

Coal Mining Site Investigation & Risk Assessment

Site: Pitsford Road, Manchester

Reference: 17-302-R3-1

Date: August 24





E3P

Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

+ 44 (0) 161 707 9612
<https://e3p.co.uk>

Registered in England
CRN: 08725262

QUALITY ASSURANCE

Report reference
17-302-R3-1

REV REF:	DESCRIPTION	AUTHOR	CHECKED	AUTHORISED	DATE
R3-1	First issue	JC	ND	AS	08/08/24

This report has been prepared for the sole benefit, use, and information of the client. The liability of Environmental Engineering Partnership Limited T/A E3P with respect to the information contained in the report will not extend to any third party. This report has been prepared by the qualified persons as listed below.

WRITTEN BY	QUALIFICATIONS	POSITION
Jack Clayton	BSc (Hons)	Graduate Consultant

REVIEWED BY	QUALIFICATIONS	POSITION
Nicola Dawson	BSc (Hons), FGS	Senior Consultant

AUTHORISED BY	QUALIFICATIONS	POSITION
Maritn Dyer	BSc (Hons), FGS, MEnvSc, CEnv	Director



EXECUTIVE SUMMARY

Site Address	Land north off Pitsford Road, Miles Platting, Manchester, M40 8GS	
Grid Reference	E 386174, N 400168.	
Site Area	2.57 Ha.	
Current Site Use	The subject site is rectangular in shape, located to the northeast of Manchester city centre. It is currently unoccupied but bound to the north and east by a national rail access road. The site is predominantly vegetated brownfield land with the only structures present appearing to be metal fencing sporadically around the site, and a brick retaining wall along the southwest boundary. The whole site has been artificially raised and levelled where historical railway sidings were previously located which has created an embankment and steep slope on all sides.	
Proposed Development	E3P understands that Bellway Homes intends to construct a low-rise residential development with associated gardens, estate roads and infrastructure.	
Geological Setting	Drift Geology	Across multiple intrusive investigations natural drift deposits were encountered between 4.70 to 32.70 m bgl. Drift deposits comprised of brown mottled grey stiff high strength to very high strength CLAY, overlying a thin band of brown fine to medium SAND and GRAVEL situated on top of the bedrock.
	Bedrock Geology	During the rotary borehole investigation in July 2024, bedrock was encountered within all locations at depths in excess of 29.80 m bgl. Bedrock comprised grey MUDSTONE at a depth of 29.80-35.90 m bgl and SANDSTONE from 32.60-35.90 m bgl to a maximum proven depth of 50.00 m bgl. Within RB101, RB102, RB103 & RB104, coal traces were encountered within the MUDSTONE between depths of 31.40 – 35.90 m bgl. Coal was not identified in any notable bands or of any notable thickness.
	Subsidence Hazards	No hazard identified in data searches.
Coal Authority Information	The site is located in a coal mining reporting area but not within a development high-risk area. No shafts, mine entries or adits are present within the site or within a 200 m vicinity of the site. There is, however, a conjectured seam crossing the east of the subject site as per the Coal Authority report though is unlikely to be worked at a shallow depth <30 m bgl. Although, confirmatory boreholes will be required to confirm this.	
Conclusions	No evidence of viable coal seam or historic coal workings were noted in any of the boreholes. Should a worked seam be present at depth of >50m bgl, the site benefits from ~20m of rock cover which is deemed sufficient to mitigate any successive cavitation and therefore the risk of subsidence at the surface is very low.	



TABLE OF CONTENTS

EXECUTIVE SUMMARY	3
1. INTRODUCTION	5
1.1. Background	5
1.2. Proposed Development.....	5
1.3. Objectives	5
1.4. Limitations	6
1.5. Sources of Information	6
1.6. Confidentiality.....	6
2. SITE SETTING	7
2.1. Site Details	7
2.2. Current Site Use	7
2.3. Surrounding Area.....	8
3. SITE HISTORY.....	9
3.1. On-Site Historical Development.....	9
3.2. Anecdotal Information	11
4. SITE GEOLOGY.....	12
4.1. Geology and Hydrogeology.....	12
4.2. Geotechnical Data	12
4.3. Coal Mining	13
4.3.1. Coal Mining Information.....	13
4.3.2. Coal Authority Plan	16
4.3.3. Mine Abandonment Plans	16
4.4. Coal Mining Risk Assessment	16
4.5. Brine Workings.....	17
5. COAL MINING SITE INVESTIGATION	18
5.1. Scope of Intrusive Ground Investigation	18
5.2. Summary of Ground Investigation Works	19
5.3. Summary of Coal Mining Issues.....	19
APPENDIX I LIMITATIONS.....	20
APPENDIX II GLOSSARY	25
APPENDIX III COAL AUTHORITY MINING REPORT	28
APPENDIX IV DRAWINGS	29
APPENDIX V EXPLORATORY HOLE LOGS.....	30

DRAWING LIST

17-302-001 – Site Location Plan
17-302-002 – Proposed Development Plan
17-302-004 – Site Features Plan
17-302-003 – Historical Features Plan
17-302-006 – Exploratory Hole Location Plan
17-302-018 – Coal Mining Issues Plan



1. INTRODUCTION

1.1. BACKGROUND

Bellway Homes commissioned E3P to undertake a Coal Mining Investigation and Risk Assessment at the site known as the land off Pitsford Road, Miles Platting, Manchester, M40 8GS; herein referred to as the site.

