BURO HAPPOLD

Project North Stand Manchester

Coal Mining Risk Assessment

NSE-BHE-XX-XX-RP-CG-000002

0053810

13 April 2023

Revision P03

Copyright © 1976 - 2023 Buro Happold. All rights reserved

Revision	Description	Issued by	Date	Checked
P01	Draft submission	FG	03/02/2023	COH
P02	Final submission	FG	31/03/2023	COH
P03	Final submission (red line boundary change)	FG	13/04/2023	COH

https://burohappold.sharepoint.com/sites/053810/05_Teams Files/Ground Engineering/BH Reports/Coal Mining Risk Assessment/NSE-BHE-XX-XX-RP-CG-000002 - CMRA P03.docx

Report Disclaimer

This Report was prepared by Buro Happold Limited ("BH") for the sole benefit, use and information of Manchester City Football Group for information. BH assumes no liability or responsibility for any reliance placed on this Report by any third party for any actions taken by any third party in reliance of the information contained herein. BH's responsibility regarding the contents of the Report shall be limited to the purpose for which the Report was produced and shall be subject to the express contract terms with Manchester City Football Group. The Report shall not be construed as investment or financial advice. The findings of this Report are based on the available information as set out in this Report.

author	**Francesca Gould / Aadam Desai**
date	**13th April 2023**
approved	**Chris O'Hara**
signature	
date	**13th April 2023**

Copyright © 1976 - 2023 Buro Happold. All rights reserved

Contents

Introduction 4

2 The Site 5

3 Environmental Setting 10

4 Coal Mining 13

5 Coal Mining Risk Assessment 24

6 Mitigation of Risks related to Coal Mining 26

7 Summary and conclusions 30

Bibliography 31

Drawings

Appendix A Coal Mining Abandonment Plans

Appendix B Coal Mining Report (CON29)

Copyright © 1976 - 2023 Buro Happold. All rights reserved

Introduction

1.1 General

A Coal Mining Risk Assessment has been produced for Manchester City Football Club, across an area of land located between the Etihad Stadium and the Metrolink cutting. The Site boundary is presented within Figure 2-1.

This report has been prepared in accordance with the requirements of Manchester City Council (MCC) and identifies the risks that coal mining poses to the proposed development, how these risks influence the proposed development and what mitigation measures are likely to be required.

The Site boundary for planning purposes changed following the initial instruction for the work. Accordingly, this current report (Version P03) is an updated version of the report and incorporates revisions to reflect the extended site area. A review of the additional land has been undertaken and the changes are not significant with respect to the Coal Mining Risk Assessment and conclusions, therefore the Groundsure report has not been amended resulting in a few figures showing a slightly different red line boundary throughout this report.

1.2 Proposed development

The proposals include alterations to the Etihad Stadium, increasing the overall capacity of the north stand. North of the Stadium, two new buildings will be constructed, one to be a hotel, and the other a workspace with a football museum and enhanced City Shop. A covered fan zone area referred to as City Square will also be provided as part of the proposals. The formal description of the proposed development and further detail on the proposals can be found in the planning statement and planning application form, both of which accompany the planning application.

1.3 Structure of this report

Following on from this introduction:

- Chapter 2 describes the existing Site and Site history;
- Chapter 3 describes the local geology, hydrogeology, and hydrology;
- Chapter 4 records evidence of coal mining;
- Chapter 5 summarises the risk posed by coal mining;
- Chapter 6 site outlines the potential mitigation measures to reduce risk; and
- Chapter 7 provides a summary and conclusion to the report.

Copyright © 1976 - 2023 Buro Happold. All rights reserved

2 The Site

2.1 Site location and description

The Site is centred on grid reference SJ 86780 98622 located at Manchester City Football Club, Ashton New Road, Bradford, Manchester M11 3HY. It is located to the northeast of Manchester City centre, approximately 2km northeast of Manchester Piccadilly Rail Station. The ground level is approximately +59mOD, rising slightly to the east toward Gibon Street and Alan Turing Way (to around +61mOD). The Site is 3.5 ha and located within the Etihad Campus. It is bound to the north by the tramline and station (with Ashton Canal beyond), to the east by Alan Turing Way (A6010), to the west are the National Squash Centre and the Manchester Regional Arena, and to the south is the Stadium.

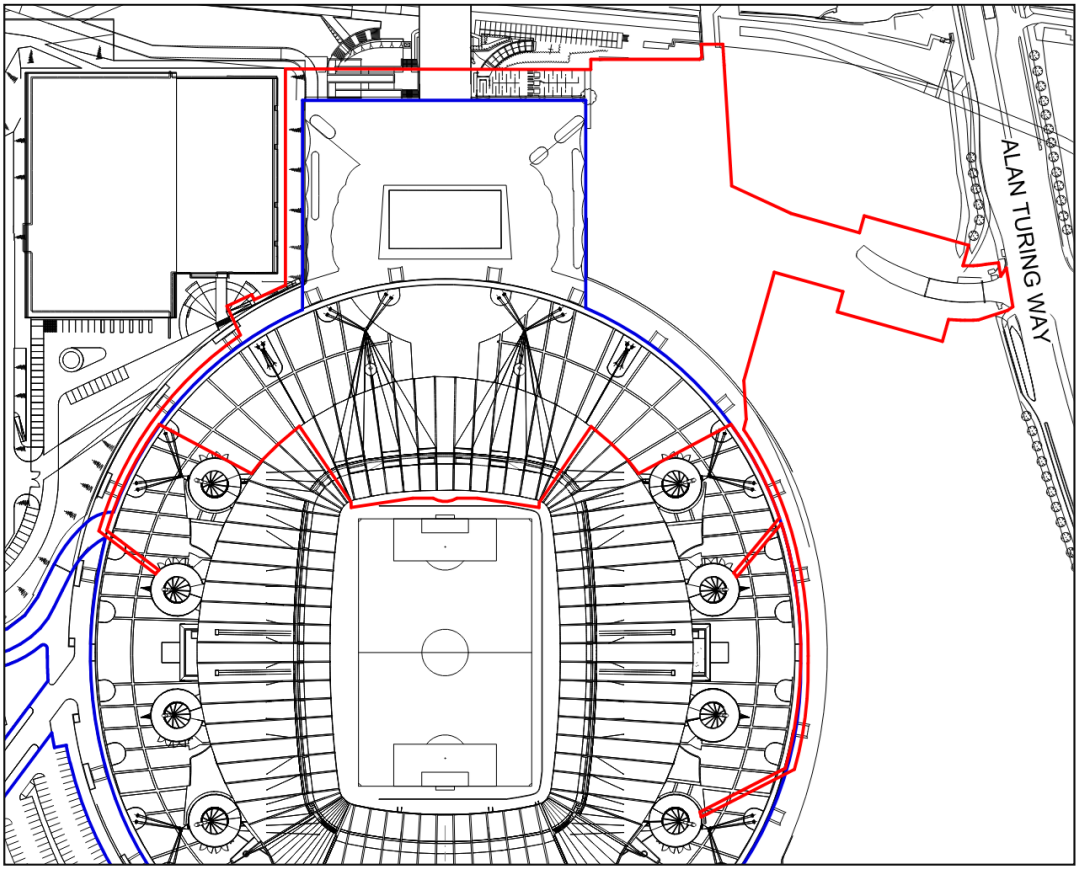


Figure 2-1 Red line boundary

2.2 Current activities on site

The area north of the Stadium is entirely hardstanding (public open space) with Manchester City Shop located within the centre and food pavilions to either side (east and west). North of these is the Etihad Campus tramline station (Metrolink) with Joe Mercer Way forming a bridge over both the tramline and Ashton Canal orientated north-south. Joe Mercer Way is the main pedestrian access point to the Stadium from the north.

A large area to the east is currently occupied by contractor offices for the arena development as well as storage facilities and to the southeast, car parking. The area to the west is occupied by several developments including the Manchester

Copyright © 1976 - 2023 Buro Happold. All rights reserved

Regional Stadium, the National Squash Centre and a waste facility. Soft landscaped areas are present amongst these developments.

To the northeast, adjacent to the contractor offices and just south of Forge Bridge are two circular features exposed on Google Earth satellite images, these are associated with the deep sewer diversion works.

Copyright © 1976 - 2023 Buro Happold. All rights reserved

2.3 Site History

The following summary of the history has been derived from the Desk Study Report [1] and the Groundsure historical maps.

Table 2-1 Summary of site history

Date	On site	Off site
1848	The Site was occupied by fields with several tracks passing through. These all led to a rectangular building in the centre of the Site which included four no. smaller square structures at the periphery and a large rectangular feature (possible water feature?) to the west of it. A small section of the Site to the SW extends onto the Manchester and Salford Water Works Reservoir. The Ashton Canal arm passes through the eastern most extent of the Site.	**North** – Ashton Canal, Lock No. 5 to the northwest and Lock No. 6 to the northeast. Coal Pits to the northeast (south of the canal, opposite Lock No. 6 and west of the canal arm). **East** - An arm off the canal extends southward alongside the east of the Site. Beyond this was Bradford Mill (small wares) and Oxley Place. To the southeast are several additional Coal Pits and Bradford Colliery. **South** – A large water feature adjacent to the Water Works reservoir. Bradford Colliery. **West** –Manchester and Salford Water Works Reservoir SW, Coal Pits (approx. 4 no.) beyond. Another water feature NW with Fustian Mill beyond. A Pottery, Coal Pits, Engine House and Brick Kiln, Brick Field all located beyond the reservoir.
1890s	Site shown as developed: residential buildings to the north (off Eldon St, Wood St and Bailey St). Benson St cuts through the centre of the Site (east-west), south of this is Bewisk Good Station and associated rail land. Philips Park Road also cut through the north of the Site (east-west, north of the residential developments), beyond this is Gratrix's Mills (Lead). Some of the Site to the east and south extend onto Bradford Iron Works. The area surrounding the canal arm (which the Site passes through) was also heavily developed with industry.	**North** – Albion Colour Works (dye works) and Gatrix's Mills (lead mill) located between the Canal and Philips Park Road. Beyond the Canal, Bradford Road Gas Works developed. **East** – Industrial development all around the Canal arm extension, including Park Mills (cotton) and African Mills (cotton). **South** – Colliery still present, extension of Bradford Iron Works and associated rail/tram lines. Chapel and significant residential development. **West** – Engineers and Iron Founders Works (includes a chimney). Water Works Reservoir no longer present, presumed infilled, replaced by rail / tram lines connecting to a main line (L.Y.R. Ardwick Branch). Fustian Mill labelled as Reservoir Mill. Brick Field replaced by residential development. Pottery replaced by Cotton Works
1905 - 1908	Further residential development within north of the Site, between Ashfield St and Middlewood St. Public House in northeast corner. SW of the site extends into Beswick Mineral Yard. Canal arm labelled as Colliery Arm.	**North** – Albion Works cleared. Gas works to the north expanded. **East** – Park Mill replaced with residential development. **South** – Slight expansion to the Iron Works south. Beswick Mineral Yard and Goods Shed developed to the SW. **West** – Reservoir Mill no longer labelled Some additional residential development generally observed (south and west)
1923	The Archaeological Report [2] explains that *c.*1914 the Bradford Iron Works was expanded including the addition of a new wire rod mill. No other significant changes recorded on map.	Slight expansion of Iron Works further south. Alterations observed within the Colliery. Additional building constructed (assumed industrial) to the NW, near Gratrix's Mill. No other significant changes recorded on maps.

Copyright © 1976 - 2023 Buro Happold. All rights reserved

Date	On site	Off site
1930s	No significant changes recorded on map other than the expansion of the Iron Work to the east and canal arm partly developed over by the Iron Works.	**North** – New building to the NW expanded and labelled as Progress Bakery. Additional buildings constructed between Progress Bakery and Gratrix's Mill. Large expansion of Gas Works further north. **East** – Some of the residential developments replaced by the Iron Works. African Mill now labelled as Philips Park Printing Works. **South** –Further expansion/alterations to the Iron Works. **West** – Construction of a larger Goods Shed within the former Beswick Mineral Yard. Engineering Works shown south of the Mineral Yard. Iron Works labelled as Iron Foundry.
1940s	No significant changes recorded on map.	No significant changes recorded on map. Bradford Colliery buildings partly cleared.
1950s	Approximately a third of the residential buildings cleared on Site (between Middlewood St and Eldon St, Eldon St and Beswick Place and Woolton St and Thronbury St).	Bradford Colliery buildings redeveloped, although buildings still connected via tram / rail lines to the main line.
1968	Residential development north of Benson Street entirely redeveloped and labelled as Works. Works covering more of the Canal arm, presumed partially infilled.	**West** – Further development around the Goods Shed, presumed industrial development.
1970s	Travelling Crane occupying north of Site. Large building to the south. Few tram/rail lines remain (3 no. total in the south of the Site). Travel Crane also present to the east.	Much of the residential development cleared. Electrical substations shown adjacent north.
1980	No significant changes recorded on map.	**West** – Clearance of several buildings. **South** – Colliery cleared, only shafts remain shown. Large areas of residential redevelopment further south beyond the Iron Works, including development of a school.
Late 1980s	Clearance of buildings to the north, Benson Street and the majority of the tram / rail lines. Travelling crane shown and a new large building within the northern area. Some rail lines remain as do the works to the south, although no longer shown to be Iron Works. Online sources suggest Bradford Iron Works closed in 1986. Canal Arm entirely gone (presumed infilled).	**North** – Bradford Road Gas Works cleared. Gratirx's Mill cleared, other adjacent works still shown. **East** – Works include a travelling crane adjacent to Forge Lane. **South** – Shafts shown as disused. Development of a depot. **West** – Goods Sheds cleared, much of the rail land cleared. The former Cotton Mill shown as a Factory.
1990s	The Site largely shown as cleared.	Works to the east largely cleared. Foundry to the west still present. All tram/rail land cleared.
2000 (Satellite image)	Aerial satellite image shows lagoon located on Site.	Surrounding areas shown as cleared with construction activities taking place.
2002	The Site entirely redeveloped to include part of The City of Manchester Stadium (Commonwealth Games). Rectangular building shown north of the Stadium.	Entire area surrounding the Site cleared and replaced with some new developments, namely an athletic track (now known as Manchester Regional Arena) to the west and a large building to the north west (now known as the National Squash Courts). Aland Turing Way labelled to the east and Ashton New Road to the south.
2009 (Satellite image)	Aerial satellite image shows the Stadium and Joe Mercer Way as constructed. Stockpile appears to be located within the eastern part of the Site.	Athletics Track, Tennis Centre and National Squash Centre all shown as constructed.. BMX track can be seen on land north of Ashton Canal.

Copyright © 1976 - 2023 Buro Happold. All rights reserved

Date	On site	Off site
2010	Stadium now labelled as Manchester City FC. Manchester FC Shop constructed.	Joe Mercer Way shown to the north. Athletics track to the west labelled as Regional Athletics Arena.
2022	Additional smaller developments shown in the north around the Manchester FC Shop. Road shown to loop around the Stadium connected to Ashton New Road in the south.	**North** – Tramline and Station shown in the north (south of the canal). No other significant changes recorded on map. Co-Op Live Arena under construction north of the Canal (not shown on maps). **East** – Area used as temporary offices for contractors working on the arena development.

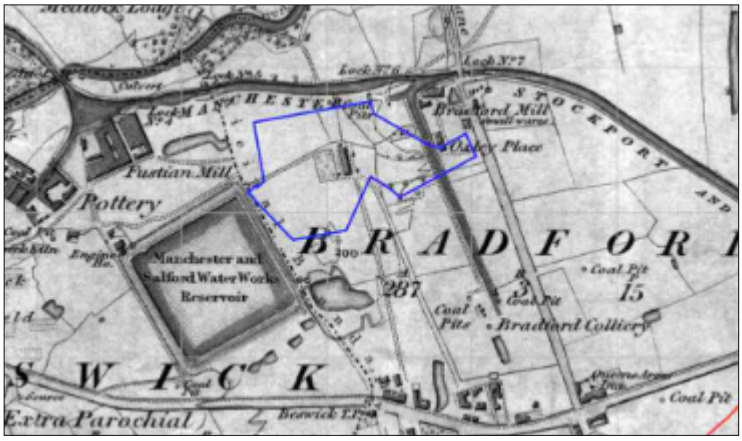


Figure 2-2 Historical map from 1848 showing unknown structure and associated water feature (?) within the centre of the Site

Copyright © 1976 - 2023 Buro Happold. All rights reserved

3 Environmental Setting

3.1 Published geology

The 1:50,000 and 1:10,000 geological maps [3] and [4] together with borehole logs available from several historical Site investigations indicate the geology to be the Carboniferous Pennine Upper Coal Measures, overlain by superficial deposits namely, Glacial Till. The historical investigations utilised include in chronological order:

- ESG and Buro Happold in 2014 [5] [6],
- May Gurney in 2010 [7],
- Norwest Holst in 1998 [8]
- Northern Foundations in 1995 [9]and 1991 [10]

Owing to the significant industrial past of the Site area (including Bradford Ironworks and Bradford Road Gas Works) and the nature of redevelopments, Made Ground will be present.

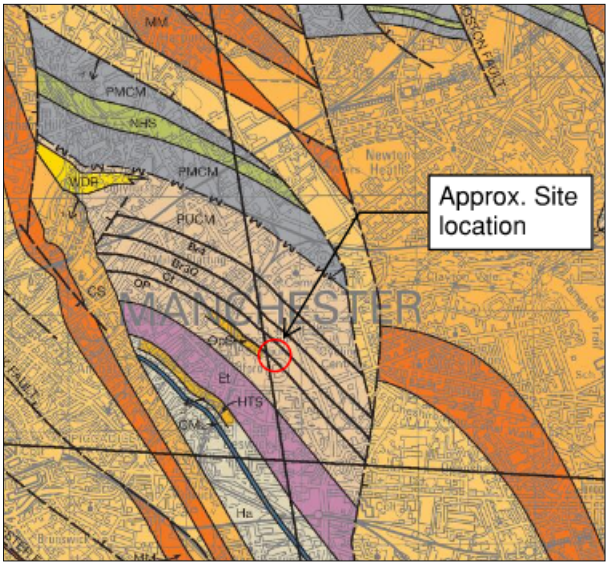


Figure 3-1 Extract of 1:50,000 BGS map (Sheet 85)

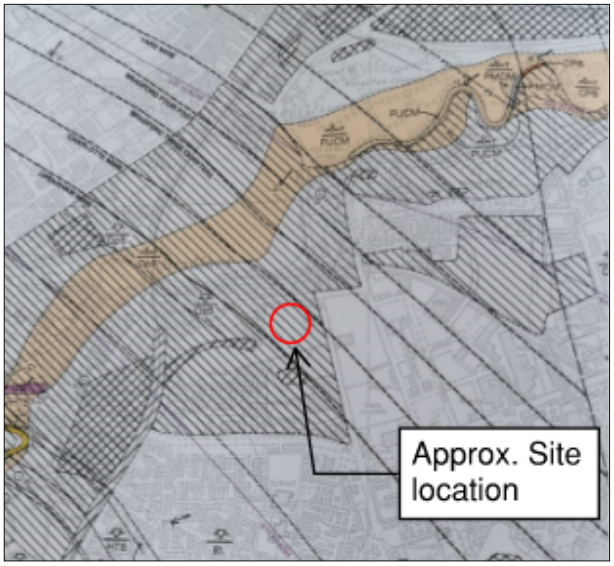


Figure 3-2 Extract of 1:10,000 BGS map (SJ89NE)

The Coal Measures have been thrown up by faulting and are surrounded by Permo-Triassic rocks. The Bradford Fault forms the eastern boundary of the Coal Measures, this has a total throw of about 1000m to the east. The Ardwick Fault system forms the western boundary of the workings. The BGS geological maps indicate two coal seams sub-crop on the Site, the Openshaw and the Charlotte. Further northeast are the Bradford Three Quarter and the Bradford Four-foot seams, owing to the dip direction of the seam (SW) there is a potential that these seams contain workings within the Site area. The maps indicate that the strata dips between 20° and 25° southwest.

During previous ground investigations (ESG, May Gurney, Norwest Holst) rockhead has generally been found between 15m and 21m depth (+47.0 to +41.3mOD). The Coal Measures at rockhead are highly weathered and were typically recorded as very stiff clay, often fissured. In some boreholes rockhead was recorded as weak to moderately weak sandstone or siltstone which was moderately to highly weathered.

Copyright © 1976 - 2023 Buro Happold. All rights reserved

Table 3-1 Summary of geology (ESG and May Gurney)

Strata	Top of Deposit		Approx. thickness
	Approx. depth (mbgl)	Approx. elevation (mOD)	
Made Ground Comprises a range of material types from manufactured asphalt and sub-base to re-used natural superficial materials containing anthropogenic fragments of brick, concrete, metal, ash and occasional clinker and slag.	0	~60.9	0.7 to 5.3
Glacial Till (Clay) Firm becoming firm to stiff and locally stiff to very stiff, brown and grey, thinly laminated fissured, CLAY with fine to coarse gravel. Occasionally described as slightly sandy and slightly silty.	3.2	57.8	11.1 to 14.3
Coal Measures Very weak becoming weak (from approx. 18mbgl) and becoming moderately weak (from approx. 25mbgl) grey thinly laminated very silty MUDSTONE. Weathering is variable throughout the deposit and is expected to be completely weathered around coal workings.	15.7	45.4	Depth not proven
Coal Seams			
Coal encountered at (May Gurney BH15/09):		43.6	0.24m
Coal encountered at (ESG BHNS3):		41.6	0.31m
Coal encountered at (May Gurney BH13/09):		36.1	0.15m
Coal encountered at (ESG BHNS1E):		34.8	0.25m
Coal encountered at (ESG BHNS1E):		34.0	0.15m

3.2 Hydrogeology

The Coal Measures are classified as Secondary (A) Aquifer defined as permeable layers capable of supporting water supplies at a local rather than strategic scale and in some cases forming an important source of base flow to rivers. Direction of groundwater flow is considered to be generally west / southwest, following the direction of the River Medlock. There are five groundwater abstractions located within 1km of the Site. The Site is not within a groundwater source protection zone. The abstractions are related to the following:

- Borehole at premises at Clayton, Manchester. Ciba Specialty Chemicals Plc (>900m southeast)

Copyright © 1976 - 2023 Buro Happold. All rights reserved

- Two boreholes at Openshaw, West Ashton, Manchester. One associated with Evonik Chemicals Ltd and the other associated with Manchester City Football Club (>900 southeast)
- Two boreholes at premises at Croft Street, Clayton, Manchester (>900m east)

3.3 Hydrology and Drainage

Ashton Canal is located to the north of the Site, beyond the Metrolink (33m north). The Canal climbs for 10.8km through 18 locks toward Ashton-under-Lyne. Lock No. 9 is located nearest to the Site, resulting in a 3.5m ground level change.

The River Medlock is located about 176m northwest of the Site and flows south and west toward the River Irwell in Manchester City Centre. The course of the River Medlock once meandered through the land north of the Site (within the Co-Op Live arena development site). By the early 1890s it had been diverted and realigned northwards. Then by 1905, the River was contained within a 600m-long culvert below the former Bradford Road Gas Works site. There is an entrance opposite Philips Park (>300m north) and another entrance by to the west of the Site by Ashton Canal Park (>300m west).

The stage datum for the River Medlock is +35.832m AOD, data obtained by the Environment Agency (presented on River Levels website [11]) describes the typical recent levels of the river at Gurney Street (approximately 700m southwest of the Site) as between 0.11m and 0.36m (+35.942m and +36.192m AOD). The highest recorded level (since data collection began) is 3.37m (+39.202m AOD).



Figure 3-3 Extract from the Groundsure Report, showing the location of the River Medlock and Ashton Canal relative to the Site.

