project

Originator

Volume

Level

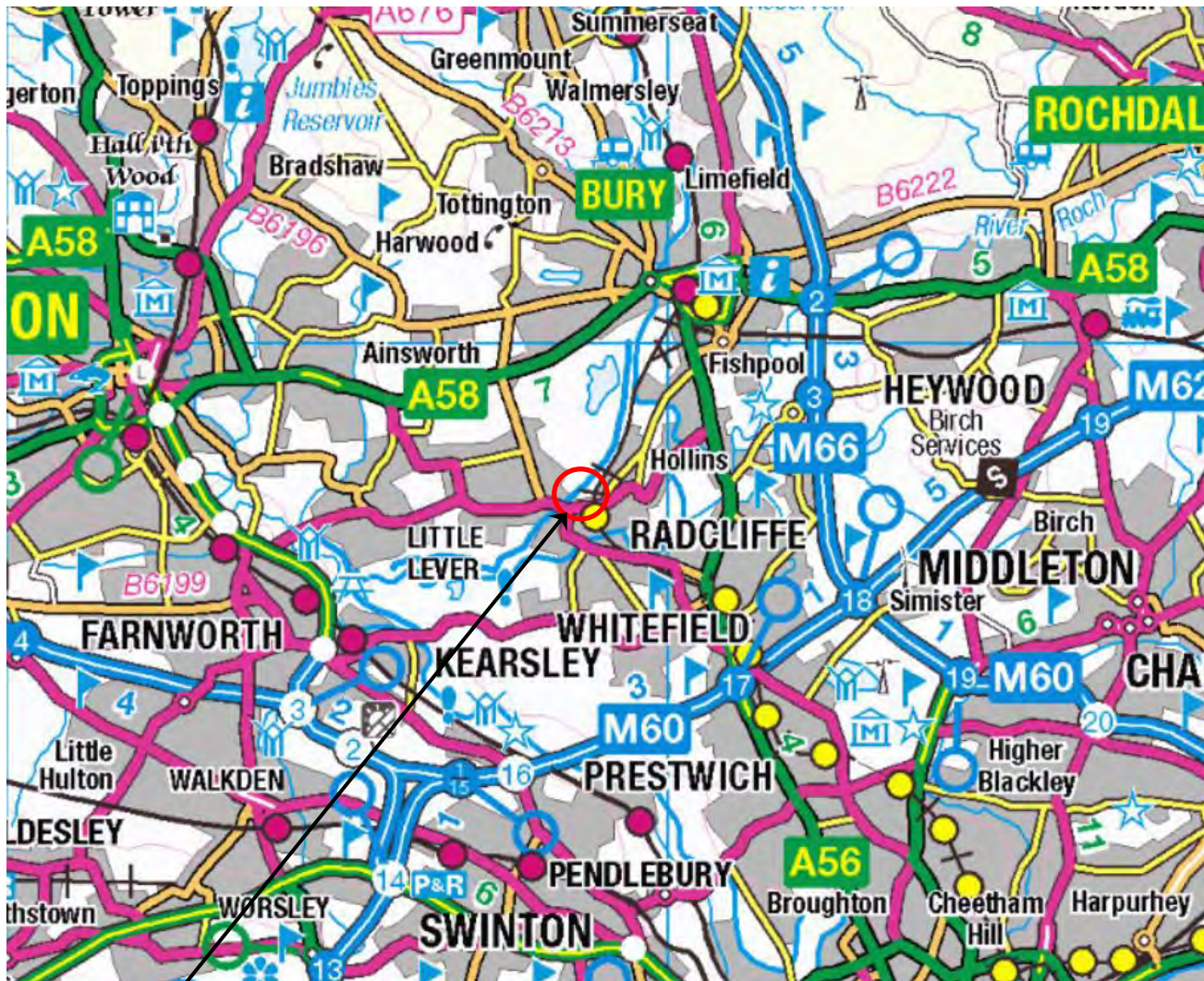
Type

Role

Category/Number

Rev

FS1013-REN-XX-XX-D-CS-5100-P02



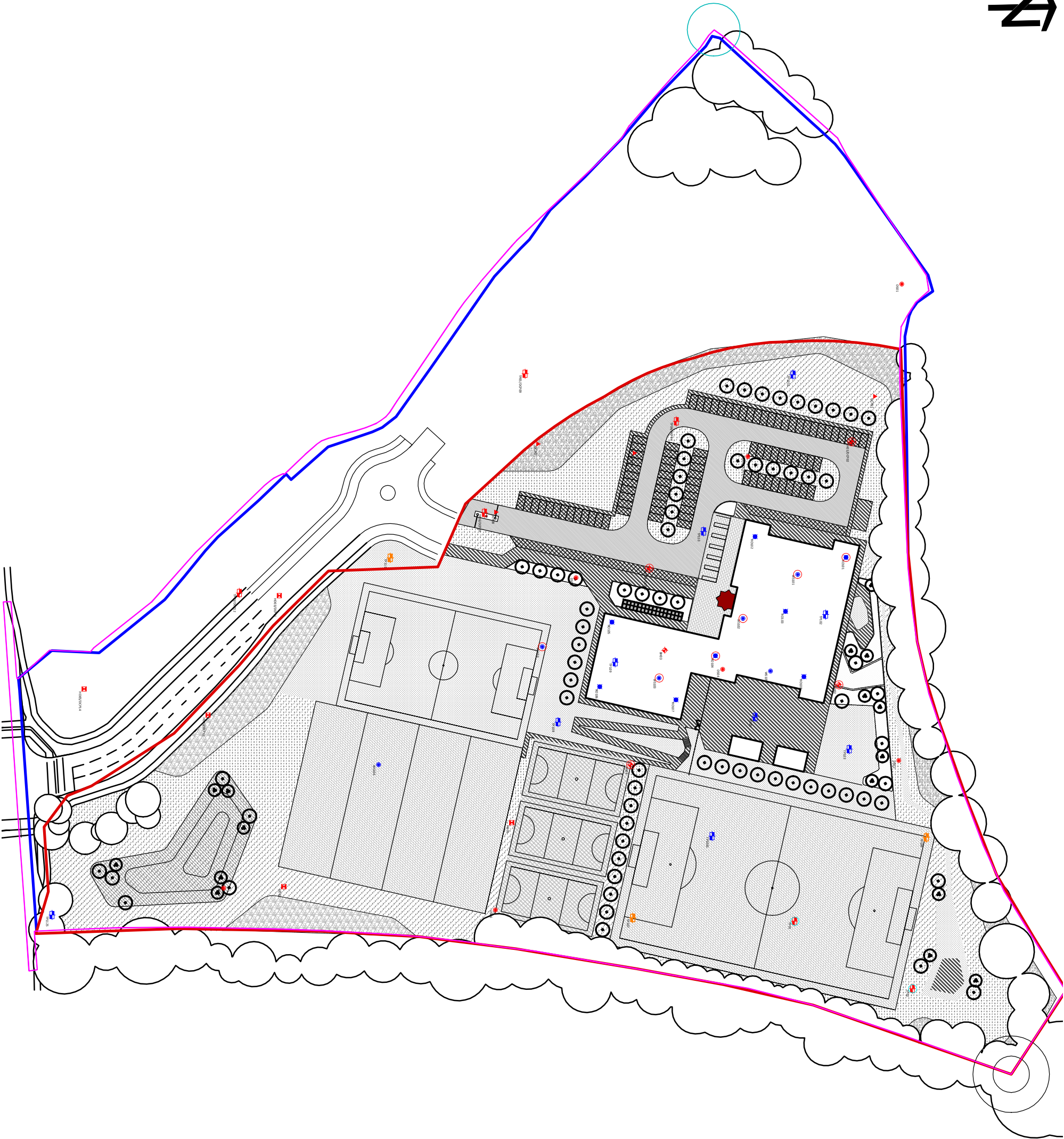
SITE LOCATION

NEAREST POSTCODE: M26 2SZ

SITE ENTRANCE WHAT3WORDS:
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REV	DATE	DESCRIPTION	BY	CKD
 BROWNFIELD SOLUTIONS LTD CLINICAL • ENVIRONMENTAL • NATURAL • ENGINEERING • DESIGN • SURVEY • LANDSCAPE				
CLIENT MORGAN SINDALL				
PROJECT TITLE STAR ACADEMY, RADCLIFFE, MANCHESTER				
DRAWING TITLE SITE LOCATION PLAN				
DRAWING No. C5394/01	REVISION -	SCALE NTS	DATE 16/06/23	
DRAWN BY SD		CHECKED BY PH		