This report is required to determine potential geotechnical liabilities associated with coal mining with a proposed future residential development.

1.2. PROPOSED DEVELOPMENT

Bellway Homes intends to construct a low-rise residential development with associated gardens, estate roads and infrastructure. Drawing 17-302-002 (Appendix IV) identifies the proposed development layout.

A snapshot of the Proposed Development Layout is indicated in Figure 1.

Figure 1 Snapshot of Proposed Development



1.3. OBJECTIVES

The objectives of the desk-based Coal Mining Risk Assessment are as follows:

- Review historical plans, geology, mining records and any local authority information available to complete a desk-based coal mining risk assessment in line with currently mining guidance.
- Interpretation of information to identify and assess the risks to the proposed development from coal mining legacy, including the cumulative impact of issues.



- ✿ Assess the desk-based information and where possible provide preliminary recommendations in relation to shallow mine workings.
- ✿ Provide recommendations regarding future works required and the likely scope of any future investigations.

1.4. LIMITATIONS

The limitations of this report are presented in APPENDIX I.

1.5. SOURCES OF INFORMATION

Background information was sought from the following sources:

- ✿ Coal Authority Coal Mining Report (Report Ref GS-9081814)
- ✿ Groundsure Search (Report Ref GS-9080629);
- ✿ Historical mapping dated 1848 to 2024;
- ✿ Online planning records held by Manchester City Council;
- ✿ Consultations with representatives of Manchester City Council;
- ✿ British Geological Survey Map;
- ✿ Magic Map Groundwater Vulnerability Map;
- ✿ Radon: Guidance on protective measures for new buildings (BRE Document BR211, 2007);
- ✿ Groundsure IO database;
- ✿ <https://zeticauxo.com/downloads-and-resources/risk-maps/>; and
- ✿ <https://flood-map-for-planning.service.gov.uk>.

1.6. CONFIDENTIALITY

E3P has prepared this report solely for the use of the client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from E3P; a charge may be levied against such approval.



2. SITE SETTING

2.1. SITE DETAILS

Table 1 Site Details

Site Address	Land off Pitsford Road, Miles Platting, Manchester, M40 8GS
National Grid Reference	E 386174, N 400168
Site Area	2.57 Ha

All acronyms used within this report are defined in the Glossary presented in APPENDIX II.

A site location plan is presented in **Error! Reference source not found.** as Drawing 17-302-001.

2.2. CURRENT SITE USE

E3P has undertaken a site walkover of the entire site, and a description of the key findings is summarised in Table 2.

Table 2 Site Description

Occupancy/Use	The subject site is rectangular in shape and located to the northeast of Manchester city centre. It is currently unoccupied but bound to the north and east by a National Rail access road. The site is predominantly vegetated brownfield land with the only structures present appearing to be a perimeter metal fencing around the site, and a brick retaining wall along the southwest boundary. No further structures have been identified within the site boundary. The whole site has been artificially raised and levelled where historical railway sidings were previously located which has created an embankment and steep slope on all sides. Street lighting is present along the northwest boundary of the site along Pitsford Road.	
Structures	No above ground structures have been identified within the site boundary with the exception of the retaining wall at the western end of the site.	
Access	Both pedestrian and vehicular access can be gained in the northeast of the site via a gated narrow lane off Pitsford Road. Pedestrian access is also possible at multiple breaks in the fence along Pitsford Road.	
Slope	Determining the topography of the site is difficult due to the presence of dense vegetation. The site is elevated above Pitsford Road with a significant slope present along the northern site boundary. In some areas the slope is estimated to be ca. 2.50m higher than surrounding features.	
Retaining Structures	There is an approximately 3.00m brick wall forming the western boundary of the subject site that acts as a retaining wall for the site and Queens Road. The wall is showing some evidence of cracking.	
Surface Cover (%)	Buildings:	0%
	Hardstand:	5%
	Soft cover:	95%
Services	No services were aside from gas entering the tip at the southwest of the site were recorded upon review of the appropriate service plans for the intrusive investigation.	



2.3. SURROUNDING AREA

The surrounding area land uses are summarised in Table 3.

