



Rochdale SEND PassivHaus Coal Mining Risk Assessment

Tilbury Douglas

Date: 27 October 2021

Doc ref: 19522-HYD-XX-XX-RP-GE-0001

DOCUMENT CONTROL SHEET

Issued by	Hydrock Consultants Limited 4 Lakeside Festival Park Stoke on Trent Staffordshire ST1 5RY	Tel: 01782 261919 E-mail: stoke@hydrock.com www.hydrock.com
Client	Tilbury Douglas	
Project name	Rochdale SEND	
Title	Coal Mining Risk Assessment	
BIM reference	19522-HYD-XX-XX-RP-GE-0001	
Project reference	19522	
Date	27/10/2021	

Document Production Record		
Status and Revision	S2	Name
Prepared by	Martin Cross BSc MSc MA MBA PhD CEng FICE CGeol CSci CEnv SiLC RoGEP Adviser	
Checked by	Davood Mahdavian BSc, MSc, PhD, CEng, MIMMM	
Approved by	Danny Hope SiLC	

Document Revision Record			
Status	Revision	Date	Revision Details
S2	P1	27/10/2021	First Issue.

Hydrock Consultants Limited has prepared this report in accordance with the instructions of the above-named client for their sole and specific use. Any third parties who use the information contained herein do so at their own risk.

CONTENTS

1.	INTRODUCTION.....	1
2.	DESK-BASED INFORMATION SOURCES.....	2
3.	COAL AUTHORITY INTERACTIVE VIEWER INFORMATION.....	9
4.	COAL AUTHORITY CONSULTANTS MINING REPORT.....	11
5.	MINE ABANDONMENT PLANS.....	14
6.	IDENTIFICATION AND ASSESSMENT OF SITE-SPECIFIC COAL MINING RISKS.....	15
7.	CONCLUSIONS AND PROPOSED MITIGATION STRATEGY.....	17
8.	REFERENCES.....	18

Appendices

Appendix A	Drawings
Appendix B	Coal Authority Consultants Mining Report and Abandonment Plans

Tables

Table 2.1: Site referencing information	2
Table 6.1: Coal Mining Risk Assessment	15

Figures

Figure 1: Ordnance Survey Plan of site Location.....	2
Figure 2: Site Location.....	3
Figure 3: Aerial image of the site	5
Figure 4: Plan showing distribution of Superficial Deposits	6
Figure 5: Plan showing solid geology and positions of coal seams and geological fault in relation to the site area	7

1. INTRODUCTION

1.1 Terms of reference

In October 2021, Hydrock Consultants Limited (Hydrock) was commissioned by Andrew Sixsmith of Tilbury Douglas to undertake a Coal Mining Risk Assessment at the site of a proposed new Special Education Needs and Disability (SEND) school facility to be constructed on the disused playing field located to the west of Heywood Sports Village, off West Starkey Street, Heywood, Rochdale (centred at National grid coordinates 385124, 411134). The site occupies the area of a former playing field, measuring approximately 100m from east to west and approximately 95m from north to south.

1.2 Objectives

The objectives of this Coal Mining Risk Assessment are to:

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

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

1.3 Available information

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

- Mott MacDonald, October 2019, SEN Schools, North West – Heywood. Geotechnical and Geoenvironmental Desk Study, Ref. 410640-03-A, 28.10.2019.
- Geotechnics, July 2020. Heywood School, Rochdale. Factual Report, Ref. PN204098, Geotechnics, Chester, July 2020.
- Mott MacDonald, August 2020, HVA SEND Schools North West – Heywood, Technical Note, 05.08.20.
- Coal Authority, October 2021. Consultants Coal Mining Report. Heywood Sports Centre, OL10 4TW, Ref. 51002685361001, 01.10.21.
- Ellis Williams, October 2021, Preliminary Landscape Masterplan, Rochdale SEND, ref. ABC-EWA-ZZ-ZZ-DR-A-01234, REV P2.

2. DESK-BASED INFORMATION SOURCES

2.1 Data

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

- The drawing referenced in Section 1.3. of this CMRA.
- Publicly available online aerial photography.
- Geological mapping (British Geological Survey).
- Coal Authority Interactive Mapping Viewer available on the internet;
- Coal Authority CON29M Non-Residential Mining Report (Ref. 51002685361001, dated 01.10.21).
- Coal Authority Mining Abandonment Plans for the site, Mining Records Office (Mansfield).

The Consultants Coal Authority report is included in Appendix B.

2.2 Site Referencing

The site is referenced in Table 2.1.

Table 2.1: Site referencing information

Item	Brief Description
Site name	Field west of Heywood Sports Villag.
Site location and National Grid Reference	Off West Starkey Street Heywood. The nearest postcode is OL10 4TW, and the approximate National Grid Reference of the site centre is SD 851 111.

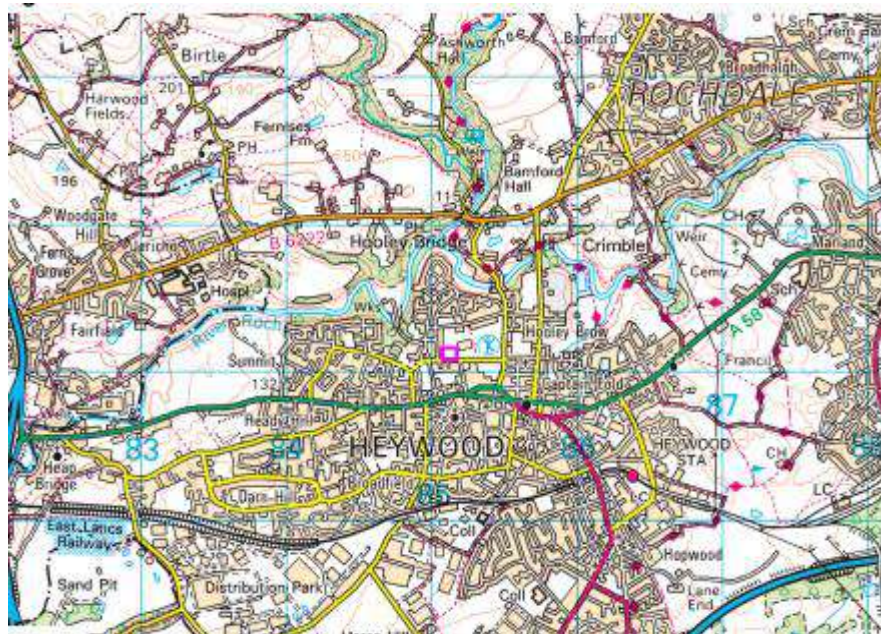


Figure 1: Ordnance Survey Plan of site Location

The approximate Ordnance Survey National Grid Reference for the site is SD 385123, 411132 and an extract from the relevant 1:50,000 Scale O.S. Map is included as Figure 1.

The site is located on the disused playing field located immediately west of the existing Heywood Sports Village facility, off West Starkey Street, Heywood, OL10 4TW (see Figure 2). A site location plan (19522-HYD-XX-XX-GE-DR-1001) is also provided in Appendix A.