KEY	
	APPROXIMATE SITE BOUNDARY
	TRIAL PIT
	WINDOW SAMPLE BOREHOLE
	ROTARY OPEN BOREHOLE
	BOREHOLE INSTALLATION
	ADDITIONAL TRIAL PIT
GEOTECHNICS (2022)	
	HAND EXCAVATED TRIAL PIT
	TRIAL PIT
	WINDOW SAMPLE BOREHOLE
	CABLE PERCUSSIVE/ROTARY CORE BOREHOLE
	PLATE LOAD TEST, LWD, TRL-DGP
	SOAKAWAY INFILTRATION TEST
	BOREHOLE INSTALLATION

NOTES

- ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE COMMENCING WORKS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT & ENGINEER FOR VERIFICATION. FIGURED DIMENSIONS ONLY ARE TO BE TAKEN FROM THIS DRAWING.
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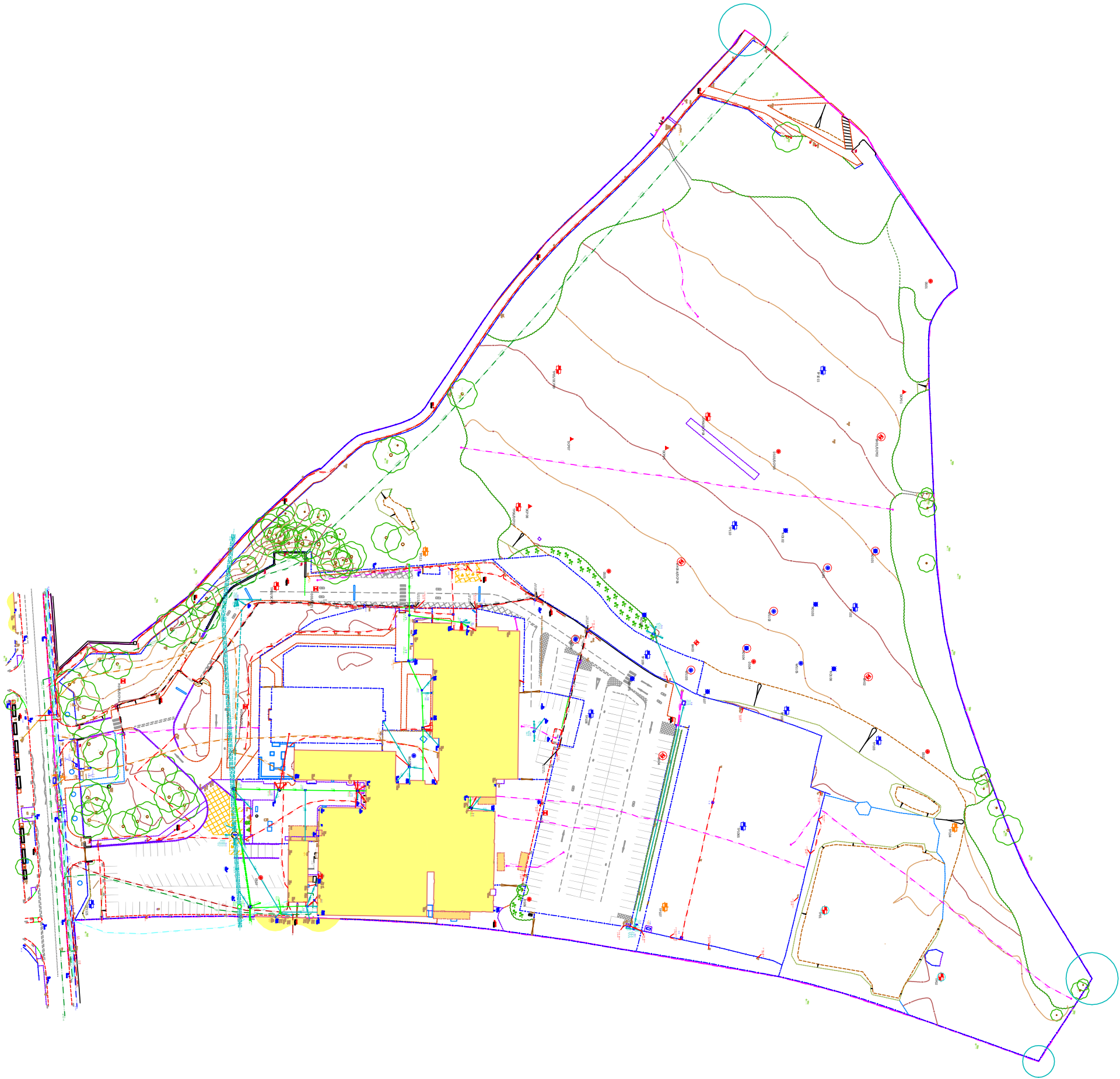


CLIENT
MORGAN SINDALL

PROJECT TITLE
STAR ACADEMY, RADCLIFFE

DRAWING TITLE
PROPOSED EXPLORATORY HOLE
LOCATION PLAN

DRAWING NO.	REVISION	SCALE	DATE
C5394/02	A	NTS	28/07/23
DRAWN BY PH	CHECKED BY NS		



KEY	
	APPROXIMATE SITE BOUNDARY
	TRIAL PIT
	WINDOW SAMPLE BOREHOLE
	ROTARY OPEN BOREHOLE
	BOREHOLE INSTALLATION
	ADDITIONAL TRIAL PIT

GEOTECHNICS (2022)	
	HAND EXCAVATED TRIAL PIT
	TRIAL PIT
	WINDOW SAMPLE BOREHOLE
	CABLE PERCUSSIVE/ROTARY CORE BOREHOLE
	PLATE LOAD TEST, LWD, TRL-DCP
	SOAKAWAY INFILTRATION TEST
	BOREHOLE INSTALLATION

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STAR ACADEMY, RADCLIFFE

DRAWING TITLE

PROPOSED EXPLORATORY HOLE
LOCATION PLAN

DRAWING NO.	REVISION	SCALE	DATE
CS394/02	A	NTS	28/07/23
DRAWN BY		CHECKED BY	
PH		NS	



KEY

- APPROXIMATE SITE BOUNDARY
- ✗ MINE SHAFT
- ▣ DEVELOPMENT HIGH RISK AREA
- PROBABLE SHALLOW COAL MINE WORKINGS
- ABANDONED MINES CATALOGUE
- SURFACE COAL RESOURCE AREA
- COAL OUTCROPS

REV	DATE	DESCRIPTION	BY	CKD

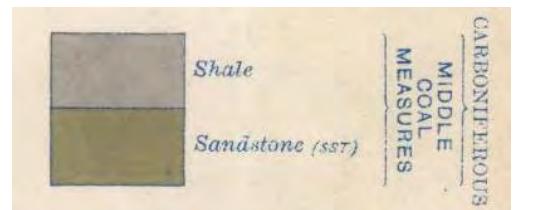
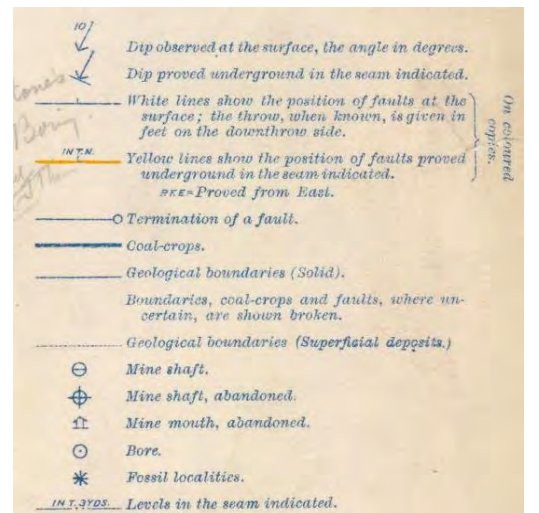
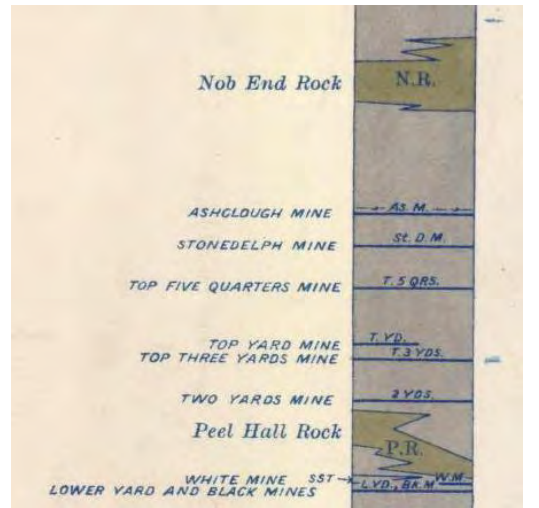


CLIENT			
MORGAN SINDALL			
PROJECT TITLE			
STAR ACADEMY, RADCLIFFE			
DRAWING TITLE			
COAL AUTHORITY INTERACTIVE MAP EXTRACT			
DRAWING No.	REVISION	SCALE	DATE
C5394/03	-	NTS	31/07/23
DRAWN BY		CHECKED BY	
PH		JM	



KEY

APPROXIMATE SITE BOUNDARY



REV	DATE	DESCRIPTION	BY	CKD



**BROWNFIELD
SOLUTIONS LTD**
GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

CLIENT

MORGAN SINDALL

PROJECT TITLE

STAR ACADEMY, RADCLIFFE

DRAWING TITLE

Geological Map Extract

DRAWING No. C5394/04	REVISION -	SCALE NTS	DATE 31/07/23
DRAWN BY PH		CHECKED BY JM	

APPENDIX A

BGS Boreholes

SD 70 NE 25

SECTION OF PIT AT WITHINS.