Table 3 **Surrounding Land Uses**

DIRECTION	LAND USE
North	Residential units and St Augustine's Primary School
East	Commercial units
South	Railway line
West	Residential units and Village Park



3. SITE HISTORY

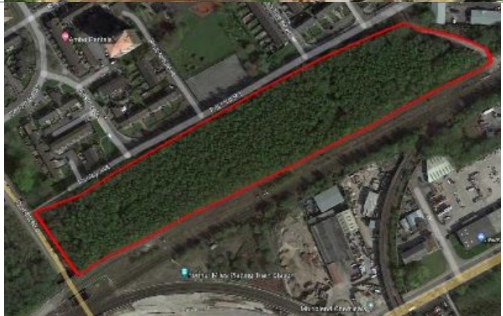
3.1. ON-SITE HISTORICAL DEVELOPMENT

A review of historical mapping pertinent to the site is summarised in Table 4 below. In addition, historical site features are presented on Drawing No 17-302-003 in APPENDIX IV.

Table 4 Site Historical Development

MAP EDITION	HISTORICAL LAND USE	HISTORICAL MAP EXCERPT
1848 1:10,560	The site consists of agricultural land adjacent to the Lancashire and Yorkshire Railway Line.	
1891 1:10,560	The site has been developed into Brewery Sidings with associated buildings in the southwest. Markings also suggest the presence of embankments to the north and west of the sidings. A structure is present in the west of the site.	
1908 1:2,500	Further sidings have been added to the north with associated ground levelling. A small structure has been added in the north, along with redevelopment of lines in the south of the site.	
1922 1:2,500	A structure has been added in the southwest of the site.	



MAP EDITION	HISTORICAL LAND USE	HISTORICAL MAP EXCERPT
1949-1950 1:2,500	Small structures in the southwest of the site have been removed.	
1980-1985 1:10,000	No changes recorded.	
1985-1988 1:10,000	Railway sidings and associated small structures have been removed. An embankment is still noted to the west.	
2003 Aerial Imagery	Aerial imagery indicates that the land has become partially overgrown with self-seeding vegetation.	
2021 Aerial Imagery	Vegetation is shown to be dense across the site.	

A review of the historic mapping has not identified anything which is otherwise indicative of historic coal mining or any coal mining related features.

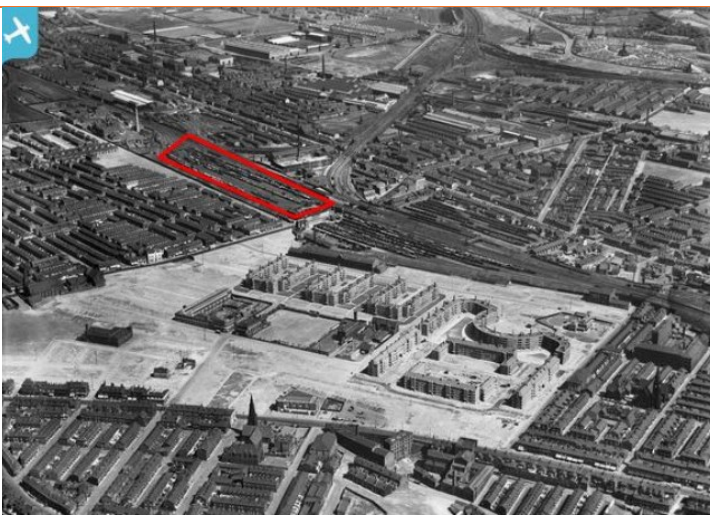
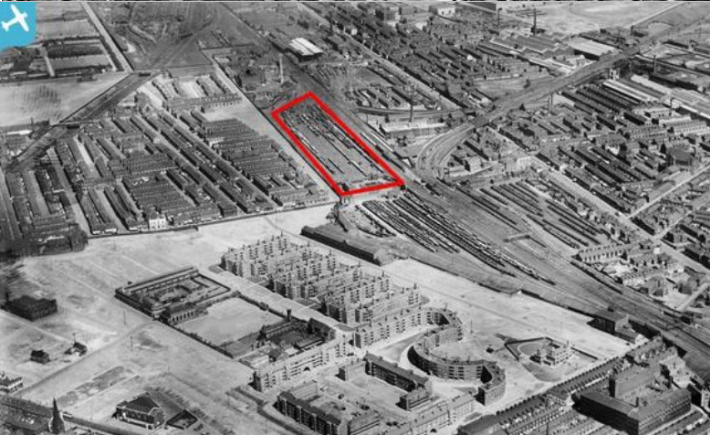
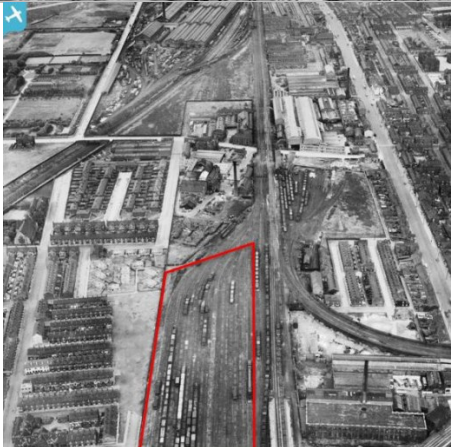


3.2. ANECDOTAL INFORMATION

A web-based search for detail in and around the subject site features Brewery Sidings in a number of historical Railway websites. The main detail obtained (from <http://www.prestonstation.org.uk/lineclear/brewerysidings.html>) suggests that 'Brewery Sidings Signal Box closed on the 15th September 1998 in connection with stage one of the Manchester north re-signalling works.'