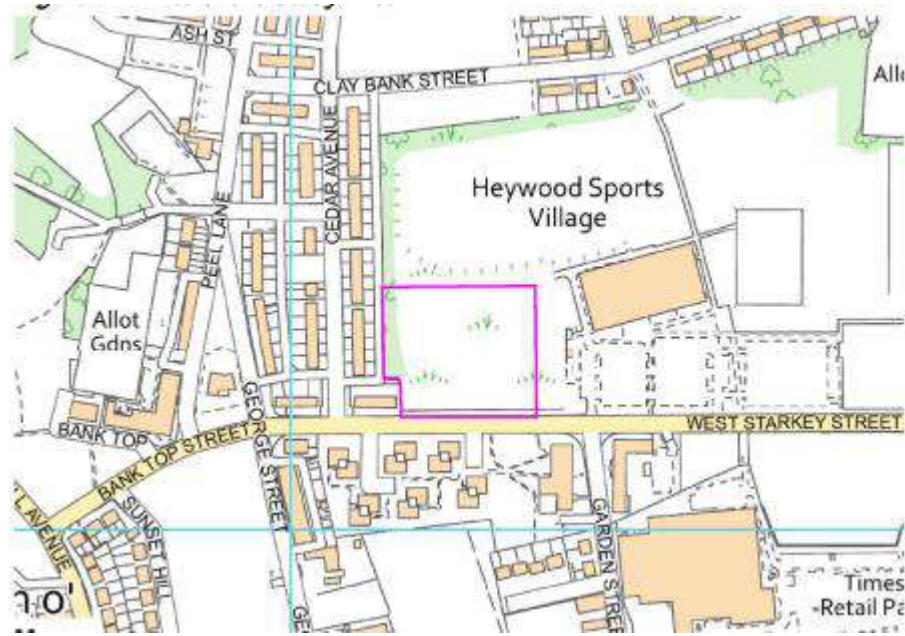


Figure 2: Site Location

2.3 Site Description

The site of the proposed HVA SEN School at Heywood is located in the town of Heywood, in the Metropolitan Borough of Rochdale, Greater Manchester and is centred on National Grid Reference (N.G.R.) 385123, 411132. The site is located in the southwest corner of the wider site of Heywood Sports Village that provide sports halls and outdoor pitches for hire. The site is approximately 100m x 100m the extents are shown in Figure 2. The site is an area of unused grassland, bordered to the north by sports pitches, to the east by Heywood Sports Village and a carpark, to the south by West Starkey Street and to the west by a row of trees and properties along Cedar Avenue. Available ordnance survey mapping shows the site to be flat lying with an approximate elevation of 115m AOD. The land to the north and the east is around 1m higher. The site is currently owned by Rochdale Borough Council and site access is available through Heywood Sports Village.

2.4 Proposed Development

The proposed site in Heywood is currently one of five sites of a larger scheme being run on behalf of the Department of Education. The overarching goal of the scheme is to provide more schools across the north west of England to meet the demands for secondary and tertiary pupils with complex Autism Spectrum Condition (ASC). The site in Heywood is proposed to be a two-storey structure with a 'batched modular' style of construction, aiming to adopt lightweight, economical

design and non-piled foundations. The proposed site layout is shown on Ellis Williams drawing 'Preliminary Landscape Masterplan' (ABC-EWA-ZZ-ZZ-DR-A-01234, REV P2) provided in Appendix A.

2.5 Site Walk-over Survey

A site walkover was undertaken by Mott MacDonald Limited on 8 October 2019. Mott MacDonald Noted the following based on their observations. An aerial image of the current site is shown in Figure 3.

Access to the site was possible through the car park of Heywood Sports Village and several paths cutting through the hedge line from West Starkey Street. Generally, across the site, ground was soft, uneven and slightly hummocky in places with many patches of overgrown grass. Paths were worn through the grass border on all four sides of the site. The northern length of the site is bordered by a slope approximately 1.2m high, rising to the north where a sports pitch is situated. The hedge row running along West Starkey Street is overgrown as are trees and vegetation bordering the western side of the site. Litter is seen across the site (e.g., cans, bottles & plastic bags), two hotspots of waste are the northwest and southwest corners of the site. Waste seen included an old sofa, bin bags, cans, glass bottles and tape strung between trees in a small clearing. Building rubble was also seen in these areas. Observed at two locations across the field were small areas of infilled ground, (approximately 0.5x0.5m) that were infilled with a dark brown/black sandy gravelly soil, void of grass cover and markedly different from surrounding ground.

Along the eastern border of the site is an electrical substation and to the north a separate area fenced off storing the bins from the sports village. The ground level of the substation is approximately 1m lower than the level of the field. A gas main running along the eastern site boundary was reported by Rochdale Borough Council (2019) during a meeting with Mott MacDonald Limited on 3 October 2019. However, no evidence was observed to confirm this information.

During a conversation with Mr Smith, the General Manager at Heywood Sports Village, Mott MacDonald noted the following anecdotal information:

- Water supply to Heywood Sports Village was indicated to run northeast-southwest, thought to run from approximately 25m west of car park entrance, from West Starkey Street, northeast to the sports village – there is no indication of the feature at surface.
- The site had been unused since December 2011 following its use as a football pitch when a player fell and sustained serious injury on 'building rubble' that had reportedly risen to the surface over time.
- Following this incident, topsoil was reportedly removed and replaced with an approximately 0.4m thick sand layer, drainage, topsoil and reseeded for reuse, however the pitch was never reused.
- No 'building rubble' has been removed from the site and may still be present.
- He had no knowledge of the gas main reportedly running along the eastern boundary of site.
- Mr Smith (2019b) provided drainage plans for the site. These show drains running approximately north-south to the edge of the historic sports pitch noted as 'perforated' and

'80 degrees', these then join drainage running to the east, before being pumped north, north of the site boundary linking with other drainage across the site, and ultimately being pumped north west with an outfall into the River Roch.

Mott MacDonald did not observe any evidence of specific coal mining features present on the site.



Figure 3: Aerial image of the site

2.6 Site History

The history of the site has been reviewed from historical OS maps at various scales (presented within the Landmark Envirocheck report provided within the Mott MacDonald Geotechnical and Geo-environmental Desk Study) to identify any previous land use on site or nearby that may pose a geotechnical or geo-environmental risk to the proposed scheme. In summary, the site appears not to have changed from agricultural fields/grassland from 1851 until circa 1955-56, where 4No. rows of property were shown on site from West Starkey Street. These properties are no longer mapped on the 1977 mapping and the site was not developed in the subsequent years. The surrounding area has seen housing and infrastructure development with housing now bordering the site to the west and West Starkey Street bordering the site to the south. The current Heywood Sports Village replaces a previous swimming pool and sports village directly east of the site. More recently the site was previously an old football pitch and prior to the investigation a layout drawing showing the under-pitch drainage was provided by Heywood Sports Village.

