



Coal Mining Risk Assessment

Rochdale Sixth Form College, Rochdale

October 2022

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Client Name: Waterman Structures Limited
Document Reference: WIE19085-100-R-5.1.3-CMRA
Project Number: WIE19085

Quality Assurance – Approval Status

This document has been prepared and checked in accordance with
Waterman Group's IMS (BS EN ISO 9001: 2015, BS EN ISO 14001: 2015 and BS EN ISO 45001:2018)

Issue	Date	Prepared by	Checked by	Approved by
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Comments

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Contents

1. Introduction	1
1.1 Site Location and Description	1
1.2 Proposed Development	1
1.3 Scope and Objectives of Report	1
1.4 Limitations	2
2. Sources of Information	3
3. Coal Mining Assessment	4
3.1 Historical Context	4
3.2 Geology	4
3.2.1 Artificial Ground	4
3.2.2 Superficial Geology	5
3.2.3 Bedrock	6
3.3 Coal Authority Mining Report	7
3.3.1 Past Underground Working	7
3.3.2 Probably recorded shallow workings, spine roadways and mine entries.	7
3.3.3 Abandoned Mine Plan Catalogues	8
3.3.4 Outcrops, Faults, Fissures, Breaklines, Opencast or Coal Authority Tips	8
3.3.5 Investigative or remedial activity	8
3.3.6 Licensing and future mining activity	8
3.4 Previous Ground Investigation	8
3.5 Coal Authority Interactive Map Viewer	9
3.6 Coal Seams Below Site	10
3.7 Summary	12
4. Identification and Assessment of Site-Specific Coal Mining Risks	13
5. Mitigation Strategy	14
5.1 Further Works	14
5.2 Coal Authority Permission	14

Figures

Figure 1: Excerpt from the Groundsure Report showing Artificial Ground	5
Figure 2: Excerpt from the Groundsure Report of the expected Superficial Deposits	6
Figure 3: Excerpt from the Groundsure Report of the expected Bedrock	7
Figure 4: Development High Risk Area (Coal Authority Interactive Map Viewer)	10
Figure 5: BGS Borehole Plan	11

Tables

Table 1:	Summary of Potential Risks Associated with Coal Mining Legacy	13
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Appendices

- A. Site Plans
- B. Coal Authority Consultant's Mining Report
- C. Historical Borehole Logs

1. Introduction

Waterman Infrastructure & Environment Ltd (WIE) have been commissioned by Waterman Structures Limited on behalf of Rochdale Sixth Form College to undertake a desk-based Coal Mining Risk Assessment at the proposed development site.

The site currently operates as a Sixth Form College, with the proposed development being an extension to the north of the existing building, on the current car park.

This report has been prepared in the format of a Coal Mining Risk Assessment, and in general accordance with the layout advocated by The Coal Authority, such that it will be suitable to support a planning application.

The site is located within close proximity to a Coal Mining “Development High Risk Area” and coal subcrop immediately to the northeast of the Site.

1.1 Site Location and Description

The Site is located at National Grid Reference SD 389238 413340, to the northwest of Rochdale town centre (hereafter “the Site”) and is shown on the Site Location Plan (ref: *WIE19085-105-GR-PRA-A1A*) in Appendix A.

The Site currently comprises a surface level car park and is roughly rectangular in shape and occupies approximately 0.4ha. The Site is typically flat and is covered in a macadam surfacing.

1.2 Proposed Development

It is proposed to redevelop the Site for an educational end use. The development proposals include construction of a new six-storey teaching block together with associated infrastructure and soft landscaping.

The proposed development layout ABW Architects Ltd. Drawing Ref: 3940_RSFC_Ground Floor GA Plan_DRAFT is included in Appendix A.

1.3 Scope and Objectives of Report

The purpose of this Coal Mining Risk Assessment Report is to:

- Present a desk-based review of all readily available information on the coal mining issues which are relevant to the Site;
- Use that information to identify and assess the risks to the proposed development from coal mining legacy, including the cumulative impact of issues;
- Set out appropriate mitigation measures to address any coal mining legacy issues affecting the Site, including any necessary remedial works and/or demonstrate how coal mining issues have influenced the proposed development; and,
- Demonstrate to the 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.

1.4 Limitations

The scope of this report is limited to assigning levels of risk associated with coal mining legacy, as informed by desk study review of information available at the time of writing and specifically listed within the report.

The report considers Shallow Coal Mining only. In accordance with current Coal Authority guidance, this is defined as lying at a depth of up to 10 times the thickness of coal seam extraction down to a maximum depth of 30 metres. Workings below this depth (deep mining) do not normally constitute a threat to surface stability, except in particular circumstances.

2. Sources of Information

The sources of information consulted in undertaking this study are listed below. Relevant reports or extracts are appended:

1. British Geological Survey (BGS) database of historical boreholes “GeolIndex” (<http://mapapps2.bgs.ac.uk/geoindex/home.html>) accessed September 2022);
2. British Geological Survey (BGS) map Rochdale Sheet 76 Bedrock edition (1:50,000) (2008);
3. British Geological Survey (BGS) map Rochdale Sheet 76 Bedrock and Superficial edition (1:50,000) (2008);
4. British Geological Survey (BGS) map Rochdale Sheet SD81SE (1:10,000) (2007);
5. Coal Authority Consultants Mining Report (Ref: 51003311848001, dated 15th September 2022);
6. Coal Authority Interactive Map Viewer (<http://mapapps2.bgs.ac.uk/coalauthority/home.html>) accessed September 2022;
7. Groundsure Enviro+Geoinsight 1:10,000 Geology Report (Ref: WTM1-8813133, dated June 2022);
8. Waterman Preliminary Environmental Risk Assessment (PERA) (Ref: WIE19085-105-R-1-1-3, June, 2022).

3. Coal Mining Assessment

3.1 Historical Context

Prior to the introduction of the Coal and Metalliferous Mines Regulation Acts in 1872, there was no legal requirement to record workings and it was only from as late as 1947 that records were considered as fully complete. Consequently, there is a legacy of 'unrecorded' workings within former coal field areas.

The first available map from 1848 (1:10,560 scale) indicates most of the Site was in use, until the 1960s, as Sunny Bank Mills (Cotton and Woollen), at which point the former buildings were cleared. The Site has been used for car parking since at least 1999. Between mapping from 1890 to 1930 the northern most corner of the Site was occupied by a Town Mill Dye Works. The River Roch is located to the east of the Site. The course of the River Roch was moved in the 1960s, such that the river now flows adjacent to the eastern site boundary.

A quarry was recorded on the 1890 (1:10,560 scale) maps approximately 450m to the east of the site. Although unspecified on the mapping it is thought that the quarry produced sands and gravels rather than being related to former opencast mining practices.