					Ft.	In.	Ft.	In.
1	Soil and gravel	...	...	...	8	0		
2	Marl	...	...	...	53	0		
3	Blue Rock	...	...	...	8	0		
4	Floor	...	...	...	1	2		
5	Blue Rock	...	...	...	5	9		
6	Floor	...	...	...	1	0		
7	Soft Rock	...	...	...	1	9		
8	Metal	...	...	...	8	0		
9	COAL	...	...	...		5		
10	Warrant	...	...	...	2	10		
11	Soft Rock	...	...	...	9	0		
12	COAL	...	...	...	1	1		
13	Warrant	...	...	...	2	5		
14	Rocky Warrant	...	...	...	1	4		
15	Rock	...	...	...	9	6		
16	Strong Metal...	...	...	...	4	0		
17	Slate Floor	...	...	...	1	2		
18	COAL	...	...	...	2	0		
19	Warrant	...	...	...	2	8		
20	Strong Rocky Warrant	...	...	...	3	6		
21	Strong Grey Metal	...	...	...	14	0		
	WHITE MINE							
22	COAL	...	...	...		3		
	Warrant	...	...	...	2	4		
	Dark Grey Metal	...	...	...		9		
	COAL	...	...	...	1	6		
23	Soft Doughing	...	...	...		6		
24	Warrant	...	...	...	3	4		
25	Rock Bands	...	...	...	4	9		
26	Rock	...	...	...	3	6		
27	Rock Bands	...	...	...	3	10		
28	Burr	...	...	...	1	0		
29	Flaggy Rock	...	...	...	4	7		
30	Strong Blue Metal	...	...	...	6	0		



SD 70 NE ³⁹ 25

(WITHINS, 2).

					Ft.	In.	Ft.	In.
31	Blue Metal	...	...	...	4	6		
32	Black Stone	...	...	...	1	4		
33	COAL	...	...	...	1	6		
34	COAL	...	...	...	1	6		
35	COAL	...	...	...		8		
36	Dirt	...	...	...				
37	COAL	...	...	...		4		
38	Warrant...	...	...	...	5	6		
39	RUBBISHY COAL...	...	...	...	1	0		
40	Warrant...	...	...	...		6		
41	Shale	...	...	...	2	6		
42	Warrant...	...	...	...	2	9		
43	BLACK MINE BASTARD COAL	...	...	...	1	1		
	White Earth	...	...	...		8		
	COAL	...	...	...	2	4		
44	Warrant	...	...	...	3	6		
45	Metal with balls	...	...	...	37	2		
46	Red Gritty Metal	...	...	...	12	3		
47	Rock	...	...	...	1	6		
48	Red Metal	...	...	...	1	8		
49	Red Rock	...	...	...	10	10		
50	COAL	...	...	...		1		
51	Warrant...	...	...	...	3	0		
52	Dark Rock Bands	...	...	...	3	0		
53	Strong Black Metal	...	...	...	1	2		
54	BASTARD COAL	...	...	...	1	2		
55	White Earth	...	...	...	2	4		
56	Dark Rock Band	...	...	...	4	6		
57	Hard Black Stone	...	...	...		9		
58	COAL	...	...	...	1	2		
59	White Earth	...	...	...	2	10		
60	Grey Metal and Balls	...	...	...	8	8		



SD 70 NE ²⁰25

(WITHINS, p. 3)

					Ft.	In.	Ft.	In.
61	COAL	...	...	...	2	2		
62	White Earth	...	...	...	1	0		
63	Grey Metal	...	...	...	12	10		
64	BASTARD COAL and Shale	...			1	6		
65	Grey Metal	...	...	...	3	0		
66	GINGHAM MINE							
	COAL	...	...	...	1	8		
	Dirt	...	...	...		3		
	COAL	...	...	...		8		
67	White Earth	...	...	...	2	6		
68	BASTARD COAL	...	...	...		2		
69	White Earth	...	...	...	1	6		
70	Grey Metal	...	...	...	6	4		
71	COAL	...	...	...		1		
72	Metal	...	...	...	3	8		
73	LITTLE MINE							
	COAL	...	...	...		6		
	Dirt	...	...	...		2		
	COAL	...	...	...	1	3		
74	Warrant...	...	...	...	1	6		
75	Rock	...	...	...	10	10		
76	Metal	...	...	...	7	7		
77	Rock	...	...	...	8	0		
78	Metal and Iron Bands	...			2	0		
79	Rock	...	...	...	17	9		
80	Metal and Iron Bands	...			1	6		
81	Burr	...	...	...	2	6		
82	Rock	...	...	...	3	0		
83	Metal and Iron Bands	...			11	6		
84	Dark Grey Metal	...	...		6	6		
85	Black Stone	...	...	...	6	9		
86	Dark Grey Metal	...	...		5	6		
87	Black Stone	...	...	...	6	8		
88	COAL	...	...	...	3	0		



SD 70 NE ⁹¹ 25

(WITHINS, p. 4)

					Ft.	In.	Ft.	In.
89	Warrant	...	...	...	3	0		
90	Grey Metal...	...	...	...	9	4		
91	Metal and Iron Bands	...	...	...	4	0		
92	White Earth	...	...	...	2	6		
93	Black Shale	...	...	...		6		
94	White Earth	...	...	...	18	4		
95	Black Shale	...	...	...	1	0		
96	Dark Strong Metal with Iron Bands	28				0		
97	Black Bass...	...	...	...		4		
98	Warrant	...	...	...	2	3		
99	Black Bass...	...	...	...	1	0		
100	BASTARD COAL	...	...	...		10		
101	Black Bass...	...	...	...		10		
102	Warrant	...	...	...	2	6		
103	BASTARD COAL	...	...	...		5		
104	Strong Metal	...	...	...		10		
105	Warrant	...	...	...	1	0		
106	Black Shale	...	...	...	1	4		
107	Warrant	...	...	...		9		
108	DOE MINE							
	COAL...	...	...	...	3	0		
	Dirt...	...	...	...		2		
	COAL...	...	...	...		6		
	Dirt...	...	...	...		2		
	COAL...	...	...	...	1	6		
	Dirt...	...	...	...		3		
	COAL...	...	...	...		4		
	Warrant	...	...	...	1	11		
	COAL...	...	...	...	2	6		
	Dirt...	...	...	...		7		
	COAL...	...	...	...		7		
109	Warrant	...	...	...	2	4		
110	Iron Bands...	...	...	...		10		
111	Black Shale	...	...	...	1	10		



SD70 NE ⁹²213

(WITHINS, p. 5.)

					Ft.	In.	Ft.	In.
112	FIVE QUARTERS MINE							
	COAL	...	...	...	1	2		
	Dirt	...	...	...		3		
	COAL	...	...	...	2	9		
113	Dark Warrant...	...	...	...	1	3		
114	Light Warrant	...	...	...	3	8		
115	Dark Soft Doughing...	...	...	...		4		
116	Dark Warrant	...	...	...	1	8		
117	Strong Grey Metal with Iron balls	...	...	...	12	0		
118	Warrant and Ironballs	...	...	...	5	6		
119	Strong Grey Metals with Ironballs	...	...	...	12	0		
120	Ironband	...	...	...		4		
121	Strong Grey Metal	...	...	...	8	6		
122	" " " with rock	...	...	...	6	0		
123	Strong Black Metal...	...	...	...	1	0		
124	Strong Black Binds...	...	...	...	3	0		
125	Burr	...	...	...	3	0		
126	Rock	...	...	...	21	2		
127	COAL	...	...	...		3		
128	Warrant	...	...	...	1	6		
129	Black Shale	...	...	...	1	4		
130	BASTARD COAL...	...	...	...	1	0		
131	Warrant	...	...	...	2	6		
132	Strong Grey Metal	...	...	...	3	6		
133	Black Stone	...	...	...	3	4		
	HELL HOLE MINE							
134	COAL	...	...	...	2	0		
135	Soft Warrant...	...	...	...	2	0		
136	Strong Warrant	...	...	...	4	3		
137	Strong Metal...	...	...	...	9	10		
138	Warrant and Ironballs	...	...	...	4	8		
139	Strong Grey Metal (Ironballs)	...	...	...	16	3		
140	Metal	...	...	...	6	7		



SD 70 NE ⁴³ 25

(WITHINS, p. 6).