2.7 Geology

2.7.1 Published Geology

The 1:50,000 scale map published by the British Geological Survey, Sheet 85 Manchester, Drift edition) dated 2011, shows the site to be underlain by Devensian Glacial Till, consisting of clays, sands, gravels and cobbles. The plan showing the distribution of superficial deposits within the Envirocheck Report (Ref. 218158924/1/1 shows Glaciofluvial Deposits (sand and gravel) to be present in the south western area of the site with Glacial Till (Diamicton) present over the remainder of the site.

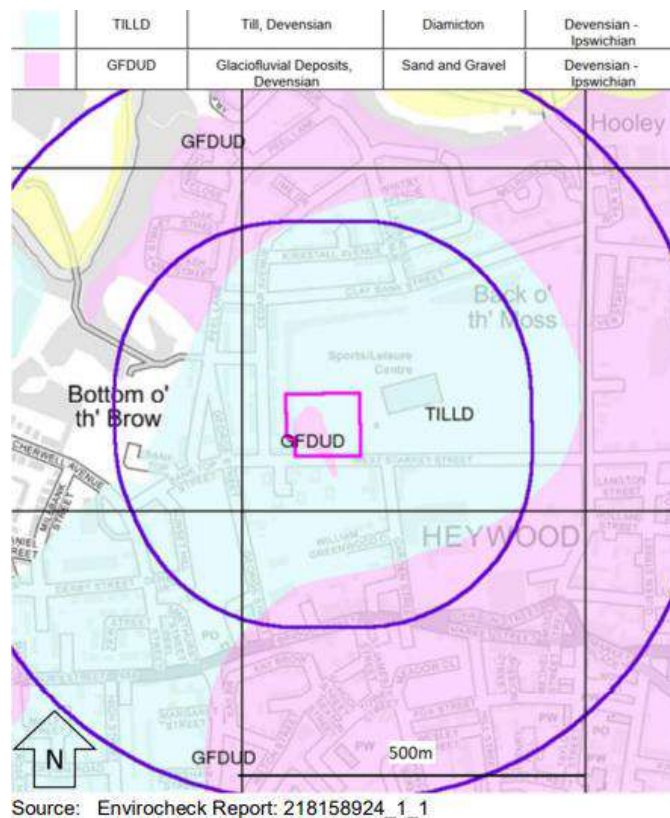


Figure 4: Plan showing distribution of Superficial Deposits

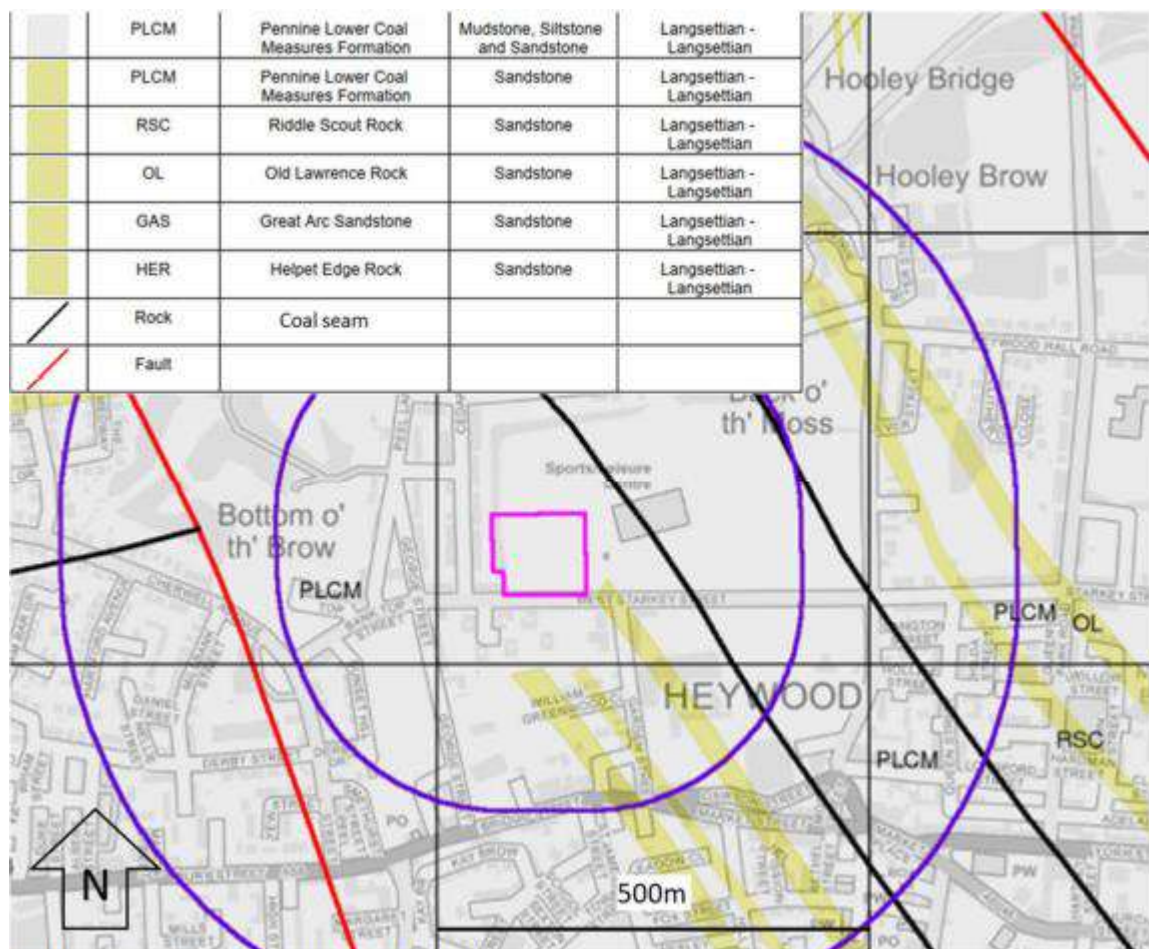
The 1:50,000 scale map published by the British Geological Survey, Sheet 85 Manchester (Solid edition) dated 2010, shows the superficial deposits to be underlain by rock strata of the Pennine Lower Coal Measures Group, consisting of interbedded Mudstone, Siltstone, Sandstone and coal seams of Carboniferous age. Fig 5. is an extract from the solid geology plan provided within the Envirocheck Report (Ref. 218158924/1/1). The plan shows the Pennine Lower Coal Measures to be present beneath the site and the positions of the two coal seams to the NE and geological fault to the west of the site.

Two (2 No.) seams of coal (possibly the Arley Coal and Smith (Bottom Neddy) Coal, are noted to subcrop within 250m of the north-eastern corner of the site, with the one seam (possibly Smith

Coal) being very close to the north-eastern corner of the site. The Arley Coal was formerly referred to as the Rowley Mine Coal. The abandonment plan (Ref 16820/6) shows the 'crop of the Rowley Mine Coal' seam to the north east of the site area. The 1: 5000 generalised vertical sections shown on the solid edition of sheet 85 shows the Smith Coal above the Arley Coal in the geological sequence. The Arley Coal is located further to the north east of the Arley Coal (Rowley Mine Coal) seam. Both coal sub-crops are orientated roughly north-west to south-east with the coal seams dipping south west beneath the site area.