Copyright © 1976 - 2023 Buro Happold. All rights reserved

4 Coal Mining

4.1 Information sources

The principal sources of historic mining information relied upon are the following:

- Groundsure report
- 1991 Northern Foundations, various documents (S.I. 5400) Appendix A and B, borehole logs, drawings
- 1995 Northern Foundations, Precis Reports on Phase 2 Site Investigation at Eastlands, Manchester
- 1999 Norwest Holst, Report on a ground investigation at Manchester Stadium (Area S)
- 1998 Arup, Interim Geotechnical Report
- 2001 Arup, Remediation and Enabling Works Methodology Statement (Sportcity Eastlands – Enabling Works Phase 1)
- 2002 Drilltec Northern, Metrolink Advanced Works, Drilling and Grouting
- 2002 Van Elle, Site records and grout location plans (SE Stadium)
- 2004 Arup, Validation Report (Sportcity Phase 3 Enabling Works) [12]
- 2008 Arup, Sportcity Constraints Establishment, Context Report [13]
- 2010 May Gurney Geotechnical, Site Investigation Report (Sportcity Remediation and Servicing Contract) [14]
- 2010 Arup, Geotechnical Interpretative Report (Sportcity Remediation and Servicing Works) [15]
- 2010 Arup, Outline Remediation Strategy (Sportcity Remediation and Servicing Works) [16]
- 2010 Buckingham Group Ltd, Remediation Strategy [17]
- 2011 Buckingham Group Ltd, Verification Report [18]
- 2011 Buckingham Group Ltd, Master Mine Stabilisation Works Validation Report (Sportcity Remediation and Servicing Works) [19]
- 2011 BWB Consulting, Area C Mine Stabilisation Works Validation Report (Sportcity Remediation and Servicing Works) [20]
- 2011 Buckingham Group Ltd, Removal of Constraints for New Developments over the Existing Mine Shafts at Sportcity Manchester [21]
- 2011 BWB Consulting, Area C Earthworks Validation Report (Sportcity Remediation and Servicing Works) [22]
- 2013-2014 ESG, Factual and Ground Conditions Report, A3174-13 [5]
- 2020 CC Geotechnical Ltd, Ground Investigation for Proposed Shaft, Factual Report [23]

4.2 History

The Site is located within the Central Manchester Coalfield (CMC) and has a long history of coal mining. Early mine workings date as far back as the 1590s, where shallow coal was extracted from thin seams via a method known as 'bell pits'. This methodology requires a shaft to be sunk to the seam and coal extracted by miners, a winch was used to carry coal to the surface. As coal extraction proceeded the bottom of the shaft was enlarged and a sloping roof created, resembling a bell shape. When these pits were considered too dangerous to work, they were abandoned and a second shaft sunk nearby (see Figure 4-1). Between the 1700s and 1800s it was likely the coal within the top 100m of the ground surface was mined using 'pillar and stall' techniques.

Copyright © 1976 - 2023 Buro Happold. All rights reserved

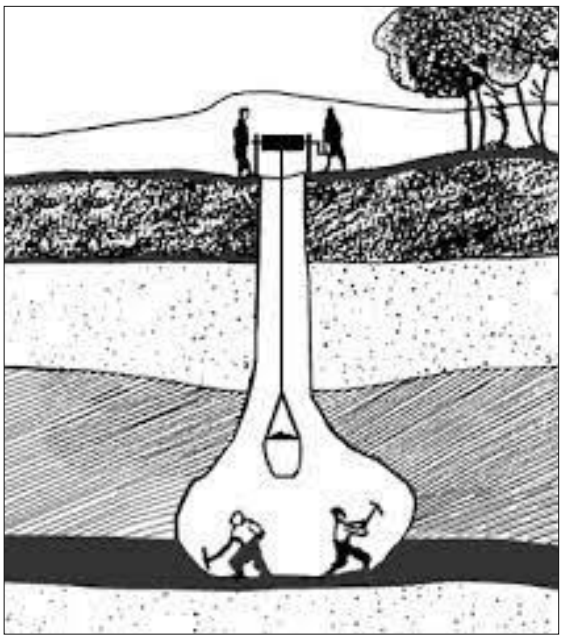


Figure 4-1 Example of bell pit construction [24]

Clayton Colliery was located on the south side of Ashton New Road, and it was served by Clayton Branch of the Ashton Canal. Clayton Colliery is understood to have opened in 1798, owing to its close proximity to Bradford Colliery (southeast of the Site) these were merged around the 1870s. Coal was worked by deep mining from Bradford Colliery in the Roger, Crombouke, Parker and Four-foot seams.

In 1948, Bradford Colliery became the first pit in Britain to adopt 'longwall' mining techniques. However, there were many reports of subsidence in the overlying and surrounding areas including the tilting of the gas holder north of the Canal. Consequently, the National Coal Board decided they had to close Bradford Colliery down in 1968.

4.3 Coal Seams Beneath the Site

The cluster of productive seams that sub-crop across the wider Sportcity area include: Openshaw Mine, Charlotte Mine, Three Quarters Mine and Bradford Four-foot Mine. The seams in this group were separated by bands of shale and fireclay. Situated at a depth of about 509 yards (465m) the Bradford Four-foot Mine is the deepest and thickest of these seams (depth assumed to be from Bradford Colliery, seam sub-crops to the north and east of the Site). Below the Bradford Group are the Parker Mine, Crombouke Mine and Roger Mine. The insets to the Parker and Roger Mines are at depths of about 543 yards (496m) and 946 yards (865m) respectively. The Crombouke Mine is 26 yards (24m) above the Roger Mine.

In the early 1870s fireclay (used to manufacture bricks) was exploited from some of the shallow workings, including the Openshaw, fireclay workings were abandoned in 1903. The shallow / outcropping seams from the Bradford sequence were apparently worked at a very early date from a series of shafts accessing the coals close to sub-crop. Shallow mine workings of similar (early) date were also present within the Charlotte Mine, and it is these workings along with the Openshaw seam that sub-crop at the Site. In addition to the main seams recorded (as detailed above) a series of thinner seams have also been recorded by Arup [25]. These thinner seams are recorded to sub crop between the Charlotte seams and the Bradford Three Quarter and are named as Thin Coal A, Thin Coal B and Thin Coal C.

Copyright © 1976 - 2023 Buro Happold. All rights reserved

Using information from existing ground investigations (summarised by Arup [25]), the following sequence of the Coal Measures has been inferred:

Table 4-1 Likely sequence of coal measure strata beneath the Site

Sequence	Approximate thickness	Description
Openshaw Mine	~0.4m	Sub-crop located in the southwest of the Site.
Measures between the Openshaw the Charlotte Mines	>9m	Mainly mudstone with sandstone in the upper part.
Charlotte Mine	~10m	Sub-crop located within the central part of the Site. Partial collapse reported. Sequence of weak seatearth mudstones with up to three separate coals: 0.8-1.1m Coal (worked) 2-3m Seatearth 0.3-0.4m Coal 4-5m Seatearth 0.5-1m Coal (often parted)
Measures between Charlotte Mine and Thin Coal A	~23-25	Variable strata sequence, often with thick sandstone in the lower part. Several thin impersistent coal seams 6m, 8m, and 13m above Thin Coal A. The horizon 13m above the Thin Coal A has been locally worked as the Charlotte Coal.
Thin Coal A	-	Sub-crop located within the east of the Site. Thin, but persistent coal.
Measures between Thin Coal A and B	~21m	Mainly mudstone, often dark at top & base of sequence.
Thin Coal B	-	Sub-crop located within far northeast of the Site. Thin, but very persistent coal.
Measures between Thin Coal B and C	~16m	Often dark mudstone with ironstone bands.
Thin Coal C	-	Thin, but persistent coal.
Measures between Thin Coal C and Bradford ¾ Mine	~20m	Mainly mudstone, some sandstone bands. Thin Coal sometimes present ~6m below Thin Coal C.
Bradford ¾ Mine	~0.8m	Often worked horizon. Occasionally absent.
Measures between Bradford ¾ Mine and Bradford Four-foot	~16m	Mainly mudstone, thick sandstone horizon in places.
Bradford Four-foot Mine	~2-2.5m (coal and parting)	Complex horizon. Extensively worked. General sequence: 1-1.5m Coal 1m Seatearth 0.1m Coal

It is to be noted that the coal seam thicknesses have been estimated from historical ground investigation information based on the encountered coal and/or voids due to workings or poor recovery. Additional seams are located beneath the Bradford Four-foot seam however, these are unlikely to impact the design owing to their depth down dip. The coal seams are presented with a cross-section, refer to drawing NSE-BHE-XX-XX-DR-CG-001002 at the end of this report (extract also provided in Figure 6-1).

4.4 Historic workings and mine shafts

4.4.1 CON29 Report

Copyright © 1976 - 2023 Buro Happold. All rights reserved

A CON29 report has been obtained (see Appendix B), within which the following comments are made:

1. Area of past underground coal mining

A record of mine entry or entries has been identified within 20m of the Site. Additionally, the zone of influence of a mine entry has been calculated to encroach into the Site (see Figure 4-2). The Coal Authority believe the mine entry itself is likely to be outside of the Site boundary and a site investigation to clarify its exact condition and location is unlikely to be a viable option and that no further remote searches would be of value. The Site lies within the potential zone of influence of recorded workings in 7 seams of coal. The most recent underground working in the area was 1961. These workings lie between 40m and 985m. Any ground movement due to this mining activity should have stopped. The Site is also indicated to lie within an area where coal deposits have been worked at shallow depth in the past but for which no plans exist. A coal outcrop is recorded to pass through the Site boundary. There is a possibility of unrecorded mining features associated with this coal outcrop within the Site boundary.

2. Shafts and adits (mine entries)

A potential risk due to past underground coal mining has been identified within the boundary of the Site. Whilst no further searches are required, it should be noted that in the event of coal mining settlement or subsidence occurring, the property will benefit from the protection of the Coal mining Subsidence Acts of 1991 and as amended in 1994.

3. Withdrawal of support

The Site lies within an area where a notice of entitlement to withdraw support has been published. This notice was issued in 1955.

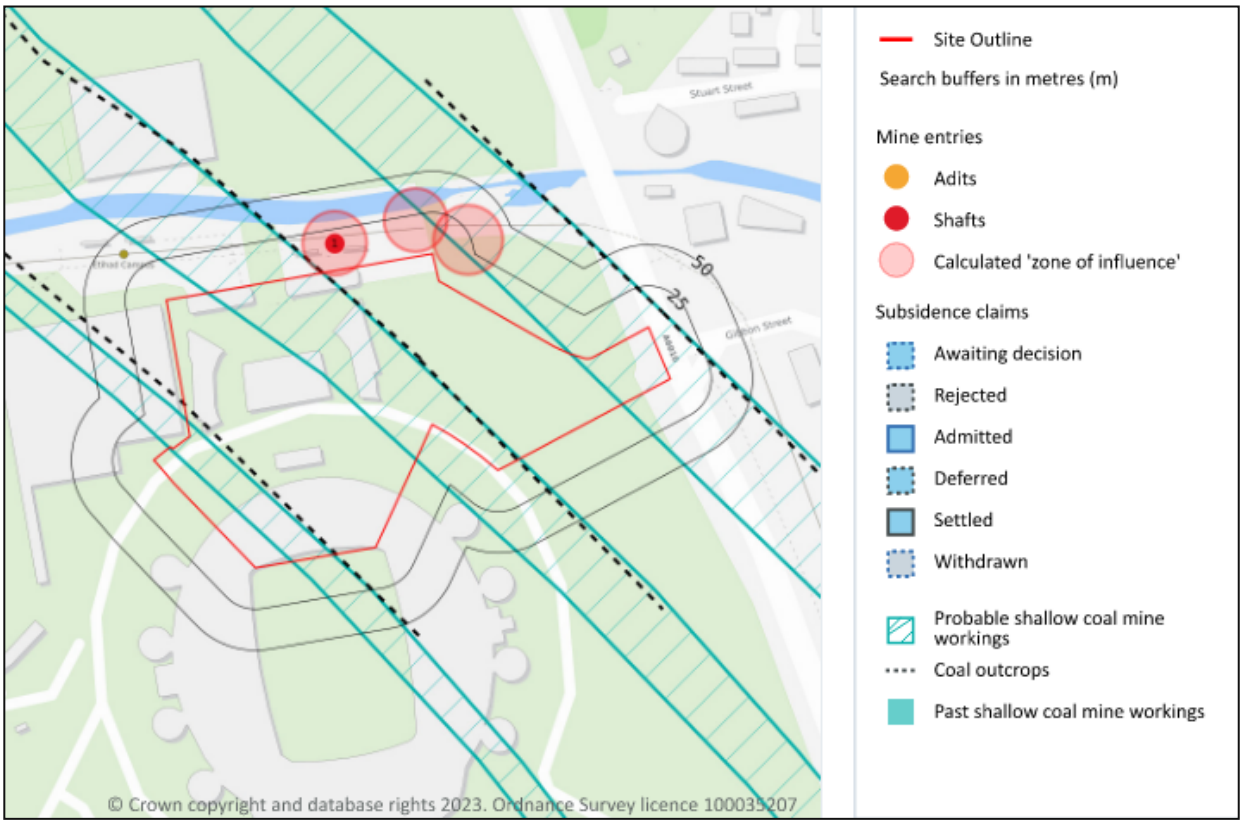


Figure 4-2 Coal mining seams and shafts located within the vicinity of the Site (image taken from the CON 29 report (as part of the Groundsure package) included in Appendix B).

Copyright © 1976 - 2023 Buro Happold. All rights reserved

4.4.2 Coal abandonment plans

Coal abandonment plans have been obtained for the Site for three seams (Bradford Four-foot, Roger & Crombouke), and an additional further plan with no reference to which seam it relates to (see Appendix A). The full set of abandonment plans with the Site boundary are presented in drawing NSE-BHE-XX-XX-DR-CG-002002 at the end of this report.

Abandonment Plan NW643 (Figure 4-3), date of construction August 1962 shows that workings have been carried out beneath the Site within the Bradford Four-foot Seam from the No.1, No.2 and Forge (Little Pit) shafts associated with the Bradford Colliery which lie to the southeast of the Site. Forge Shaft is shown to reach the Four-foot Mine at 111 yards (101m). The seam is shown to be divided into two parts, 9'' (0.23m) and 3'6'' (1.07m), respectively. The workings associated with Bradford Four-foot are recorded as abandoned by 1891. There is no guidance on the type of mining that was carried out, although during the 1800s the likely method of working coal was pillar and stall. However, there are records that date back as early as the 1700s and possibly even the 1500s therefore bell pits cannot be discounted given the Bradford Four-foot sub-crops near to the Site. The limit of the working is located to the east, between the former Bradford Wire Works and the Printing Works (south of the canal).

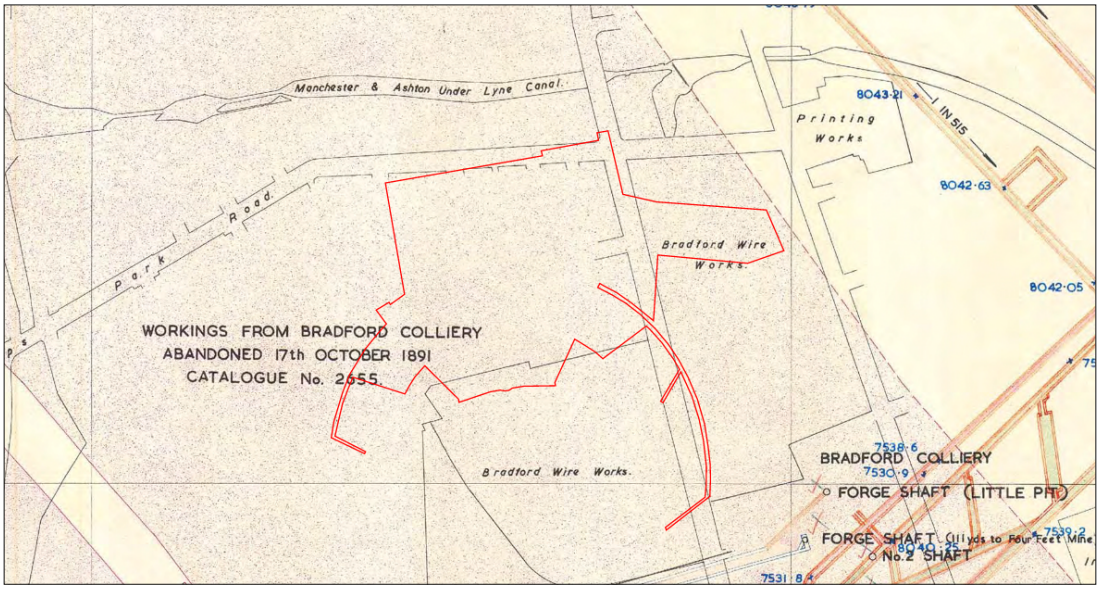


Figure 4-3 Extract of abandonment plan NW 643 (Bradford Four-foot Seam)

Abandonment Plan NW644 (Figure 4-4), date of construction May 1954, shows workings within the Crombouke seam beneath the Site, commencing from the No.1 and No.2 shafts of the Bradford Colliery. The section shows the seam as being 4'1'' thick (1.24m). The plan indicates the seam was worked in panels. The eastern panel was worked in 1912 at a recorded depth of about 840m below ground level (approximately located beneath Forge Lane). There are then a further four panels working westward, each dated a later year (i.e. 1913, 1914, 1915, 1916). The far western panel dated in 1916 recorded a depth of working at about 874m below ground level. The method of working is not clearly shown but is assumed to be either pillar and stall or long wall.

Copyright © 1976 - 2023 Buro Happold. All rights reserved

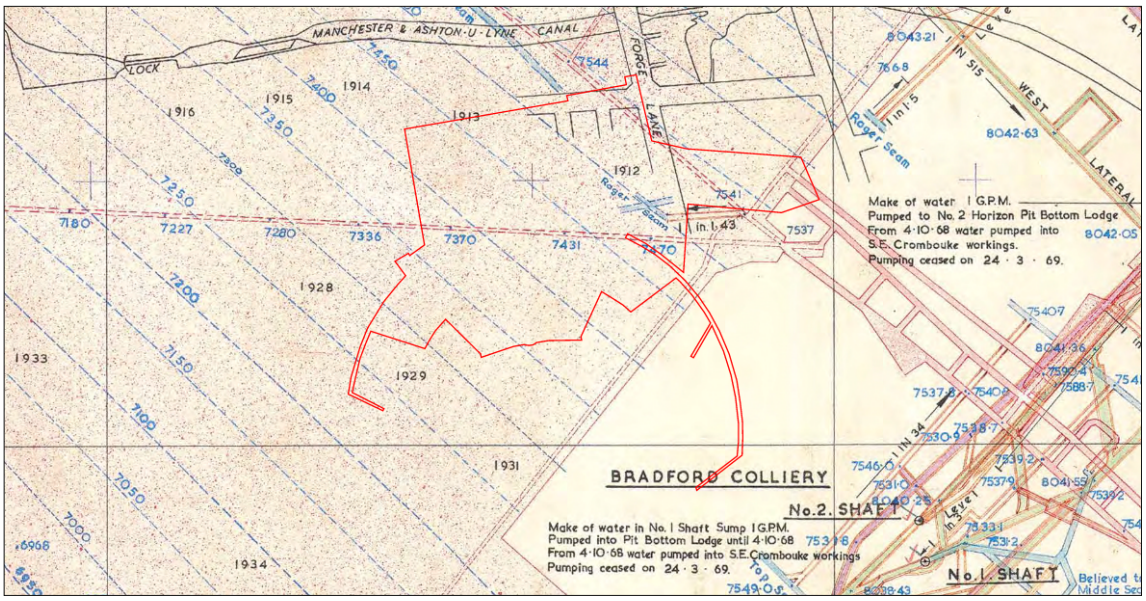


Figure 4-4 Extract of abandonment plan NW 644 (Crombouke Seam)

Abandonment Plan NW645 (Figure 4-4), date of construction May 1954, shows workings within the Roger seam carried out beneath the Site, commencing from the No.1 and No.2 shafts of the Bradford Colliery. The section shows the seam as being 7' thick (2.13m). The plan indicates two areas of working, with possible adits extending from the Colliery to the worked seam areas. The area to the southeast was worked in May 1943 (orientated approximately east west). Worked levels are around 880m below ground level. The area to the north was worked in November 1943 (orientated approximately northwest to southeast). Worked levels are recorded around 865m below ground level. The Roger seam is recorded as 26 yards (23.8m) below the Crombouke seam. The seam is shown to have been worked using long wall method.

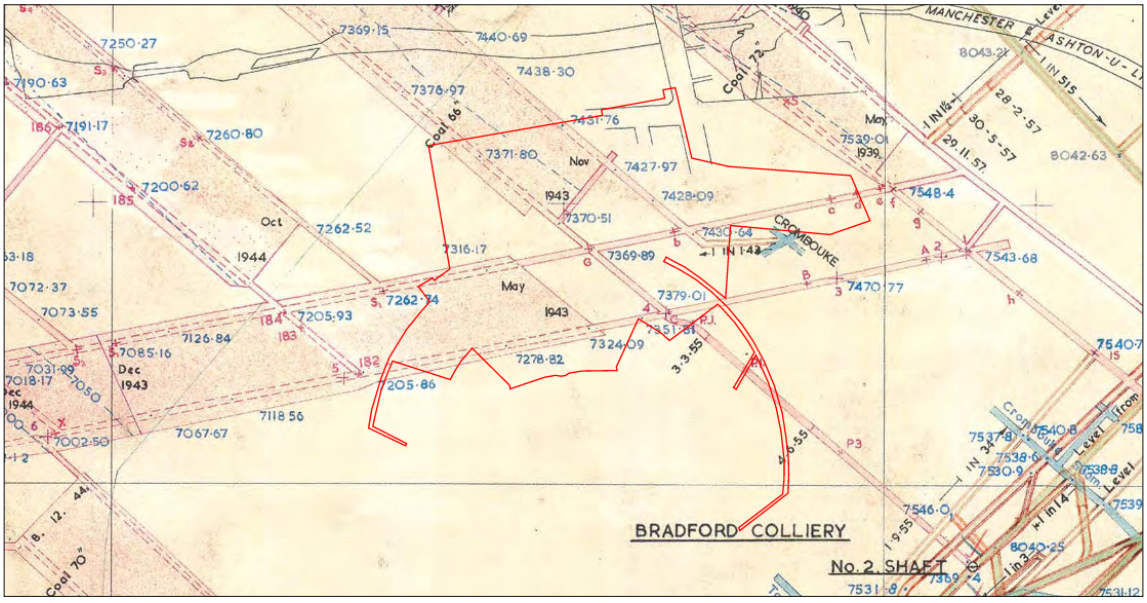


Figure 4-5 Extract of abandonment plan NW 645 (Roger Seam)

Copyright © 1976 - 2023 Buro Happold. All rights reserved

Parker Mine Abandonment Plan shows workings beneath the Site carried out between 1901 and 1922. The depth of the workings or which seam they were targeted within is not specified. The area of workings is under most of the north and northwest of the Site, with the 1922 arm extending southward.

An unknown abandonment plan dated 1949, labelled as 14917 (see Figure 4-6) does not present any obvious features within the Site. However a number of unknown structures can be seen to the east (grey rectangular boxes) along with shafts to the north and northeast. These features have been overlain onto a plan (see drawing NSE-BHE-XX-XX-DR-CG-002002 at the end of this report) to see if there are any correlations with other known features.