					Ft.	In.	Ft.	In.
141	Strong Metal	...	...	...	7	6		
142	Warrant	...	...	...	2	3		
143	Shale	...	...	...	3	2		
144	COAL	...	...	...		3		
145	Soft Warrant	...	...	...	1	0		
146	Strong Metal with Ironstone...				7	6		
147	Doughing	...	...	...		9		
148	COAL	...	...	...		2		
149	Doughing	...	...	...		3		
150	COAL and Dirt	...	...	...		7		
151	COAL	...	...	...		7		
152	Warrant	...	...	...		9		
153	Grey Metal	...	...	...	1	6		
154	COAL	...	...	...		2		
155	Warrant	...	...	...	1	0		
156	Strong Grey Metal Ironstone...				16	2		
157	Warrant	...	...	...	3	0		
158	COAL	...	...	...	1	0		
159	Dirt	...	...	...		1		
160	COAL	...	...	...	1	0		
161	Warrant	...	...	...	7	0		
162	Strong Grey Metal	...	...	...	43	6		
163	D i t t o with Burr	...	...	...	8	0		
164	Grey Metal	...	...	...	9	2		
165	Doughing	...	...	...		4		
167	COAL TRENCHERBONE ? Only half way across shaft	...	...	...	1	8		
168	Faulty Broken Ground	...	...	...	9	9		
169	Dark Grey Stone...	...	...	...	11	3		
170	COAL	...	...	...		3		
171	Soft Warrant	...	...	...	1	0		
172	Soft Metal	...	...	...	15	0		

As original
Part ()
162 1645



SD 70 NE ⁹⁴25

(WITHINS, p. 7).

Ft. In. Ft. In.

DYE HOUSE MINE

173	COAL	...	...	...	...	3	
	Black Shale	...	...	...	2	4	
	BASTARD COAL	...	...	...	2	0	
	COAL	...	...	...	1	6	
174	Warrant...	...	...	...	1	6	
175	Strong Grey Metal	...	...	...	3	0	
176	Flaggy Rock	...	...	...	12	0	
177	Black Metal	...	...	...	6	0	
178	Warrant...	...	...	...	4	6	
179	Rock	...	...	...	1	4	
180	Strong Grey Metal	...	...	...	2	2	
181	Burr	...	...	...	2	0	
182	Metal	...	...	...	8	0	
183	Grey Metal	...	...	...	13	3	
184	Faulty Broken Ground	...	...	...	15	8	
185	Rock	...	...	...	6	3	
186	Metal	...	...	...	2	6	
187	Black Metal	...	...	...	4	6	
188	COAL	...	...	...		9	
189	Warrant...	...	...	...	1	0	
190	Strong Grey Metal	...	...	...	9	8	
191	Black Metal	...	...	...	2	4	
192	Soft Binn	...	...	...	1	0	
193	Rock	...	...	...	12	0	
194	Burr	...	...	...	2	9	
195	Rock	...	...	...	11	6	
196	Metal	...	...	...	1	0	
197	Rock	...	...	...	1	6	
198	Metal	...	...	...	4	0	
199	CANNEL MINE						
	COAL	...	...	...	2	3	
	Warrant	...	...	...		6	
	COAL	...	...	...	2	3	
	Warrant	...	...	...	1	2	
	COAL	...	...	...		4	



SD 70NE⁹⁵ 25

(WITHINS, p. 8)

						Ft.	In.	Ft.	In.
200	Warrant	...	...	...	...	1	6		
201	Strong Metal	...	...	...	...	1	6		
202	"	"	with Rock binds...			16	6		
203	Metal	...	...	...	...	5	6		
204	QUEEN COAL...	...	...	...	...	1	8		
205	Black Leys...	...	...	...	...	1	0		
206	Warrant	...	...	...	...	2	10		



SD70NE/25 Section drawn R.L.S.

SD 7897 0788

Lanes. 95-N.E. 12.

SD70/161

SD70/

SECTION OF PIT AT WITHINS.

					Ft.	In.	Ft.	In.
1	Soil and gravel	...	...	...	8	0		
2	Marl	...	...	...	53	8		
3	Blue Rock	...	...	...	8	0		
4	Floor	...	...	...	1	2		
5	Blue Rock	...	...	...	5	9		
6	Floor	...	...	...	1	0		
7	Soft Rock	...	...	...	1	9		
8	Metal	...	...	...	8	0		
9	COAL	...	...	...		5		
10	Warrant	...	...	...	2	10		
11	Soft Rock	...	...	...	9	0		
12	COAL	...	...	...	1	1		
13	Warrant	...	...	...	2	5		
14	Rocky Warrant	...	...	...	1	4		
15	Rock	...	...	...	9	6		
16	Strong Metal...	...	...	...	4	0		
17	Slate Floor	...	...	...	1	2		
18	COAL	...	...	...	2	0		
19	Warrant	...	...	...	2	8		
20	Strong Rocky Warrant	...	...	...	3	6		
21	Strong Grey Metal	...	...	...	14	0		
	WHITE MINE							
22	COAL	...	...	...		3		
	Warrant	...	...	...	2	4		
	Dark Grey Metal	...	...	...		9		
	COAL	...	...	...	1	6		
23	Soft Doughing	...	...	...		6		
24	Warrant	...	...	...	3	4		
25	Rock Bands	...	...	...	4	9		
26	Rock	...	...	...	3	6		
27	Rock Bands	...	...	...	3	10		
28	Burr	...	...	...	1	0		
29	Flaggy Rock	...	...	...	4	7		
30	Strong Blue Metal	...	...	...	6	0		



(WITHINS, 2).

Ft. In. Ft. In.

31	Blue Metal	...	...	...	4	6
32	Black Stone	...	...	...	1	4
33	COAL	...	...	...	1	6
34	COAL	...	...	...	1	6
35	COAL	...	...	...		8
36	Dirt	...	...	...		
37	COAL	...	...	...		4
38	Warrant...	...	...	...	5	6
39	RUBBISHY COAL...	...	...	...	1	0
40	Warrant...	...	...	...		6
41	Shale	...	...	...	2	6
42	Warrant...	...	...	...	2	9
43	BLACK MINE BASTARD COAL	...	...	...	1	1
	White Earth	...	...	...		8
	COAL	...	...	...	2	4
44	Warrant	...	...	...	3	6
45	Metal with balls	...	...	...	37	2
46	Red Gritty Metal	...	...	...	12	3
47	Rock	...	...	...	1	6
48	Red Metal	...	...	...	1	8
49	Red Rock	...	...	...	10	10
50	COAL	...	...	...		1
51	Warrant...	...	...	...	3	0
52	Dark Rock Bands	...	...	...	3	0
53	Strong Black Metal	...	...	...	1	2
54	BASTARD COAL	...	...	...	1	2
55	White Earth	...	...	...	2	4
56	Dark Rock Band	...	...	...	4	6
57	Hard Black Stone	...	...	...		9
58	COAL	...	...	...	1	2
59	White Earth	...	...	...	4	10
60	Grey Metal and Balls	...	...	...	8	8



(WITHINS, p. 3)

SD70/162
SD76

					Ft.	In.	Ft.	In.
61	COAL	...	...	...	2	2		
62	White Earth	...	...	...	1	0		
63	Grey Metal	...	...	...	12	10		
64	BASTARD COAL and Shale	...			1	6		
65	Grey Metal	...	...	...	3	0		
66	GINGHAM MINE							
	COAL	...	...	...	1	8		
	Dirt	...	...	...		3		
	COAL	...	...	...		8		
67	White Earth	...	...	...	2	6		
68	BASTARD COAL	...	...	...		2		
69	White Earth	...	...	...	1	6		
70	Grey Metal	...	...	...	6	4		
71	COAL	...	...	...		1		
72	Metal	...	...	...	3	8		
73	LITTLE MINE							
	COAL	...	...	...		6		
	Dirt	...	...	...		2		
	COAL	...	...	...	1	3		
74	Warrant...	...	...	...	1	6		
75	Rock	...	...	...	10	10		
76	Metal	...	...	...	7	7		
77	Rock	...	...	...	8	0		
78	Metal and Iron Bands	...			2	0		
79	Rock	...	...	...	17	9		
80	Metal and Iron Bands	...			1	6		
81	Burr	...	...	...	2	6		
82	Rock	...	...	...	3	0		
83	Metal and Iron Bands	...			11	6		
84	Dark Grey Metal	...	...		6	6		
85	Black Stone	...	...	...	6	9		
86	Dark Grey Metal	...	...		5	6		
87	Black Stone	...	...	...	6	8		
88	COAL	...	...	...	3	0		