A web-based search of the subject site has recovered the following photographs, courtesy of Britain From Above:

Table 5 Summary of Anecdotal Information from Britain from Above

1939 PLATE: EPW061690	
1939 PLATE: EPW061689	
1952 PLATE: EAW045589	



4. SITE GEOLOGY

4.1. GEOLOGY AND HYDROGEOLOGY

The British Geological Survey (BGS) map (Sheet 085) for the site, (1:50,000, Solid and Drift edition) and online records indicate that the site is underlain by the geological sequence presented in Table 6.

Table 6 Summary of Underlying Geology

GEOLOGICAL UNIT	CLASSIFICATION	DESCRIPTION	AQUIFER CLASSIFICATION
Drift	Till - Devensian	Diamicton – CLAY and GRAVEL	Secondary undifferentiated
Solid	Pennine Middle Coal Measures Formation – (North – majority of the site)	MUDSTONE, SILTSTONE, and SANDSTONE	Secondary A aquifer
	Pennine Upper Coal Measures Formation – (South of the site)	MUDSTONE, SILTSTONE, and SANDSTONE	

E3P has reviewed the BGS database, which identified a borehole in close proximity, from which to compare the published geology above.

The borehole logs are summarised in Table 8 below.

Table 7 Summary of BGS Borehole Records

LOCATION	DEPTH	MADE GROUND	DRIFT	SOLID
139 m NE	29.26 m	N/A	CLAY and GRAVEL 0.00–24.38 m bgl	Black SHALE 24.38–29.26 m bgl

The nearest recorded faulting is circa 250 m to the northeast of the subject site. This is not considered to be within influencing distance of the subject site.

4.2. GEOTECHNICAL DATA

Geotechnical data presented within a commercially available environmental database is summarised within Table 8.

Table 8 Summary of Geotechnical Data

HAZARD	DESIGNATION
Shrink-Swell Clay	Very low risk
Landslides	Very low risk
Ground Dissolution	Negligible risk
Compressible Ground	Negligible risk
Collapsible Deposits	Very low risk
Running Sand	Very low risk
Natural Cavities	None recorded within 500 m
Manmade Cavities	None recorded within 500 m



4.3. COAL MINING

The Groundsure report states the site is in an area that may be affected by coal mining.

A CA mining report was obtained (Ref: 51003314104001) dated 27th September 2022.

The CA operates a risk-based approach to the assessment of potential instability issues associated with future development of land located within the predefined CA consultation areas. This risk-based approach subdivides the potential risk into “low” and “high” risk categories.

The risk categories can be defined as:

Low-Risk Sites – Deemed to be land where coal mining has taken place, however it was at such depth not to pose a risk to new development, and it therefore contains no known recorded risks and as such no further assessment is required.

For low-risk sites, the CA categorically states:

If your proposed development is within the Development Low Risk Area, there is no need for you to submit any coal mining information with your planning application and The Coal Authority will not be consulted by the LPA. The LPA will include our Standing Advice as an informative note within the decision notice.

High-Risk Sites – Deemed to be landholdings located within an area known to contain legacy risks that include:

- ✿ Mine entries (shaft or adit);
- ✿ Shallow coal workings (recorded and probable);
- ✿ Workable coal seam outcrops;
- ✿ Mine gas sites and areas;
- ✿ Recorded coal-mining-related hazards;
- ✿ Geological features (fissures and break lines); and
- ✿ Former surface mining sites (sometimes using historic opencast extraction methods).