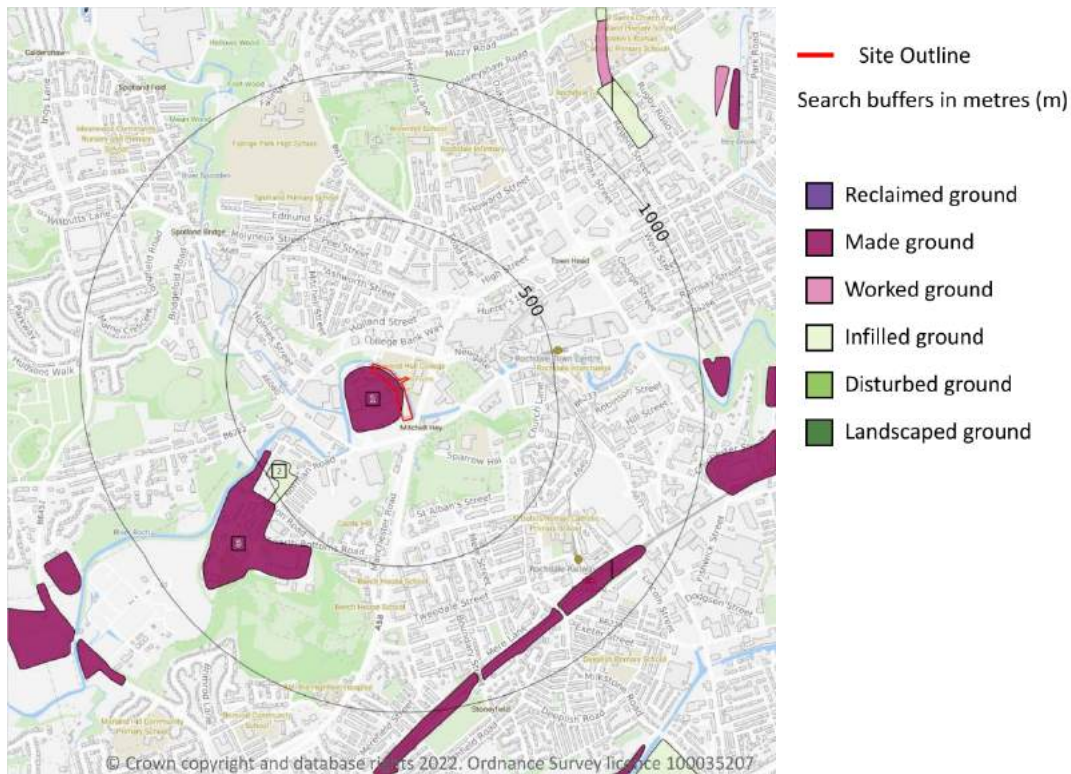
3.2 Geology

The anticipated geology has been inferred using the Groundsure 1:10,000 geology datasheet, BGS GeoIndex Database borehole records and the British Geological Survey (BGS) Sheet 76 Bedrock and Superficial Editions (1:50,000 scale) and BGS Sheet SD81SE Rochdale (1:10,000 scale).

3.2.1 Artificial Ground

The artificial ground 1:10,000 scale map (Figure 1) from the Groundsure Report indicates that the Site is partially underlain by Made Ground, most likely associated with the former industrial land usage.

Figure 1: Excerpt from the Groundsure Report showing Artificial Ground

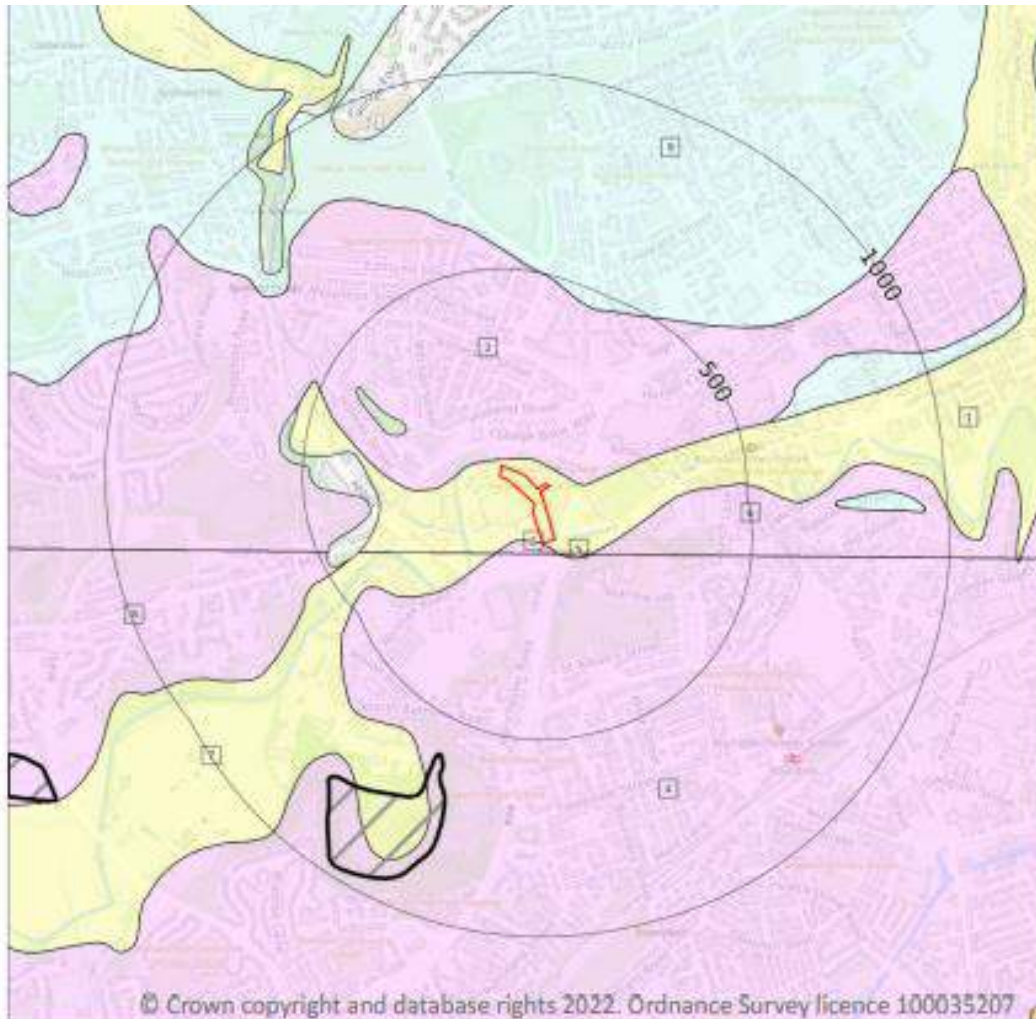


3.2.2 Superficial Geology

The Groundsure Report superficial deposits map (1:10,000 scale) indicates the site is wholly underlain by Alluvium, predominantly comprising clay, silt, sand and gravels. It is anticipated that the Alluvium is underlain by a layer of Glaciofluvial deposits comprised of sand and gravels.

It is noted that the Alluvium underlying the site generally follows the topographical lows associated with the route of the River Roch.

Figure 2: Excerpt from the Groundsure Report of the expected Superficial Deposits