(WITHINS, p. 4)

SD70/12
161
SD

					Ft.	In.	Ft.	In.
89	Warrant	...	...	...	3	0		
90	Grey Metal...	...	...	...	9	4		
91	Metal and Iron Bands	...	...	...	4	0		
92	White Earth	...	...	...	2	6		
93	Black Shale	...	...	...		6		
94	White Earth	...	...	...	18	4		
95	Black Shale	...	...	...	1	0		
96	Dark Strong Metal with Iron Bands	28				0		
97	Black Bass...	...	...	...		4		
98	Warrant	...	...	...	2	3		
99	Black Bass...	...	...	...	1	0		
100	BASTARD COAL	...	...	...		10		
101	Black Bass...	...	...	...		10		
102	Warrant	...	...	...	2	6		
103	BASTARD COAL	...	...	...		5		
104	Strong Metal	...	...	...		10		
105	Warrant	...	...	...	1	0		
106	Black Shale	...	...	...	1	4		
107	Warrant	...	...	...		9		
108	DOE MINE							
	COAL...	...	...	...	3	0		
	Dirt...	...	...	...		2		
	COAL...	...	...	...		6		
	Dirt...	...	...	...		2		
	COAL...	...	...	...	1	6		
	Dirt...	...	...	...		3		
	COAL...	...	...	...		4		
	Warrant	...	...	...	1	11		
	COAL...	...	...	...	2	6		
	Dirt...	...	...	...		7		
	COAL...	...	...	...		7		
109	Warrant	...	...	...	2	4		
110	Iron Bands...	...	...	...		10		
111	Black Shale	...	...	...	1	10		

(WITHINS, p. 5.)

12
SD 70161
SD

					Ft.	In.	Ft.	In.
112	FIVE QUARTERS MINE							
	COAL	...	...	...	1	2		
	Dirt	...	...	...		3		
	COAL	...	...	...	2	9		
113	Dark Warrant...	...	...		1	3		
114	Light Warrant	...	...		3	8		
115	Dark Soft Doughing...	...				4		
116	Dark Warrant	...	...		1	8		
117	Strong Grey Metal with Iron balls				12	0		
118	Warrant and Ironballs	...			5	6		
119	Strong Grey Metals with Ironballs				12	0		
120	Ironband	...	...	...		4		
121	Strong Grey Metal	...	...		8	6		
122	" " " with rock				6	0		
123	Strong Black Metal...	...			1	0		
124	Strong Black Binds...	...			3	0		
125	Burr	...	...	...	3	0		
126	Rock	...	...	...	21	2		
127	COAL	...	...	...		3		
128	Warrant	...	...	...	1	6		
129	Black Shale	...	...	...	1	4		
130	BASTARD COAL...	...	...		1	0		
131	Warrant	...	...	...	2	6		
132	Strong Grey Metal	...	...		3	6		
133	Black Stone	...	...	...	3	4		
	HELL HOLE MINE							
134	COAL	...	...	...	2	0		
135	Soft Warrant...	...	...		2	0		
136	Strong Warrant	...	...		4	3		
137	Strong Metal...	...	...		9	10		
138	Warrant and Ironballs	...			4	8		
139	Strong Grey Metal (Ironballs)				16	3		
140	Metal	...	...	...	6	7		

SD70/16/12
570

(WITHINS, p. 6).

					Ft.	In.	Ft.	In.
141	Strong Metal	...	...	...	7	6		
142	Warrant	...	...	...	2	3		
143	Shale	...	...	...	3	2		
144	COAL	...	...	...		3		
145	Soft Warrant	...	...	...	1	0		
146	Strong Metal with Ironstone...				7	6		
147	Doughing	...	...	...		9		
148	COAL	...	...	...		2		
149	Doughing	...	...	...		3		
150	COAL and Dirt	...	...	...		7		
151	COAL	...	...	...		7		
152	Warrant	...	...	...		9		
153	Grey Metal	...	...	...	1	6		
154	COAL	...	...	...		2		
155	Warrant	...	...	...	1	0		
156	Strong Grey Metal Ironstone...				16	2		
157	Warrant	...	...	...	3	0		
158	COAL	...	...	...	1	0		
159	Dirt	...	...	...		1		
160	COAL	...	...	...	1	0		
161	Warrant	...	...	...	7	0		
162	Strong Grey Metal	...	...	...	43	6		
163	D i t t o	with Burr	...	...	8	0		
164	Grey Metal	...	...	...	9	2		
165	Doughing	...	...	...		4		
167	COAL	TRENCHERBONE ?	...	...	1	8		
		Only half way across shaft						
168	Faulty Broken Ground	...	...	...	9	9		
169	Dark Grey Stone...	...	...	...	11	3		
170	COAL	...	...	...		3		
171	Soft Warrant	...	...	...	1	0		
172	Soft Metal	...	...	...	15	0		

As original
163 164 165



SD70/12
SD70

(WITHINS, p. 7).

					Ft.	In.	Ft.	In.
DYE HOUSE MINE								
173	COAL	...	...	...		3		
	Black Shale	...	...	...	2	4		
	BASTARD COAL	...	...	...	2	0		
	COAL	...	...	...	1	6		
174	Warrant...	...	...	...	1	6		
175	Strong Grey Metal	...	...	...	3	0		
176	Flaggy Rock	...	...	...	12	0		
177	Black Metal	...	...	...	6	0		
178	Warrant...	...	...	...	4	6		
179	Rock	...	...	...	1	4		
180	Strong Grey Metal	...	...	...	2	2		
181	Burr	...	...	...	2	0		
182	Metal	...	...	...	8	0		
183	Grey Metal	...	...	...	13	3		
184	Faulty Broken Ground	...	...	...	15	8		
185	Rock	...	...	...	6	3		
186	Metal	...	...	...	2	6		
187	Black Metal	...	...	...	4	6		
188	COAL	...	...	...		9		
189	Warrant...	...	...	...	1	0		
190	Strong Grey Metal	...	...	...	9	8		
191	Black Metal	...	...	...	2	4		
192	Soft Binn	...	...	...	1	0		
193	Rock	...	...	...	12	0		
194	Burr	...	...	...	2	9		
195	Rock	...	...	...	11	6		
196	Metal	...	...	...	1	0		
197	Rock	...	...	...	1	6		
198	Metal	...	...	...	4	0		
199	CANNEL MINE							
	COAL	...	...	...	2	3		
	Warrant	...	...	...		6		
	COAL	...	...	...	2	3		
	Warrant	...	...	...	1	2		
	COAL	...	...	...		4		



(WITHINS, p. 8)

SD70/161

						Ft.	In.	Ft.	In.
200	Warrant	...	...	...	...	1	6		
201	Strong Metal	...	...	...	...	1	6		
202	"	"	with Rock binds...			16	6		
203	Metal	...	...	...	...	5	6		
204	QUEEN COAL...	...	...	...	...	1	8		
205	Black Leys...	...	...	...	...	1	0		
206	Warrant	...	...	...	...	2	10	998	0

SD70

APPENDIX B

Mining Search



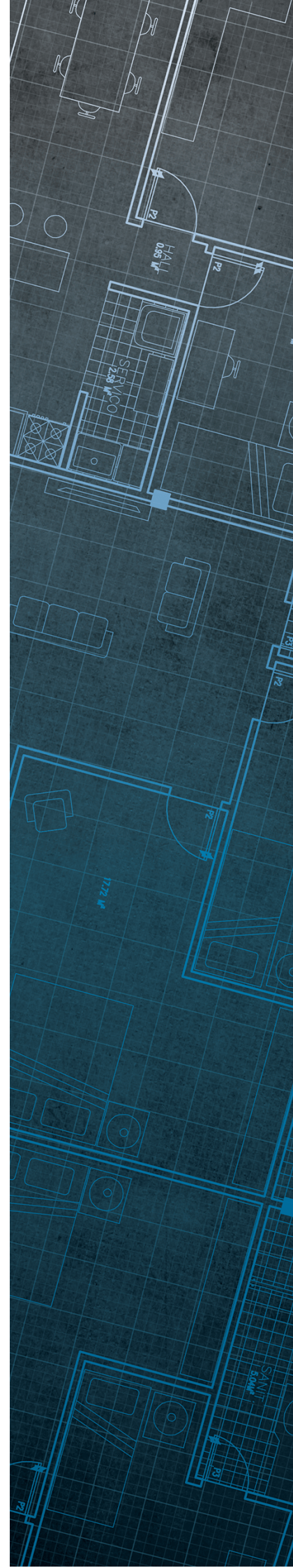
The Coal
Authority

Consultants Coal Mining Report

Spring Lane School
Spring Lane
Radcliffe
Bury
M26 2SZ

Date of enquiry:	17 July 2023
Date enquiry received:	17 July 2023
Issue date:	17 July 2023