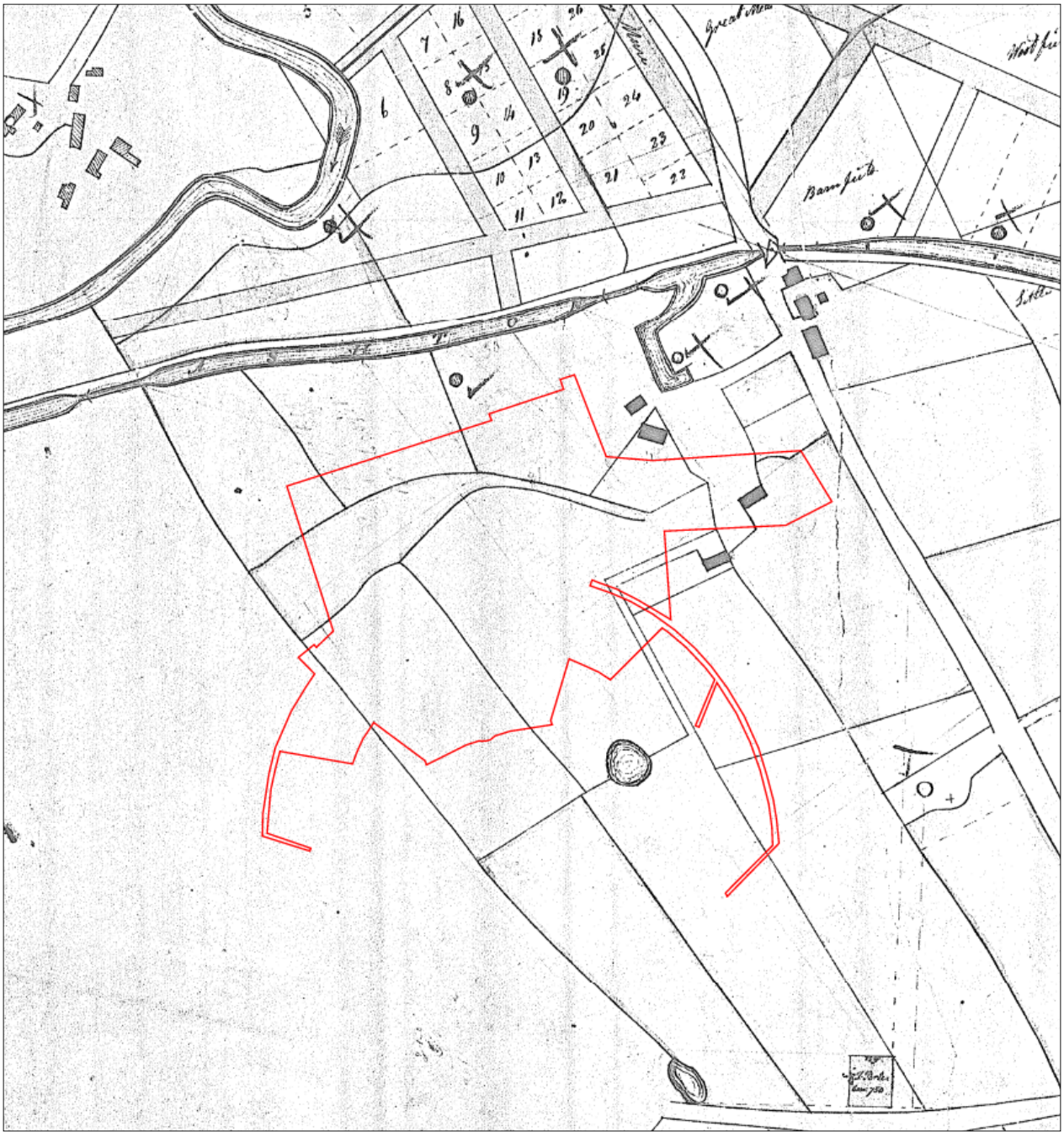


Figure 4-6 Extract of abandonment plan 14917, dated 1949

Copyright © 1976 - 2023 Buro Happold. All rights reserved

4.4.3 Mine shaft records

There are a number of mine shafts located in the surrounding areas, although none specifically identified on Site. This said, unrecorded mine shafts that do not appear of Coal Authority records cannot be discounted at this stage. Four shafts were sunk at Bradford Colliery over the years, the Colliery is located some 200m southeast of the Site. The two earliest were Forge Pit and Little Pit, the latter being an air shaft to ventilate the workings. The first modern shaft was Deep Pit (No. 1) *[later referred to as Shaft U by Arup and Buckinghams]*, this was sunk in 1854 and had a diameter of 18 feet (5.5m). The second modern shaft was the Parker Shaft (No. 2) *[later referred to as Shaft T by Arup and Buckinghams]*, which was sunk in 1902.

Deep Pit (No. 1) reached a depth of 923.3 yards (approximately 844m), the Crombouke seam was intersected at the bottom of the shaft. The Parker inset was recorded at about 496m below ground level. Parker Shaft (No. 2) was sunk to a depth of 955.8 yards (approximately 874m), intersecting the Roger seam at approximately 865m below ground level. The Parker inset was recorded at about 498m below ground level and a second Parker inset (recorded as Parker New Return inset) recorded at about 798m below ground level. Forge Pit was sunk to approximately 138m below ground level according to the Bradford Four-foot Coal Mining Abandonment Plan (see Appendix A), though online references [24] suggest the shaft was sunk to a depth of over 500 yards (457m) to reach the Bradford Four-foot. The Coal Mining Abandonment Plan (see Appendix A) includes a reference of 111 yards (101m) to the Four-foot Mine from Forge Shaft.

Reorganisation and reconstruction of the Bradford Colliery was completed in 1958 when four faces were in operation in two seams; the Roger Mine and the Crombouke Mine. Deep Pit (No. 1) served as a 'downcast' to carry air down into the colliery whilst Parker Shaft (No. 2) was the 'upcast' which extracted the stale air, see Figure 4-7.

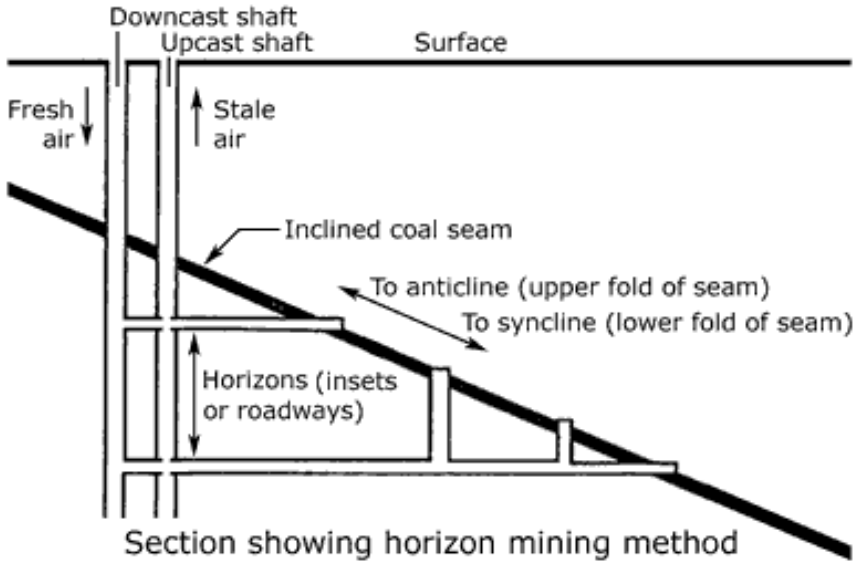


Figure 4-7 Method of mining suitable for inclined coal seams [24]

Copyright © 1976 - 2023 Buro Happold. All rights reserved

The nearest shafts located to the Site are those to the north and northeast, Shaft F, Shaft G, Shaft I and Shaft H, see drawing NSE-BHE-XX-XX-DR-CG-002001 at the end of this report. A summary of these shafts is presented in Table 4-2 along with the any treatment details.

Table 4-2 Mine shafts within close proximity to the Site

Shaft Ref	Coal Auth. Ref.	National Grid Ref	Location	Shaft description	Treatment details
F	386398-005	386797, 398757	Located south of the Metrolink Corridor, north of the Site.	2.4m diameter with two courses of brick lining and covered by a concrete slab. Proved to 80m, close to expected depth of Bradford Four-foot Coal.	Coal Authority (CA) record the shaft was pressure grouted to a depth of 40m with 25.5tonnes of grout by contractors on behalf of Amec Capitol Projects Ltd. Shaft backfill pressure grouted as part of Metrolink Advance Works Contract. Grout injected under pressure until constant pressure was maintained indicating limit of grout take, process repeated until casing was at 20m and grout at the surface. Total grout take was 23 tonnes. No cap constructed.
G	386398-006	386847, 398773	Located south of the Metrolink Corridor, northeast of the Site.	-	Shaft backfill pressure grouted as part of the Metrolink Advance Works Contract. Borehole drilled, 75mm casing installed to 40m depth. In total 23 tonnes of grout injected under pressure at 40m depth. Process repeated in stages until 10m depth. Total grout take for shaft was 25.5 tonnes.
H	386398-013	386882, 398758 BH1: 386891.7, 398742.3	No primary source other than CA to show the shaft at this location.	Shaft location investigated during Metrolink and Stadium enabling works and not located. In 2010 a total of 150 probe holes were drilled in a spiral pattern at 1.5m centres to explore the position of the shaft. Shaft potentially located during the 2020 CCG ground investigation whereby 42m of Made Ground (with low SPT results) was encountered within the BH1 location (some 20m south).	No details, investigated but not located, based on historic plans conjectured position is NE of Shaft I, as Shaft I was identified this would suggest Shaft H is beneath the Metrolink land; however, if the 42m of made ground encountered by CCG in 2020 is in fact the location of Shaft H, it would place it approximately 10m east of the site as shown in drawing NSE-BHE-XX-XX-DR-CG-002001.
I	386398-012	386919, 398782	Located to the south of the Metrolink, northeast of the Site.	Shaft located, 2.3m diameter with two courses of brick lining. Proven to 51m, close to the expected depth of the Bradford Four-foot seam	Shaft was pressure grouted in October 3001 for Amec Capitol Projects Ltd. Borehole drilled, 75mm casing installed to 40m depth. 20 tonnes of grout injected under pressure at 40m depth. Doesn't confirm the depth of the shaft. Total grout take was 31 tonnes.

Copyright © 1976 - 2023 Buro Happold. All rights reserved

As noted in Table 4-2 above, CCG undertook a ground investigation in 2020 in connection with the proposed construction of a deep shaft (sewerage) off Alan Turing Way. The scope of the investigation comprised the sinking of 4no. boreholes (BH1 to BH4, inclusive) by cable percussion methods. Borehole 1 (NGR 386891.7, 398742.3) discovered 42m of Made Ground in close proximity to the previously unknown location of Shaft H mentioned in Table 4-2. It is thought this is either Shaft H or another unrecorded shaft as there is no previous coal authority reference for this location. Notwithstanding this information, further unrecorded mine entries within or nearby to the Site (that do not appear on the Coal Authority records) cannot be discounted.

All mine shaft locations including the location of BH1 from the 2020 CCG ground investigation have been plotted on a Site plan, shown on drawing NSE-BHE-XX-XX-DR-CG-002001. Many plans do not include co-ordinated positions of the shaft locations and therefore have been inferred based on unchanged features i.e. Ashton Canal. The precise location of these inferred positions cannot be relied upon and should be treated as approximations.

4.5 Previous mine treatment works

Significant grout treatment and validation works have taken place across the wider Site area, these are presented within drawing NSE-BHE-XX-XX-DR-CG-001003 at the end of this report.

2000 Stadium grout works (assumptions based on grout plan, no information on grout takes)

As part of the Stadium development, it would appear that grout works were concentrated around the Charlotte Coals and the Openshaw. No grout records have been made available for review in respect of the main works undertaken below and in the immediate vicinity of the Stadium. However, a plan showing the grouting grid has been located, and this appears to show a 6m grout grid pattern reducing locally to 3m in areas. It is assumed that the grid pattern was locally reduced to 3m as a result of increased grout take suggesting the potential for voids having been encountered in these areas.

2001 Metrolink Area 6 and Area 7 (IMC Northern) [26]

In addition to the main grouting work undertaken below and in the immediate vicinity of the Stadium, in 2001, Drilltec Northern Ltd also carried out grout treatment work within a number of areas along the Metrolink tramline alignment. The area's most relevant to the Site include Area 6 and Area 7.

Area 6: Proving holes were initially drilled on a 12m grid to prove the presence and extent of any workable coal seam, holes were drilled to a depth of some 30m. The drilling proved a band of coal up to 1m thick in the centre of the area. The coal was shown to dip northeast to southwest. Rock head was found at 11m. The drilling pattern was reduced to a 6m grid in this area and coal was found to be solid with no evidence of mine workings or broken ground. Grout was injected under pressure in a PFA / cement ratio of 10/1 into each drill hole. The average grout take per hole was some 0.24 tonne (approximately equivalent to the amount required to fill the drill holes).

Area 7: Proving holes were initially drilled on a 12m grid to prove the presence and extent of any workable coal seam, holes were drilled to a depth of some 30m. The drilling proved a band of coal up to 0.8m thick in the eastern/central part of the area. The coal was shown to dip northeast to southwest. Rock head was found at 10m. The drilling pattern was reduced to a 6m grid in this area and coal was found to be solid with no evidence of mine workings or broken ground. Grout was injected under pressure in a PFA / cement ratio of 10/1 into each drill hole. The average grout take per hole was some 0.21 tonne (approximately equivalent to the amount required to fill the drill holes).

2002 Van Elle (southeast of the Stadium) [27]

Copyright © 1976 - 2023 Buro Happold. All rights reserved

Van Elle completed grout treatment works to the southeast of the Stadium, targeting the Charlotte lower leaf and Charlotte upper leaf. Drill holes appear to be in a 6m grid, reducing to 3m grid in areas of coal and broken ground and reduced again to a 1.5m grid in localised areas. There are drill records with accompanying grout records however the grout takes are not clear (no total volumes provided).

2010 Buckinghams / BWB [28], [29], [30]

Validation Area D: This was completed to validate the area covered by Van Elle, an area of approximately 900m2 located to the southeast of the Stadium, targeting the Charlotte seams. A seam of grey mudstone / coal consistently identified at depths of between 16.8m and 24.1m BGL. The seam thickness was recorded between 0.4 and 1.3m. This was assumed to be the upper charlotte seam. A second seam of coal, 0.6m in thickness, was identified in borehole I55 at a depth of 27.3mbgl, assumed to be the charlotte lower seam. No soft drilling or loss of flush was recorded during drilling in either of the seams. There were a total of 9 holes on a 12m grid to depths of 30mbgl. Each hole was backfilled with grout upon completion of drilling, with all holes taking between 0.15 tonne and 0.2 tonne. The total volume of grout taken in all 9 holes was 1.5 tonne. Due to the low grout takes, it was concluded that no voids remain in Validation Area D and the area has been sufficiently treated.

Treatment Area D: Covering an area of approximately 5,000m2, located to the southeast of the Stadium, targeting the Charlotte seams. A total of 174 holes primarily on a 6m grid to depths of 30m to 33m BGL. Majority of holes took no more than 0.15 tonne. Twelve holes within primary grid took in excess of 0.15 tonne with the highest taking 0.9tonne and the lowest being 0.2 tonne. The total grout take of the primary grid was 32.8tonne which equates to an average of 0.19tonne per hole.

Treatment Area E: Covering an area of approximately 3,500m2, located to the south of the Stadium, targeting the Openshaw Coal seam. The work involved drilling and grouting 140 holes on a primary 6m grid to a depth of 30m to 33m BGL. There were two seams associated with the Openshaw Coal, the lower seam (labelled as Openshaw B) was encountered across the majority of the working area at approximate depths of 13m BGL in the north of the area and 25m BGL in the south. The seam appeared to dip at an angle of between 7° and 17° SW and was approximately 0.3m thick. The upper seam (labelled as Openshaw A) was identified in the south western portion of the area, dipping at an angle of approximately 20°, also about 0.3m thick. Grout takes did not exceed 0.3tonne, with the majority being recorded at about 0.15tonne. The average take was 0.17tonne per hole. The low grout take indicated no voided or broken ground was present within this area targeting the Openshaw Coal.

Copyright © 1976 - 2023 Buro Happold. All rights reserved

5 Coal Mining Risk Assessment

The potential coal mining risks associated with the Site have been assessed below with respect of the following considerations:

- The spatial distribution of shafts and/or coal mining features (including possible structures, see drawing NSE-BHE-XX-XX-DR-CG-002001)
- The spatial distribution of coal seams based on ground investigation data
- The spatial distribution of broken ground and voids based on existing ground investigation data
- The spatial distribution of the proposed development
- Any proposed foundation strategy envisaged – deep piling (CFA or rotary bored and shallow raft)

Given the foregoing considerations, the whole Site is considered to be at potential risk from former coal mining activities.

The potential risks include the following considerations:

- Migration of voids and adverse settlement from shafts or other coal mining features
- Collapse of deep workings beneath deep foundations
- Subsidence due to shallow workings
- Migration of mine gas into the proposed development
- Spontaneous combustion of coal / potential for underground fires

The identified risks based on these constraints are summarised below.

Table 5—1 Coal Mining Risk Assessment

Source	Hazard	Occurrence	Risk
Shafts and/or other coal mining features / structures	Untreated Mine Shaft (not located)	1 no. mine shaft (Shaft H) currently not located, thought to be within the Metrolink cutting (based on BWB / Arup work in 2010). However, 2020 CCG investigation uncovered the potential location, or another unrecorded shaft, approximately 10m east of the Site and 20m south of trajected position of Shaft H.	Adverse settlement beneath proposed buildings. Migration of voids, crown holes, collapse of ground, etc. Investigation to conclude the locations of any further unrecorded shafts on Site .
	Treated mine shaft	3 no. mine shafts (F, G & I) treated nearby to the Site (north).	No risk envisaged – treatment work was carried out in 2011. Building not located on treated mine shafts and foundations located suitable distance away.
	Historical unknown structures	Unknown structures present within the centre of the Site on the 1848 OS historical map. Four unknown structures shown on the 1949 abandonment plan.	Potentially unstable ground, void if associated with a shaft, crown holes, collapse of ground, etc. Or potential existing deep foundation forming an obstruction. Further detailed investigation within the area should be considered.

Copyright © 1976 - 2023 Buro Happold. All rights reserved

Source	Hazard	Occurrence	Risk
	Subsidence from shallow mine workings	The description and anticipated thickness of each seam is discussed in Table 4-1. Given the limited coverage of the existing ground investigation information on Site, further site-specific ground investigation is required in order to better delineate the distribution, depth and degree of workings of coal seams beneath the Site.	Adverse settlement beneath proposed buildings. Migration of voids, crown holes, collapse of ground, etc. Investigation to conclude the locations of any broken ground / voids.
Historic workings within coal seams	Untreated mine workings	Voids found in recent ground investigations to the northeast of the site. Several seams located beneath the site. Large area of the Site has not been treated at this stage (see drawing NSE-BHE-XX-XX-DR-CG-001003).	Collapse of ground beneath deep foundations.
	Treated mine workings (seams)	Grouting to the Charlotte and Openshaw seams took place for the Stadium and Metrolink constructions. Grout takes were generally low (rarely exceeding well volume).	Area to the northeast between the Stadium and Metrolink does not appear to have been grouted. Collapse of ground beneath foundations within the Coal Measures.
	Mine gas	Coal seams beneath the Site. No evidence of mine gas issues during previous ground investigation.	Shaft and boreholes may create preferential pathways for ground gas migration. Potential for ground gas to accumulate into enclosed spaces above. Further ground investigation will confirm the ground gas regime.
	Mine water	Groundwater may contain dissolved metals and/or sulphates from historical flooded workings. Surface flooding by groundwater is not envisaged due to the topography and hydrology of the site.	Chemical attack on concrete substructure beneath the groundwater table.
	Combustion	Coal seams unlikely to be exposed by excavation. Coal seams will be penetrated with deep pile foundations.	Spontaneous combustion of coal / potential for underground fires (if not appropriately controlled) when constructing foundations through coal seams.

Copyright © 1976 - 2023 Buro Happold. All rights reserved

6 Mitigation of Risks related to Coal Mining

6.1 Risk avoidance

Due to the extent of historical coal mining activities on the Site, and the findings of historic ground investigations, is it considered that the full avoidance of coal mining related risk across the Site is unlikely. Risks associated with mine entries and former workings are present and the requirements for further investigation and treatment should be considered prior to developing the Site.

6.2 Risk reduction

The nature of the Site means that total risk avoidance is unlikely to be a feasible option due to the historical coal mining that has occurred (as discussed above in Section 6.1). The more likely scenario is that the associated coal mining risks will need to be managed (i.e. risk reduction) through targeted site investigation in line with the proposed development scheme. However, it would be prudent to undertake investigations as detailed below as part of an ongoing risk management process. This process is likely to include the following elements:

- Explore the depth and nature of the coal seams located beneath the Site (i.e. presence of broken ground and/or voids)
- Targeted grouting to enhance the integrity of the ground via infilling any broken ground and/or voids
- Engineered solution to manage any residual risk

6.3 Shafts and other coal mining features

6.3.1 Untreated / unlocated mine shaft

There are a number of mine shafts located in the surrounding areas, although none specifically identified on Site. This said, unrecorded mine shafts that do not appear of Coal Authority records cannot be discounted. The works contractor should remain vigilant during excavation and Site clearance works. If a potential unrecorded mine shaft is identified on Site, investigation and treatment in accordance with C758D [31] is likely to be required. The Coal Authority will need to be informed.

There is potentially a shaft located adjacent to the Site (east). Some ground investigation work carried out in 2020 by CCG found Made Ground material with low SPT readings down to 42mBGL within BH1. This location has been shown on drawing NSE-BHE-XX-XX-DR-CG-002001. There is limited information in respect of these works at this time although it is understood that CCG were instructed to backfill and move off the position. It is not known if any remedial works were carried out. The position of this encounter is approximately 20m south of the unlocated Shaft H (CA reference: 386398-013). Shaft H was previously explored during the Stadium and Metrolink construction though not identified. It was later explored in 2010, whereby 150 probe holes were drilled in a spiral pattern at 1.5m centres. The shaft was never encountered and was assumed to be further north beneath the Metrolink cutting. As this position is located off Site and away from any of the proposed building structures and foundations, it is not deemed necessary to incorporate any further investigation into this programme of work.

6.3.2 Unknown historical structures

The 1848 historical OS map includes a rectangular structure in the centre of the Site with an associated larger rectangular feature (possibly a water feature) and three smaller square features. Though these features do not corelate with any

Copyright © 1976 - 2023 Buro Happold. All rights reserved

historical mine features shown on abandonment plan maps it is within the general area of Bradford Colliery works. Therefore, further investigation within the vicinity of this structure to determine presence of broken or voided ground is recommended.

An abandonment plan dated 1949 shows four small rectangular features to the east of the Site. These structures are located within the vicinity of the trajected position of Shaft H and approximately 10m south of CCG BH1. The structures are located within an area not previously grouted, though off Site.

6.3.3 Historic mine workings

6.3.4 Deep workings

The Roger and Crombouke seams were worked beneath the Site during the early to mid-1900s. These were both at depths of over 800m below ground level. The Parker seam was recorded at a depth of over 450m below ground level. Owing to the depth of these seams there is limited potential for any voids or broken ground to impact the proposed development. Both seams were accessed via shafts located at Bradford Colliery, some 200m southeast of the Site.

6.3.5 Shallow workings

The coal seams lay in an envisaged gradient of 21.8° to 33.7°, with the dip direction to the southwest. The cluster of productive seams that sub-crop within the vicinity of the Site include: Openshaw Mine, Charlotte Mine, Three Quarters Mine and Bradford Four-foot Mine. Openshaw Mine and Charlotte Mine sub-crop on Site, see Figure 6-1 below.

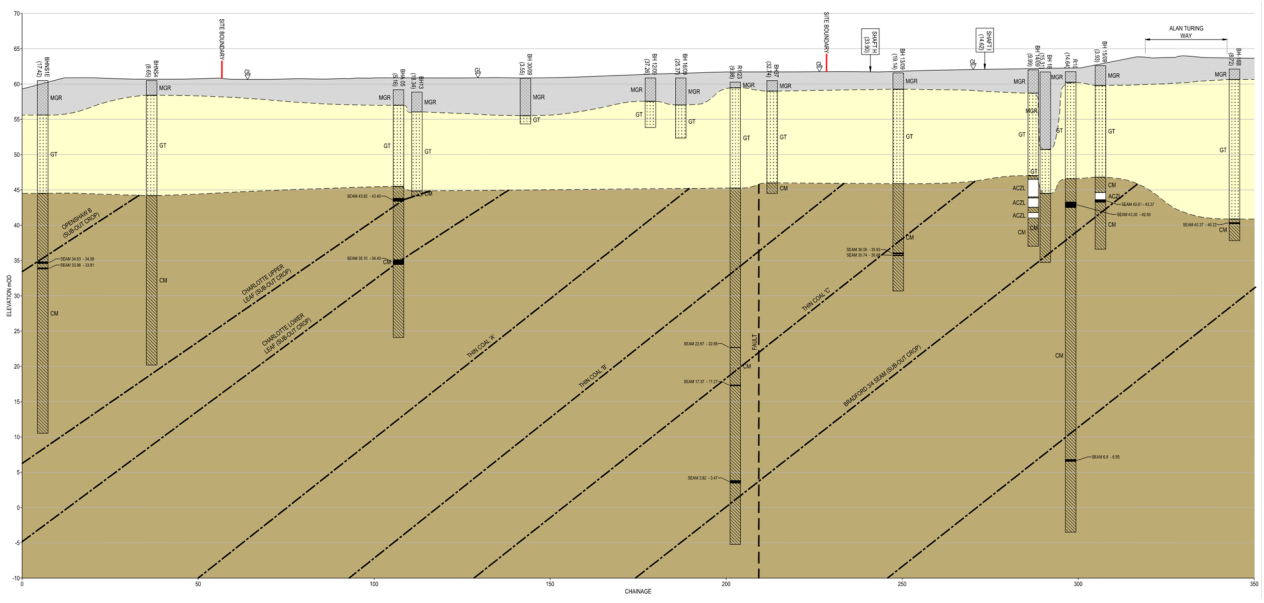


Figure 6-1 Extract of drawing NSE-BHE-XX-XX-DR-CG-001002 showing cross section through the Site and preliminary interpretation of the shallow coal seams.