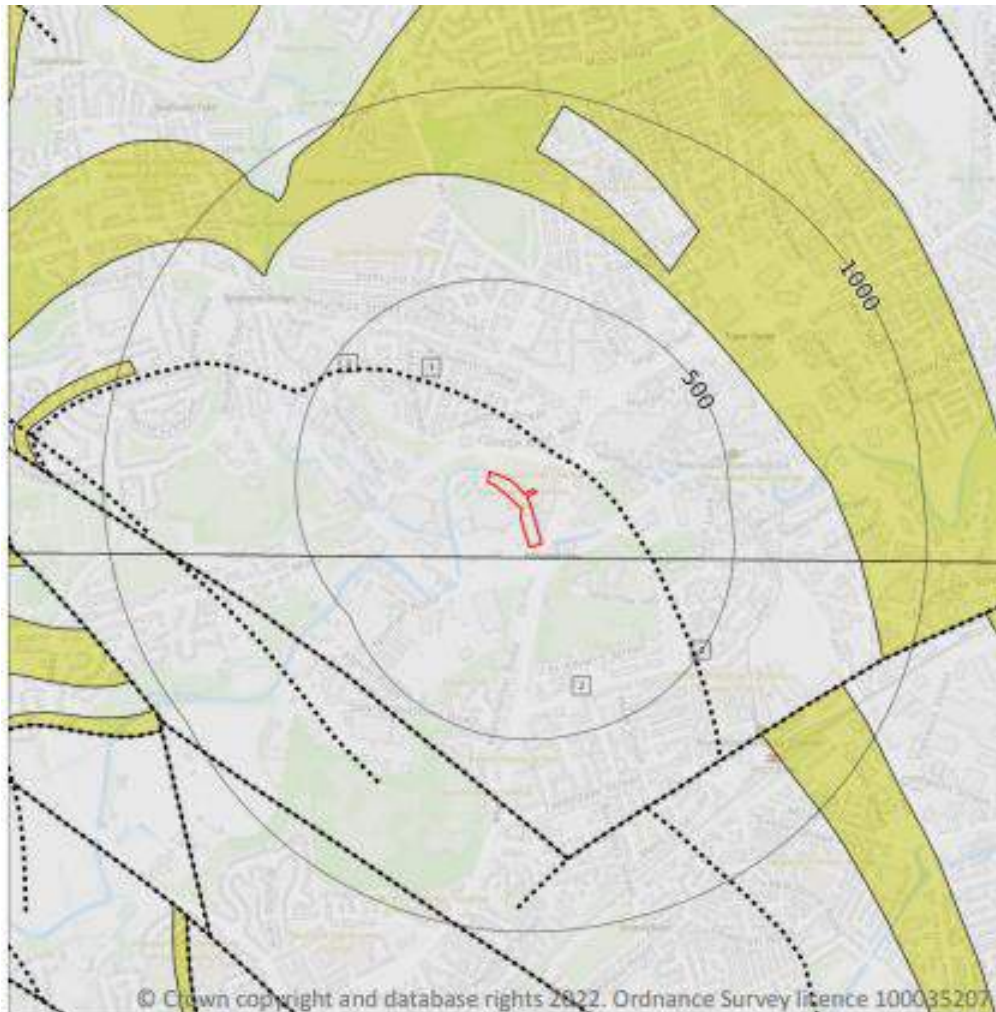


3.2.3 Bedrock

The Groundsure Report Bedrock map (1:10,000 scale) indicates the Site is wholly underlain by the Pennine Lower Coal Measures Formation, which is recorded as Interbedded grey mudstone, siltstone and pale grey sandstone, commonly with mudstones containing marine fossils in the lower part, and more numerous and thicker coal seams in the upper part.

No coal seam subcrops are recorded within the site boundary, however the Coal Authorities' online mapping tool indicates that the Arley Coal subcrops approximately 150m from the site's north eastern boundary. No geological faults are noted within the site boundary. 1No. fault is inferred within 500m of the Site, which is a normal fault approx. 109m to the northeast, trending northwest-southeast.

Figure 3: Excerpt from the Groundsure Report of the expected Bedrock



3.3 Coal Authority Mining Report

The entire site lies within a Coal Authority Reporting Area, therefore a Coal Authority Mining Report is required for new developments. A “Development High Risk” area is located immediately north and east of the Site and the Development High Risk Area is drawn where the Arley Coal is inferred to subcrop and be present at shallow depth below ground level. A Coal Mining Risk Assessment has been prepared for the Site. As part of this study, a Consultants Coal Mining Report has been procured.

A summary of the report is presented below, and a copy included within Appendix B:

3.3.1 Past Underground Working

The Coal Authority have confirmed that there was no past mining recorded on site.

3.3.2 Probably recorded shallow workings, spine roadways and mine entries.

No probable unrecorded shallow workings, spine roadways at shallow depths or mine entries are noted within 100m of the Site.

3.3.3 Abandoned Mine Plan Catalogues

The following Abandoned Mine Plan Catalogues are of relevance to the Site:

- 16820.

3.3.4 Outcrops, Faults, Fissures, Breaklines, Opencast or Coal Authority Tips

None are recorded.

3.3.5 Investigative or remedial activity

The Coal Authority confirmed that no site investigations or remediated sites are located with 50m of the site.

No coal mining subsidence is noted.

No instances of mine gas or mine water treatment schemes are recorded within 500m of the Site.

3.3.6 Licensing and future mining activity

No future underground mining or coal mining licensing is recorded within 200m of the Site.

No Court Orders, Section 46 Notices, withdrawal of support notices or payments to owners of former copyhold land are recorded.

3.4 Previous Ground Investigation

The following environmental report was provided with respect to the subject site:

- White Young Green Environmental Ltd. document “*Geo-Environmental Ground Investigation Interpretative Report, Rochdale 6th Form College, Rochdale Campus of Hopwood Hall College*”, Ref: E13212_RSFC_RC_SI_CEC_V1, Dated: February 2008.

The White Young Green ground investigation was primarily targeted at the area to the south east of the Site where the main Rochdale Sixth Form College building is located. The investigation included the drilling of 4No. window sample holes to between 0.6m bgl and 4.45m bgl, 1No. cable percussion borehole to 9.69m bgl and 1No. rotary open hole to 30m bgl. Chemical analysis was undertaken and 6No. rounds of gas and groundwater monitoring were completed following completion of the fieldwork. 2No. window sample holes, the cable percussion borehole and the rotary open hole were drilled at the south-eastern end of the Site. No investigation was undertaken in the western half of the Site.

Ground conditions were found to comprise up to 2m of Made Ground, approximately 1.5m of alluvium, up to 4.7m of Glacial Deposits and Bedrock from between 8.1m bgl and 8.5m bgl. The report notes a band of sandstone between 10.8 and 12.0mbgl; below this band the Pennine Lower Coal Measures were recorded as weak to strong thinly laminated interbedded fine and medium micaceous sandstone and very fine mudstone. The report also notes that ‘*no coals seams were identified within the depths investigated*’.

The Made Ground was found to be variable in composition, but was generally granular in nature. WS7, in the south eastern corner of the Site, was terminated at 0.6m bgl as a concrete obstruction was encountered. The hole was moved, however, WS7A also encountered a concrete obstruction at 0.6m bgl.

The Alluvium is described as very soft brown grey sandy gravelly Clay. Glacial Deposits comprising Glaciofluvial Deposits (Sand and Gravel) of brown grey silty sandy Gravel or grey Sand were

encountered in all holes, other than the rotary open hole. Glacial Till was encountered in all holes below the Glaciofluvial Deposits and generally comprised brown slightly gravelly sandy Clay.

The ground conditions encountered were generally in accordance with those anticipated from a review of the geological maps.

Groundwater strikes were recorded at variable depths (0.4m bgl to 16.9m bgl) during the ground investigation, within the Made Ground, Alluvium and Pennine Lower Coal Measures. Monitoring standpipes were installed in the Alluvium, with groundwater levels of between 1.03m bgl and 2.72m bgl being recorded at the south-eastern end of the Site during the monitoring period. It is considered likely that there is a continuous groundwater body present within the Alluvium and Glacial Deposits at shallow depths beneath the Site, and a deeper groundwater body within the Pennine Lower Coal Measures.

No visual or olfactory evidence of contamination was noted within the exploratory holes and a dual phase dip meter used during monitoring did not encounter any free product.

9No. soil samples were subjected to a suite of chemical analysis, which included metals, cyanides, pH, Total Petroleum Hydrocarbons (TPH), speciated Polyaromatic Hydrocarbons (PAHs), phenols and sulphates. 3No. samples were tested for Volatile Organic Compounds (VOCs) and Semi-Volatile Organic Compounds (SVOCs). 5No. samples were screened for the presence of asbestos. 1No. groundwater sample and 2No. surface water samples from the River Roch were subjected to chemical analysis.

The chemical test results for the site soils were screened against Tier 1 Screening Values for a commercial/industrial end use. None of the results exceeded the relevant Screening Values.

The chemical test results for the groundwater and surface water were screened against Tier 1 Screening Values based on Environmental Quality Standards (EQS). Exceedances for Barium, Selenium, Copper and Nitrite were recorded, however, White Young Green concluded that these exceedances could not be attributed to their wider site.

Very limited concentrations of methane and carbon dioxide, and low flow rates, were encountered during the monitoring and White Young Green therefore classified the Site as Characteristic Situation 1, in accordance with CIRIA C659 (which was later superseded by CIRIA C665). This differs from the information provided by Rochdale Borough Council Building Control. It is recommended that the inclusion of gas protection measures within the existing building is confirmed.

The report concluded that the Site posed a low risk to environmental receptors and considered it unlikely that regulators would require remediation to be completed.