A roughly NNW-SSE orientated fault is indicated approximately 380m west of the site. The fault separates two units of the Pennine Lower Coal Measures formation, with the downthrown unit being situated to the east of the fault.

The British Geological Survey maps consulted do not show the presence of Made Ground below or adjacent to the site. However, Made Ground is considered to be present based on the walkover survey observations made by Mott MacDonald.



Source: Envirocheck Report: 218158924_1_1

Figure 5: Plan showing solid geology and positions of coal seams and geological fault in relation to the site area

2.7.2 Previous ground investigation data

A preliminary combined geotechnical and geo-environmental ground investigation was undertaken at the Heywood site between 22 - 27 May 2020 by Geotechnics. The works undertaken included two cable percussion boreholes to 12.45m bgl, four trial pits to 3m bgl and four cone penetration tests to 8.3 – 10.0m bgl. Further details are provided in the Geotechnics Factual Report. The purpose of the investigation can be summarised as follows:

- Investigate and characterise strata across the site to aid in the production of a geological model.
- Employ in-situ and laboratory tests to allow for the derivation of geotechnical parameters that can be used to inform foundation design, which will be carried out at the next stage of the project.
- Undertake geo-environmental laboratory tests in order to assess the risk posed to human health and controlled waters.

The Geotechnical ground investigation did not prove rockhead and the scope did not include intrusive investigation to investigate the risk of shallow mine workings beneath the site.

The ground conditions encountered on site were as follows:

- Made Ground (gravelly silty clayey sand with cobbles) to up to 0.9m bgl.
- Peat (spongy fibrous peat with rootlets and plant remains) to up to 2.6m bgl.
- Alluvium (very soft to soft silty sandy gravelly clay grading to slightly sandy gravelly silt) to up to 7m bgl.
- Interlayered Glacial Till (stiff sandy gravelly clay) and Glaciofluvial Deposits (medium dense gravelly silty sand) to at least 12.5m bgl.
- The shallow ground conditions were described as soft and loose, with Peat being particularly susceptible to settlement via consolidation and compression.
- Groundwater was struck at 10.7 - 10.9m bgl within Glaciofluvial Deposits and is recorded at 9.6 – 9.9m bgl across six monitoring visits.
- Aggressive ground conditions are likely to exist on site. Concentrations will need to be reviewed against BRE SD1 so that classifications can be assigned and concrete designed appropriately.

3. COAL AUTHORITY INTERACTIVE VIEWER INFORMATION

3.1 Coal Mining Reporting Area

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

3.2 Development High Risk Area

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

3.3 Mine Entries

No mine entries are indicated to be present within the site on the Coal Authority Interactive Viewer. The nearest mine entry is shown to the north of the Heywood Sports Village in a built-up area called Back o' th' Moss/Clay Bank Street.

3.4 Surface Coal Resource Area

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

3.5 Fissures and Break-lines

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

3.6 Surface Mining

No surface mining (past and current) is shown on the site area (Coal Authority Interactive Viewer).

3.7 Past Shallow Coal Workings

The Coal Authority Interactive Viewer does not show any past shallow coal mine workings based on the Coal Authorities records of underground workings, or parts thereof, whose depth is 30m or less from the surface. However, the area lies within an area of 'Probable Shallow Coal Workings.' Probable coal mine workings contain locations and estimated extents of probable shallow underground workings for which no recorded plans exist, but where it is likely that workable coal at shallow depth has been mined before records were kept (pre-1872). The data has been estimated from available mining records by qualified mining surveyors.

3.8 Coal Outcrops

The Coal Authority Interactive Viewer shows a coal outcrop to be located immediately to the north east of the site. Coal outcrops illustrate a location where a workable seam is present at or close to the surface. Coal outcrops identify where an underground seam reaches rockhead, indicating an area where coal may

have been worked at some time in the past (Coal Authority Interactive Viewer, October 2021). Whilst this dataset highlights areas of probable underground workings at shallow depth, it may also indicate areas where un-viable seams of coal remain. This dataset contains a buffer of 50m on the dip side of the outcrop position as held by the Coal Authority.

4. COAL AUTHORITY CONSULTANTS MINING REPORT

A Coal Authority Mining Report (CON29M) has been obtained for the site, Ref. 51002685361001, dated 1 October 2021. The key findings of this report are summarised in Table 4-1 below.

Table 4-1. Key findings of Coal Authority Mining Report Ref. 51002685361001, dated 1 October 2021.

Item	Has the CON29M Report highlighted evidence or potential of:	
1	Past underground coal mining	No
2	Probable unrecorded shallow workings	Yes
3	Spine roadways at shallow depth	No
4	Mine entries	No
5	Abandoned mine plan catalogue numbers	Yes
6	Outcrops	No
7	Geological faults, fissures and break-lines	No
8	Opencast mines	No
9	Coal Authority managed tips	No
10	Site investigations	No
11	Remediated sites	No
12	Coal mining subsidence	No
13	Stop Notices	No
14	Mine gas	No
15	Mine water treatment schemes	No
16	Future underground mining	No
17	Coal mining licensing	No
18	Court orders	No
19	Section 46 notices	No
20	Withdrawal of support notices	No
21	Payments to owners of former copyhold land	No

The detailed findings of the Coal Authority Mining Report (CON29M) are listed below.

1. Past underground mining

No past mining recorded.

2. Probable unrecorded shallow workings

Yes.

3. Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

4. Mine entries

None recorded within 100 metres of the enquiry boundary.

5. Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary: 16820. Hydrock has contacted the Coal Authority to obtain a copy of this record.

6. Outcrops

No outcrops recorded on the site. However, there are coal outcrops immediately to the north east of the site.

7. Geological faults, fissures and break-lines

No faults, fissures or break-lines recorded.

8. Opencast mines

None recorded within 500 metres of the enquiry boundary.

9. Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

10. Site investigations

None recorded within 50 metres of the enquiry boundary.

11. Remediated sites

None recorded within 50 metres of the enquiry boundary.

12. 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.

13. Stop Notices

There is no current Stop Notice delaying the start of remedial works or repairs to the property. The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

14. Mine gas

None recorded within 500 metres of the enquiry boundary.

15. Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

16. Future underground mining

None recorded.

17. Coal mining licensing

None recorded within 200 metres of the enquiry boundary.

18. Court orders

None recorded.

19. 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.

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

21. 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.

5. MINE ABANDONMENT PLANS

The mining abandonment plan Ref. 16820 was obtained from the Coal Authority. This reference related to a photo Ref. 16820-999999-6OF11.jpg. The photo showed a 1:10,560 Dicconsions Coal Survey Scale Plan. The plan shows the conjectured 'crop of the Royley Mine Coal seam' outcropping near to the north east of the site area. The Rowley Mine Coal seam is shown trending NW-SE and dipping to the SW towards the site area. No other relevant mining information is shown on the survey plan in the area of the site. Based on the Northern Mining Research Society (NMRS) Records the Royley Mine Coal is now referred to as the Arley seam which corresponds to the coal seam shown on the 1: 50,000 Geological Map, Manchester Sheet 85 (Solid Edition), published in 2010.