Based on existing ground investigation information, the worked Bradford Four-foot seam is anticipated at a depth of >70m below ground level at the Site and the Bradford Three quarter at about 45m below ground level. The Charlotte Mine and Openshaw Mine sub-crop on Site. There are a number of additional thin seams that were recorded by Arup, these have been labelled as Thin Coal A-C. It is not known whether these seams were worked at all.

Copyright © 1976 - 2023 Buro Happold. All rights reserved

Owing to the nature of these seams (shallow depth, sub-cropping beneath the Glacial Till) and historical accounts of shallow mine working within the area as early as c. 1590 and 1740, excavation methods via 'bell pits' cannot be discounted. Further ground investigation is recommended to confirm the depth of these coal seams, the nature of the working (i.e. presence of any broken or voided ground) and understand the need to carry out further grouting work.

6.3.6 Mine water

Mine workings are likely to be present beneath the water table, therefore the groundwater may contain dissolved metals and/or sulphates from historical flooded coal workings. Water levels on Site were previously recorded to be in the range of approximately 0.80-5.50m below ground level (perched water levels within the Made Ground). Baseline groundwater levels were obtained from the neighbouring site (former gas works, north), these recorded groundwater within the Coal Measure strata between +37mOD to +39mOD [32]. The ground model can be summarised as follows: up to 5m of Made Ground, approximately 10m of low permeability Glacial Till overlying the Coal Measures. It is considered unlikely that any existing groundwater contamination will impact the proposed development at or near the ground surface.

The Coal Measures are a Secondary A aquifer and therefore, there may be some existing impact to a potential groundwater source due to the flooding of historical workings. However, this reflects the current situation. It is envisaged that the development will not result in any alteration to the existing hydrogeological regime or any further negative impact to groundwater receptors. Existing groundwater data is taken from the 2014 ground investigation [5] and interpretation [6] together with the baseline groundwater monitoring information from the neighbouring site [32]. Further Site-specific investigation including groundwater monitoring is required.

Chemical attack on concrete substructure beneath the groundwater table is possible and is particularly prevalent for piled foundations. Groundwater sampling and testing is to be undertaken as part of a Site-specific ground investigation in order to identify the concrete classification in accordance with BRE SD1 [33] for any below ground substructures that could potentially come into contact with groundwater (piled foundations).

6.3.7 Mine gas

During the Site-specific ground investigation, monitoring wells are to be installed within the Made Ground to identify the presence of any shallow ground gas, and a suitable programme of monitoring shall be undertaken to assess the ground gas regime and determine the characteristic situation, in accordance with BS 8485 [34], CL:AIRE Good Practice for Risk Assessment for Coal Mine Gas Emissions [35] and C665 [36].

At this stage, the presence of mine gas cannot be disproven and therefore, there remains to be a risk associated with its presence. It should be noted that contractors should follow the Coal Authority guidance on managing the risk of hazardous gases when drilling or piling near coal [37].

6.3.8 Coal combustion

The Coal Authority guidance [37] for coal seams with a history of spontaneous combustion does not list any of the shallow or deeper coal seams anticipated beneath the Site. Despite this, there is a risk of spontaneous combustion if coal is exposed to the atmosphere by excavation. As such, works contractors' method statements are required to reflect the risk posed by exposing coal seams during excavations and/or piling. It is considered that the coal strata is capped across the site by approximately 10m of superficial deposits and therefore, there are no risks associated with exposing coal for extended periods of time. In a worst-case scenario, coal may be brought to the surface or churned up during ground investigation works and subsequent piling. However, there are no known recorded instances during previous ground investigations or foundation installations across the wider Etihad campus where coal brought to the surface resulted in spontaneous combustion. Therefore, the coal combustion risk is considered to be low to moderate.

Copyright © 1976 - 2023 Buro Happold. All rights reserved

It should be noted that drilling will need to be undertaken in accordance with HSE and Coal Authority permitting requirements, which may, for example, preclude the use of air flush in seams where there is a known risk of spontaneous combustion.

Copyright © 1976 - 2023 Buro Happold. All rights reserved

7 Summary and conclusions

7.1 Summary

Based on historical ground investigation data, the depth of Made Ground across the Site is anticipated to vary between 0.8-5m in thickness, underlain by approximately 10m of low permeability superficial deposits (Glacial Till) with the Coal Measures below. The average rockhead depth across the Site is approximately 15.8m below ground level. The Site and surrounding areas have been the subject of a reasonable degree of mining activity both from deep mining and shallow workings.

The cluster of productive seams that sub-crop across the wider Sportcity area include: Openshaw Mine, Charlotte Mine, Three Quarters Mine and Bradford Four-foot Mine. There are a number of other thin seams recorded, namely Thin A-C. Deeper workings are present beneath the Site but these are over 450m below ground level therefore not considered to be a significant risk to the development.

There are three treated mine shafts surrounding the Site (Shaft F, G and I). The Coal Authority include reference to Shaft H, this was investigated in 2010 but not located. CCG completed some ground investigation in 2020, BH1 encountered Made Ground to a depth of 42m below ground level, the SPTs throughout the length of this hole were very low. It was suspected to be a mine shaft. The position of BH1 is approximately 10m south of the trajected Shaft H position. According to the CON29 report, the zone of influence surrounding Shaft H encroaches onto the Site.

The potential presence of unknown structures (between mid-1800s and mid 1900s) cannot be discounted at this stage.

Historical ground investigation data to the northeast/east and west of the Site evidence several occurrences of voids within a broad depth of between 33m-65m below ground level.

Extensive grouting treatment has taken place across southwest of the Site associated with the Stadium construction. Other grouting has taken place to the north associated with the Metrolink construction. There has been no evidence of subsequent subsidence post-treatment, concluding grouting treatment has been successful across these areas. Validation of the grout works on Site is recommended. The area to the north and northeast of the Site has not been subject to grout treatment work, further investigation will determine the need for, and scope of further grout treatment works in these areas. Refer to drawing NSE-BHE-XX-XX-DR-CG-001003 to see the extent of the grout treatment work.

7.2 Conclusions

Risks associated with the Site will need to be considered for the proposed development. It is considered prudent to undertake the proposed risk mitigation measures detailed below. It is envisaged that the currently identified risks outlined above (Table 5—1) will be managed by the following outline strategy:

- Further investigation to locate or prove the absence of any suspected shafts and/or voids within the shallow seams beneath the Site.
- Structures are likely to include piled foundations within the Coal Measure strata, piles will need to be founded between coal seams, suitable thickness needs to be achieved. This will be explored during the ground investigation.
- Undertake targeted grouting to stabilise the ground and infill any suspected shafts and/or voids.
- Engineered solution to manage any residual risk.

Copyright © 1976 - 2023 Buro Happold. All rights reserved

Bibliography

[1] Buro Happold Ltd, "Etihad Campus - Ground Engineering Desk Study [NSE-BHE-XX-XX-RP-CG-000001]," 2023.

[2] Oxford Archaeology North, "Sportycity, Bradford, Manchester - Final Excavation Report," 2011.

[3] British Geological Survey, "1:50,000 Geological Map Series, Sheet 85 (Manchester)," 2010.

[4] British Geological Survey, "1:10 000 BGS Map Sheet SJ89NE (Gorton)," 2004.

[5] ESG, "Etihad Stadium, Manchester. Extension of North and South Stands. Factual and Ground COnditions Report. [No. A3174-13]," 2014.

[6] Buro Happold Ltd, "Etihad Stadium - Preliminary Risk Assessment [No. 031608]," 2014.

[7] May Gurney, "Manchester Sportcity Remediation and Servicing Contract - Site Investigation FInal Factual Report [No. SI1565]," 2010.

[8] Norwest Holst Soil Engineering Ltd, "Report on a ground invesitgation at Manchester Stadium (Area S)," 1999.

[9] Northern Foundations Ltd, "Precis Reports on Phase 2 Site Invesitgations at Eastlands, Manchester (S.I.5700/P2)," 1995.

[10] Northern Foundations Ltd, "Various documents (S.I. 5400): Appendix A and Appendix B, borehole logs, drawings, groundwater and ground gas data," 1991.

[11] "River Levels at Gurney Street," [Online]. Available: https://riverlevels.uk/medlock-ancouts-gurney-street#google_vignette. [Accessed 30th January 2023].

[12] Ove Arup & Partners Ltd, "Validation Report - Sportcity Phase 3 Enabling Works," 2004.

[13] Ove Arup & Partners Ltd, "Sportscity Constraints Establishment - Context Report," 2008.

[14] May Gurney Geotechnical, "Site Investgation Report No. SI1565," Manchester, 2010.

[15] Ove Arup & Partners Ltd, "Geotechnical Interpretative Report - Sportcity Remediation and Servicing Works," 2010.

[16] Ove Arup & Partners Ltd, "Outline Remediation Strategy - Sportcity Remediation and Servicing Works," 2010.

[17] Buckingham Group Contracting Ltd, "Remediation Strategy - C10034/RVR/001/v4," 2010.

[18] Buckingham Group Contracting Ltd, "Verification Report," Manchester, 2011.

[19] BWB Consulting Ltd, "Master Mine Stabilisation Works Validation Report," 2011.

[20] BWB Consulting Ltd, "Areac C Mine Stabilisation Works Validation Report," 2011.

Copyright © 1976 - 2023 Buro Happold. All rights reserved

[21] BWB Consulting Ltd, "Removal of Constraints for New Developments over Existing Mine Shafts at Sportcity Manchester," 2011.

[22] BWB Consulting Ltd, "Area C Earthworks Validation Report," 2011.

[23] CC Geotechnical Ltd, "Ground Investigation for Proposed Shaft, Factual Report," 2020.

[24] P Whitehead, "The Industrial Heritage of Britain," October 2022. [Online]. Available: http://www.pittdixon.go-plus.net/bradford-colliery/bradford-colliery.htm. [Accessed 7 November 2022].

[25] Ove Arup & Partners Ltd, "Sportcity Remedaition and Servicing Works - Geotechnical Interpretative Report," 2010.

[26] IMC Consulting Engineers, "Manchester Metrolink Phase 3 - Ground stabilisation grouting report," 2002.

[27] Van Elle Specialist Geotechnical Engineering Contractors, "Site records and grout location plans (SE stadium)," 2002.

[28] Buckingham Group Contracting Ltd, "Sportcity Remediation and Site Servicing - Master Mine Stabilisation Works Validation Report," 2011.

[29] Buckingham Group Contracting Ltd, "Area A Mine Stabilisation Works Validation Report," 2011.

[30] Buckinghams Group Contracting Ltd, "Area B Mine Stabilisation Works Validation Report," 2011.

[31] CIRIA, "C758D Abandoned mine workings manual," 2019.

[32] Buro Happold Ltd, "Grouting Works: Groundwater Risk Assessment [BRA-BHE-XX-XX-BN-CG-0001]," 2020.

[33] Building Research Establishment, "Concrete in aggressive ground (SD 1)," 2005.

[34] British Standard, "BS 8485:2015+A1:2019 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings," 2019.

[35] CL:AIRE, "Good Practice for Risk Assessment for Coal Mine Gas Emissions," 2021.

[36] CIRIA, "C665 Assessing risks posed by hazardous ground gases to buildings (revised)," 2007.

[37] The Coal Authority, "Guidance on managing the risk of hazardous gases when drilling or piling near coal," 2019.

Copyright © 1976 - 2023 Buro Happold. All rights reserved

Drawings

NSE-BHE-XX-XX-DR-CG-001001 – Previous site investigation

NSE-BHE-XX-XX-DR-CG-001002 – Geological cross section

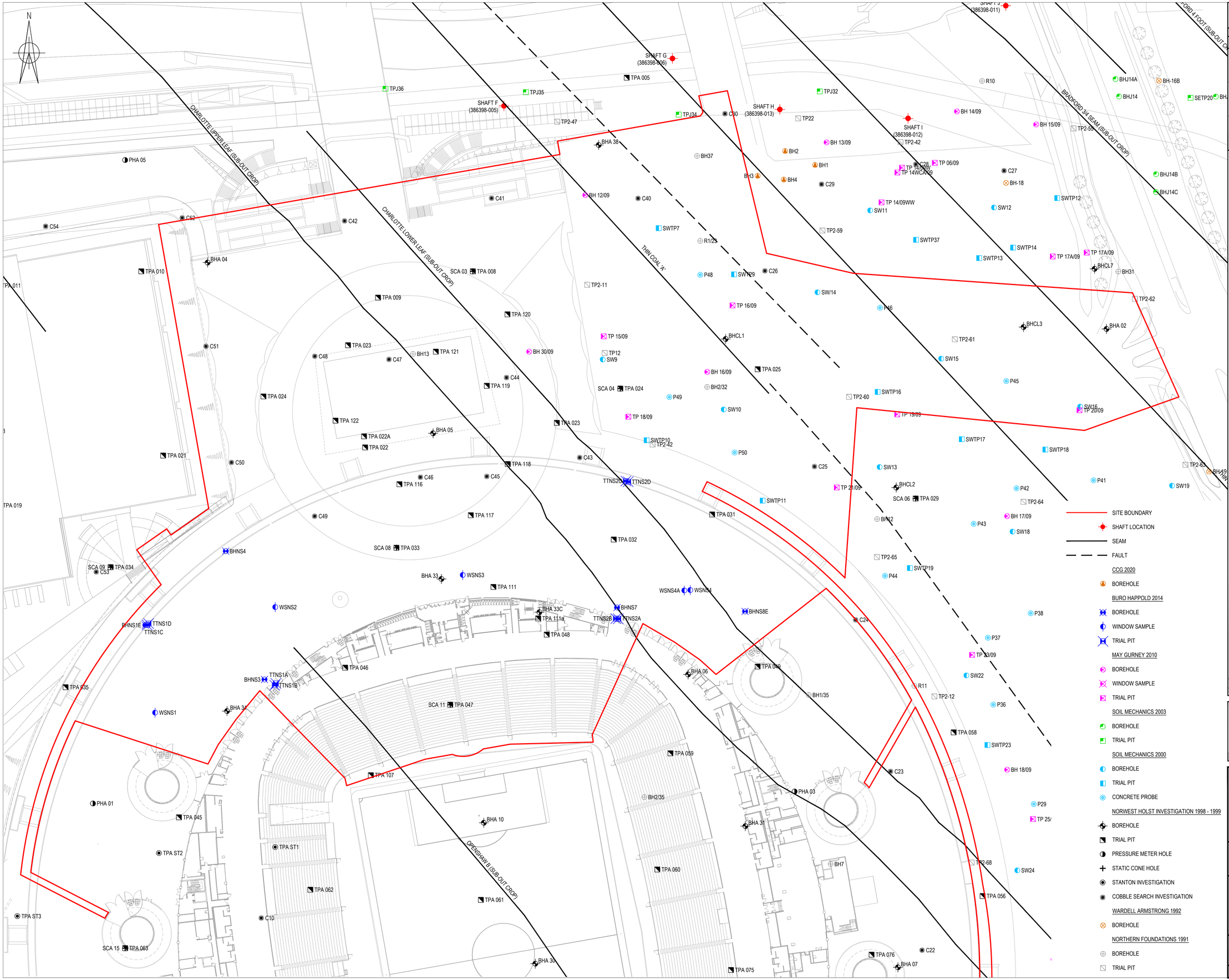
NSE-BHE-XX-XX-DR-CG-001003 – Mining treatment areas

NSE-BHE-XX-XX-DR-CG-001005 – Proposed ground investigation

NSE-BHE-XX-XX-DR-CG-002001 – Abandonment plans with site boundary

NSE-BHE-XX-XX-DR-CG-002002 – Mining Constraints Plan

Copyright © 1976 - 2023 Buro Happold. All rights reserved



© Buro Happold Limited or its group companies.
All Rights reserved. Buro Happold and its group companies assert (unless otherwise agreed in writing) their rights under s.77 to 89 of the Copyright, Designs and Patents Act 1988.

DO NOT SCALE THIS DRAWING.

HEALTH AND SAFETY INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING

CONSTRUCTION.

MAINTENANCE/CLEANING/OPERATION.

DECOMMISSIONING/DEMOLITION.

Notes

Rev	Description	Date	Drn	Ch'd
P01	INFORMATION	31.03.23	NG	FG

INFORMATION

Status of drawing

BURO HAPPOLD

Camden Mill
Lower Bristol Road
Bath BA2 3DQ
UK

Tel: +44 (0)1225 320600
Fax: +44 (0)870 787 4148
Email: 0053810@burohappold.com
Web: www.burohappold.com

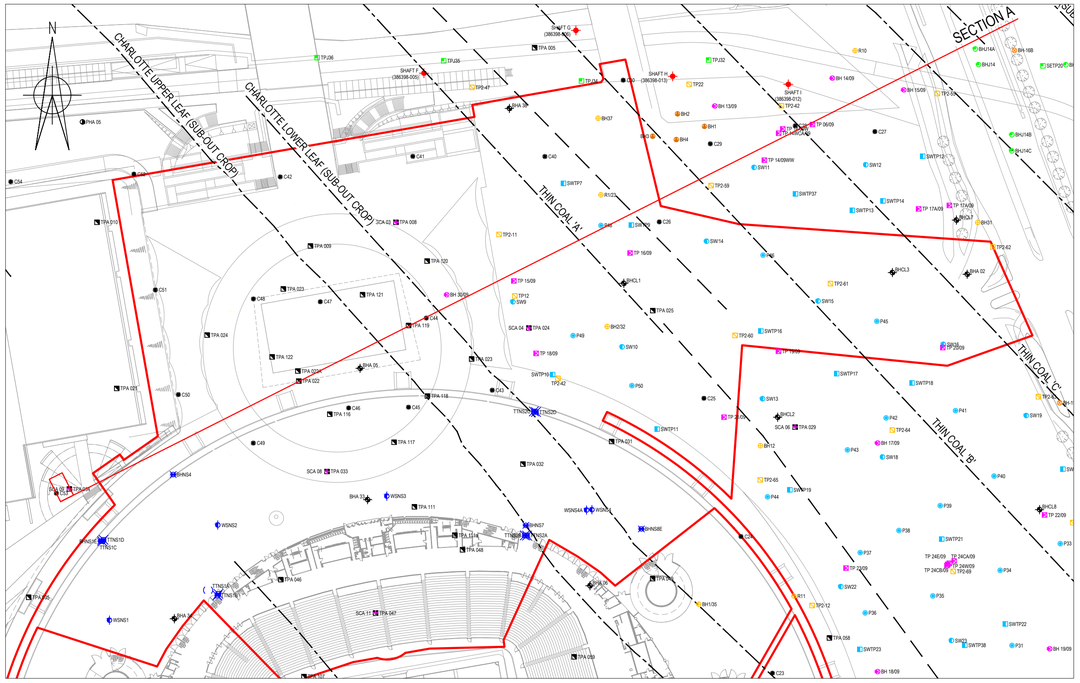
Architect

Project **PROJECT NORTH STAND MANCHESTER**

Drg Title EXISTING SITE INVESTIGATION

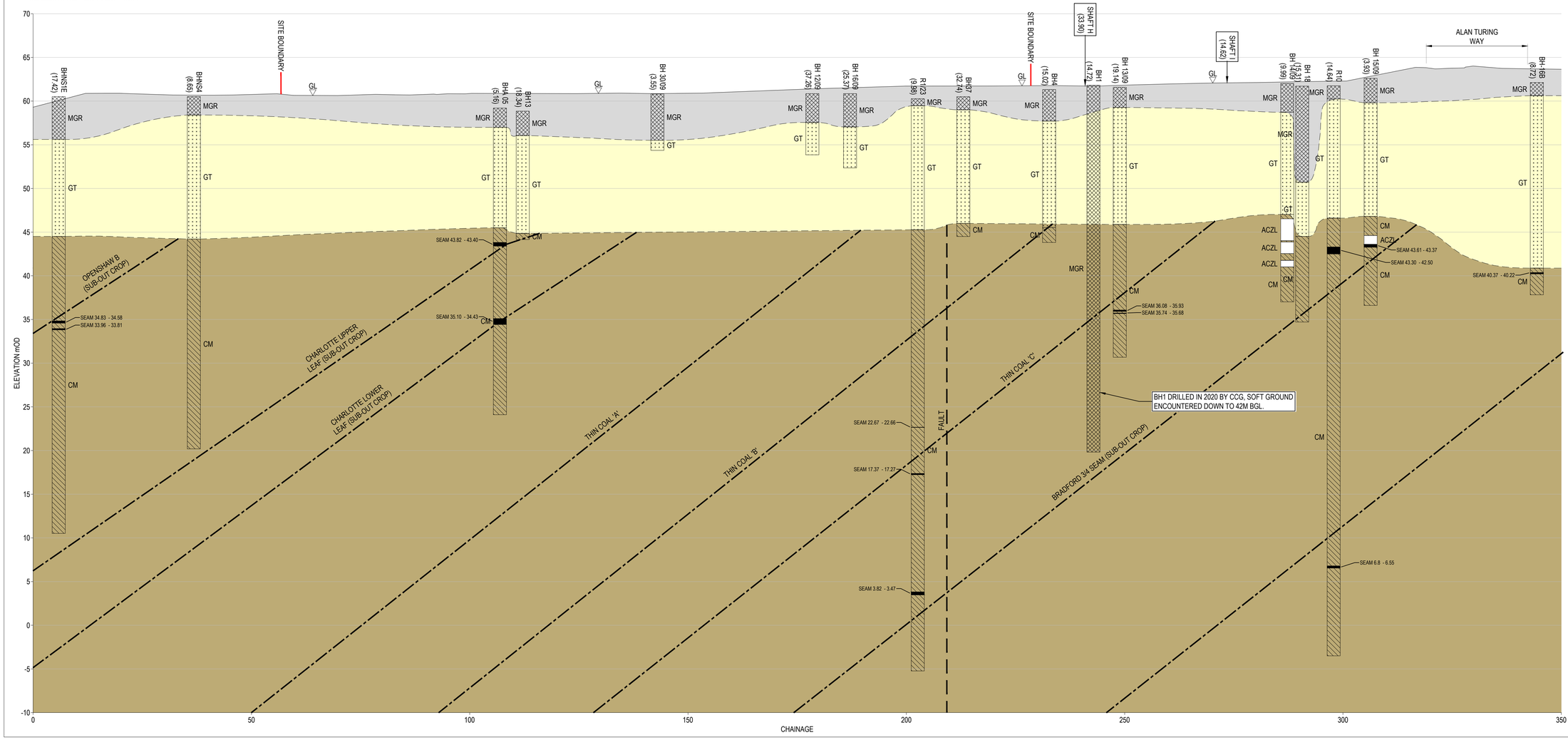
Scales@A1	1:500
Drawn by	NG
Checked by	FG
Job No.	0053810
Date	MAR 2023
Rev	P01

Drawing No. NSE-BHE-XX-XX-DR-CG-001001



SECTION A

SCALES: HORIZ - 1:500 VERT - 1:250



- SITE BOUNDARY
- INDICATIVE SEAM
- POSSIBLE FAULT LOCATION
- GL — GROUND LEVEL FROM TOPOGRAPHICAL SURVEY DATA
- (8.65) — BOREHOLE OFFSET FROM SECTION LINE
- MGR — MADE GROUND
- GT — GLACIAL TILL
- CM — COAL MEASURES
- AZCL — ZONE OF CORE LOSS

INFERRED GEOLOGY

- MADE GROUND
- GLACIAL TILL
- COAL MEASURES

© Buro Happold Limited or its group companies.
All Rights reserved. Buro Happold and its group companies assert (unless otherwise agreed in writing) their rights under s.77 to 89 of the Copyright, Designs and Patents Act 1988.

DO NOT SCALE THIS DRAWING.

HEALTH AND SAFETY INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING

CONSTRUCTION.

MAINTENANCE/CLEANING/OPERATION.

DECOMMISSIONING/DEMOLITION.

Notes

REF. ARUP, COALSEAMS AND SHAFT LOCATIONS, DRAWING NO. ARP-LAY-CG-130, REVISION C, 01.03.2010.