4.3.1. COAL MINING INFORMATION

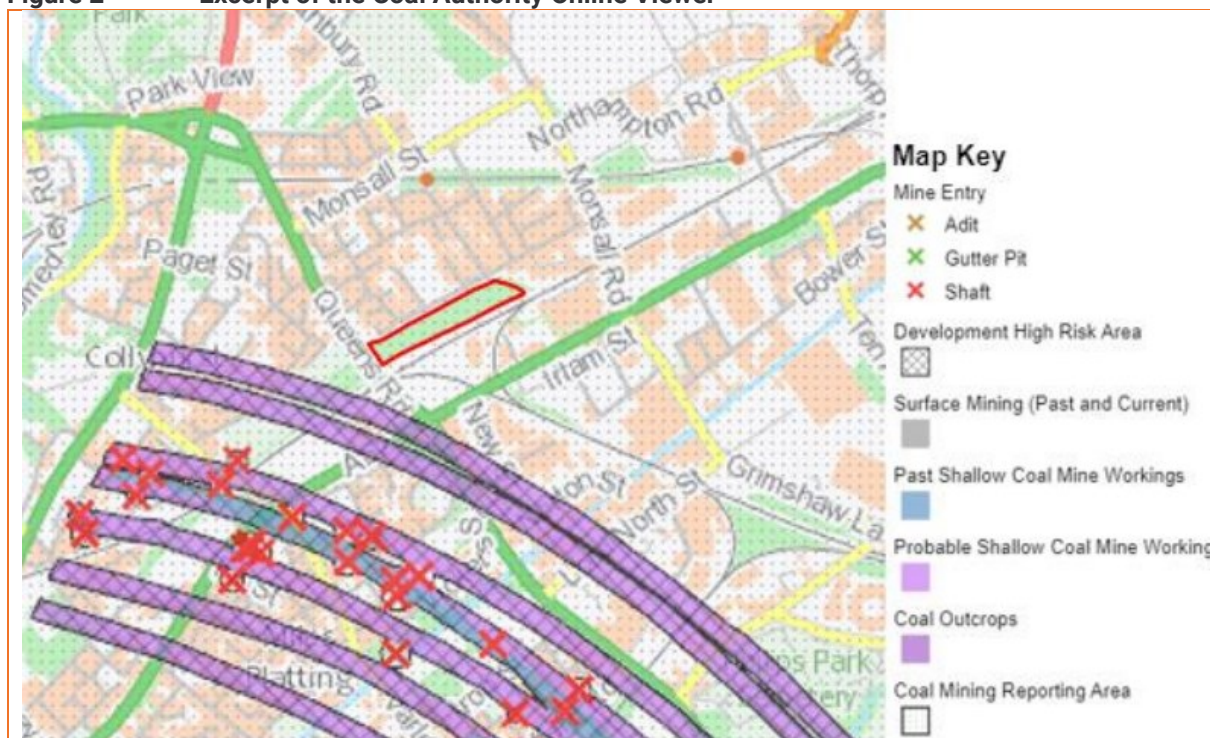
Prior to the enactment of the Coal Mines Regulation Act (1872), which came into force on the 1st January 1883, there was no statutory requirement to record the extent of abandoned mine workings and as such the CA has no knowledge of extensive workings throughout the UK Coal Fields where shallow workings are present at a depth that could result in a subsidence event in the future (through successive cavitation) associated with failure of support mechanism.

To determine if a site may have unrecorded or recorded coal mine workings requires the consideration of a wide range of information and E3P has completed a review of relevant information in relation to potential coal mining activities.

In the first instance, E3P has reviewed the Coal Authority Online Viewer and an excerpt of this is presented as Figure 2. This map shows that the site does not lie within a development high risk area. Furthermore, there are coal seams to the south which appear to dip away from the site. The map also indicates that there are no shallow workings beneath the site and there are no mine shafts on the site.



Figure 2 Excerpt of the Coal Authority Online Viewer



As the site is within an area affected by Coal Mining E3P has obtained a Coal Authority Consultants Coal Mining Report for the site (Ref: GS-9081814).

Table 9 provides a summary of pertinent coal mining information with this report.

Table 9 Coal Mining Information

SOURCES OF INFORMATION	SUMMARY				
Known Past Underground Mining	SEAM	ANGLE OF DIP	EXTRACTION THICKNESS	DEPTH	YEAR LAST MINED
	Parker	17.9	80	137	1935
	Roger	16.2	180	524	1964
	Crombouke	16.9	120	540	1936
	Roger	17.2	180	542	1964
	Crombouke	21.0	120	607	1924
	Roger	16.1	180	622	1961
	Roger	17.4	180	630	1967
	Roger	20.8	180	636	1963
Probable Unrecorded workings	No				
Spine Roadways at Shallow Depth	No spine roadway recorded at shallow depth.				
Mine Entries within 100m of the site	None recorded within 100 meters of the enquiry boundary.				
Mine Abandonment plans	No				