Our reference:	51003367400001
Your reference:	C5394-4372-SD



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

BROWNFIELD SOLUTIONS LIMITED

Enquiry address

Spring Lane School
Spring Lane
Radcliffe
Bury
M26 2SZ

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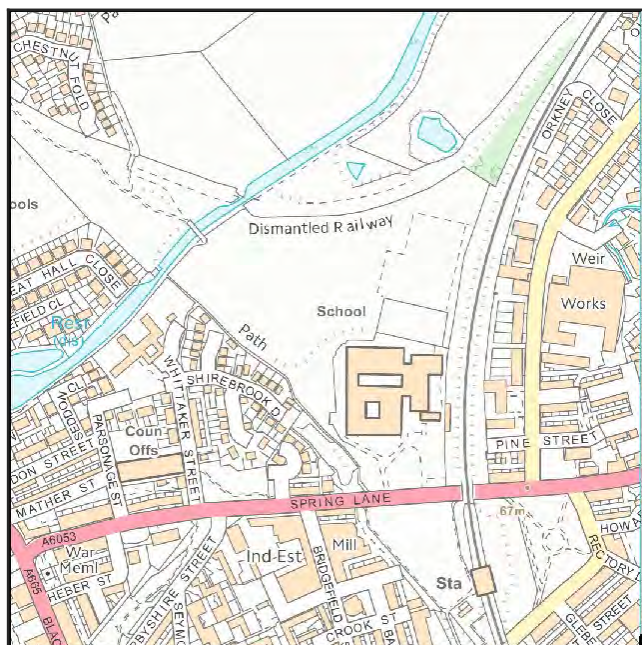
www.groundstability.com

 @coalauthority

 /company/the-coal-authority

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Approximate position of property



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Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	ROGER	Coal	3Z30	65	Beneath Property	9.5	South-East	190	1883
unnamed	RAMS	Coal	3YQV	96	Beneath Property	9.5	South-East	170	1880
unnamed	DOE	Coal	3YNK	141	Beneath Property	7.1	South-East	100	1887
unnamed	WIGAN FIVE FEET	Coal	3YR5	146	Beneath Property	8.9	South-East	120	1887
unnamed	DOE	Coal	3YN6	149	East	6.3	South-East	100	1887
unnamed	CANNEL	Coal	3YPB	258	Beneath Property	9.5	South-East	130	1893
unnamed	CANNEL	Coal	3Y50	265	North	9.5	South-East	130	1893

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	378407-005	378445 407657	Prior to the development of this site in 1973 this shaft had been unfilled and covered by a concrete slab sited at ground level. In the past the shaft had been used for the disposal of effluent by Radcliffe Paper Mills. Upon site development by Dennis Brandwood (Homes) Limited the shaft was filled and capped to an unknown specification to the requirements of the local authority	Coal	
Shaft	378407-007	378836 407535		Coal	

Abandoned mine plan catalogue numbers

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

7020	NW1060	NW1556
NW983	3001A	16820
3428A	2055	

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
INCE NEW	Coal	Yes	Within	N/A	34
PARK YARD	Coal	Yes	Within	N/A	31

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

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

Site investigations

None recorded within 50 metres of the enquiry boundary.

Remediated sites

None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence

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

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

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

Mine gas

None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

Section 3 – Licensing and future mining activity

Future underground mining

None recorded.

Coal mining licensing

None recorded within 200 metres of the enquiry boundary.

Court orders

None recorded.

Section 46 notices

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

Withdrawal of support notices

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

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

Payments to owners of former copyhold land

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

Section 4 – Further information

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

Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority.

MINE GAS: Please note, if there are no recorded instances of mine gas within 500m of the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

Development advice

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

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

Section 5 – Data definitions

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

Past underground coal mining

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

Probable unrecorded shallow workings

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

Spine roadways at shallow depth

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

Mine entries

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

Abandoned mine plan catalogue numbers

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

Outcrops

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

Geological faults, fissures and breaklines

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

Opencast mines

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

Coal Authority managed tips

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

Site investigations

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

Remediated sites

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

Coal mining subsidence

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

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

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

Mine gas

Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission. Please note, if there are no recorded instances of mine gas reported, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded.

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

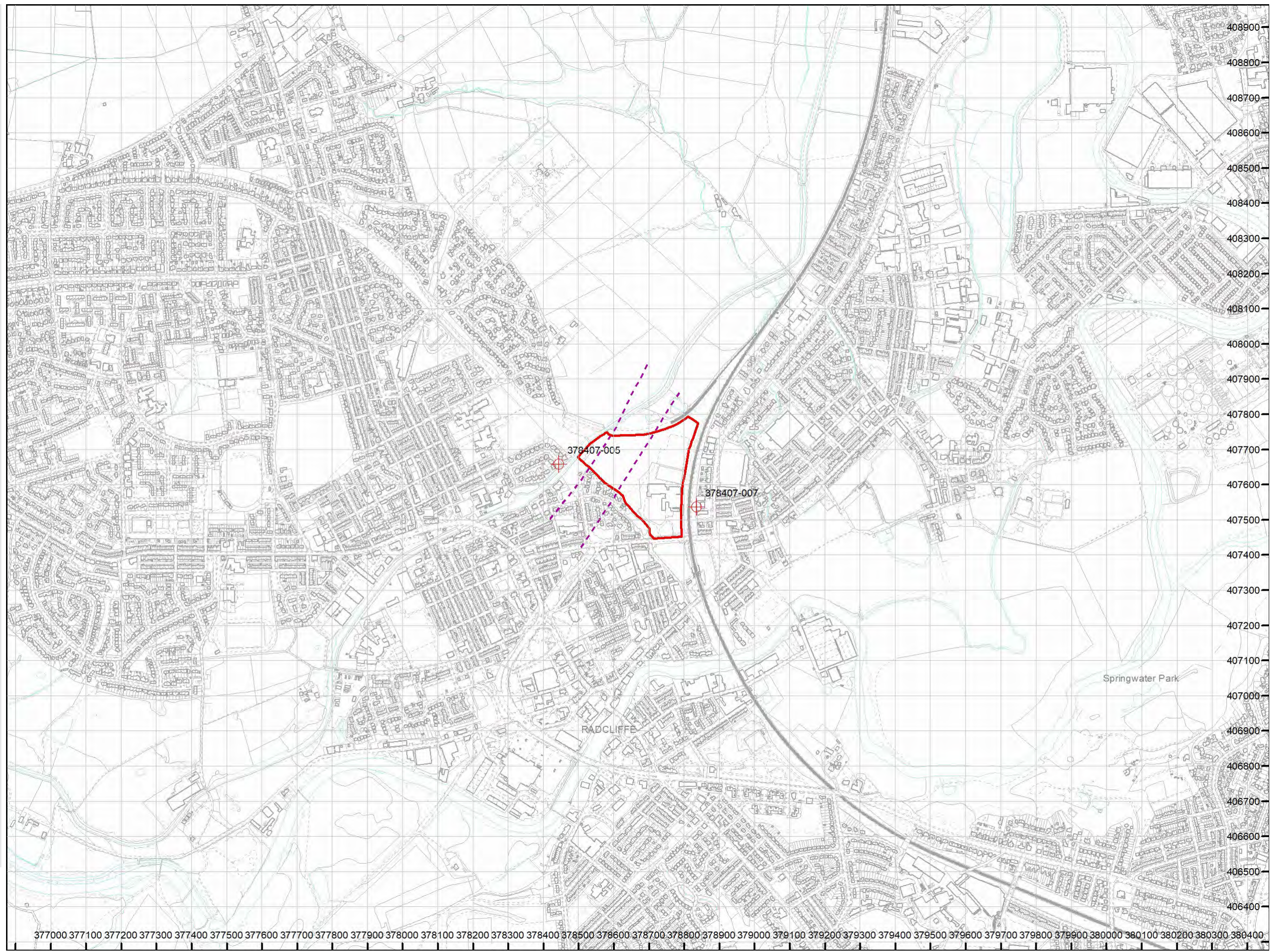
Disused mine shaft

Outcrop (Conjectured)