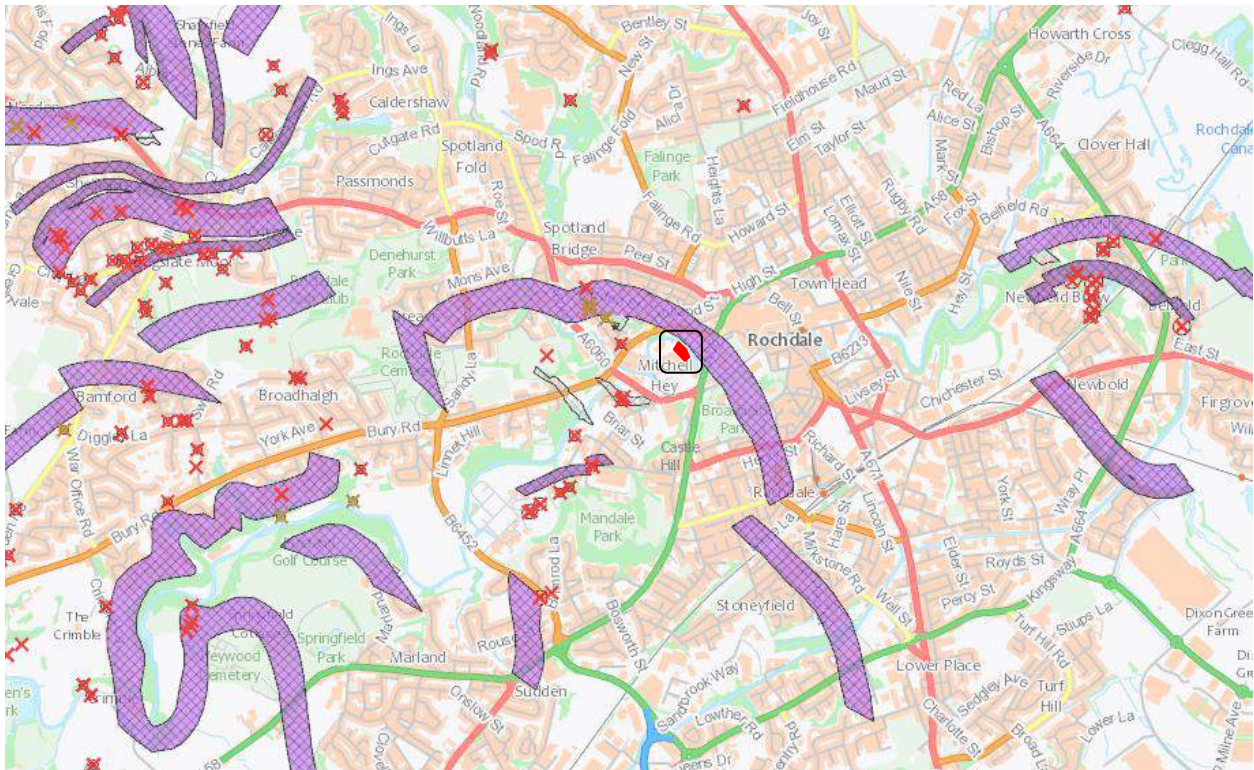
The report also recommended that further ground investigation was completed once structures existing at the time of the first phase of ground investigation were demolished. It is not clear whether this additional ground investigation was completed.

3.5 Coal Authority Interactive Map Viewer

The online Coal Authority Interactive Map Viewer indicates that the site is within a surface coal resource area, and within a coal mining reporting area. The Interactive Map Viewer also indicates the presence of a coal subcrop recorded to the north east of the Site.

An area defined as Development High Risk has been identified close to the site boundary and extending around 150m to the north east of the Site and generally corresponds to the area of probable shallow workings, as shown in Figure 4 below. Cross hatching designates the Development High Risk Area. The red mark indicates the Site location.

Figure 4: Development High Risk Area (Coal Authority Interactive Map Viewer)



3.6 Coal Seams Below Site

Data acquired from the BGS mapping and the Coal Authority shows an inferred subcrop of the Arley coal seam approximately 150m to the east / north-east of the site. The BGS 1:10,000 scale map does not record the dip of the seam, however there are several boreholes within proximity of the site that detail the local geology and have been used to infer a regional dip of the Arley coal seam. These boreholes are circled on Figure 5 below.

Borehole SD81SE14 (located 750m SW of the Arley coal seam subcrop) records the Arley Coal at a depth of 45.11m bgl. with a seam thickness of 600mm. Using spot levels from the 1:10,000 BGS map an approximate level for the borehole of 124mAOD and the inferred subcrop of 130mAOD gives the Arley coal a regional dip of 4 degrees to the south-west.

Based on the regional dip and differences in topography between the subcrop (130mAOD) and the site (118mAOD), located 150m to the south-west, the seam is expected to have been washed out and replaced by the superficial deposits recorded on the geological mapping, and hence are not recorded beneath the site. This is further supported by borehole SD81SE15 which is similarly located south-west of the coal subcrop at a lower topographical level and notes “Arley Mine passed in these measures”.

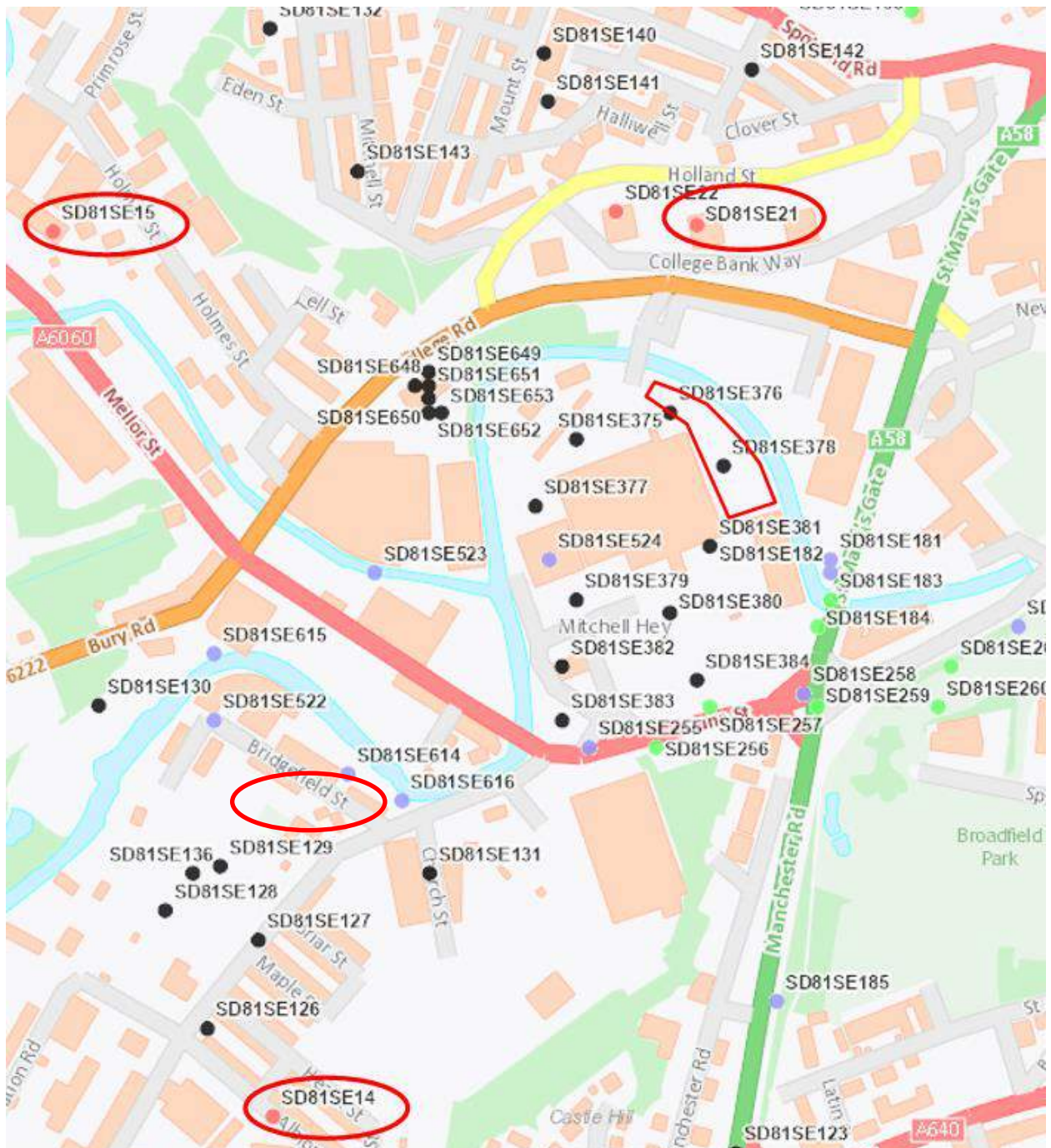
Borehole SD81SE21 is located slightly north of the inferred Arley coal subcrop and records the succession below the Arley coal seam as 13.41m of superficial drift deposits underlain by siltstone and mudstone beds, of the Pennine Lower Coal Mine Succession, down to a depth of 45.26m, onto 8.23m of micaceous siltstones and sandstones thought to represent the Riddle Scout Rock. The borehole log terminates at 64.77m bgl with no coal seams recorded within the succession; suggesting that aside from the absent Arley coal seam, no further seams should dip below the site within the top 60-70m of stratum.