Based on a review of the NMRS Records, Gazetteer of British Collieries the nearest colliery to the site was the former Captain Fold Colliery which was located north east of the site area. The Heywood Coal Co ran this small colliery from 1848-1855. The Captain Fold Colliery worked the Arley Coal, also known as the Royley Mine Coal (circa 0.75m thick) at a depth of 84m (NMRS Records, Gazetteer of British Collieries).

The Abandonment Plans are included in Appendix B.

6. IDENTIFICATION AND ASSESSMENT OF SITE-SPECIFIC COAL MINING RISKS

6.1 Mining or mineral extraction

The information collected from the desk-based sources has been collated and a site-specific coal mining risk assessment has been prepared. The risk assessment is summarised in Table 6.1 below.

Table 6.1: Coal Mining Risk Assessment

Coal Mining Issue	Y/N	Risk Assessment		
		Probability	Consequence	Comments
Unrecorded shallow underground coal mining.	Y	Medium	High	- The site does not lie within an area of recorded shallow coal workings. - The site lies in a general area where probable unrecorded shallow coal (>30m below ground level).
Other unrecorded underground coal mining.	Y	Medium	High	The site does lie near an area of known coal workings in the Captain Fold Colliery which worked the Arley Coal (also known as the Royley Mine Coal) which is shown outcropping to the NE of the site.
Mine entries (shafts and adits).	N	Low	Medium to High	- There are no known coal mine entries within, or within 20m of, the boundary of the site. - There may however be mine entries/additional mine entries in the local area which the Coal Authority has no knowledge of.
Coal Outcrops	Y	Medium	Medium to High	Two coal outcrops are shown to be located to the NE of the site. The coal seams dip SW towards the site.
Coal mining geology (fissures/break-lines).	N	Low	Medium	There are no records of any faults being affected by coal mining at the site.
Record of past mine gas emissions.	N	Low	Medium	There are no records of mine gas emission at the site.
Recorded coal mining surface hazard.	N	Low	High	The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50m of the enquiry boundary.
Surface mining (opencast workings).	N	Low	Low	There are no records of opencast mining at, or in the vicinity of, the site.

In summary, the following conclusions can be drawn from the Coal Mining Risk Assessment.

- The site lies within an area of probable shallow coal workings.
- The site lies near an area of known coal workings in the Captain Fold Colliery which worked the Arley Coal (also known as the Royley Mine Coal) which is shown outcropping to the NE of the site.
- Two coal outcrops are shown to be located to the NE of the site. The coal seams dip SW towards the site. These seams are thought to be the Arley Coal and Smith Coal.
- The Coal Authority Mine Abandonment plan available for the site shows the Arley Coal formerly referred to as the Royley Mine Coal outcropping to the NE of the site and dipping SW below the site area.

- There are no known coal mine entries within, or within 20m of, the boundary of the site. There may, however, be mine entries/additional mine entries in the local area which the Coal Authority has no knowledge of.
- There are no records of any faults being affected by coal mining at the site.
- There are no records of mine gas emission at the site.
- The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50m of the enquiry boundary, since 31 October 1994, before which details are not known.
- There are no records of opencast mining at, or in the vicinity of, the site.

Hydrock, therefore, concludes that historical coal mining, particularly in relation to the risk of probable shallow coal workings poses a medium to high risk to the proposed development.

The risk assessment above forms the basis of the proposed mitigation strategy formulated in the next section.

7. CONCLUSIONS AND PROPOSED MITIGATION STRATEGY

7.1 Mitigation Strategy

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

7.2 Shallow Coal Workings

The Coal Mining Risk Assessment has identified a Medium to High risk that shallow unrecorded (i.e., less than 30m depth below the ground surface) coal workings could be present below the site. It is possible that the Smith Coal and Arley Coal seams are present at shallow depth below the site. It is recommended that at least 1 No rotary open-hole borehole is completed to the north east corner of the proposed structure to confirm whether shallow coal seams are present below the site area. If shallow seams are encountered Hydrock suggest that additional rotary open-hole boreholes are completed to investigate whether these seams have been worked.

If evidence of shallow mine workings is confirmed, the workings will require treatment by a programme of drilling and grouting beneath the proposed development. This will require to be designed and a specification of the treatment to be completed for Coal Authority and Rochdale BC Planning/Building Control approval.

7.3 Mine Entries

The Coal Authority does not hold records of any mine entries within, or within 20m of, the boundary of the site. There may however be mine entries/additional mine entries in the local area which the Coal Authority has no knowledge of.