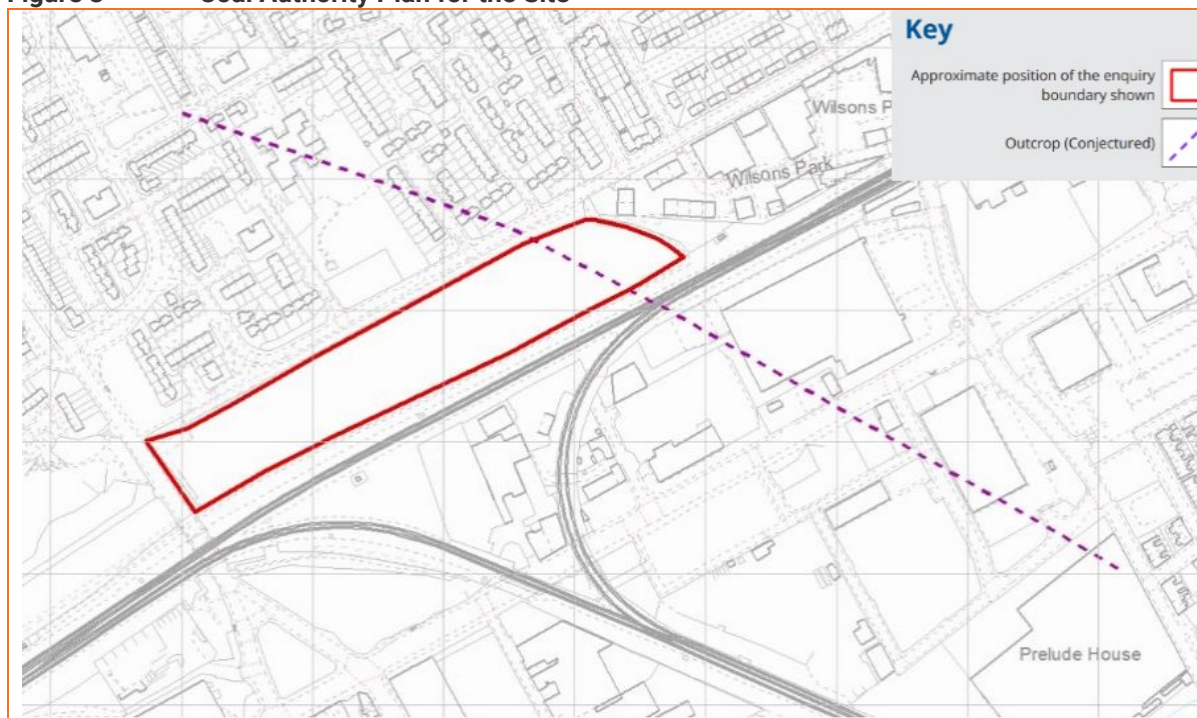
SOURCES OF INFORMATION	SUMMARY
Known outcrops	One conjectured seam was identified crossing the site. The CA provided the following information related to this: Seam Name: Doctor Workable: No
Faults / Fissures	No faults, fissures or break lines recorded.
Opencast mines	None recorded within 500 m of the enquiry boundary.
Coal Authority Managed Tips	None recorded within 500 m of the enquiry boundary.
Remediated Sites	None recorded within 50 m of the enquiry boundary.
Coal Mining Subsidence	The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 m of the enquiry boundary, since 31 st October 1994. There is no current Stop Notice delaying the start of remedial works or repairs to the property. The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 off the Coal Mining Subsidence Act 1991.
Mine Gas	None recorded within 500 m of the enquiry boundary.
Mine Water	None recorded within 500 m of the enquiry boundary.
Future Underground Mining	None recorded.
Coal Authority Development Advice	None.
British Geological Survey Mapping	The 1:50,000 scale geological mapping for the area does not note the presence of any coal seams underlying the site.
Review of Coal Authority Archive	No CA archives/mine abandonment plans are made available.
Historical Ordnance Survey Mapping	A review of the 1:10,000 Ordnance Survey mapping from circa 1848, which has records of mine workings that predate the Mining & Regulation Act of 1872, identified the following features indicative of historical mine workings in proximity to the application site:  Coal pit – 500 m southwest  Coal pit – 500 m south  Three separate coal pits 750 m south In consideration of the historical mining features in proximity to the site and potential for coal close to the surface it is considered possible that coal extraction has occurred, underlying the site at shallow depths. Further investigation was required.
Historical Site Investigations	E3P has not been provided with any historic site investigation reports.



4.3.2. COAL AUTHORITY PLAN

The Coal Authority plan referenced: shows the conjectured coal seam beneath the site and this is presented in Figure 3.

Figure 3 Coal Authority Plan for the Site



4.3.3. MINE ABANDONMENT PLANS

No mine abandonment plans have been made available for E3P to review.

4.4. COAL MINING RISK ASSESSMENT

This risk assessment comprises a desk-based review of all available information on coal mining issues that are relevant to the application site deemed to be located within a high-risk area. This includes:

- ✚ Interpretation of information to identify and assess the risks to the proposed development from coal mining legacy, including the cumulative impact of issues;
- ✚ Setting out appropriate mitigation measures to address the coal mining legacy issues affecting the site, including any necessary remedial works and/or demonstrate how coal mining issues have influenced the proposed development; and
- ✚ Demonstrating to the local planning authority that the application site is, or can be made, safe and stable to meet the requirements of national planning policy with regard to development on unstable land.

The coal mining risk assessment is summarised in Table 10.



Table 10 Summary of Coal Mining Risk Assessment

Coal Mining Risk Assessment	Yes/No	Risk Assessment
Recorded Underground Coal Mining at Shallow Depth (< 30 m)	No	Low
Recorded Underground Coal Mining at Shallow Depth (> 30 m)	Yes	Low
Evidence of Unrecorded Surface Extraction of Coal Outcrop	No	Low
Unrecorded Underground Coal Mining at Shallow Depth (< 30 m)	Yes	Moderate
Mine Entries (Shaft/Adits)	No	Low
Coal Mining Geology – Fractures/Fissures	No	Low
Recorded Gas Emissions	No	Low
Recorded Mining Surface Hazard	No	Low
Surface Mining (Opencast)	No	Very Low/Low

Based on the above, the coal mining risk assessment is determined to be low risk.