Rev	Description	Date	Drn	Ch'd
P01	INFORMATION	31.03.23	NG	FG

INFORMATION

Status of drawing

BURO HAPPOLD

Camden Mill
Lower Bristol Road
Bath BA2 3DQ
UK

Tel: +44 (0)1225 320600
Fax: +44 (0)870 787 4148
Email: 0053810@burohappold.com
Web: www.burohappold.com

Architect

Project **PROJECT NORTH STAND MANCHESTER**

Drg Title GEOLOGICAL CROSS SECTION

Scales@A1 1:1250
Drawn by NG
Checked by FG

Job No. 0053810
Date MAR 2023
Rev P01

Drawing No. NSE-BHE-XX-XX-DR-CG-001002

N

SHAFT A (386398-004)
SHAFT B (386398-003)
SHAFT C (386398-002)
SHAFT D (386398-010)
SHAFT E (386398-001)
SHAFT F (386398-005)
SHAFT G (386398-006)
SHAFT H (386398-013)
SHAFT I (386398-012)
SHAFT J (386398-011)
SHAFT P (386398-011)
(386398-019)
(386398-020)

CHARLOTTE UPPER LEAF (SUB-OUT CROP)
CHARLOTTE LOWER LEAF (SUB-OUT CROP)
OPENSHAW B (SUB-OUT CROP)
YARD (SUB-OUT CROP)
18 INCH SEAM
THIN COAL 'A'
THIN COAL 'B'
THIN COAL 'C'
THIN COAL
BRADFORD 4 FOOT (SUB-OUT CROP)
BRADFORD 3/4 SEAM (SUB-OUT CROP)
BRADFORD UPPER 3/4 SEAM (SUB-OUT CROP)

SHAFT EE (387398-033)
(387398-011)
(387398-012)
SHAFT Q (387398-016)
(387398-015)
(387398-030)
SHAFT S (387398-017)
SHAFT R (387398-018)
(387398-019)
SHAFT T (387398-020)
SHAFT U (387398-021)
(387398-77)
SHAFT Z (387398-028)
SHAFT FF (386398-019)

AREA AT RISK (SUBJECT TO FURTHER REVIEW AND ADDITIONAL GI)

PROPOSED FURTHER GROUTING WORKS

PROPOSED FURTHER GROUTING - 3M GRID TO 30M DEPTH (ASSUMED). MIN. 140 DRILL HOLES.

PROPOSED FURTHER GROUTING - 6M GRID TO 30M DEPTH (ASSUMED). MIN. 180 DRILL HOLES.

SITE BOUNDARY

GROUT TREATMENT ZONE (SEE BELOW FOR DATA AVAILABILITY & SOURCE)

GROUT TREATMENT LOCATION

SHAFT LOCATION

AREA OF SHAFT PROBING INVESTIGAITON

SEAM

FAULT

GROUTING DATA AVAILABILITY

1. 2001 IMC DRILLTEC NORTHERN LTD: DRILL AND GROUT DATA RECEIVED - AREA 6 (CHT), AREA 7 (OPS
2. NO GROUT DATA AVAILABLE
3. 2010 BWB: DRILL AND GROUT DATA RECEIVED - TREATMENT AREA E (OPS)
4. 2010 BWB: DRILL AND GROUT DATA RECEIVED - TREATMENT AREA D (CHT)
5. 1993 WARDELL ARMSTRONG: DRILL AND GROUT DATA RECEIVED - ZONE 4 (CHT)
6. 2010 BWB: DRILL AND GROUT DATA RECEIVED - VALIDATION AREA D (CHT)
7. 2001 VAN ELLE: DRILL AND GROUT DATA RECEIVED (CHT) & 2010 BWB: DRILL AND GROUT DATA RECEIVED - VALIDATION AREA C (CHT
8. 1993 WARDELL ARMSTRONG: DRILL AND GROUT DATA RECEIVED - ZONE 3 (BR)
9. SPORTCITY ENABLING WORKS VALIDATION REPORT,JAN 2004
10. 2010 BWB: DRILL AND GROUT DATA RECEIVED - TREATMENT AREA C (BR)
11. 2010 BWB: DRILL AND GROUT DATA RECEIVED - VALIDATION AREA B (BR)
12. 2001 IMC DRILLTEC NORTHERN LTD: DRILL AND GROUT DATA RECEIVED - AREA 3 (BR)
13. SPORTCITY ENABLING WORKS VALIDATION REPORT,JAN 2004
14. 1993 WARDELL ARMSTRONG, INTERMEDIATE RING ROAD

© Buro Happold Limited or its group companies.
All Rights reserved. Buro Happold and its group companies assert (unless otherwise agreed in writing) their rights under s.77 to 89 of the Copyright, Designs and Patents Act 1988.

DO NOT SCALE THIS DRAWING.

HEALTH AND SAFETY INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING

CONSTRUCTION.

MAINTENANCE/CLEANING/OPERATION.

DECOMMISSIONING/DEMOLITION.

Notes

REF. ARUP, COALSEAMS AND SHAFT LOCATIONS, DRAWING NO. ARP-LAY-CG-130, REVISION C, 01.03.2010.

BWB CONSULTING, SCOPE OF WORKS FOR MINE WORKINGS TREATMENT AND VALIDATION, DRAWING NO. NTH/185/211, REVISION P2, 14.10.2010.

BWB CONSULTING, FIGURE 5 VALIDATION AREA B MINE STABILISATION WORKS, DRAWING NO. NTH 185/03/AREAA/F5, 02.2011.

BWB CONSULTING, FIGURE 6 VALIDATION AREA C MINE STABILISATION WORKS, DRAWING NO. NTH 185/03/AREAB/F6, 02.2011.

BWB CONSULTING, FIGURE 7 VALIDATION AREA C MINE STABILISATION WORKS, DRAWING NO. NTH 185/03/AREAA/F7, 02.2011.

BWB CONSULTING, SCOPE OF WORKS FOR MINE WORKINGS TREATMENT AND VALIDATION SHEET 1, DRAWING NO. NTH/185/210, REVISION P2, 14.10.2010.

UTILITIES & EASEMENTS ARE NOT SHOWN ON THIS DRAWING. FOR SERVICES LOCATIONS SEE BURO HAPPOLD DRAWING NO. MNS-BHE-XX-XX-DR-CV-9101, COMBINED UTILITIES, REVISION P01, 08.09.22.

Rev	Description	Date	Drn	Ch'd
P01	INFORMATION	31.03.23	NG	FG

INFORMATION

Status of drawing

BURO HAPPOLD

Camden Mill
Lower Bristol Road
Bath BA2 3DQ
UK

Tel: +44 (0)1225 320600
Fax: +44 (0)870 787 4148
Email: 0053810@burohappold.com
Web: www.burohappold.com

Architect

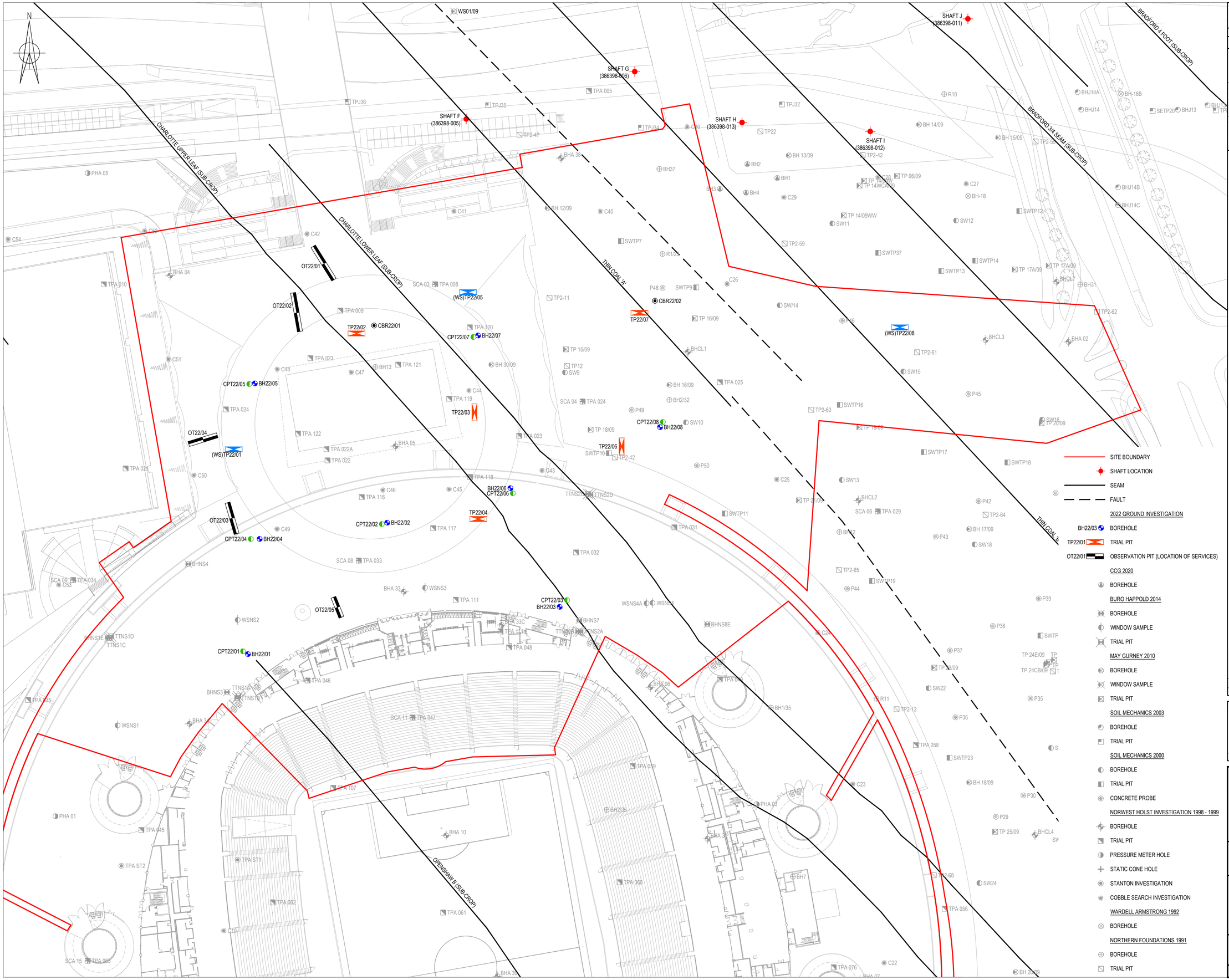
Project **PROJECT NORTH STAND MANCHESTER**

Drg Title MINING TREATMENT AREAS

Scales@A1 1:1250
Drawn by NG
Checked by FG

Job No. 0053810
Date MAR 2023
Rev P01

Drawing No. NSE-BHE-XX-XX-DR-CG-001003



© Buro Happold Limited or its group companies.
All Rights reserved. Buro Happold and its group companies assert (unless otherwise agreed in writing) their rights under s.77 to 89 of the Copyright, Designs and Patents Act 1988.

DO NOT SCALE THIS DRAWING.

HEALTH AND SAFETY INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING

CONSTRUCTION.

MAINTENANCE/CLEANING/OPERATION.

DECOMMISSIONING/DEMOLITION.

Notes

SOAKAWAY TO BE INCLUDED WITHIN TP22/02.

IN SITU CBR TO BE INCLUDED WITHIN TP22/02 AND TP22/07.

DOWNHOLE GEOPHYSICS TO BE INCLUDED WITHIN BH22/04 AND BH22/06.

GROUND GAS AND GROUNDWATER INSTALLATIONS TO BE INCLUDED IN ALL BOREHOLES (2X INSTALLATIONS PER LOCATION).

Rev	Description	Date	Drn	Ch'd
P01	INFORMATION	31.03.23	NG	FG

INFORMATION

Status of drawing

BURO HAPPOLD

Camden Mill
Lower Bristol Road
Bath BA2 3DQ
UK

Tel: +44 (0)1225 320600
Fax: +44 (0)870 787 4148
Email: 0053810@burohappold.com
Web: www.burohappold.com

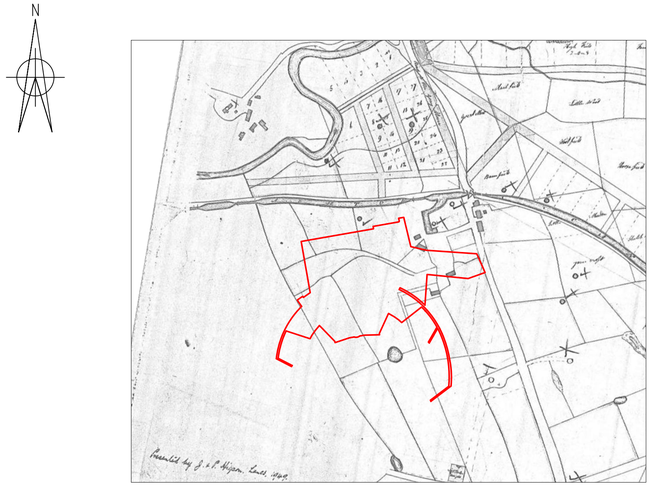
Architect

Project **PROJECT NORTH STAND MANCHESTER**

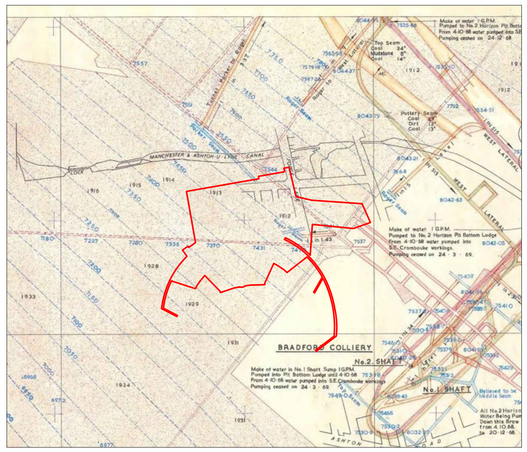
Drg Title EXPLORATORY HOLE LOCATION PLAN

Scales@A1 1:500	Job No. 0053810
Drawn by NG	Date MAR 2023
Checked by FG	Rev P01

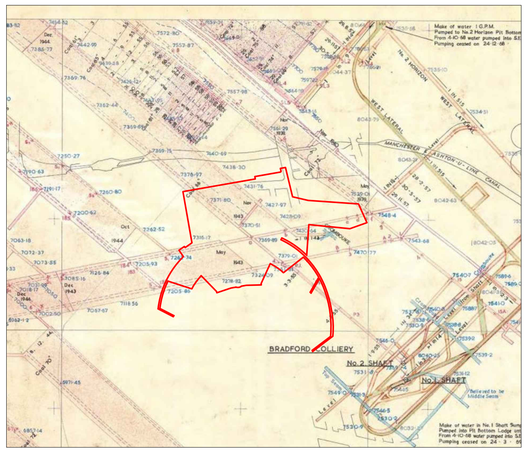
Drawing No. NSE-BHE-XX-XX-DR-CG-001005



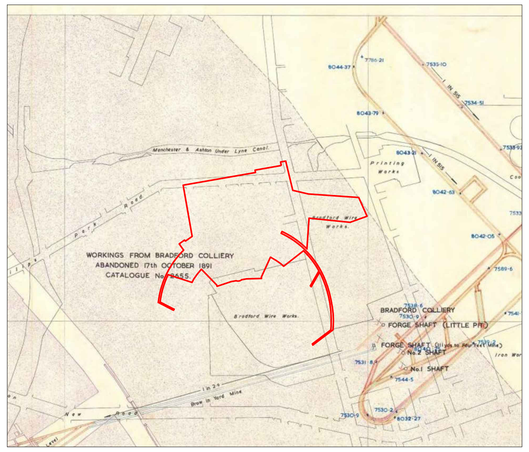
MINE ABANDONMENT PLAN 1



MINE ABANDONMENT PLAN 2



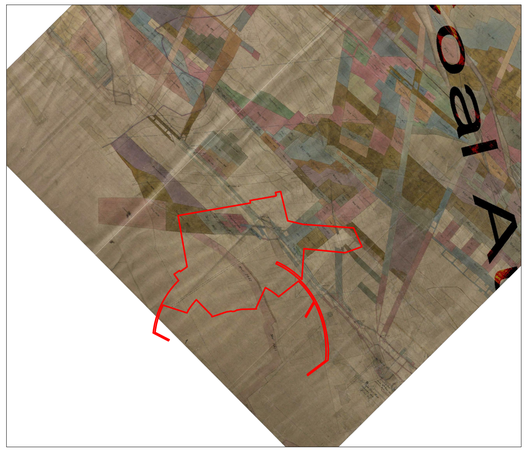
MINE ABANDONMENT PLAN 3



MINE ABANDONMENT PLAN 4



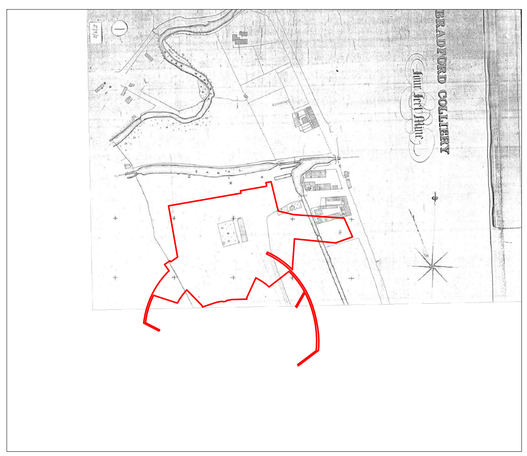
MINE ABANDONMENT PLAN 5



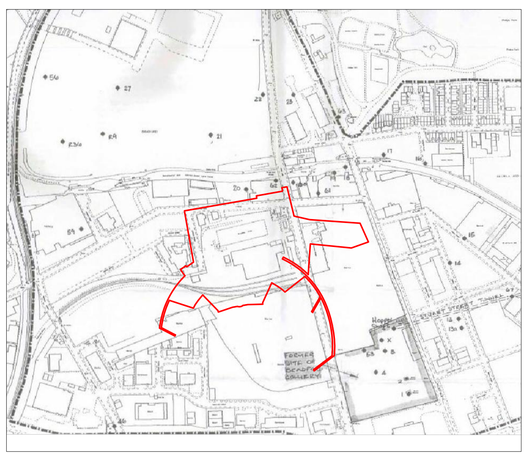
MINE ABANDONMENT PLAN 6



MINE ABANDONMENT PLAN 7



MINE ABANDONMENT PLAN 8



MINE ABANDONMENT PLAN 9

© Buro Happold Limited or its group companies.
All Rights reserved. Buro Happold and its group companies assert (unless otherwise agreed in writing) their rights under s.77 to 89 of the Copyright, Designs and Patents Act 1988.

DO NOT SCALE THIS DRAWING.

HEALTH AND SAFETY INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING

CONSTRUCTION.

MAINTENANCE/CLEANING/OPERATION.

DECOMMISSIONING/DEMOLITION.

Notes

1. WHERE SHAFT COORDINATES ARE NOT AVAILABLE, PLANS HAVE BEEN OVERLAID AS ACCURATELY AS POSSIBLE, REFERENCE SHOULD BE MADE TO ORIGINAL PLANS AND EXACT LOCATIONS ON THIS PLAN CAN NOT BE RELIED UPON.

SITE BOUNDARY

Rev	Description	Date	Drn	Ch'd
P01	INFORMATION	31.03.23	NG	FG

INFORMATION

Status of drawing

BURO HAPPOLD

Camden Mill
Lower Bristol Road
Bath BA2 3DQ
UK

Tel: +44 (0)1225 320600
Fax: +44 (0)870 787 4148
Email: 0053810@burohappold.com
Web: www.burohappold.com

Architect

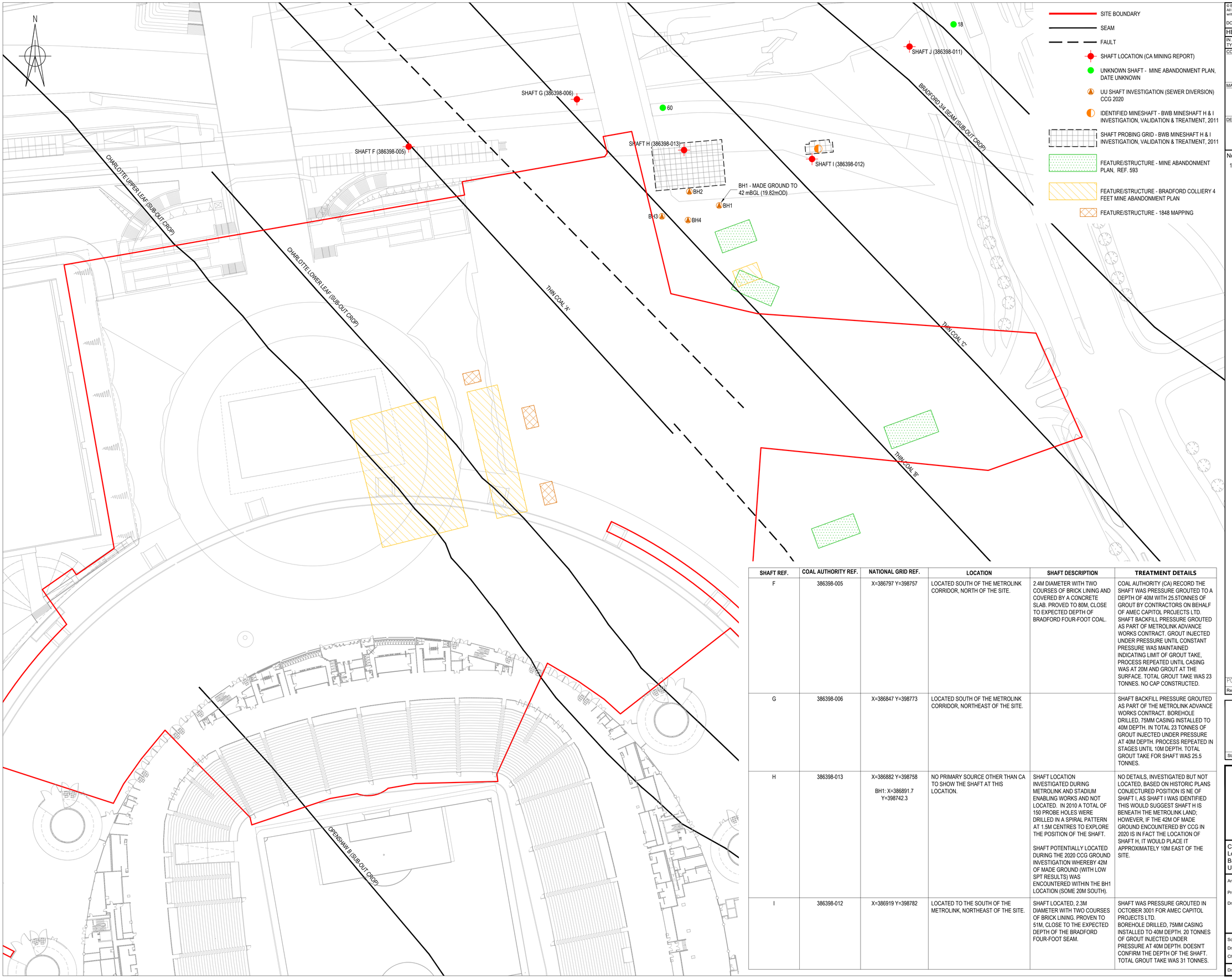
Project **PROJECT NORTH STAND MANCHESTER**

Drg Title MINING ABANDONMENT PLANS

Scales@A1 1:5000
Drawn by NG
Checked by FG

Job No. 0053810
Date MAR 2023
Rev P01

Drawing No. NSE-BHE-XX-XX-DR-CG-002001



SHAFT REF.	COAL AUTHORITY REF.	NATIONAL GRID REF.	LOCATION	SHAFT DESCRIPTION	TREATMENT DETAILS
F	386398-005	X=386797 Y=398757	LOCATED SOUTH OF THE METROLINK CORRIDOR, NORTH OF THE SITE.	2.4M DIAMETER WITH TWO COURSES OF BRICK LINING AND COVERED BY A CONCRETE SLAB. PROVED TO 80M, CLOSE TO EXPECTED DEPTH OF BRADFORD FOUR-FOOT COAL.	COAL AUTHORITY (CA) RECORD THE SHAFT WAS PRESSURE GROUTED TO A DEPTH OF 40M WITH 25.5TONNES OF GROUT BY CONTRACTORS ON BEHALF OF AMEC CAPITOL PROJECTS LTD. SHAFT BACKFILL PRESSURE GROUTED AS PART OF METROLINK ADVANCE WORKS CONTRACT. GROUT INJECTED UNDER PRESSURE UNTIL CONSTANT PRESSURE WAS MAINTAINED INDICATING LIMIT OF GROUT TAKE, PROCESS REPEATED UNTIL CASING WAS AT 20M AND GROUT AT THE SURFACE. TOTAL GROUT TAKE WAS 23 TONNES. NO CAP CONSTRUCTED.
G	386398-006	X=386847 Y=398773	LOCATED SOUTH OF THE METROLINK CORRIDOR, NORTHEAST OF THE SITE.		SHAFT BACKFILL PRESSURE GROUTED AS PART OF THE METROLINK ADVANCE WORKS CONTRACT. BOREHOLE DRILLED, 75MM CASING INSTALLED TO 40M DEPTH. IN TOTAL 23 TONNES OF GROUT INJECTED UNDER PRESSURE AT 40M DEPTH. PROCESS REPEATED IN STAGES UNTIL 10M DEPTH. TOTAL GROUT TAKE FOR SHAFT WAS 25.5 TONNES.
H	386398-013	X=386882 Y=398758 BH1: X=386891.7 Y=398742.3	NO PRIMARY SOURCE OTHER THAN CA TO SHOW THE SHAFT AT THIS LOCATION.	SHAFT LOCATION INVESTIGATED DURING METROLINK AND STADIUM ENABLING WORKS AND NOT LOCATED. IN 2010 A TOTAL OF 150 PROBE HOLES WERE DRILLED IN A SPIRAL PATTERN AT 1.5M CENTRES TO EXPLORE THE POSITION OF THE SHAFT. SHAFT POTENTIALLY LOCATED DURING THE 2020 CCG GROUND INVESTIGATION WHEREBY 42M OF MADE GROUND (WITH LOW SPT RESULTS) WAS ENCOUNTERED WITHIN THE BH1 LOCATION (SOME 20M SOUTH).	NO DETAILS, INVESTIGATED BUT NOT LOCATED, BASED ON HISTORIC PLANS CONJECTURED POSITION IS NE OF SHAFT I, AS SHAFT I WAS IDENTIFIED THIS WOULD SUGGEST SHAFT H IS BENEATH THE METROLINK LAND; HOWEVER, IF THE 42M OF MADE GROUND ENCOUNTERED BY CCG IN 2020 IS IN FACT THE LOCATION OF SHAFT H, IT WOULD PLACE IT APPROXIMATELY 10M EAST OF THE SITE.
I	386398-012	X=386919 Y=398782	LOCATED TO THE SOUTH OF THE METROLINK, NORTHEAST OF THE SITE.	SHAFT LOCATED, 2.3M DIAMETER WITH TWO COURSES OF BRICK LINING. PROVEN TO 51M, CLOSE TO THE EXPECTED DEPTH OF THE BRADFORD FOUR-FOOT SEAM.	SHAFT WAS PRESSURE GROUTED IN OCTOBER 3001 FOR AMEC CAPITOL PROJECTS LTD. BOREHOLE DRILLED, 75MM CASING INSTALLED TO 40M DEPTH. 20 TONNES OF GROUT INJECTED UNDER PRESSURE AT 40M DEPTH. DOESN'T CONFIRM THE DEPTH OF THE SHAFT. TOTAL GROUT TAKE WAS 31 TONNES.