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

7.4 Aggressive ground conditions

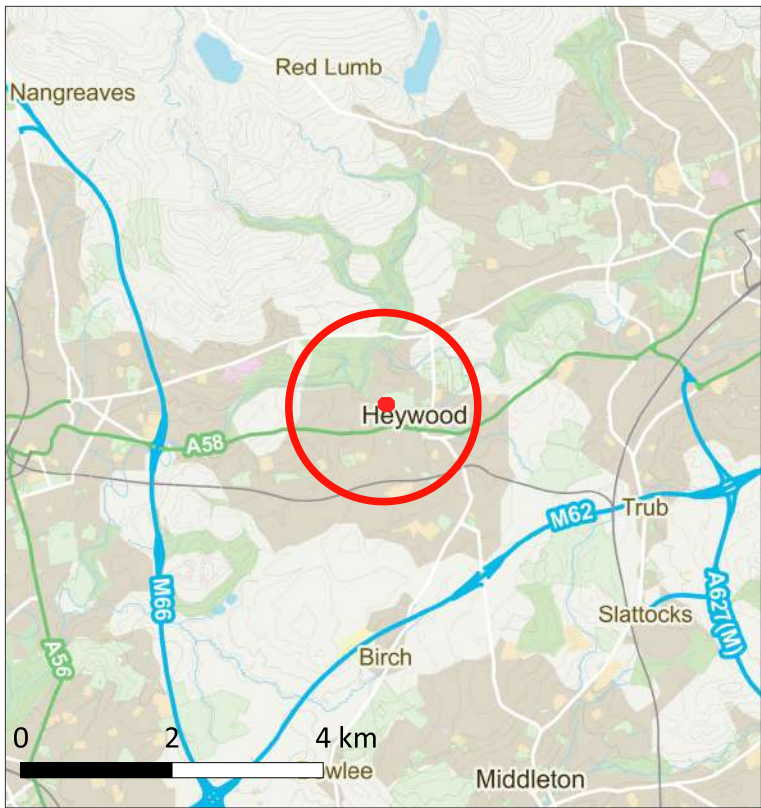
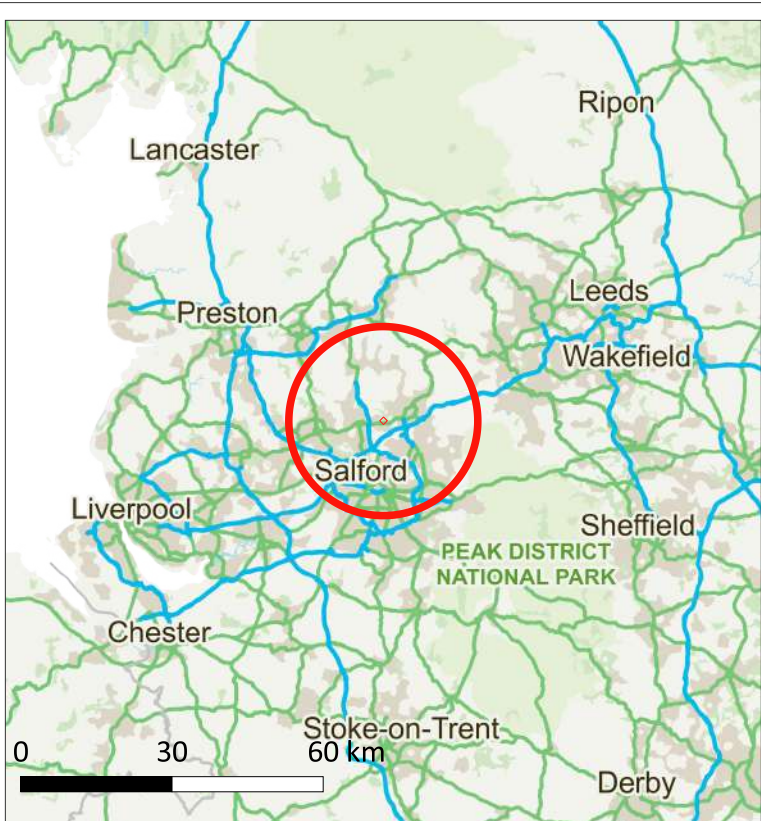
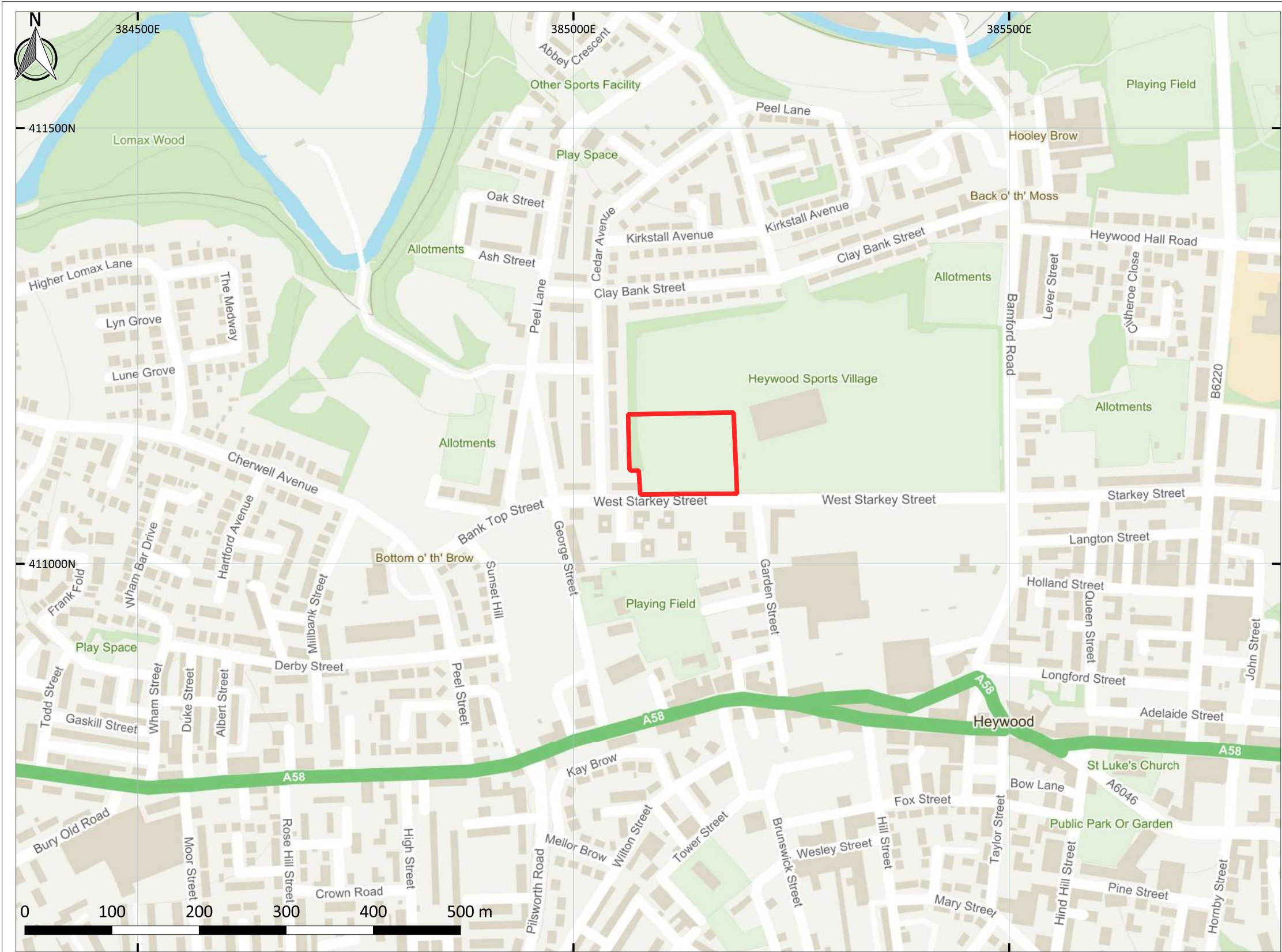
Any areas of colliery spoil that may be present on site can contain significantly elevated concentrations of sulphur and sulphate, leading to the formation of aggressive ground conditions for concrete in certain circumstances. In such cases buried concrete should be designed in accordance with BRE Special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

8. REFERENCES

- ATKINSON, M. F., 2004. Structural Foundations Manual for Low Rise Buildings. Second Edition. Taylor and Francis, London.
- BRE, 2005. Concrete in aggressive ground. BRE Special Digest 1, 3rd Edition. BRE, Garston.
- BRITISH STANDARDS INSTITUTION, 1999. Code of practice for Site Investigations. BS 5930 Incorporating Amendment No. 2:2010. BSI, London.
- CIRIA, 2019. Abandoned mine workings manual. CIRIA Report C758D, Construction Industry Research and Information Association, London.
- Coal Authority, October 2021. Consultants Coal Mining Report. Heywood Sports Centre, OL10 4TW, Ref. 51002685361001, 01.10.21.
- Geotechnics, July 2020. Heywood School, Rochdale. Factual Report, Ref. PN204098, Geotechnics, Chester, July 2020.
- Mott MacDonald, October 2019, SEN Schools, North West – Heywood. Geotechnical and Geoenvironmental Desk Study, Ref. 410640-03-A, 28.10.2019.
- Mott MacDonald, August 2020, HVA SEND Schools North West – Heywood, Technical Note, 05.08.20.
- NATIONAL COAL BOARD, 1975. Subsidence Engineers' Handbook. Revised Edition. National Coal Board, London.