4.5. BRINE WORKINGS

The site is not situated within the Cheshire Brine District. Therefore, no further assessment is required in relation to brine workings.



5. COAL MINING SITE INVESTIGATION

5.1. SCOPE OF INTRUSIVE GROUND INVESTIGATION

In due consideration of the potential presence of a conjectured seam in the east of the subject site, a series of rotary boreholes have been advanced in accordance with Coal Authority Permission Ref: 27664 to assess the potential presence of shallow workings within this seam and the potential for ground instability to induce a future subsidence event within the proposed development.

Exploratory fieldwork was completed between 23rd July 2024 and 25th July 2024. A summary of the fieldwork completed is included in Table 12.

The exploratory hole logs are included within

Table 11 Summary of Fieldwork

POTENTIAL SOURCE/RATIONAL	LOCATION HOLE	TYPE	MAXIMUM DEPTH (M BGL)
General Ground Conditions Including the Presence of Voids	RB101	Rotary Borehole	50.00
	RB102		50.00
	RB103		50.00
	RB104		50.00

Due to the proximity to the adjacent Network Rail Huddersfield Main Line, track monitoring was required throughout the duration of the drilling works to ensure no movements were identified along the adjacent track as a result of the drilling works.

Track monitoring was undertaken by Vital Consultancy Limited as per the agreed scope with Network Rail. During the monitoring, all targets were successfully read and no appreciable movement was detected, therefore all survey results were within the expected limits. Results of the track monitoring are available on request.



5.2. SUMMARY OF GROUND INVESTIGATION WORKS

Four rotary boreholes have been advanced at the locations detailed within the E3P exploratory borehole location plan at positions to intersect the potential coal seams and assess the potential for any workings.

Table 12 Summary of Strata

ROTARY BOREHOLE	DEPTH TO STRATUM (M BGL)			REMARKS
	MADE GROUND (m bgl)	DRIFT (m bgl)	BEDROCK (m bgl)	
RB101	0.00 – 4.60	4.60 – 29.80	>29.80	Thin coal traces within MUDSTONE (31.40 – 32.00 m bgl) No voids encountered
RB102	0.00 – 5.60	5.60 – 31.40	>31.40	Coal traces within MUDSTONE (31.40 – 32.60 m bgl) No voids encountered
RB103	0.00 – 5.70	5.70 – 32.70	>32.70	Thin coal traces within MUDSTONE (33.70 – 34.00 m bgl) No voids encountered
RB104	0.00 – 5.10	5.10 – 33.10	>33.10	Coal traces within MUDSTONE (34.60 – 35.90 m bgl) No voids encountered

There was no evidence to suggest that the seams were being locally displaced by possible fault sub-inclusions of rock. The lead driller did not record the presence of any voids, broken ground, partial or total loss of flush in any of the boreholes, which would be indicative of historic coal extraction.

5.3. SUMMARY OF COAL MINING ISSUES

E3P has reviewed the BGS geological mapping and CA information, in addition to completing four 50 m rotary boreholes to investigate shallow mine workings. A summary of the findings follows.

- ✿ Minor coal traces were recorded within the MUDSTONE at 30 – 40m, however no evidence of a seam of a workable thickness was recorded in any of the boreholes.
- ✿ In addition, no evidence of coal extraction or workings was noted at the depth of the coal traces.
- ✿ The predominant risk posed to the site is in relation to the Doctor coal outcrop, recorded trending through the east of the site generally traversing north to south. However, the coal outcrop is recorded not to be workable, therefore reducing the overall risk posed to the site.
- ✿ No coal seams have been detected between 30-50m below ground level (bgl). Therefore, even in the worst-case scenario where seams are present at depths greater than 50m with an extraction thickness of 1.00 – 2.00m, there is enough rock cover to prevent any potential cavitation. Consequently, the risk of surface subsidence is minimal.

END OF REPORT

APPENDIX I LIMITATIONS





GENERAL

1. This report and any associated works (together comprising the "Services") were compiled and carried out by E3P for the client (as present in Section 1) under the E3P "Terms of Business" or with those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.
2. Unless explicitly agreed otherwise, in writing, this report has been prepared under E3P Standard Terms and Business as included within our proposal to the Client.
3. Project-specific appointment documents may be agreed upon at our discretion and a charge may be levied for both the time to review and finalise appointment documents and also for associated changes to the appointment terms. E3P reserves the right to amend the fee should any changes to the appointment terms create an increased risk to E3P.
4. The report needs to be considered in light of the proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