© Buro Happold Limited or its group companies.
All Rights reserved. Buro Happold and its group companies assert (unless otherwise agreed in writing) their rights under s.77 to 89 of the Copyright, Designs and Patents Act 1988.

DO NOT SCALE THIS DRAWING.

HEALTH AND SAFETY INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING

CONSTRUCTION.

MAINTENANCE/CLEANING/OPERATION.

DECOMMISSIONING/DEMOLITION.

Notes

1. WHERE SHAFT COORDINATES ARE NOT AVAILABLE, PLANS HAVE BEEN OVERLAID AS ACCURATELY AS POSSIBLE, REFERENCE SHOULD BE MADE TO ORIGINAL PLANS AND EXACT LOCATIONS ON THIS PLAN CAN NOT BE RELIED UPON.

Rev	Description	Date	Drn	Ch'd
P01	INFORMATION	31.03.23	NG	FG

INFORMATION

Status of drawing

BURO HAPPOLD

Camden Mill
Lower Bristol Road
Bath BA2 3DQ
UK

Tel: +44 (0)1225 320600
Fax: +44 (0)870 787 4148
Email: 0053810@burohappold.com
Web: www.burohappold.com

Architect

Project **PROJECT NORTH STAND MANCHESTER**

Drg Title MINING CONSTRAINTS PLAN

Scales@A1 1:5000
Drawn by NG
Checked by FG

Job No. 0053810
Date MAR 2023
Rev P01

Drawing No. NSE-BHE-XX-XX-DR-CG-002002

Appendix A Coal Mining Abandonment Plans

Copyright © 1976 - 2023 Buro Happold. All rights reserved

THIS PLAN IS PROVIDED BY THE PETROLEUM OF THE ORIGINAL AUTHORITY. THE COAL AUTHORITY CANNOT GUARANTEE THE ACCURACY OF THE INFORMATION OR SCALE

SCALE 1/2500

Presented by J. & P. Hilgan. Lancs. 1949.

Scale : 60 yds. to 1 inch

1 IN 2500 — 600 M

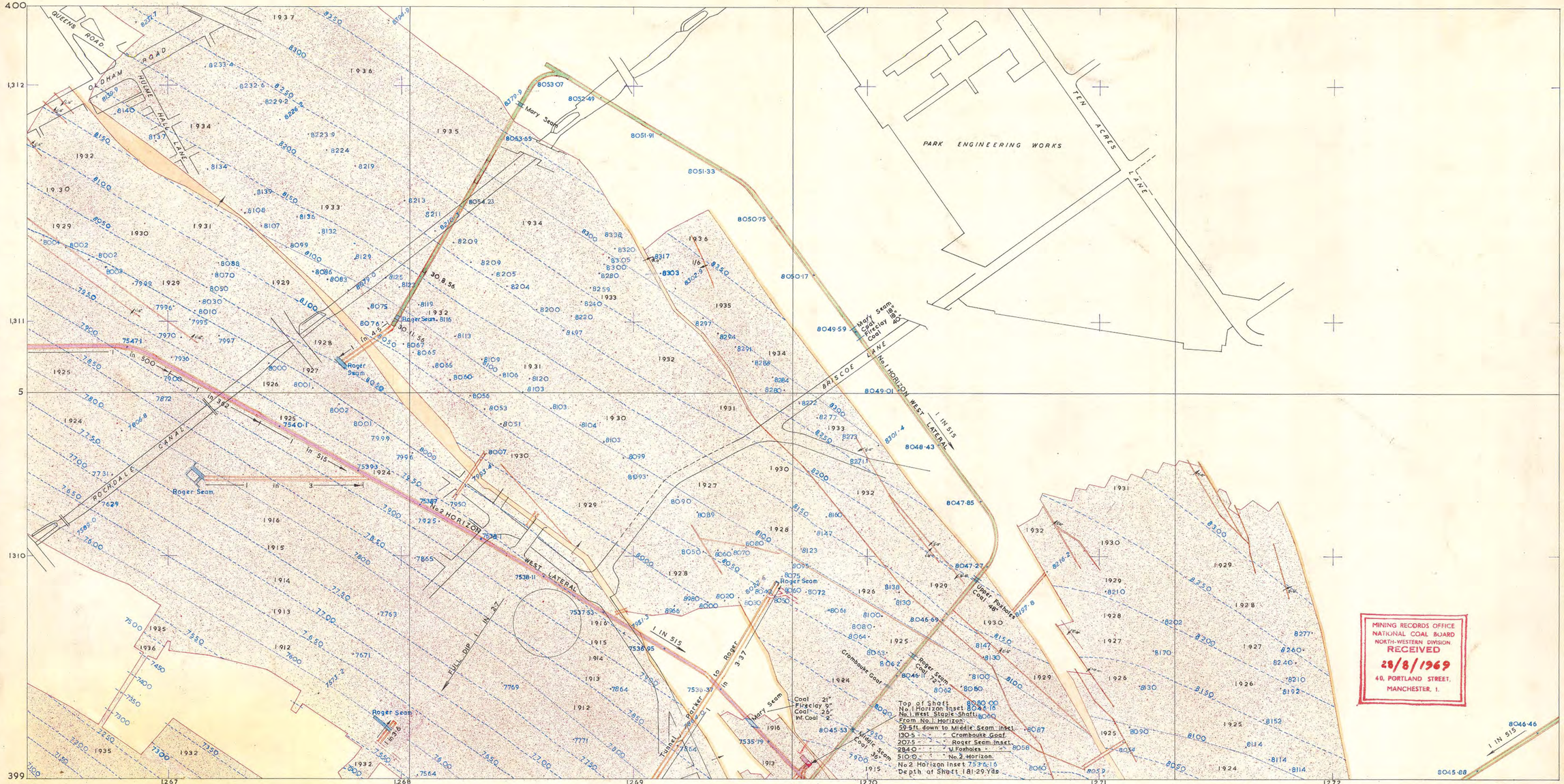
17.36
60 yds
1 IN 2160

14917/1

Land · 18/4 Cent
Early 19/4 Cent

No. 9

CULL—BIRKENHEAD



— BRADFORD COLLIERY —

No. 1 SHAFT 33/8798/062422		No. 2 SHAFT 33/8798/058448	
SURFACE LEVEL	10,205·74	SURFACE LEVEL	10,207·84
No. 1 HORIZON INSET	8,042·00	No. 1 HORIZON INSET	8,041·28
No. 2 HORIZON INSET	7,532·44	No. 2 HORIZON INSET	7,530·57
DEPTH OF SHAFT	923·25yds.	DEPTH OF SHAFT	955·81yds.

16 YDS

NOTE

WHEN THIS PLAN IS REFERRED TO REFERENCE MUST ALSO BE MADE TO THE OVERLAY TRACING OF THE ROGER SEAM. NOTE MUST ALSO BE TAKEN THAT WORKINGS IN THE ROGER SEAM MAY ALSO AT SOME TIME CONTAIN AN ACCUMULATION OF WATER WHICH MAY BE DANGEROUS TO WORKINGS TO WHICH THIS PLAN RELATES.

— SCALE — 1/2500 —

DATUM FOR LEVELS
10,000 feet below ORDNANCE DATUM

— SECTION OF SEAM —

GREY BIND
SOFT STREAKY BIND 2'0"
COAL 4'-1"
FIRECLAY

CROMBOUKE SEAM

N.W. 644/7

DATE OF CONSTRUCTION 27·5·54

33/8699

N.W. 644

The Coal Authority
IFTS accredited

Catalogue No.: NW644 Sheet Info:

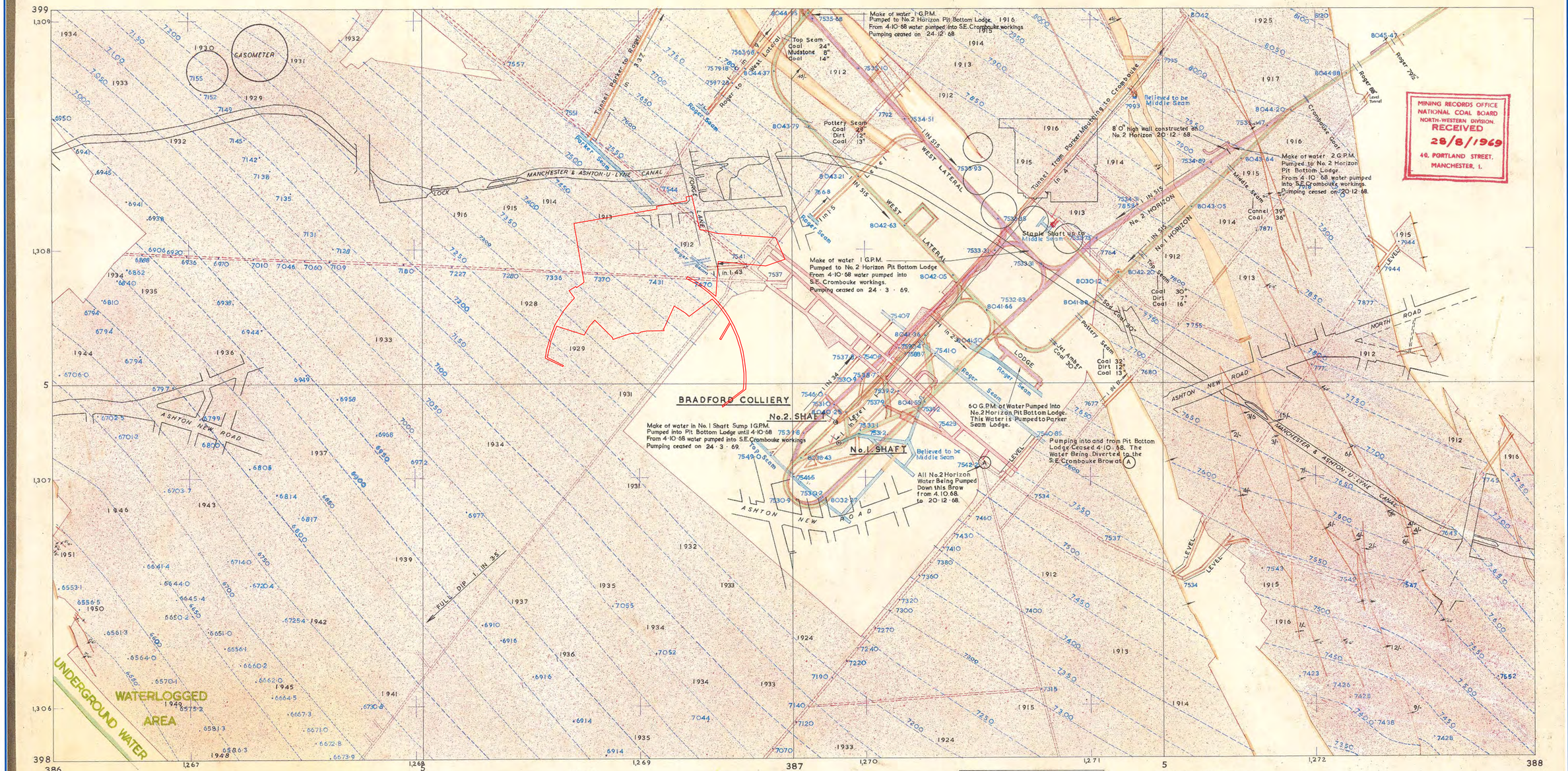
Date: 01/09/2010 | Scale: 1 TO 2500

Database Right and Copyright, The Coal Authority 2003, Unauthorised Use Prohibited

Matthew Carr - Buckingham group contracting ltd,Black pitt farm,stowe,Buckinghamshire,MK18 5LJ,UK

All rights reserved. No part of any image supplied may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the Authority. By accepting and using this image you agree to be bound, without limitation or qualification, by the terms and conditions for the use of the Coal Authority Scanning Services which can be viewed at: www.coal.gov.uk/services/history/tc

The Coal Authority, 200 Lichfield Lane, Berry Hill, Mansfield, Nottinghamshire NG18 4RG www.coal.gov.uk



BRADFORD COLLIERY

No.1 SHAFT 33/8798/062422		No.2 SHAFT 33/8798/058448	
SURFACE LEVEL	10205·74	SURFACE LEVEL	10207·84
FORGE INSET	9774·00	FORGE INSET	9755·92
RED ROCK INSET	8909·67	RED ROCK INSET	8938·00
PARKER INSET	8577·92	PARKER INSET	8574·81
No.1 HORIZON INSET	8042·00	No.1 HORIZON INSET	8041·28
No.2 HORIZON INSET	7532·44	PARKER NEW RETURN INSET	7588·67
SUMP TUNNEL INSET	7486·86	No.2 HORIZON INSET	7530·57
TOP OF SPILLAGE	7480·28	SKIP POCKET INSET	7475·57
CROMBOUKE SEAM AT BOTTOM OF SHAFT	7435·99	ROGER SEAM INSET	7369·40
DEPTH OF SHAFT	923·25 Yds	TOP OF SPILLAGE	7369·40
		BOTTOM OF SHAFT	7340 40
		DEPTH OF SHAFT	955·81 Yds

33/8698

NOTE

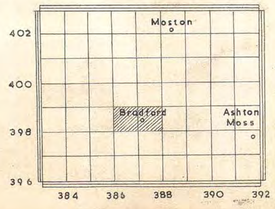
CROMBOUKE — 26 YDS — ROGER

WHEN THIS PLAN IS REFERRED TO REFERENCE MUST ALSO BE MADE TO THE OVERLAY TRACING OF THE ROGER SEAM. NOTE MUST ALSO BE TAKEN THAT WORKINGS IN THE ROGER SEAM MAY ALSO AT SOME TIME CONTAIN AN ACCUMULATION OF WATER WHICH MAY BE DANGEROUS TO WORKINGS TO WHICH THIS PLAN RELATES.

N.W.644

— SCALE - 1/2500 —

DATUM FOR LEVELS
10,000 feet below ORDNANCE DATUM



— SECTION OF SEAM —



CROMBOUKE SEAM

N.W. 644/6

DATE OF CONSTRUCTION 13 - 5 - 54

The Coal Authority

IFTS accredited

Catalogue No.: NW644 Sheet Info:

Date: 01/09/2010 | Scale: 1 TO 2500

Database Right and Copyright, The Coal Authority 2003, Unauthorised Use Prohibited

Matthew Carr - Buckingham group contracting ltd,Black pitt farm,stowe,Buckinghamshire,MK18 5LJ,UK

All rights reserved. No part of any image supplied may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the Authority. By accepting and using this image you agree to be bound, without limitation or qualification, by the terms and conditions for the use of the Coal Authority Scanning Services which can be viewed at: www.coal.gov.uk/services/history/tc

The Coal Authority, 200 Lichfield Lane, Berry Hill, Mansfield, Nottinghamshire NG18 4RG www.coal.gov.uk

399

Make of water 1 G.P.M.
Pumped to No.2 Horizon Pit Bottom Lodge.
From 4-10-68 water pumped into S.E. Crombouke workings.
Pumping ceased on 24-12-68.

Make of water 2 G.P.M.
Pumped to No.2 Horizon
Pit Bottom Lodge.
From 4-10-68 water pumped into S.E. Crombouke workings.
Pumping ceased on 20-12-68.

8'0" high wall constructed on No.2 Horizon 20-12-68.

Make of water 1 G.P.M.
Pumped to No.2 Horizon Pit Bottom Lodge
From 4-10-68 water pumped into S.E. Crombouke workings.
Pumping ceased on 24-3-69.

No.2 HORIZON PIT BOTTOM LODGE
60 G.P.M. Pumped up No.1 Shaft to Parker Seam Lodge.
Pumping into and from Pit Bottom Lodge ceased 4-10-68

Make of water in No.1 Shaft Sump 1 G.P.M.
Pumped into Pit Bottom Lodge until 4-10-68.
From 4-10-68 water pumped into S.E. Crombouke workings
Pumping ceased on 24-3-69.

BRADFORD COLLIERY

No.2. SHAFT

No.1. SHAFT

ELECTRICITY GENERATING STATION.

MANCHESTER & ASHTON-U-LYNE CANAL

WEST LATERAL

No.2 HORIZON

No.1 HORIZON

CROMBOUKE

ROGER

NORTH ROAD

ASHTON NEW ROAD

CLAYTON LANE

Coal 7" Dirt 2" Coal 18" Dirt 56" Coal 14½"

Coal 19" Dirt 7" Coal 28" Dirt 6" Inf. Coal

Upper Footrake Coal 4½"

L.P. Footrake

Top Seam Level

Crombouke Seam

Believed to be Middle Seam

MINING RECORDS OFFICE
NATIONAL COAL BOARD
NORTH-WESTERN DIVISION.
RECEIVED
28/8/1969
40, PORTLAND STREET,
MANCHESTER, 1.

BRADFORD COLLIERY

No.1. SHAFT 33/8798/062422		No.2. SHAFT 33/8798/058448	
SURFACE LEVEL	10205·74	SURFACE LEVEL	10207·84
FORGE INSET	9774·00	FORGE INSET	9755·92
RED ROCK INSET	8909·67	RED ROCK INSET	8938·00
PARKER INSET	8577·92	PARKER INSET	8574·81
No.1 HORIZON INSET	8042·00	No.1 HORIZON INSET	8041·28
No.2 HORIZON INSET	7532·44	PARKER NEW RETURN INSET	7588·67
SUMP ACCESS TUNNEL INSET	7486·86	No.2 HORIZON INSET	7530·57
DEPTH OF SHAFT	923·25 Yards	ROGER SEAM INSET	7369·40
		DEPTH OF SHAFT	955·81 Yards

33/8698

CROMBOUKE — 26 YDS — ROGER

NOTE

WHEN THIS PLAN IS REFERRED TO REFERENCE MUST ALSO BE MADE TO THE OVERLAY TRACING OF THE CROMBOUKE SEAM. NOTE MUST ALSO BE TAKEN THAT WORKINGS IN THE CROMBOUKE SEAM MAY AT SOME TIME CONTAIN AN ACCUMULATION OF WATER WHICH MAY BE DANGEROUS TO THE WORKINGS TO WHICH THIS PLAN RELATES

SCALE – 1/2500

DATUM FOR LEVELS
10,000 feet below ORDNANCE DATUM

Moston
Bradford
Ashton Moss

SECTION OF SEAM

GREY ROCK WITH BLACK PARTINGS
FOLLOWING DIRT 1'3"
COAL 7'0"
GREY BIND

ROGER SEAM

N.W. 645/5

DATE OF CONSTRUCTION 27-5-54

N.W. 645

The Coal Authority

IFTS accredited

Catalogue No.: NW645 Sheet Info:

Date: 01/09/2010 | Scale: 1 TO 2500

Database Right and Copyright, The Coal Authority 2003, Unauthorised Use Prohibited

Matthew Carr - Buckingham group contracting ltd,Black pitt farm,stowe,Buckinghamshire,MK18 5LJ,UK

All rights reserved. No part of any image supplied may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the Authority. By accepting and using this image you agree to be bound, without limitation or qualification, by the terms and conditions for the use of the Coal Authority Scanning Services which can be viewed at: www.coal.gov.uk/services/history/tc

The Coal Authority, 200 Lichfield Lane, Berry Hill, Mansfield, Nottinghamshire NG18 4RG www.coal.gov.uk

BRADFORD FOUR FEET SEAM

WORKINGS FROM BRADFORD COLLIERY
ABANDONED 17th OCTOBER 1891
CATALOGUE No. 2655

BRADFORD COLLIERY
FORGE SHAFT (LITTLE PIT)
No.2 SHAFT
No.1 SHAFT

CLAYTON COLLIERY
No.1 SHAFT
No.2 SHAFT

Gasholder. Gasholder. Manchester & Ashton Under Lyne Canal. Printing Works. Electricity Generating Station. Cooling Towers. Bradford Wire Works. Bradford Wire Works. Park Road. Phillips. Ashton New Road. Brow in Yard Mine. 1 in 29. Level. Level. Three Quarters Seam. British. Iron Works. Clayton Aniline Chemical Works.

Approximate Limit of Four Feet Working

1 IN 515. 1 IN 515. 1 IN 515. No.2 HORIZON. No.1 HORIZON.

8044·37 7786·21 7535·10 7534·51 8043·79 8043·21 7533·93 8042·63 7533·35 7533·31 8042·05 7533·73 7534·31 8042·47 8042·20 8030·12 8041·88 7532·83 7589·6 7538·6 7530·9 7541·7 8045·47 8044·88 8044·20 7535·47 7534·89 3043·64 8043·05 7531·8 7544·5 7530·2 8032·27

386 5 387 5 388

398

399

5

BRADFORD COLLIERY.