Additionally, no coal was recorded within the WYG's ground investigation (discussed in Section 3.4) within boreholes BH3 and ROH3, which recorded stratum down to depths of 9.69m and 30.0m bgl respectively. As such it is considered that no coal seams are present within influencing distance of the surface that would prevent the development of the Site.

BGS 1:10,000 Scale mapping identifies the Dib Hole Coal underlying the Site. However, the seam has a recorded thickness of 0.1m and a depth of >50m below the Site.

All referenced borehole logs are shown within Appendix C.

Figure 5: BGS Borehole Plan



3.7 Summary

Whilst the Site is not within a Coal Authority High Risk Development Area, one is located immediately to the north-east of the Site. The Coal Authority Consultants Coal Mining Report notes the Site is not located in an area with probable unrecorded mine workings and with a combination of BGS mapping, historical borehole data and on-site ground investigation records it is considered unlikely that the Site is underlain by any coal seams at depths that have the potential to impact the proposed development.

Considering all information reviewed in undertaking this study, the risk to the development associated with potential shallow mine workings is currently assessed as **very low**, and it is considered that further works are not required to further explore the potential for coal seams underlying the Site.

It is, however, noted that the WYG Phase 2 report recommended additional ground investigation works on the subject site, which may be required to provide geotechnical design information.

4. Identification and Assessment of Site-Specific Coal Mining Risks

Table 1 below summarises the potential risks associated with coal mining legacy for the proposed development site, as identified from the listed sources of information.

Table 1: Summary of Potential Risks Associated with Coal Mining Legacy

Coal Mining Issue	Yes	No	Risk Assessment	Risk Level
Recorded deep underground coal mining (>30m depth)		X	Coal Authority Report indicates no recorded workings beneath the site. BGS 1:10,000 Scale mapping identifies the Dib Hole Coal underlying the site. However, the seam has a recorded thickness of 0.1m and a depth of >50m below the site.	Low
Recorded shallow underground coal mining (< 30m depth)		X	Both the Coal Authority Report, BGS mapping and Coal Authority Interactive Map Viewer indicate no recorded shallow workings within 30m depth.	Low
Unrecorded shallow underground coal mining (< 30m depth)	X		BGS historical borehole logs in the vicinity of the Site and ROH3 drilled as part of the WYG ground investigation on site, indicate that the Arley Coal Seam is unlikely to be present beneath the Site. BGS 1:10,000 Scale mapping identifies the Dib Hole Coal underlying the site. However, the seam has a recorded thickness of 0.1m and a depth of >50m below the site.	Low
Recorded surface mining (i.e. recorded opencast working)		X	None identified.	Low
Unrecorded surface mining (i.e. unrecorded opencast working)		X	The Coal Authority indicated that there are no unrecorded surface mines at the Site.	Low
Mine entries (shafts, adits)		X	None identified on site, with no mine shafts indicated within 500m of the site.	Low
Coal mining geology (fissures)		X	None identified within the Coal Authority Report.	Low
Record of past mine gas emissions or potential		X	No record of past mine gas.	Low
Recorded coal mining surface hazard (hazards relating to mine entries and shallow workings)		X	None identified within the Coal Authority Report.	Low

5. Mitigation Strategy

5.1 Further Works

This Coal Mining Risk Assessment has identified a very low coal mining related risks to the proposed development:

- Potential for collapse of potential unrecorded mine-workings to impact the development.

Given the findings of previous intrusive investigation, BGS mapping and historical borehole records it is thought that the Arley coal seam is not present beneath the Site and has been eroded by the formation/placement of the Glacial / Alluvial superficial deposits underlying the Site.

It is noted, however, that the previous investigation was limited to the southern half of the site, and although unlikely, there is a theoretical risk that the Arley coal could underlie the northern section of the Site. However, as no built development is proposed for the northern site area, it is not considered that further investigation of shallow mine workings is required.

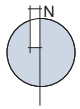
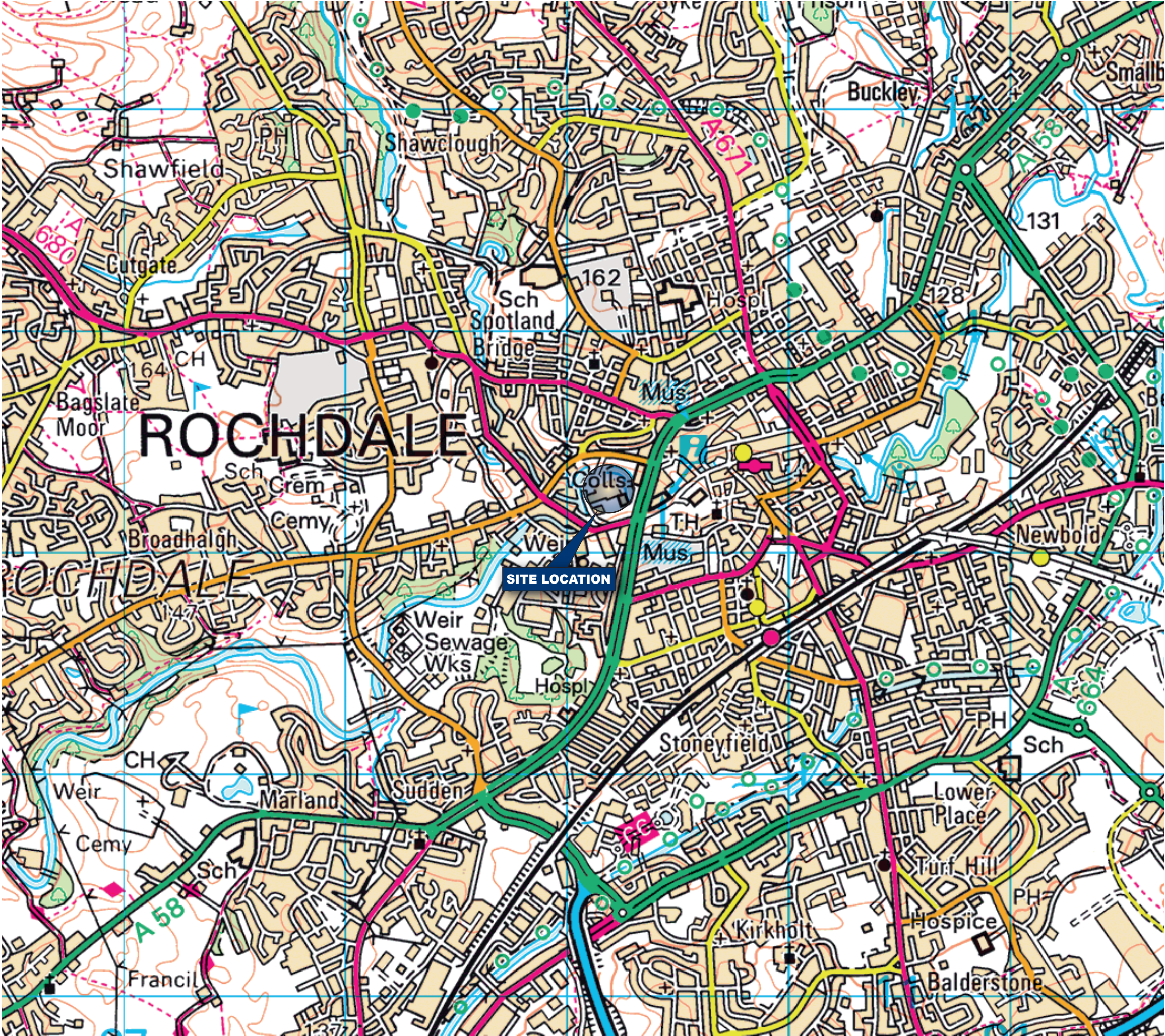
5.2 Coal Authority Permission

Whilst investigation of mining related features is not considered to be required, it is likely that further ground investigation to support foundation design will be required. If this has the potential to impact Coal Authority assets, prior written permission from The Coal Authority will be required for intrusive activities, which will disturb or enter any coal seams, coal mine workings or coal mine entries (shafts and adits). Further information on The Coal Authority's permissions process can be found at: www.coal.gov.uk.