Appendix A

Drawings



Contains Ordnance Survey data © Crown copyright and database right (2020)

KEY PLAN Site Boundary	NOTES 1. Contains OS data © Crown copyright and database right (2021)	REVISIONS <table><tr><th>REV.</th><th>DRAWN BY INITIALS</th><th>CHECKED BY INITIALS</th><th>DATE</th><th>REVISION NOTES/COMMENTS</th></tr><tr><td>P01</td><td>GE</td><td>JB</td><td>27/10/21</td><td>First issue</td></tr></table>				REV.	DRAWN BY INITIALS	CHECKED BY INITIALS	DATE	REVISION NOTES/COMMENTS	P01	GE	JB	27/10/21	First issue	Hydrock		TITLE SITE LOCATION PLAN	
		REV.	DRAWN BY INITIALS	CHECKED BY INITIALS	DATE	REVISION NOTES/COMMENTS													
		P01	GE	JB	27/10/21	First issue													
		CLIENT		HYDROCK PROJECT NO. Rochdale		SCALE @ A3 1:5,000													
		PROJECT Tilbury Douglas		PURPOSE OF ISSUE SUITABLE FOR INFORMATION		STATUS S2													
		DRAWING NO. 19522-HYD-XX-XX-GE-DR-1001		REVISION P01															



NOTES

Copyright. All rights reserved. This drawing must not be reproduced without permission. This drawing must not be scaled. Dimensions are in millimetres unless specified.

Rev	Date	Notes	By	Chk
01	14-01-21	1st issue	AW	AW
02	15-01-21	2nd issue	AW	AW
03	16-01-21	3rd issue	AW	AW
04	17-01-21	4th issue	AW	AW

KEY

Vehicular grade Asphalt Concrete

Block paving

Pedestrian grade macadam

Multi Use Games Area macadam

Existing trees retained and protected during construction

Root Protection Areas

New tree planting

Amenity grass over 150mm depth topsoil

Species rich meadow grassland over 150mm depth low fertility topsoil

Ornamental shrub planting into 300mm depth topsoil

Existing woodland retained

Narrow Pro Play 30mm artificial grass with 10mm shock pad underlay

Native species hedge mix into 300mm depth topsoil

2.4m high Palatin style steel weld mesh fencing

2m high Palatin style steel weld mesh fencing

1.2m high steel fencing - colour black NBS 040, Cl. 1408

1.8m High timber/composite hit and miss vertical pale fencing

Existing levels

Items under budget review

Appendix B

Coal Authority Consultants Mining Report and Abandonment Plans



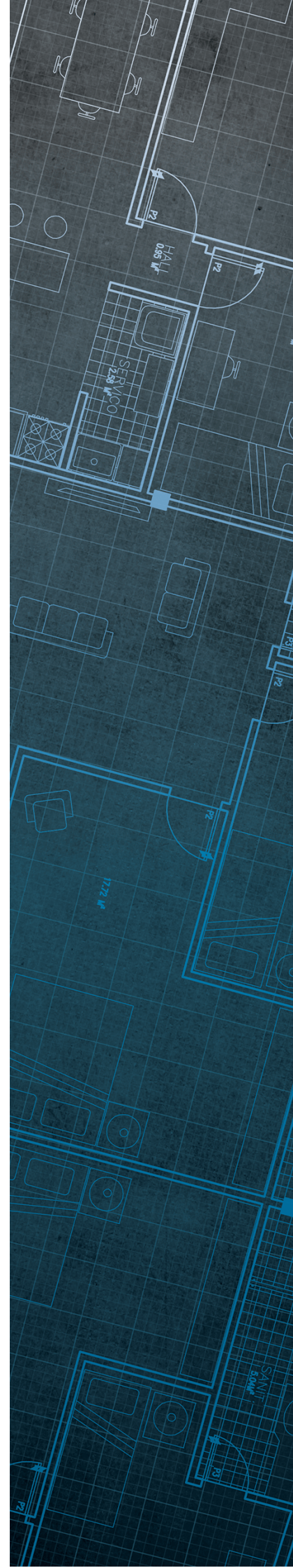
The Coal
Authority

Consultants Coal Mining Report

Heywood Sports Centre, Heywood
Sports Village, West Starkey Street,
Heywood, OL10 4tw
Greater Manchester

Date of enquiry:	1 October 2021
Date enquiry received:	1 October 2021
Issue date:	1 October 2021

Our reference:	51002685361001
Your reference:	HYD-8230155



Consultants

Coal Mining Report

This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

GROUNDSURE LIMITED

Enquiry address

Heywood Sports Centre, Heywood Sports Village,
West Starkey Street, Heywood, OL10 4tw
Greater Manchester

How to contact us

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

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

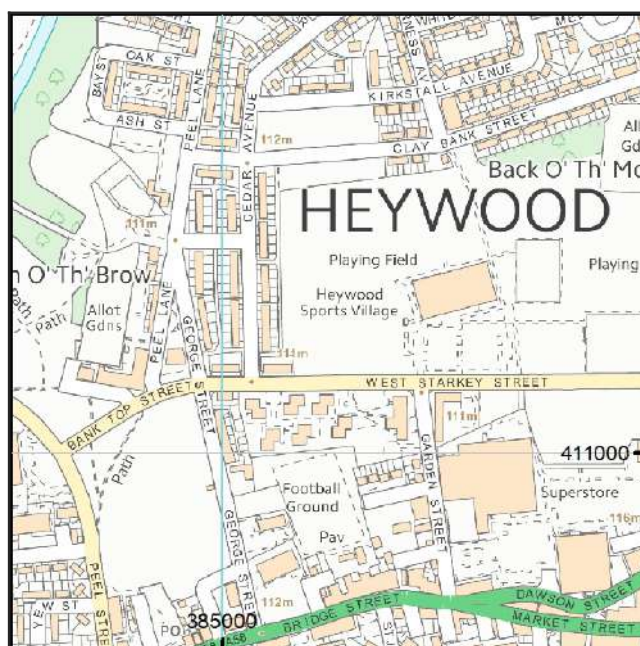
www.groundstability.com

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



Reproduced by permission of
Ordnance Survey on behalf of
HMSO. © Crown copyright and
database right 2018. All rights
reserved.

Ordnance Survey Licence number: 100020315

Section 1 – Mining activity and geology

Past underground mining

No past mining recorded.