No.1 SHAFT. 33/8798/062422

SURFACE LEVEL	10205·74
No.1 HORIZON INSET	8042·00
No.2 HORIZON INSET	7532·44
DEPTH OF SHAFT.	923·25yds

No.2 SHAFT. 33/8798/058448

SURFACE LEVEL	10207·50
No.1 HORIZON INSET	8041·28
No.2 HORIZON INSET.	7530·57
DEPTH OF SHAFT.	955·70yds

FORGE SHAFT (LITTLE PIT) 33/8798/026495

SURFACE LEVEL	10,208·77
DEPTH OF SHAFT	150·89 yds

33/8698

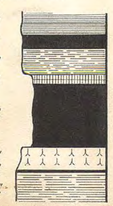
N.W.643

SCALE:- 1/2500

DATUM FOR LEVELS
10000 feet below ORDNANCE DATUM.

SECTION OF SEAM.

GREY METAL	12'- 0"
COAL	9"
FOLL: DIRT.	1'- 6"
CANNEL	6"
COAL	3'- 6"
FIRECLAY.	1'- 3"
COAL	2"
SOFT METAL.	35'- 0"



MINING RECORDS OFFICE
NATIONAL COAL BOARD
NORTH-WESTERN DIVISION.
RECEIVED
28 AUG 1969
49, PORTLAND STREET,
MANCHESTER, 1.

DATE OF CONSTRUCTION. AUGUST 1962

N.W. 643/2

The Coal Authority
IFTS accredited

Catalogue No.: NW643 Sheet Info:

Date: 01/09/2010 | Scale: 1 TO 2500

Database Right and Copyright, The Coal Authority 2003, Unauthorised Use Prohibited

Matthew Carr - Buckingham group contracting ltd,Black pitt farm,stowe,Buckinghamshire,MK18 5LJ,UK

All rights reserved. No part of any image supplied may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the Authority. By accepting and using this image you agree to be bound, without limitation or qualification, by the terms and conditions for the use of the Coal Authority Scanning Services which can be viewed at: www.coal.gov.uk/services/history/tc

The Coal Authority, 200 Lichfield Lane, Berry Hill, Mansfield, Nottinghamshire NG18 4RG www.coal.gov.uk

Copyright

Bradford Colliery - Manchester December 1891

Memorandum in regard to the Four Feet Mine

The part colored red shews the extreme limit to which the workings in this Mine have been carried. All the Coal under the part so Colored has not been extracted, the extent of such being marked on the tracings of working plans sent herewith and this map goes a birds-eye view of the boundaries within which the Four Feet Mine has been more or less worked during the last hundred years.

The Bradford Colliery Co
Thomas Livesey
Agent

Authority

2655

2655/1

The Coal Authority

IFTS accredited

Catalogue No.: 2655 Sheet Info: 1 OF 4 KEY PLAN

Date: 16/02/2011

Scale: 1 TO 10560 (6 INCH TO 1 MILE)

Database Right and Copyright, The Coal Authority 2003, Unauthorised Use Prohibited

Bouziane Boukhateb - BWB Consulting,3-4 Kayes Walk,The Lace Market,Nottingham,NG1 1PY,UK

All rights reserved. No part of any image supplied may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the Authority. By accepting and using this image you agree to be bound, without limitation or qualification, by the terms and conditions for the use of the Coal Authority Scanning Services which can be viewed at www.coal.gov.uk/services/history/tc

The Coal Authority, 200 Lichfield Lane, Berry Hill, Mansfield, Nottinghamshire NG18 4RG www.coal.gov.uk

Copyright Coal Authority

Beamish Colliery

PARKER MINE

Scale: 20 Yards to 1 Inch

The Coal Authority

Catalogue No.: NW1170 Sheet Info: PART A

Date: 16/02/2011

Scale: 20 YARDS TO 1 INCH (1 TO 720)

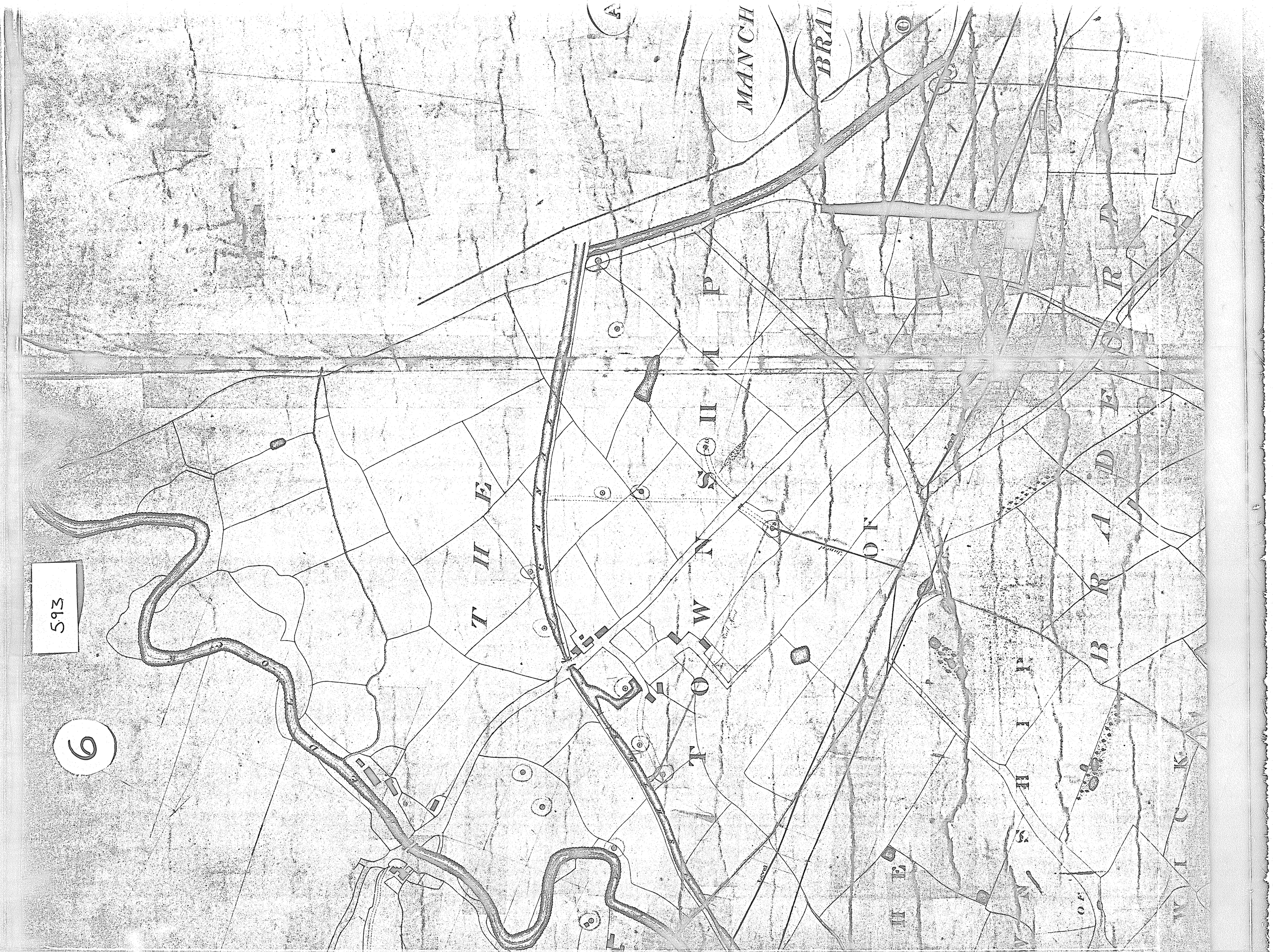
Database Right and Copyright, The Coal Authority 2003. Unauthorised Use Prohibited

Produced by Bourhakis - BMB Consulting 3-4 Hunyes Walk,The Lace Market,Nottingham,NG1 1PY,UK

All rights reserved. No part of any image supplied may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the Authority. By accepting and using the image you agree to be bound, without limitation or qualification, to the terms and conditions for the use of the Coal Authority Matching Services which will be viewed at 'www.coal.gov.uk/services/terms.htm'.

SCALE : 1/2500

THIS PLAN IS PRODUCED FROM A MICROFILM OF THE ORIGINAL ABANDONED MINE PLAN. THE COAL AUTHORITY CANNOT GUARANTEE THE ACCURACY OF THE REPRODUCTION OR SCALE.



1/N 2500 — 200M

SCALE : 1/1250

THIS PLAN IS PRODUCED FROM A MICROFILM OF THE ORIGINAL ABANDONED MINE PLAN. THE COAL AUTHORITY CANNOT GUARANTEE THE ACCURACY OF THE REPRODUCTION OR SCALE.

BRADFORD COLLIERY

Four Feet Mine

D COLLIERY

CANAL

RIVER MEDLOCK

1

279/2

(B56)

R11
56
27
22
23
63
Phillips Park
Phillips Park
R9
R36
BRADFORD
21
17
16
20
62
19
18
100
61
BESWICK AND CLAYTON WARD
15
14
67
24
STUART STREET TUNNEL
Hopper Shaft
13
13a
X
53
3
4
2
1
FORMER SITE OF BEADFORD COLLIERY
9
59
46

Appendix B Coal Mining Report (CON29)

Copyright © 1976 - 2023 Buro Happold. All rights reserved

Groundsure
LOCATION INTELLIGENCE

CON29M
OFFICIAL COAL MINING SEARCH

386784 398665,

Professional opinion

Inc. integrated mine entry interpretive assessment

POTENTIAL RISK

Site plan



Search results

1. Past underground coal mining — Identified — page 5
2. Present underground coal mining — Not identified
3. Future underground coal mining — Not identified
4. Shafts and adits (mine entries) — Identified — page 6
5. Coal mining geology — Not identified
6. Past opencast coal mining — Not identified
7. Present opencast coal mining — Not identified
8. Future opencast coal mining — Not identified
9. Coal mining subsidence claims — Not identified
10. Mine gas emissions — Not identified
11. Emergency Call Out incidents — Not identified
12. Withdrawal of support — Identified — page 8
13. Working facilities orders — Not identified
14. Payments to copyhold owners — Not identified
Cheshire Brine — Not identified

Contact us with any questions at:
info@groundsure.com
08444 159 000

Ref: GS-9323377
Your ref: 0053810_2006_FG_Main_Application
Grid ref: 386795 398677
Date: 30 January 2023

Coal mining (CON29M) assessment

We consider there to be a potential risk to the property from past coal mining activity. For further details refer to: Past underground coal mining, Shafts and adits (mine entries).

Coal mining

Shafts and adits (mine entries)

A record of a mine entry or entries has been identified within 20 metres of the property. Additionally the zone of influence of a mine entry has been calculated to encroach into the property. Please see map on **page 4**.

It is our opinion that as the mine entry itself is likely to be outside of the property boundary a site investigation to clarify its exact condition and location is unlikely to be a viable option and that no further remote searches would be of value.

Next steps for consideration:

- Please read on for details on Coal Authority responsibilities in the event of subsidence issues relating to this mine entry, and also refer to the Shafts and adits (mine entries) section on **page 6** for further details.

In the event of damage resulting from the subsidence or settlement of this mine entry, property owners can make a claim against the mine owner or responsible person (usually The Coal Authority) under the provisions of the Coal Mining Subsidence Act 1991. The mine owner or responsible person will treat the mine entry and arrange for repairs to the property to be carried out to the reasonable satisfaction of the owner.

Past underground coal mining

Potential risk due to past underground coal mining has been identified within the boundary of the property. Whilst no further searches are required, it should be noted that in the event of coal mining settlement or subsidence occurring the property will benefit from the protection of the Coal Mining Subsidence Acts of 1991 and as amended 1994.

Next steps for consideration:

- A visual inspection of the property by a suitably qualified and experienced person may be of value in identifying any currently identifiable mining related settlement or subsidence effects.

Coal Mining Subsidence Act 1991

If any coal mining subsidence damage has occurred, as determined by the appropriate persons/bodies, the property will benefit from the protection of the Coal Mining Subsidence Acts of 1991 and as amended 1994.

This Act, however, does not apply where coal was worked or gotten by virtue of the grant of a gale in the Forest of Dean, or any other part of the Hundred of St. Briavels in the county of Gloucester. In this instance it would be prudent to have the property visually inspected for signs of mining related settlement or subsidence by a suitably qualified and experienced person, who could be sought through https://www.ricsfirms.com/.

The Coal Authority provide a call out service on 01623 646 333 to take remedial action concerning the movement or collapse of any coal entries or coal mining surface hazards. Further details can be found on www.groundstability.com.

CON29M reports are a requirement for conveyancing and are recommended throughout the official Coal Mining Reporting Area. This is the area within which it is deemed prudent to clarify the risk presented by coal mining, using the questions laid out in the Law Society's CON29M form. The need for a CON29M does not always translate to an identification of risk, and reports will often be assessed as free from risk or 'Passed' even though they are within the official Coal Mining Reporting Area.

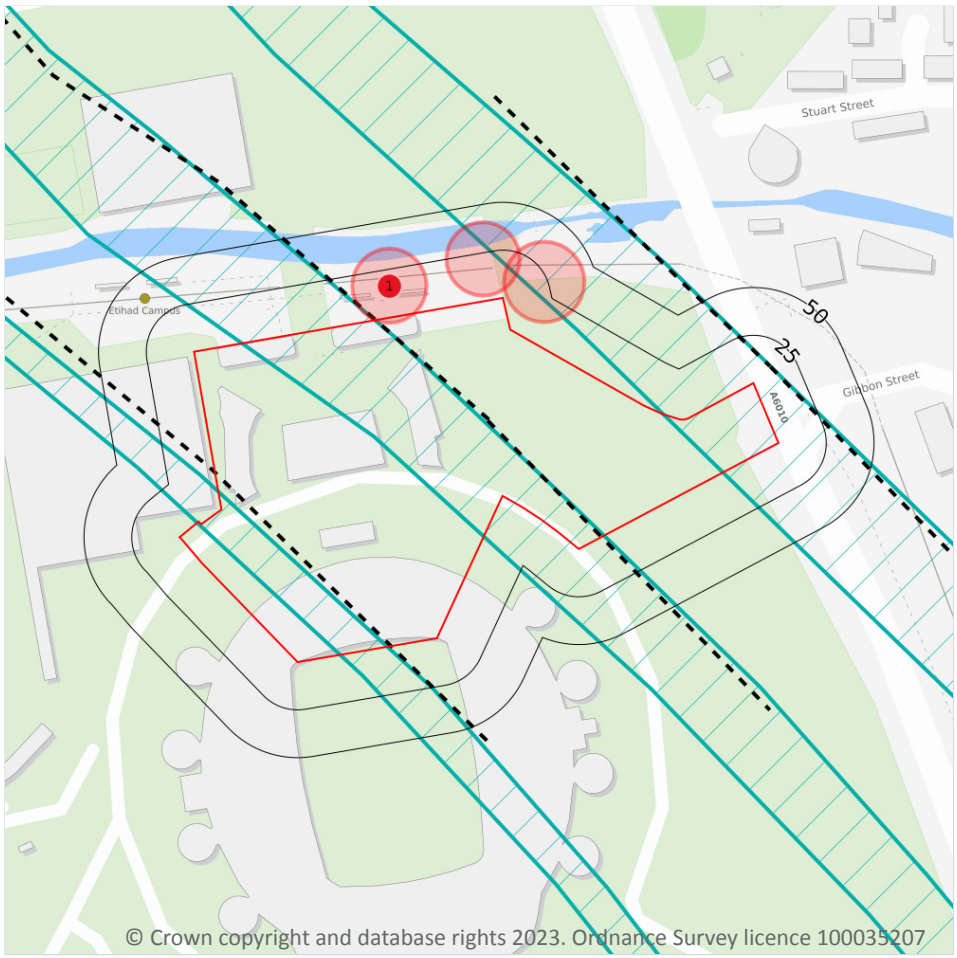
Development risk

In view of the mining circumstances a prudent developer would seek appropriate technical advice before any works are undertaken.

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

Developers should be aware that the investigation of coal seams/former mines of coal may have the potential to generate and/or displace underground gases and these risks both under and adjacent to the development should be fully considered in developing any proposals. The need for effective measures to prevent gases entering into public properties either during investigation or after development also needs to be assessed and properly addressed. This is necessary due to the public safety implications of any development in these circumstances.

Coal mining (CON29M)



Site Outline

Search buffers in metres (m)

Mine entries

Adits

Shafts

Calculated 'zone of influence'

Subsidence claims

Awaiting decision

Rejected

Admitted

Deferred

Settled

Withdrawn

Probable shallow coal mine workings

Coal outcrops

Past shallow coal mine workings

Coal mining (CON29M)

The map above shows relevant, mappable hazards identified that could constitute a risk to the property. It does not necessarily show all features or potential issues identified in this report. Further details of any features shown indicating the location of Mine Entries or Subsidence Claims can be found in the relevant sections of this report (4 and 9 respectively).

Responses to the Law Society CON29M Coal Mining search enquiries are produced using official Coal Authority data and the expert interpretation of Groundsure. This report is prepared in accordance with The Law Society CON29M (2018) Guidance Notes. Additional interpretation and calculation of mine entry zones of influence has also been carried out by Groundsure using Coal Authority and British Geological Survey data.

Please read this report carefully, and in particular any sections flagged with an amber 'i'.

The Law Society

These enquiries are The Law Society CON29M (2018) Coal Mining search enquiries and are used with permission of The Law Society. The Law Society CON29M Coal Mining search enquiries are protected by copyright owned by The Law Society of 113 Chancery Lane, London WC2A 1PL. The Law Society has no responsibility for information provided in response to CON29M (2018) Coal Mining search enquiries within this report or otherwise.

1. Past underground coal mining

Is the property within the zone of likely physical influence on the surface of past underground coal workings?

- **The property lies within the potential zone of influence of recorded workings in 7 seam(s) of coal. The most recent underground working in the area was in 1961. These workings lie between 40 metres and 985 metres. Any ground movement due to this coal mining activity should have stopped.**
- **The property is indicated to lie in an area where coal deposits have been worked at shallow depth in the past but for which no plan exists.**
- **A coal outcrop is recorded to pass through the property boundary. There is a possibility of unrecorded mining features associated with this coal outcrop within the property boundary.**

2. Present underground coal mining

Is the property within the zone of likely physical influence on the surface of present underground coal workings?

- **The property does not lie within the boundary of an underground site from which coal is being removed by underground methods.**

3. Future underground coal mining

(a) Is the property within any geographical area for which the Coal Authority is determining whether to grant a licence to remove coal by underground methods?

- **The property does not lie within the boundary of an underground site for which the Coal Authority is determining whether to grant a licence to remove coal by underground methods.**

(b) Is the property within any geographical area for which a licence to remove coal by underground methods has been granted?

- **The property does not lie within the boundary of an underground site for which a licence to remove coal by underground methods has been granted.**

(c) Is the property within the zone of likely physical influence on the surface of planned future underground coal workings?

- **The property does not lie within the zone of likely physical influence on the surface of planned future underground workings.**

(d) Has any notice of proposals relating to underground coal mining operations been given under section 46 of the Coal Mining Subsidence Act 1991?

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

4. Shafts and adits (mine entries)

Are there any shafts and adits or other entries to underground coal mine workings within the property or within 20 metres of the boundary of the property?

- **Coal mine entries are recorded to lie within 20 metres of the property.**

ID	Distance	Details	Dimensions	Treatment
1	16 m	Type: Shaft Mineral: Coal Reference: 386398-005 Name: LANCS Owner: CA	Assumed diameter (m): 2.5 Confirmed diameter (m): - Depth (m): - Accuracy (m): 8 Source: Ab Plan:14917/1, NW1171, 2655 Geol:1/4 geological sheet, 1840 Geological sheet	Details: The shaft fill was pressure grouted to a depth of 40m. The total grout take for the shaft being 23 tonnes. The works were carried out by contractors acting for Amec Capital Projects Ltd. Date: 08/10/2001

5. Coal mining geology

Is there any record of any fault or other line of weakness due to coal mining at the surface within the boundary of the property that has made the property unstable?

- **No damage arising from geological faults or other lines of weakness activated by coal mining are recorded within the property.**

6. Past opencast coal mining

Is the property situated within the geographical boundary of an opencast site from which coal has been removed in the past by opencast methods?

- **The property does not lie within the boundary of an opencast site from which coal was removed by opencast methods.**

7. Present opencast coal mining

Is the property within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods?

- **The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.**

8. Future opencast coal mining

(a) Is the property within 800 metres of the boundary of an opencast site for which the Coal Authority are determining whether to grant a licence to remove coal by opencast methods?

- **The property does not lie within 800 metres of the boundary of an opencast site for which the Coal Authority are determining whether to grant a licence to remove coal by opencast methods.**

(b) Is the property within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted?

- **The property does not lie within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.**

9. Coal mining subsidence claims

(a) Has any damage notice or claim for alleged coal mining subsidence damage to the property been given, made or pursued since 31st October 1994?

- **We have no evidence of a damage notice or subsidence claim for the property or within 50m of the property since 31st October 1994.**

(b) In respect of any such notice or claim has the responsible person given notice agreeing that there is a remedial obligation or otherwise accepted that a claim would lie against them?

- **Not applicable.**

(c) In respect of any such notice or acceptance has the remedial obligation or claim been discharged?

- **Not applicable.**

(d) Does any current "Stop Notice" delaying the start of remedial works or repairs affect the property?

- **There are no current Stop Notices delaying the start of remedial works or repairs to the property.**

(e) Has any request been made under Section 33 of the 1991 Act to execute preventive works before coal is worked, which would prevent the occurrence or reduce the extent of subsidence damage to any buildings,

structures or works and, if yes, has any person withheld consent or failed to comply with any such request to execute preventive works?

- **There is no record of a request that has been made to carry out preventive works before coal is worked under Section 33 of the Coal Mining Subsidence Act 1991.**

NB. Records of damage notices or subsidence claims before 31st October 1994 are excluded from The Coal Authority data from which this search is compiled.

10. Mine gas emissions

Does the Coal Authority have record of any mine gas emission within the boundary of the property being reported that subsequently required action by the Authority to mitigate the effects of the mine gas emission?

- **No mine gas emissions are recorded within the boundary of the property.**

11. Emergency Surface Hazard Call Out incidents

Have the Coal Authority carried out any work on or within the boundaries of the property following a report of an alleged hazard related to coal mining under the Authority's Emergency Surface Hazard Call Out procedures?

- **No Emergency Surface Hazard Call Out procedures are recorded against the property.**

12. Withdrawal of support

(a) Does the land lie within a geographical area in respect of which a notice of entitlement to withdraw support has been published?

- **The property lies within an area where a notice of entitlement to withdraw support has been published. This notice was issued in 1955.**

(b) Does the land lie within a geographical area in respect of which a revocation notice has been given under section 41 of the Coal Industry Act 1994?

- **The property does not lie within a geographical area in which a revocation notice has been given under section 41 of the Coal Industry Act 1994.**

13. Working facilities orders

Is the property within a geographical area subject to an order in respect of the working of coal under the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof?

- **The property is not in an area where a court order has been issued.**

14. Payments to owners of former copyhold land

(a) Has any relevant notice, which may affect the property, been given?

- **The property does not lie within former copyholder land.**

(b) If yes, has any notice of retained interests in coal and coal mines been given?

- **No notices of retained interests in coal and coal mines been given.**

(c) If yes, has any acceptance notice or rejection notice been served?

- **No acceptance or rejection notices have been served.**

(d) If any such acceptance notice has been served, has any compensation been paid to a claimant?

- **No compensation has been paid to a claimant.**

CON29M notes and guidance

This report is prepared in accordance with The Law Society Guidance Notes 2018; under which all replies to these enquiries are made. Groundsure's Terms and Conditions are applicable at the time the report was produced.

Property owners have the benefit of statutory protection (under the Coal Mining Subsidence Act 1991). This contains provision for the making good, to the reasonable satisfaction of the owner, of physical damage from disused coal mine workings including disused coal mine entries. A leaflet setting out the rights and obligations of either the Coal Authority or other responsible persons under the 1991 Act can be obtained by telephoning 0345 762 6848. Further information can be found on their website: www.groundstability.com.

The Coal Authority, regardless of responsibility and in conjunction with other public bodies, provide an emergency call out facility in coalfield areas to assess the public safety implications of mining features (including disused mine entries).

The Coal Authority emergency telephone number at all times is 01623 646333.

Responses to The Law Society CON29M (2018) Coal Mining Search enquiries and associated findings and recommendations relating to coal mining risk have been provided by Groundsure Ltd. Groundsure Ltd have additionally provided information relating to the Cheshire Brine Compensation Area, and have compiled all information into this report.

Queries should be made of Groundsure Ltd on 0844 415 9000, or via email: info@groundsure.com.