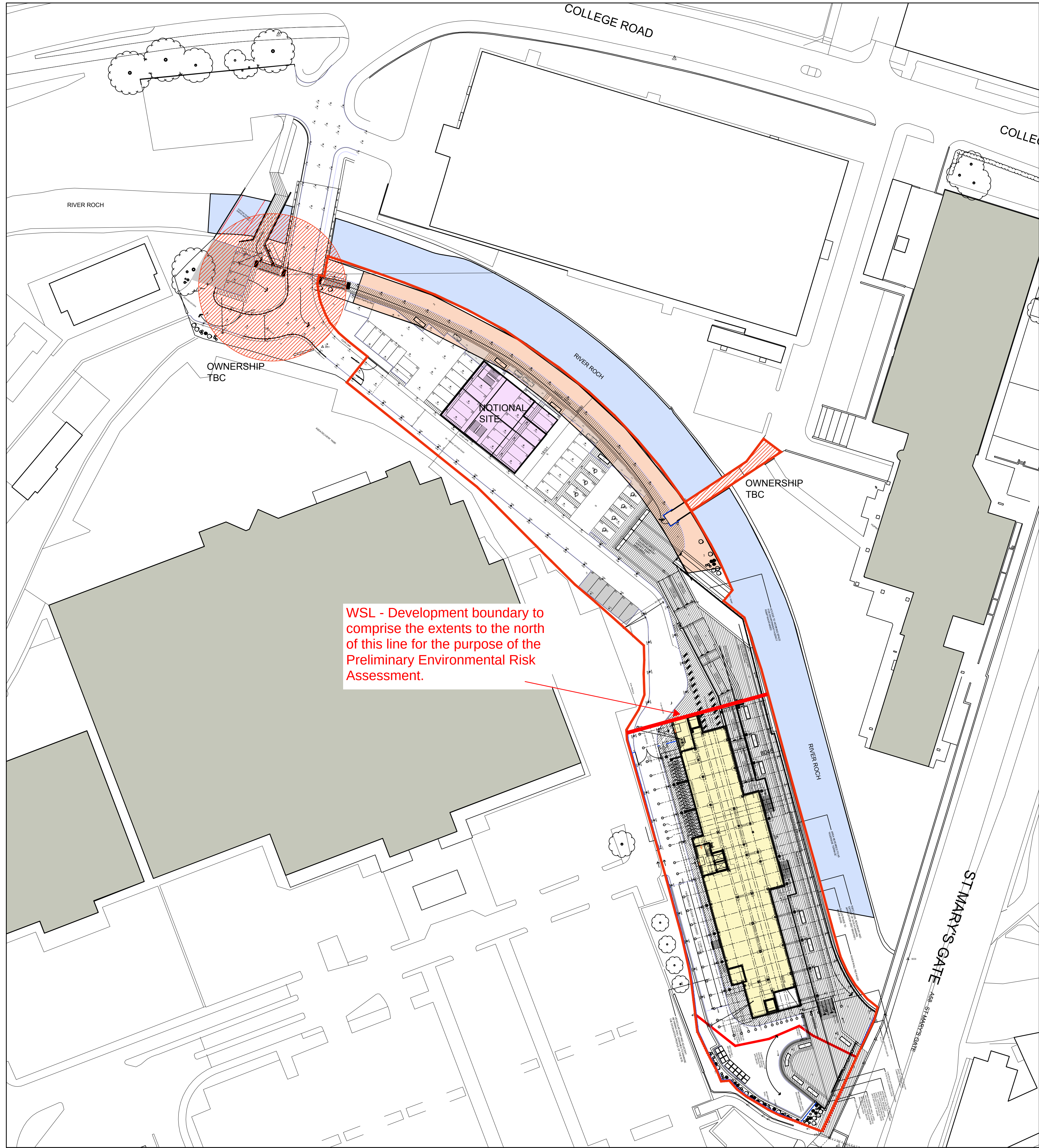
APPENDICES

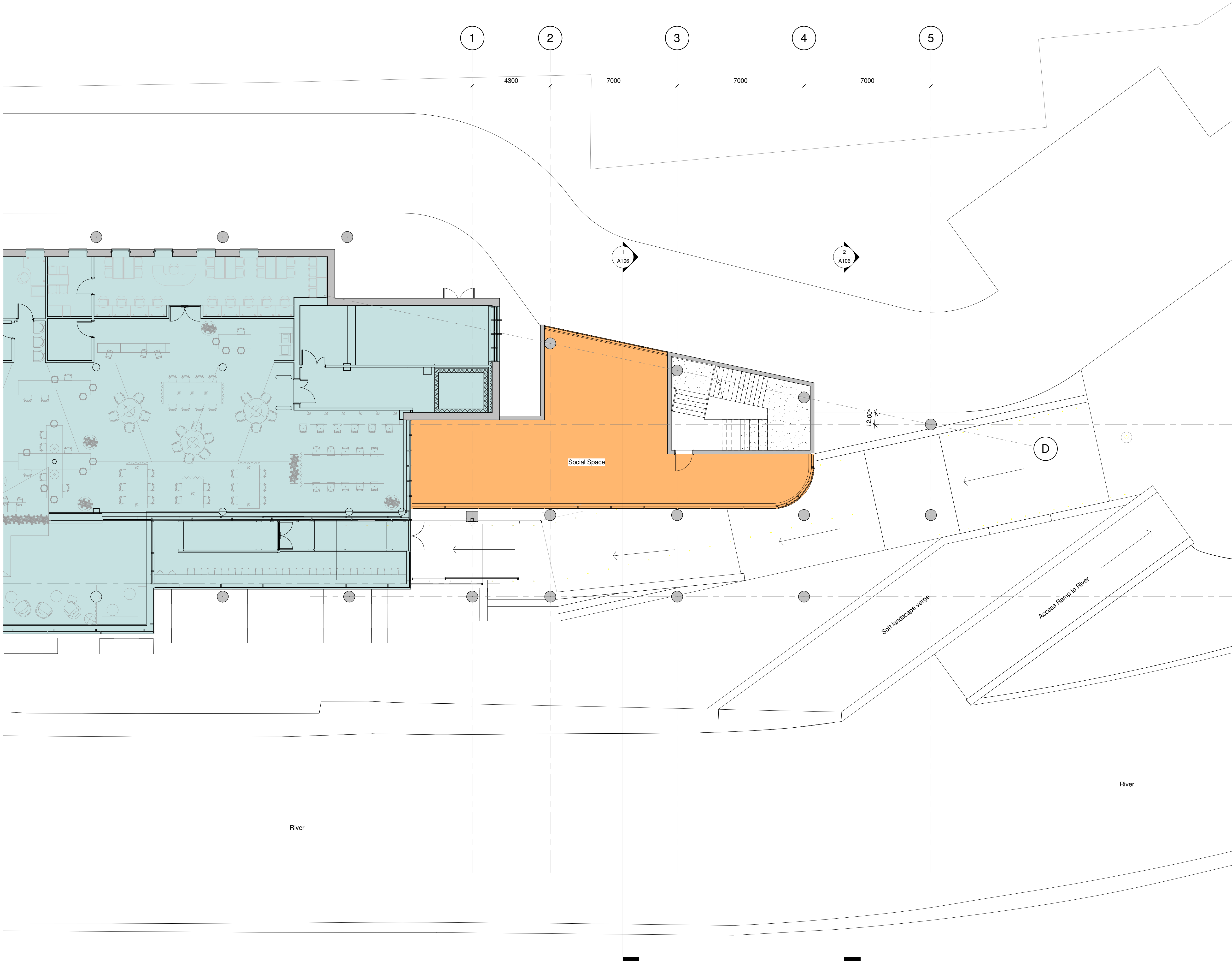
A. Site Plans

- Site Location Plan (WIE19085-105_GR_PRA_A1A)
- 3940 A Rochdale Location Red Line
- 3940_RSFC_Ground Floor GA Plan_DRAFT



Project Details	WIE19085-105: Rochdale Sixth Form College
Figure Title	Figure A1: Site Location Plan
Figure Ref	WIE19085-105_GR_PRA_A1A
Date	June 2022
File Location	\\s-incs\wiel\projects\wie19085\1005\graphics\pra\issued figures





NOTE:
1. DO NOT SCALE OFF THIS DRAWING.
2. ANY DISCREPANCIES TO BE REPORTED IMMEDIATELY TO THE ARCHITECT.
3. ALL DIMENSIONS TO BE SITE CHECKED & VERIFIED BY THE CONTRACTOR PRIOR TO THE MANUFACTURE OR ORDER OF ANY MATERIALS OR GOODS.