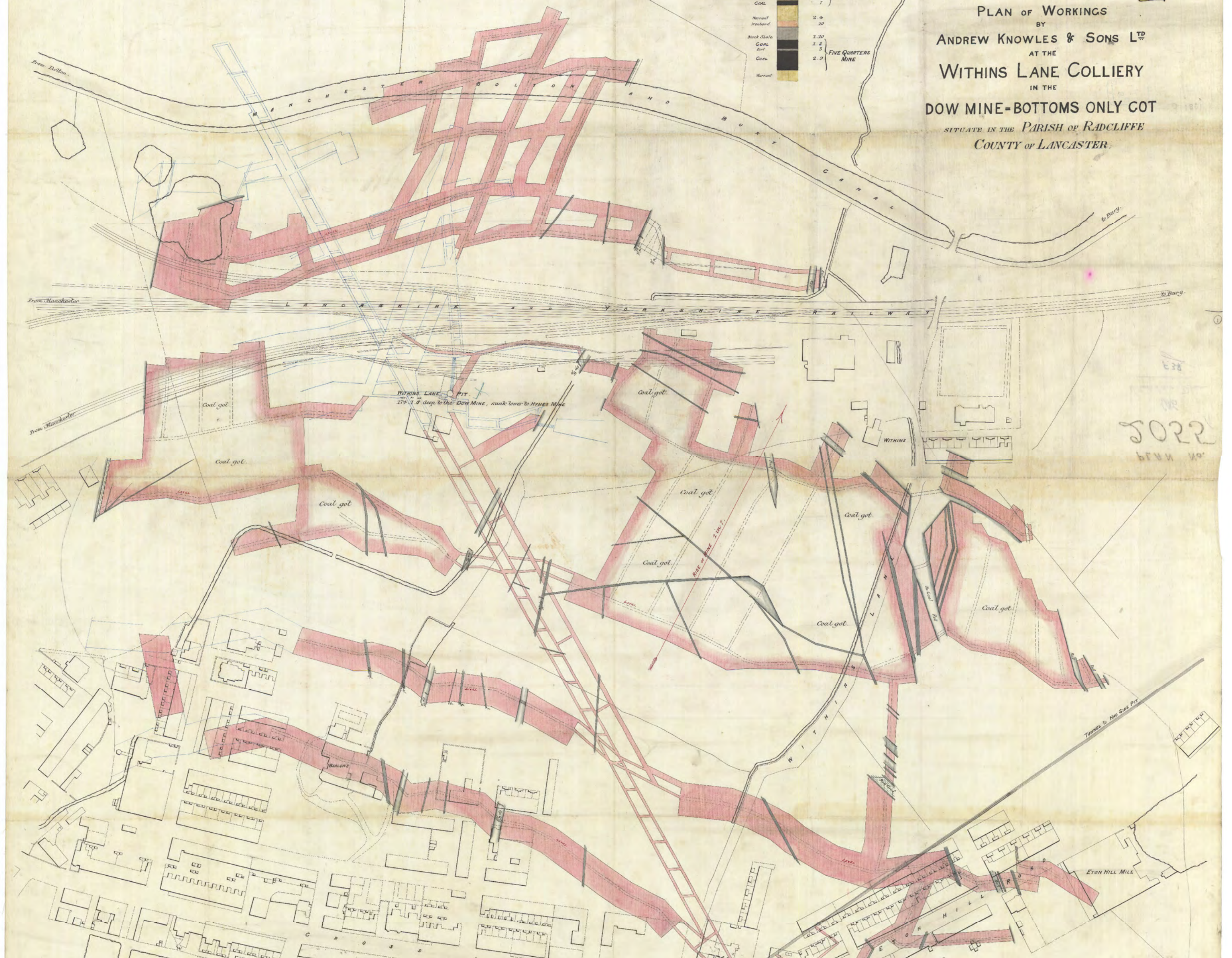


APPENDIX C

Abandonment Plans

PLAN OF WORKINGS
 BY
 ANDREW KNOWLES & SONS LTD
 AT THE
 WITHINS LANE COLLIERY
 IN THE
 DOW MINE-BOTTOMS ONLY COT
 SITUATE IN THE PARISH OF RADCLIFFE
 COUNTY OF LANCASTER

Warrant	1
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Warrant	100



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 6700 10°

PLAN OF WORKINGS
 BY
 ANDREW KNOWLES & SONS LTD
 AT THE
 WITHINS LANE COLLIERY
 IN THE
 FIVE QUARTERS MINE
 SITUATE IN THE PARISH OF RADCLIFFE
 COUNTY OF LANCASTER

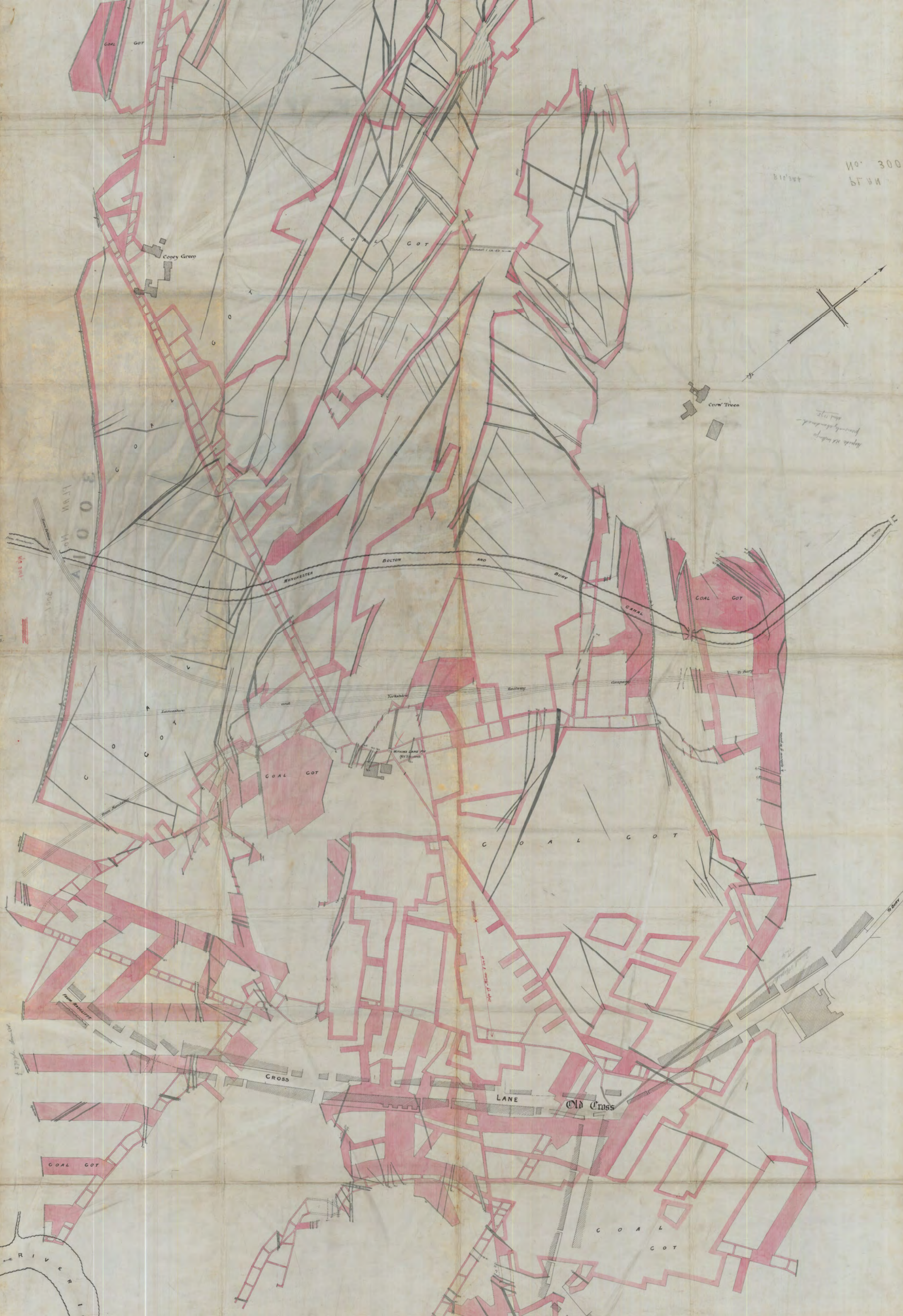
Working Coal	2.0
Coal	1.7
Harvest	2.5
Ironband	3.0
Black Shale	1.30
Coal	1.2
Dirt	0.5
Coal	2.9
Harvest	

FIVE QUARTERS MINE



5022
 6744 110

No. 3001
B.T.M.