CON29M report limitations

This CON29M (2018) Coal Mining Report has been carried out with reference to all available official Coal Authority licensed data, an extensive collection of abandoned mine plans, maps and records. From this material, we have endeavoured to provide as accurate a report as possible. Any and all analysis and interpretation of licensed Coal Authority data in this report is made by Groundsure

The information provided in this report by Groundsure Ltd has been compiled in response to The Law Society CON29M (2018) Coal Mining search enquiries. The scope of the assessment is limited to interpretation of past, present and future extraction of coal, and does not consider the impact from non-coal mining hazards and/or natural ground stability hazards. The Law Society's Guidance Notes 2018 recommends separate enquiries to the appropriate sources are made with regard to other minerals.

The Report is created by a remote investigation and reviews only information provided by the client (address and site location boundaries) and from the databases of publicly available and/or licensable information that enable a desk-based assessment of the Site. The Report does not include a Site Investigation, nor does Groundsure Ltd make additional specific information requests of the regulatory authorities for any relevant information they may hold.

This report is concerned solely with the Site searched and should not be used in connection with nearby properties, as only known coal mining features that could potentially have a direct influence upon the Site searched are considered relevant; other features present in the general area may have been omitted for ease of reference.

This report is confidential to the client, the client's legal advisor and the client's Mortgage lender, as defined in the Groundsure terms & conditions, and as such may be used by them for conveyancing or related purposes. Groundsure has no liability toward any person or organisation not party to commissioning this report. This report or any part of it is not permitted to be reproduced, copied, altered or in any other way distributed by any other person or organisation.

Additional mine entry assessment is based on and limited to the data supplied by the Coal Authority at the time of production. In order to determine whether a property is within the likely zone of influence of a disused coal mine entry the following is considered: the actual or plotted position of the mine entry, its known or assumed diameter and the thickness of superficial deposits above rockhead. Where these figures are not known, assumptions based on established estimations have been made.

CON29M report licensing

This report contains Data provided by the Coal Authority. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Groundsure Ltd prior to any re-use.

The Law Society CON29M Coal Mining search enquiries are protected by copyright owned by The Law Society of 113 Chancery Lane, London WC2A 1PL.

© Crown Copyright (2023) Ordnance Survey Licence Number 0100035207. May contain British Geological Survey materials © NERC (2023).

This report may contain public sector information licensed under the Open Government Licence v3.0.

This report may contain plans and records held by the Coal Authority and made publicly available at the time of inspection which may include British Geological Survey and Ordnance Survey data.

Conveyancing Information Executive and our terms & conditions

IMPORTANT CONSUMER PROTECTION INFORMATION

This search has been produced by Groundsure Ltd, Sovereign House, Church Street, Brighton, BN1 1UJ. Tel: 08444 159 000. Email: info@groundsure.com. Groundsure adheres to the Conveyancing Information Executive Standards.

The Standards

- Conveyancing Information Executive Members shall act in a professional and honest manner at all times in line with the Conveyancing Information Executive Standards and carry out the delivery of the Search with integrity and due care and skill.
- Compliance with the Conveyancing Information Executive Standards will be a condition within the Conveyancing Information Executive Member's Terms and Conditions.
- Conveyancing Information Executive Members will promote the benefits of and deliver the Search to the agreed standards and in the best interests of the customer and associated parties.

Complaints Advice

If you have a query or complaint about your search, you should raise it directly with the search firm, and if appropriate ask for any complaint to be considered under their formal internal complaints procedure.

If you remain dissatisfied with the firm's final response, after your complaint has been formally considered, or if the firm has exceeded the response timescales, you may refer your complaint for consideration under The Property Ombudsman scheme (TPOs). The Ombudsman can award up to £5,000 to you if the Ombudsman finds that you have suffered actual financial loss and/or aggravation, distress or inconvenience as a result of your search provider failing to keep to the Standards.

Please note that all queries or complaints regarding your search should be directed to your search provider in the first instance, not to TPOs.

COMPLAINTS PROCEDURE: If you want to make a complaint, we will:

- acknowledge it within 5 working days of receipt
- normally deal with it fully and provide a final response, in writing, within 20 working days of receipt
- liaise, at your request, with anyone acting formally on your behalf

Complaints should be sent to:
Operations Director, Groundsure Ltd, Sovereign House, Church Street, Brighton, BN1 1UJ. Tel: 08444 159 000. Email: info@groundsure.com If you are not satisfied with our final response, or if we exceed the response timescales, you may refer the complaint to The Property Ombudsman scheme (TPOs): Tel: 01722 333306, E-mail: admin@tpos.co.uk We will co-operate fully with the Ombudsman during an investigation and comply with their final decision.

Groundsure's Terms and Conditions can be viewed online at this link: https://www.groundsure.com/terms-and-conditions-jan-2020/

Important consumer protection information

All of the advice and reports that Groundsure produces are covered by a comprehensive Remediation Contribution policy to ensure customers are protected, see https://www.groundsure.com/remediation for full details.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information in your report. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference.

Coal Mining Report Insurance Policy

ZURICH

Coal Mining Report Insurance Policy

The Schedule

Policy Number: The Reference contained in the **Coal Mining Search Report**

Premium: £1.40 inclusive of Insurance Premium Tax at 12%

Property: The property which is the subject of the **Coal Mining Search Report**

Limit of Indemnity: £100,000 increasing by 10% compound per annum on each anniversary of and for the first 10 years following the **Commencement Date**

Commencement Date: The date of the **Coal Mining Search Report**

You/Your:
1. A purchaser of the **Property**
2. A lender providing a **Mortgage** in connection with a purchase of the **Property**
3. A lender providing a **Mortgage** by way of a re-mortgage of the **Property**

Definitions

Where a word is defined below or in the schedule it shall carry the same meaning wherever it appears in bold text in this policy

Insured Use: The continued use of the **Property** as a single house or flat or a single commercial premises

Market Value: The value as determined by a surveyor appointed by agreement between **You** and **Us** or (in default of agreement) the President for the time being of the Royal Institution of Chartered Surveyors

Mortgage: A mortgage or charge secured on the **Property** by an institutional mortgage lender

Coal Mining Search Report: The coal mining search report attached to this policy

Search: An official search comprising a search in form CON29M (2018) being mining searches relating to coal and brine in the area in which the **Property** is situated

We/Our/Us:
Zurich Insurance plc. A public limited company incorporated in Ireland. Registration No. 13460. Registered Office: Zurich House, Ballsbridge Park, Dublin 4, Ireland. UK Branch registered in England and Wales Registration No. BR7985. UK Branch Head Office: The Zurich Centre, 3000 Parkway, Whiteley, Fareham, Hampshire PO15 7JZ.

Zurich Insurance plc is authorised by the Central Bank of Ireland and authorised and subject to limited regulation by the Financial Conduct Authority. Details about the extent of our authorisation by the Financial Conduct Authority are available from us on request. Our FCA Firm Reference Number is 203093.

Communications may be monitored or recorded to improve our service and for security and regulatory purposes.

© Copyright – Zurich Insurance plc 2018. All rights reserved. Reproduction, adaptation, or translation without prior written permission is prohibited except as allowed under copyright laws.

Your Policy

This is a legal document and should be kept in a safe place.

This policy is an agreement between **You** and **Us** and cover is provided subject to the payment of the **Premium**.

You must read this policy and its conditions, exclusions, schedule and any endorsements as one contract. Please read all of them to make sure that they provide the cover **You** require. If they do not, please contact **Us** or **Your** insurance adviser who arranged the policy for **You**.

When **You** take out and make changes to the cover provided by this policy, **You** must take reasonable care to ensure that **You** accurately answer any questions which **We** ask of **You** and that any information **You** give **Us** is accurate. If **You** are taking out this policy for purposes which are mainly related to **Your** trade, business or profession, **You** must also let **Us** know about all facts which are material to **Our** decision to provide **You** with insurance. Failure to meet these obligations could result in this policy being invalidated, a claim not being paid, or an additional premium being charged.

Fair presentation of the risk

a) At inception of this policy and also whenever changes are made to it at **Your** request You must:

i) where **You** have taken out this policy for purposes which are wholly or mainly related to **Your** trade, business or profession, disclose to **Us** all material facts in a clear and accessible manner and not misrepresent any material facts, and
ii) where **You** have taken out this policy for purposes which are wholly or mainly unrelated to **Your** trade, business or profession, take reasonable care not to misrepresent any material facts.

b) If **You** do not comply with clause a) of this condition **We** may:

i) avoid this policy which means that **We** will treat it as if it had never existed and refuse all claims where any non-disclosure or misrepresentation by **You** is proven by **Us** to be deliberate or reckless in which case **We** will not return the premium paid by **You**; and
ii) recover from **You** any amount **We** have already paid for any claims including costs or expenses **We** have incurred.

c) If You do not comply with clause a) of this condition and the non-disclosure or misrepresentation is not deliberate or reckless this policy may be affected in one or more of the following ways depending on what **We** would have done if **We** had known about the facts which **You** failed to disclose or misrepresented:

i) if **We** would not have provided **You** with any cover **We** will have the option to:
1. avoid the policy which means that **We** will treat it as if it had never existed and repay the premium paid; and
2. recover from **You** any amount **We** have already paid for any claims including costs or expenses **We** have incurred
ii) if **We** would have applied different terms to the cover **We** will have the option to treat this policy as if those different terms apply. **We** may recover any payments made by **Us** on claims which have already been paid to the extent that such claims would not have been payable had such additional terms been applied
iii) if **We** would have charged **You** a higher premium for providing the cover **We** will charge **You** the additional premium which **You** must pay in full.

d) If any insured person, other than **You**, is responsible for a misrepresentation or failure to make a fair presentation of the risk, **We** will invoke the remedies available to **Us** under this condition as against that particular person as if a separate insurance contract had been issued to them leaving the remainder of the policy unaffected.

NB: For the purposes of the duty of disclosure stated in paragraphs a) i) and ii) above the content of the **Coal Mining Search Report** will be deemed to satisfy **Your** disclosure obligations.

Cover

1. **You** are in the process of purchasing the **Property** relying on the **Coal Mining Search Report** and/or
2. **You** (being a lender) have agreed to provide a **Mortgage** in connection with **Your** borrower's purchase or re-mortgage of the **Property** relying on the **Coal Mining Search Report**.

We will pay the following losses sustained by **You** arising out of the **Property** being affected by any matter which would have been revealed by a **Search** had one been carried out on the date of the **Coal Mining Search Report** but which was not revealed by the **Coal Mining Search Report**:

1. any reduction in **Market Value** of the **Property** calculated at the date **You** become aware of the matter(s) and/or loss in connection with a **Mortgage** as a result of such reduction.
2. all other costs and expenses including out of court settlement costs incurred by **Us** or by **You** with **Our** prior written agreement.

Waiver of Breach of Policy Condition

We will not exercise **Our** right to avoid **Our** liability to **You** in respect of loss where **You** have inadvertently breached any term or condition of the policy provided that such breach does not prejudice **Our** rights and remedies under the policy or otherwise directly or indirectly result in or increase the amount of any loss.

Protection for Mortgagees and Successors in Title

We will not avoid **Our** liability to make a payment to **You** solely because another person breaches the terms and conditions of this policy, provided such breach was not committed on **Your** behalf or with **Your** agreement, and **We** will invoke the remedies available to **Us** under the Policy as against that other person as if a separate insurance contract had been issued to them leaving the remainder of the policy unaffected.

Joint Insured

Any party insured under this policy standing in the relation of parent company, subsidiary company, associated company, branch office or joint venture partner to each other will be deemed to be joint insured for the purposes of this policy and jointly liable and responsible for any breach of any terms and conditions of this policy. If there is any inconsistency between this clause and any other term of this policy, this clause shall prevail.

Exclusions

We will not pay for any:

1. amount in excess of the **Limit of Indemnity**.
2. loss which would be recoverable under a household buildings insurance policy.
3. loss arising from any matter that **You** were aware of at the **Commencement Date**.
4. loss if the **Property** is used for any purpose other than the **Insured Use**.

Claims Conditions and How to Claim

1. **You** must:

i) give **Us** written notice as soon as possible of any potential or actual claim or any circumstances likely to result in a claim. Please provide the policy number, **Your** name, the full address of the **Property** and a brief description of the incident that has occurred. Notifications should be sent to: Speciality Lines Claims Team, Zurich Insurance, 8th Floor, 70 Mark Lane, London, EC3R 7NQ. Email: claims@uk.zurich.com, Enquiry line: telephone 0207 648 3523
ii) pass all court documents and/or other communications to **Us** as soon as possible after receipt
iii) not deal with, make any admission of liability or attempt to settle a claim without **Our** prior written agreement.
iv) agree to and carry out at **Our** expense all things necessary to minimise any loss.
v) provide all information and assistance that **We** may require to help defend and settle the claim.

2. **We** are entitled to:

i) decide how to settle or defend a claim and may carry out proceedings in the name of any person insured under this policy, including proceedings for recovering any claim.
ii) pay to **You** at any time, an amount equal to the **Limit of Indemnity** or any lower amount for which the claim can be settled, after deduction of any sum already paid. **We** may then give up control of and have no further liability in connection with the claim.

3. If **We** admit liability for a claim but there is a dispute as to the amount to be paid the dispute will be referred to an arbitrator. The arbitrator will be appointed jointly by **You** and **Us** in accordance with the law at the time. **You** may not take any legal action against **Us** over the dispute before the arbitrator has reached a decision.

4. If **You** or anyone acting on Your behalf:

a) makes a fraudulent or exaggerated claim under this policy; or
b) uses fraudulent means or devices including the submission of false or forged documents in support of a claim whether or not the claim is itself genuine; or
c) makes a false statement in support of a claim whether or not the claim is itself genuine; or
d) submits a claim under this policy for loss or damage which **You** or anyone acting on **Your** behalf or in connivance with **You** deliberately caused; or
e) realises after submitting what **You** reasonably believed was a genuine claim under this policy and then fails to tell **Us** that **You** have not suffered any loss or damage; or
f) suppresses information which **You** know would otherwise enable **Us** to refuse to pay a claim under this policy

We will be entitled to refuse to pay the whole of the claim and recover any sums that **We** have already paid in respect of the claim.

If any fraud is perpetrated by or on behalf of an insured person and not on behalf of **You** this condition should be read as if it applies only to that insured person's claim and references to this policy should be read as if they were references to the cover effected for that person alone and not to the policy as a whole.

5. If any claim is covered by any other insurance, **We** will not pay for more than **Our** share of that claim.

6. The most **We** will pay for any loss (or all losses in the aggregate), including costs and expenses agreed by **Us** is the **Limit of Indemnity**. Once **We** have paid a loss or losses equal to the amount of the **Limit of Indemnity, We** will have no further liability under this policy.

General Conditions

1. Neither **You** (nor anyone acting on **Your** behalf) must disclose the existence of this policy to any other party except **Your** legal and other professional advisers, prospective purchasers, lessees and tenants of the **Property**, their respective mortgagees, legal and other professional advisers.

2. In the UK the law allows both **You** and **Us** to choose the law applicable to the contract. This contract will be subject to the relevant law of England and Wales, Scotland, Northern Ireland, the Isle of Man or the Channel Islands depending upon the Property address stated in the Schedule. If there is any dispute as to which law applies it will be English law. The parties agree to submit to the exclusive jurisdiction of the English courts.

3. Notwithstanding any other terms of this policy **We** will be deemed not to provide cover nor will **We** make any payment or provide any service or benefit to **You** or any other party to the extent that such cover, payment, service, benefit and/or any business or activity of **Yours** would violate any applicable trade or economic sanctions law or regulation.

Cancellation Clause

If **You** have taken out this policy for purposes which are wholly or mainly unrelated to **Your** trade, business or profession, **You** may cancel this policy within 14 days of receiving the policy by writing to **Us** and in such event **We** may, at **Our** discretion, charge **You** for the time that **You** have been on cover. Any refund will be made to the party who paid the premium. If **You** do cancel, **You** may be in breach of the terms of **Your** mortgage or the terms of the contract for the sale of **Your** property. If **You** are in doubt, **You** may wish to seek legal advice prior to cancellation.

Fair Processing and Complaints Procedure
Our Complaints Procedure

Our commitment to customer service

We are committed to providing a high level of customer service. If you feel we have not delivered this, we would welcome the opportunity to put things right for you.

Who to contact in the first instance

Many concerns can be resolved straight away. Therefore in the first instance, please get in touch with your usual contact at Zurich or your broker or insurance intermediary, as they will generally be able to provide you with a prompt response to your satisfaction.

Contact details will be provided on correspondence that we or our representatives have sent you.

Many complaints can be resolved within a few days of receipt

If we can resolve your complaint to your satisfaction within the first few days of receipt, we will do so. Otherwise, we will keep you

updated with progress and will provide you with our decision as quickly as possible.

Next steps if you are still unhappy

If you are not happy with the outcome of your complaint, you may be able to ask the Financial Ombudsman Service to review your case.

We will let you know if we believe the ombudsman service can consider your complaint when we provide you with our decision. The service they provide is free and impartial, but you would need to contact them within 6 months of the date of our decision.

More information about the ombudsman and the type of complaints they can review is available via their website www.financial-ombudsman.org.uk.

You can also contact them as follows:

Post: Financial Ombudsman Service, Exchange Tower, London, E14 9SR
Telephone: 08000 234567 (free on mobile phones and landlines)
Email: complaint.info@financial-ombudsman.org.uk

If the Financial Ombudsman Service is unable to consider your complaint, you may wish to obtain advice from the Citizens Advice Bureau or seek legal advice.

The Financial Services Compensation Scheme (FSCS)

We are covered by the Financial Services Compensation Scheme (FSCS) which means that you may be entitled to compensation if we are unable to meet our obligations to you. Further information is available on www.fscs.org.uk or by contacting the FSCS directly on 0800 678 1100.

How we use your information

Who controls your personal information

This notice tells you how Zurich Insurance plc ('Zurich'), as data controller, will deal with your personal information. Where Zurich introduces you to a company outside the group, that company will tell you how your personal information will be used.

You can ask for further information about our use of your personal information or complain about its use in the first instance, by contacting our Data Protection Officer at: Zurich Insurance Group, Tri-centre 1, Newbridge Square, Swindon, SN1 1HN or by emailing the Data Protection Officer at GBZ.General.Data.Protection@uk.zurich.com.

If you have any concerns regarding our processing of your personal information, or are not satisfied with our handling of any request by you in relation to your rights, you also have the right to make a complaint to the Information Commissioner's Office. Their address is: First Contact Team, Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, SK9 5AF.

What personal information we collect about you

We will collect and process the personal information that you give us by phone, e-mail, filling in forms, including on our website, and when you report a problem with our website. We also collect personal information from your appointed agent such as your trustee, broker, intermediary or financial adviser in order to provide you with the services you have requested and from other sources, such as credit reference agencies and other insurance companies, for verification purposes. We will also collect information you have volunteered to be in the public domain and other industry-wide sources. We will only collect personal information that we require to fulfil our contractual or legal requirements unless you consent to provide additional information. The type of personal information we will collect includes; basic personal information (i.e. name, address and date of birth), occupation and financial details, health and family information, claims and convictions information and where you have requested other individuals be included in the arrangement, personal information about those individuals.

If you give us personal information on other individuals, this will be used to provide you with a quotation and/or contract of insurance and/or provision of financial services. You agree you have their permission to do so. Except where you are managing the contract on another's behalf, please ensure that the individual knows how their personal information will be used by Zurich. More information about this can be found in the 'How we use your personal information' section.

How we use your personal information

We and our selected third parties will only collect and use your personal information (i) where the processing is necessary in connection with providing you with a quotation and/or contract of insurance and/or provision of financial services that you have requested; (ii) to meet our legal or regulatory obligations; or (iii) for our 'legitimate interests'. It is in our legitimate interests to collect

your personal information as it provides us with the information that we need to provide our services to you more effectively including providing you with information about our products and services. We will always ensure that we keep the amount of information collected and the extent of any processing to the absolute minimum to meet this legitimate interest. Examples of the purposes for which we will collect and use your personal information are:

1. to provide you with a quotation and/or contract of insurance;
2. to identify you when you contact us;
3. to deal with administration and assess claims;
4. to make and receive payments;
5. to obtain feedback on the service we provide to you;
6. to administer our site and for internal operations including troubleshooting, data analysis, testing, research, statistical and survey purposes;
7. for fraud prevention and detection purposes.

We will contact you to obtain consent prior to processing your personal information for any other purpose, including for the purposes of targeted marketing unless we already have consent to do so.

Who we share your personal information with

Where necessary, we will share the personal information you gave us for the purposes of providing you with the goods and services you requested with the types of organisations described below:

associated companies including reinsurers, suppliers and service providers;
introducers and professional advisers;
regulatory and legal bodies;
survey and research organisations;
credit reference agencies;
healthcare professionals, social and welfare organisations; and
other insurance companies

Or, in order to meet our legal or regulatory requirements, with the types of organisations described below:

regulatory and legal bodies;
central government or local councils;
law enforcement bodies, including investigators;
credit reference agencies; and
other insurance companies

How we use your personal information for websites and email communications

When you visit one of our websites we may collect information from you such as your email address or IP address. This helps us to track unique visits and monitor patterns of customer website traffic, such as who visits and why they visit.

We use cookies and/or pixel tags on some pages of our website. A cookie is a small text file sent to your computer. A pixel tag is an invisible tag placed on certain pages of our website but not on your computer. Pixel tags usually work together with cookies to assist us to provide you with a more tailored service. This allows us to monitor and improve our email communications and website. Useful information about cookies, including how to remove them, can be found on our websites.

How we transfer your personal information to other countries

Where we transfer your personal information to countries that are outside of the UK and the European Union (EU) we will ensure that it is protected and that the transfer is lawful. We will do this by ensuring that the personal information is given adequate safeguards by using 'standard contractual clauses' which have been adopted or approved by the UK and the EU, or other solutions that are in line with the requirements of European data protection laws.

A copy of our security measures for personal information transfers can be obtained from our Data Protection Officer at: Zurich Insurance Group, Tri-centre 1, Newbridge Square, Swindon, SN1 1HN, or by emailing the Data Protection Officer at GBZ.General.Data.Protection@uk.zurich.com.

How long we keep your personal information for

We will retain and process your personal information for as long as necessary to meet the purposes for which it was originally

collected. These periods of time are subject to legal, tax and regulatory requirements or to enable us to manage our business.

Your data protection rights

You have a number of rights under the data protection laws, namely:

to access your data (by way of a subject access request);
to have your data rectified if it is inaccurate or incomplete;
in certain circumstances, to have your data deleted or removed;
in certain circumstances, to restrict the processing of your data;
a right of data portability, namely to obtain and reuse your data for your own purposes across different services;
to object to direct marketing;
not to be subject to automated decision making (including profiling), where it produces a legal effect or a similarly significant effect on you;
to claim compensation for damages caused by a breach of the data protection legislation.
if we are processing your personal information with your consent, you have the right to withdraw your consent at any time.

We will, for the purposes of providing you with a contract of insurance, processing claims, reinsurance and targeted marketing, process your personal information by means of automated decision making and profiling where we have a legitimate interest or you have consented to this.

What happens if you fail to provide your personal information to us

If you do not provide us with your personal information, we will not be able to provide you with a contract or assess future claims for the service you have requested.

Fraud prevention and detection

In order to prevent and detect fraud we may at any time:

check your personal data against counter fraud systems
use your information to search against various publicly available and third party resources
use industry fraud tools including undertaking credit searches and to review your claims history
share information about you with other organisations including but not limited to the police, the Insurance Fraud Bureau (IFB), other insurers and other interested parties.

If you provide false or inaccurate information and fraud is identified, the matter will be investigated and appropriate action taken. This may result in your case being referred to the Insurance Fraud Enforcement Department (IFED) or other police forces and fraud prevention agencies. You may face fines or criminal prosecution. In addition, Zurich may register your name on the Insurance Fraud Register, an industry-wide fraud database.

Claims history

We may pass information relating to claims or potential claims to any relevant database. We and other insurers may search these databases when you apply for insurance, when claims or potential claims are notified to us or at time of renewal to validate your claims history or that of any other person or property likely to be involved in the policy or claim.

This helps to check information provided and prevent fraudulent claims.

Francesca Gould
Buro Happold Limited
Camden Mill
Lower Bristol Road
Bath
BA2 3DQ
UK

T: +44 (0)1225 320 600
F: +44 (0)870 787 4148
Email: francesca.gould@burohappold.com