Existing Building

Proposed Extension

Social Space

Teaching Space

Ancillary Space

Roof Garden

GA Plan _ Ground Floor
1 : 100

Rev	Description	Date
Rochdale Sixth Form Col' College Road, Rochda'		
Ground Flr		
DRAFT		
DRAP	A1	
DATE	09/30/22	STATUS
SCALE	1 : 100	PURPOSE OF ISSUE
ABW architects Ltd. architecture building workshop		A1 © 30/09/2022 17:10:42



B. Coal Authority Consultant's Mining Report

- 51003311848001 (2022)

Appendices

Coal Mining Risk Assessment
WIE19085-100-R-5.1.3-CMRA



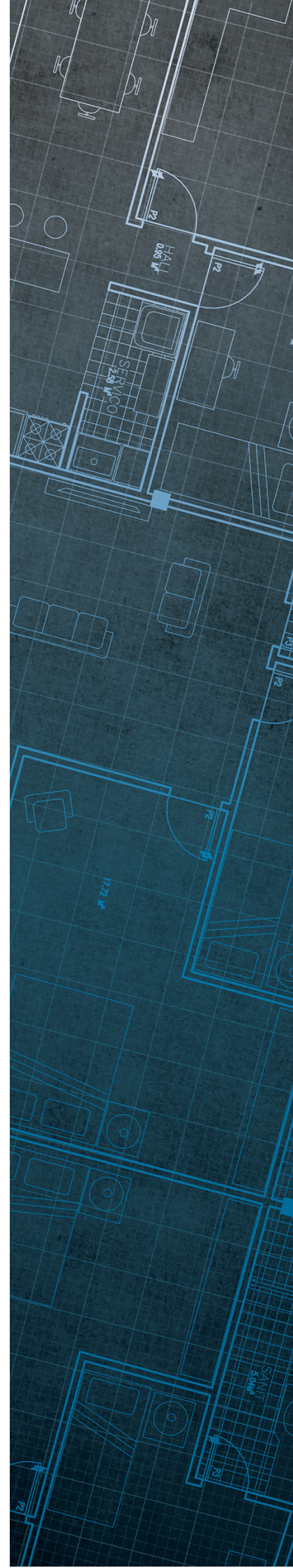
The Coal
Authority

Consultants Coal Mining Report

Rochdale Sixth Form College,
College Road
Rochdale
Lancashire
OL12 6HY

Date of enquiry:	15 September 2022
Date enquiry received:	15 September 2022
Issue date:	15 September 2022

Our reference:	51003311848001
Your reference:	301295480_1



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

NLIS Hub

Enquiry address

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NG18 4RG

www.groundstability.com

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



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Section 1 – Mining activity and geology

Past underground mining

No past mining recorded.

Probable unrecorded shallow workings

None.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers

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

16820		
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Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

No outcrops recorded.

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

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

Site investigations

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

Based on the responses in this report, no further information has been highlighted.

Section 5 – Data definitions

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

Past underground coal mining

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

Probable unrecorded shallow workings

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

Spine roadways at shallow depth

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

Mine entries

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

Abandoned mine plan catalogue numbers

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

Outcrops

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

Geological faults, fissures and breaklines

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

Opencast mines

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

Coal Authority managed tips

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

Site investigations

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

Remediated sites

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

Coal mining subsidence

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

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

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

Mine gas

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

Mine water treatment schemes

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

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

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

Future underground mining

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

Coal mining licensing

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

Court orders

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

Section 46 notices

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

Withdrawal of support notices

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

Payment to owners of former copyhold land

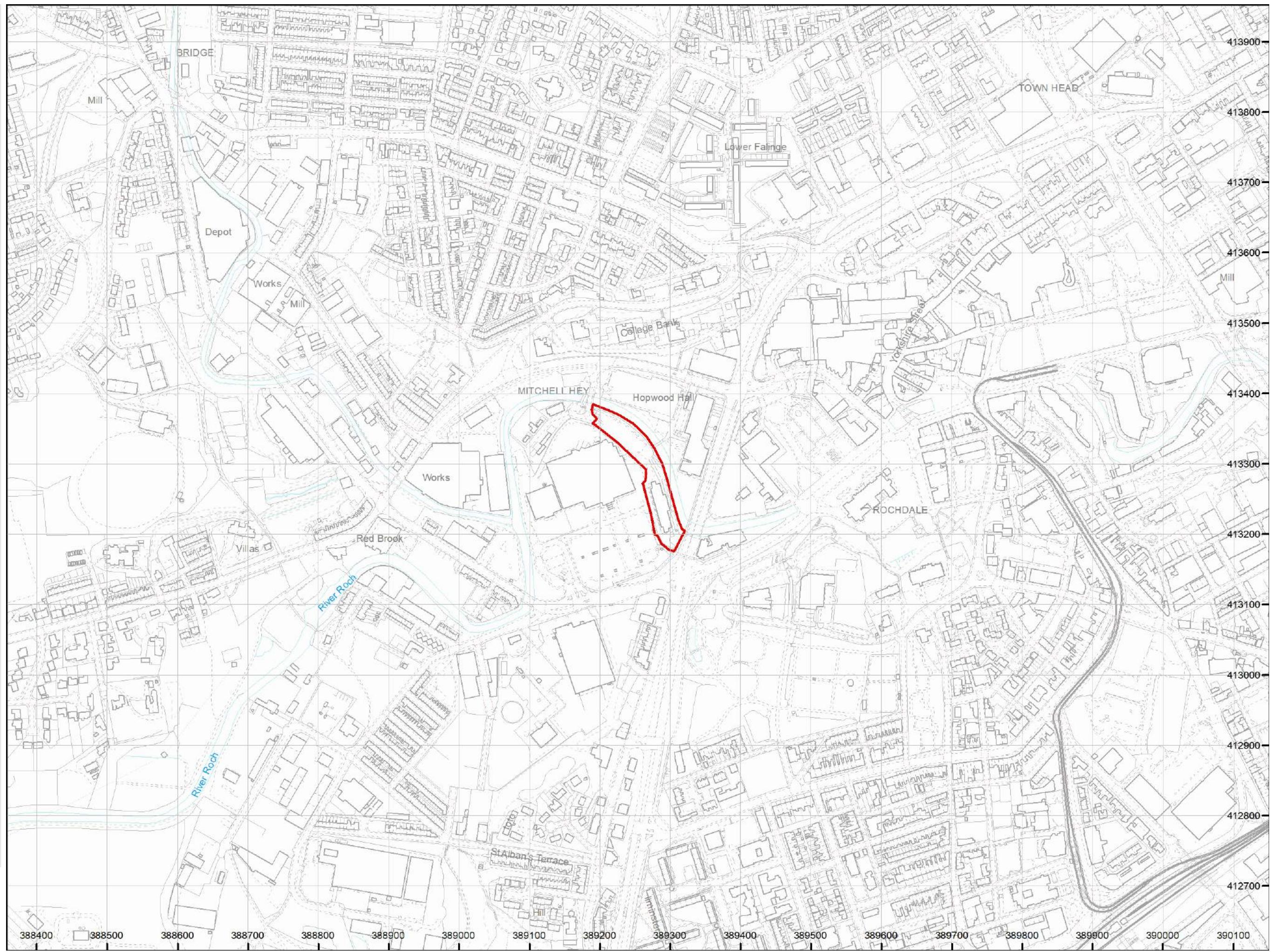
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