WHITTAKER BRIDGE COLLIERY-RADCLIFFE-LANCASHIRE

NINE FEET MINE

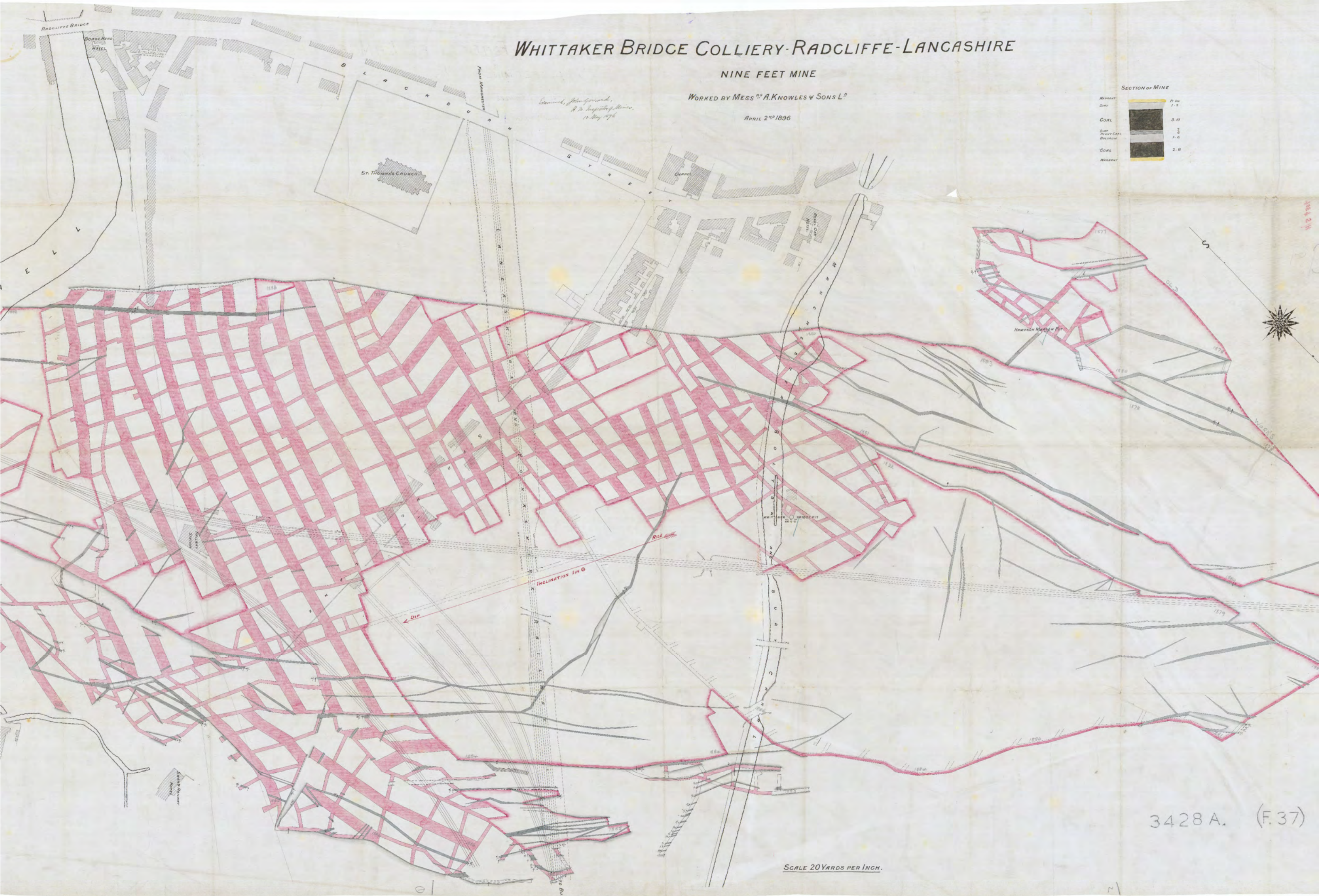
WORKED BY MESS^{RS} A. KNOWLES & SONS L^D

APRIL 2ND 1896

*Examined, John G. Ward,
R. D. Inspector, Lancs.,
13 May 1896*

SECTION OF MINE

WATER	1.0
DIRT	1.0
COAL	3.0
DIRT	1.0
DIRT	1.0
COAL	2.0
WATER	1.0



3428 A. (F.37)

SCALE 20 YARDS PER INCH.

WHITTAKER BRIDGE COLLIERY-RADCLIFFE-LANCASHIRE

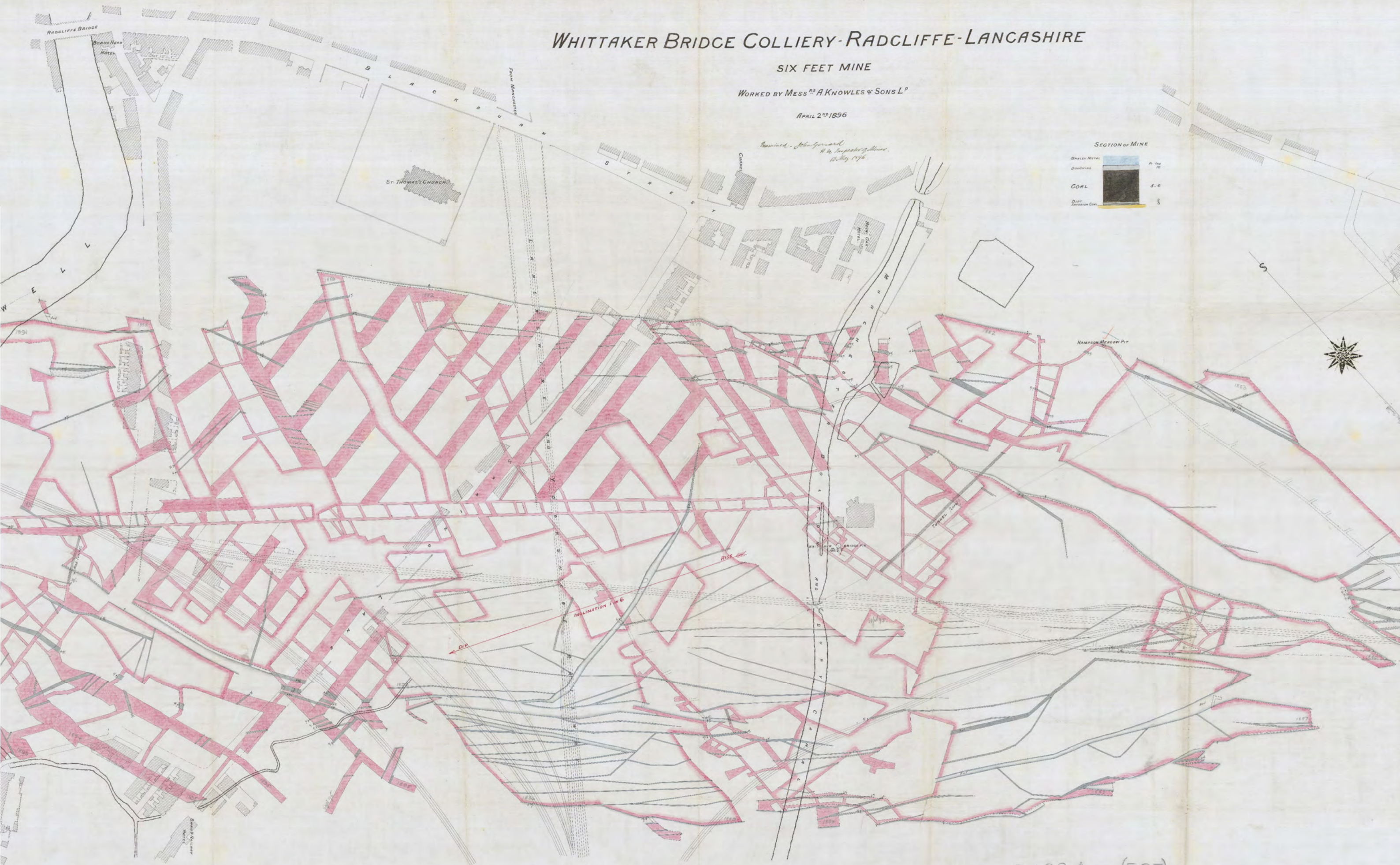
SIX FEET MINE

WORKED BY MESS^{RS} A KNOWLES & SONS L^D

APRIL 2ND 1896

*Revised - John G. Ward
H. W. Tompkins & Co.
13, May 1896*

SECTION OF MINE



3428 A. (F.37)

SCALE 20 YARDS PER INCH.

North West

**William Smith House
173 – 183 Witton Street
Northwich
Cheshire
CW9 5LP**

Tel: 01606 334 844

Midlands

**Unit 5, Alfred Court
Saxon Business Park
Stoke Prior
Bromsgrove
Worcestershire
B60 4AD**

Tel: 01215 729 014

www.brownfield-solutions.com