Probable unrecorded shallow workings

Yes.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers

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

16820		
-------	--	--

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

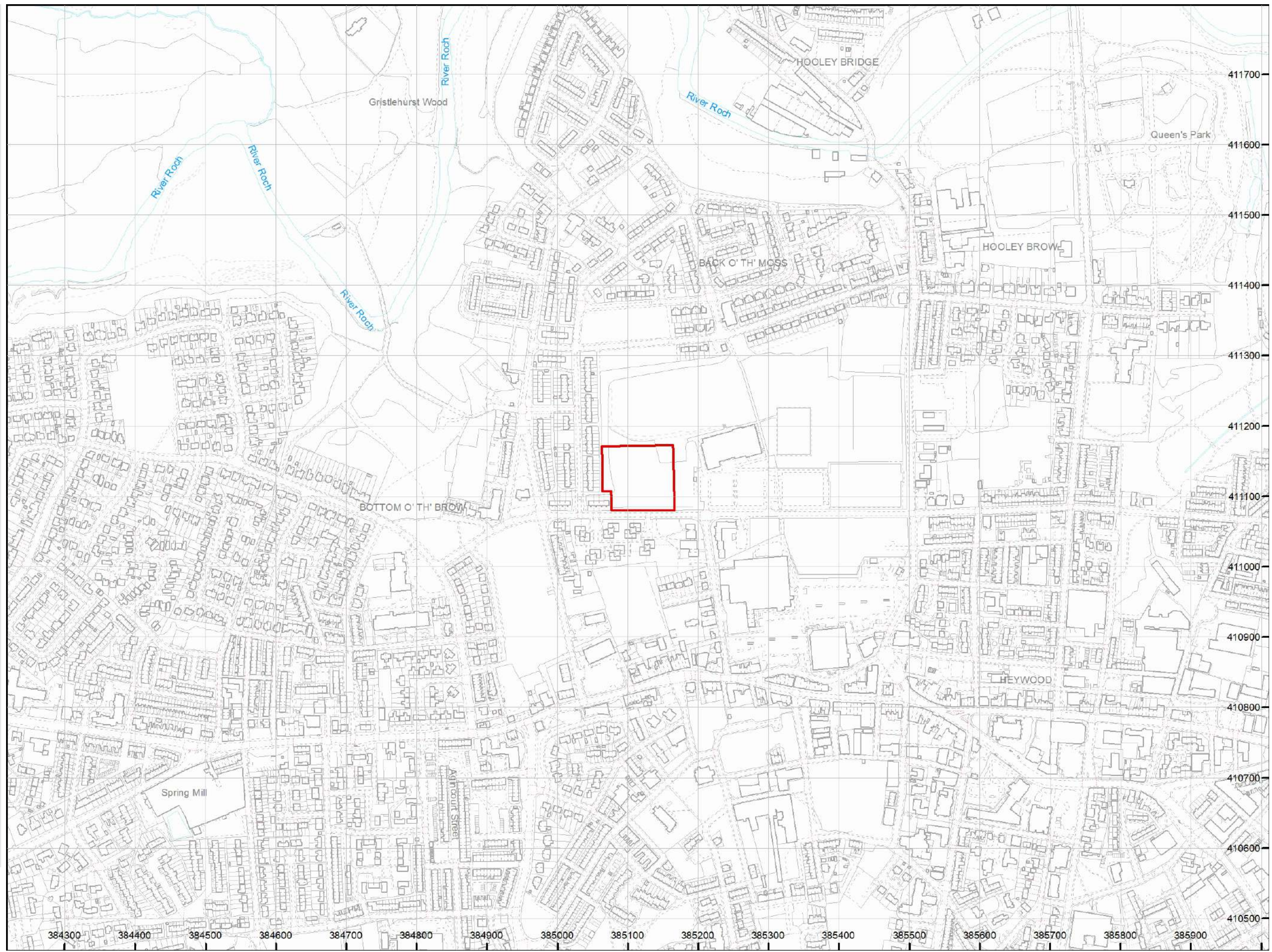
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

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

Key

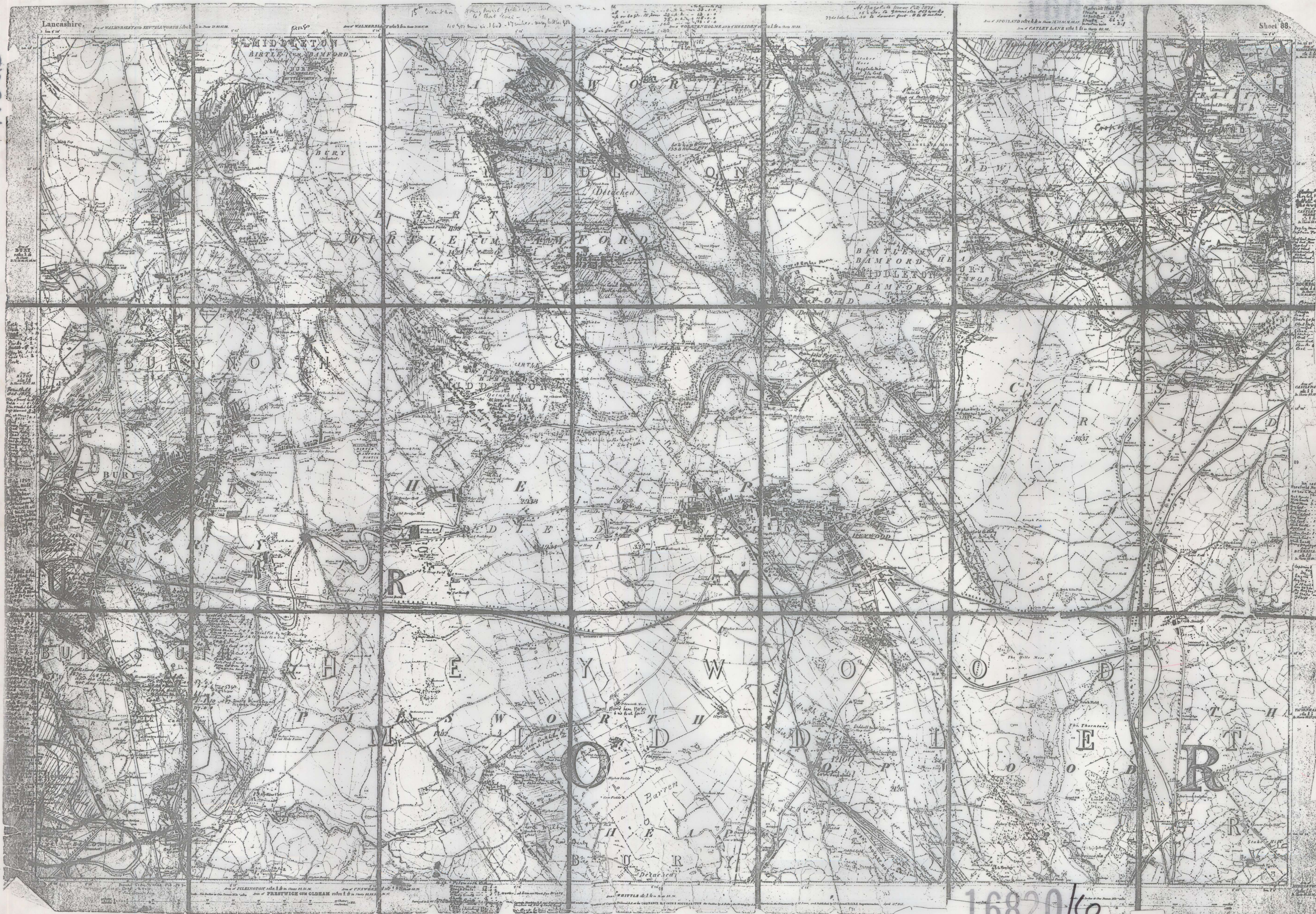
Approximate position of the enquiry boundary shown 

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



16850

16850



16850

550:19

16820/6