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 

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C. Historical Borehole Logs

- SD81SE14
- SD81SE15
- SD81SE21

Appendices

Coal Mining Risk Assessment
WIE19085-100-R-5.1.3-CMRA

SD 8890 1282

11

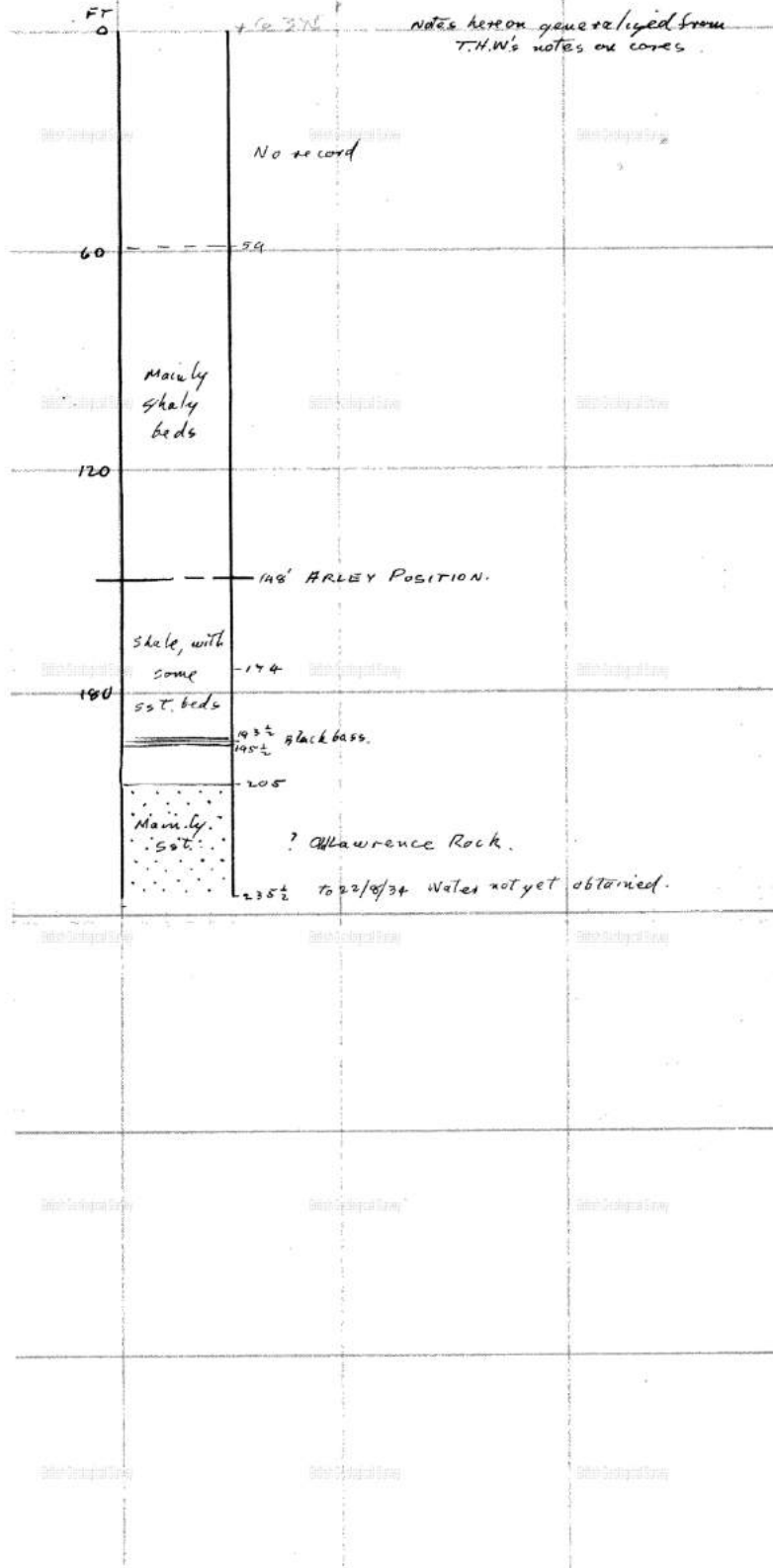
SD 81 SE 14

ROCHDALE CO-OPERATIVE LAUNDRY

SPARTH BOTTOM ST.

ROCHDALE

LANES 88 NE



(For Survey use only) GEOLOGICAL CLASSIFICATION	NATURE OF STRATA If measurements start below ground surface, state how far ...	THICKNESS		DEPTH		Depth in metres
		Feet	Inches	Feet	Inches	
		...	...			
	<i>Driller's Log.</i>					
	Made Ground	5	0	5	0	1.52
	Sand & gravel	9	0	14	0	4.27
? Arley Mine passed in these measures	Shale with thin stone bands	66	0	80	0	24.38
	<i>Cores.</i>					
	Fine grained granulated siliceous sandstone with scattered rootlets	2	0	82	0	24.99
	Dark shaly mudstone; 2-3 in. massive with murels; also scattered murels in the shale	2	0	84	0	25.60
	Dark siltstone, carbonaceous plant debris	2	6	86	6	26.37
	Dark micaceous shale, with 2 in. massive band		6	87	0	26.52
	Dark carbonaceous silty shale	1	0	88	0	26.82
	Medium grained grey brown sandstone, the lower part laminated	3	0	91	0	27.74
	Laminated micaceous siltstone, plant fragments	2	0	93	0	28.35
	Granulated silty sandstone	2	0	95	0	28.96
Probably all lower Coal Measures	Laminated micaceous siltstone with 15 in. of sandstone at 97 ft and a 2 ft. bed of tough sandstone at 100 ft.	5	0	100	0	30.48
	Laminated micaceous silty shale with occasional thin sandy ribs; becoming gradually more shaly downwards	8	0	118	0	35.97
	<i>Driller's Log</i>					
	Shale	10		128	0	39.01
	Grit	3	0	131	0	39.93
	Shale, very broken	19	0	150	0	45.72
	<i>Cores taken 6/7/54</i>					

Wipey's Rochdale Development Site

Borehole 9

Drift (see borers log)	44	13.41
Sandstone grey medium grained ganister-like	46	14.02
Siltstone, grey to black laminated	54	16.46
Siltstone grey finely laminated almost a sst in places, iron stained along joint planes, grading at base into silty shale	64	19.51
Mudstone dark micaceous with frequent very thin siltstone laminae, plants throughout	77	23.47
Mudstone grey micaceous	79	24.08
Mudstone grey mic: finely laminated with siltstone	85	25.91
Mudstone darker grey, broken to a mush from 87	88	26.82
Mudstone black rather broken in places, Mussels at 91		
96, 98, 99 ft, planolites, ostracods	104	31.70
Mudstone grey with mussels becoming broken	108-6	33.07
Mudstone black with ostracods, mussels at 110-6, 112 some fish scales, ironstone bands in lower part.	118-6	36.12
Shale grey, plant fragments increasing, some carbonaceous small shell at 121-6	121-6	37.03
Seat-earth grey	125	38.10
Mudstone silty grey	126	38.40
Mudstone grey with thin siltstone bands here and there	143-6	43.74
Mudstone grey brown with siltstone bands and iron stone bands	148-6	45.26
Siltstone grey grading into fine grained sandstone	153-6	46.79
Sandstone fine grained darker, iron-stained along joints	156	47.55
Shale light grey silty in the upper part	162-6	49.53
Sandstone grey fine grained, shale parting in the middle	166-7	50.77
Mudstone grey silty turbulently-bedded	167-7	51.08
Sandstone grey fine grained with micaceous partings	175-6	53.49
Mudstone grey micaceous with silty partings	177-8	54.15
mudstone grey	190-6	58.06
Mudstone grey, silty in places	202	61.57
Mudstone dark grey not examined	212-6	64.77

UK and Ireland Office Locations