PHASE 1 GEOENVIRONMENTAL AND PRELIMINARY RISK ASSESSMENTS

5. Coverage: This section covers reports with the following titles or combination of titles: Phase 1; Desktop Study; Geoenvironmental Assessment; Development Appraisal; Preliminary Environmental Risk Assessment; Constraints Report; Due Diligence Report; Geotechnical Development Review; Environmental Statement; Environmental Chapter; Baseline Environmental Assessment; Project Scope Summary Report (PSSR), Program Environmental Impact Report (PEIR), Geotechnical Development Risk Register; Agricultural Land Assessment; Mineral Safeguarding Assessment; Desk Top Coal Mining Risk Assessment; Hydrogeological Appraisal; Construction Environmental Management Plan; and Site Water Management Plan.
6. The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walkover inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects' responses may not have been received from all parties. E3P cannot be held responsible for any disclosures that are provided post-production of our report and will not automatically update our report.
7. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, E3P reserves the right to review such information and, if warranted, to modify the opinions accordingly.
8. It should be noted that any risks identified in this report are perceived risks based on the information reviewed. Actual risks can only be assessed following intrusive investigations of the site.
9. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials, this is for indicative purposes only and does not constitute or replace full and proper surveys completed by suitably qualified and experienced specialists in these fields.
10. E3P does not warrant work/data undertaken/provided by others.



INTRUSIVE INVESTIGATION REPORTS

11. Coverage: The following report titles (or combination) may cover this category of work: Geoenvironmental Site Investigation; Geotechnical Assessment; GIR (Ground Investigation Reports); Preliminary Environmental and Geotechnical Risk Assessment; Preliminary Summary; Coal Mining Risk Assessment, Ground Gas Addendum; and, Geotechnical Risk Register.
12. The investigation has been undertaken to provide information concerning either:
 - I. The type and degree of contamination present at the site in order to allow a generic quantitative risk assessment to be undertaken; or
 - II. Information on the soil properties present at the site to allow for geotechnical development constraints to be considered.
13. The scope of the investigation was selected on the basis of the specific development and land use scenario proposed by the Client and may be inappropriate to another form of development or scheme. If the development layout was not known at the time of the investigation the report findings may need revisiting once the development layout is confirmed.
14. Unless otherwise specified in the scope of works, any site drawing(s) provided in this report is (are) not meant to be an accurate base plan but is (are) used to present the general relative locations of features on, and surrounding, the site. Features (intrusive and sample locations etc) annotated on site plans are not drawn to scale but are centred over the approximate location. Such features should not be used for setting out and should be considered indicative only.
15. For contamination purposes, the objectives of the investigation are limited to establishing the risks associated with potential contamination sources with the potential to cause harm to human health, building materials, the environment (including adjacent land), or controlled waters.
16. For geotechnical investigations, the purpose is to broadly consider potential development constraints associated with the physical property of the soils underlying the site within the context of the proposed future or continued use of the site, as stated within the report.
17. The amount of exploratory work, soil property testing, and chemical testing undertaken has necessarily been restricted by various factors which may include accessibility, the presence of services; existing buildings; current site usage or short timescales. The exploratory holes completed assess only a small percentage of the area in relation to the overall size of the Site, and as such can only provide a general indication of conditions.
18. The number of sampling points and the methods of sampling and testing do not preclude the possible existence of contamination where concentrations may be significantly higher than those actually encountered or ground conditions that vary from those identified. In addition, there may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report.
19. The inspection, testing and monitoring records relate specifically to the investigation points and the timeframe that the works were undertaken. They will also be limited by the techniques employed. As part of this assessment, E3P has used reasonable skill and care to extrapolate conditions between these points based on assumptions to develop our interpretation and conclusions.



20. The assumption made in forming our conclusions is that the ground and groundwater conditions (both chemically and physically) are the same as have been encountered during the works undertaken at the specific points of investigation and at the time of the investigation.
21. Conditions can change between investigation points both spatially and over time and these interpretations should therefore be considered indicative. The assessment of extreme weather events and their impact on ground conditions is not within the scope of E3P's work.
22. The risk assessment and opinions provided are based on currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values. Specific assumptions associated with the risk assessment process have been outlined within the body or associated appendix of the report.
23. Additional investigations may be required in order to satisfy relevant planning conditions or to resolve any engineering and environmental issues.
24. Where soil contamination concentrations recorded as part of this investigation are used for commentary on the potential waste classification of soils for disposal purposes, these should be classed as indicative only. Due consideration should be given to the variability of contaminant concentrations taken from targeted samples versus bulk excavated soils and the potential variability of contaminant concentrations between sampling locations. Where major waste disposal operations are considered, targeted waste classification investigations should be designed, and the waste classification and any subsequent disposal option agreed upon with licenced subcontractors and/or the relevant regulators.
25. The results of the asbestos testing are factually reported, and interpretation is given as to how this relates to the previous use of the site, the types of ground encountered and site conceptualisation. This does not however constitute a formal asbestos assessment. These results should be treated cautiously and should not be relied upon to provide detailed and representative information on the delineation, type and extent of bulk ACMs and/or trace loose asbestos fibres within the soil matrix at the site.
26. If costs have been included in relation to additional site works, and/or site remediation works these must be considered as indicative only and must be confirmed by a qualified quantity surveyor.

EUROCODE 7: GEOTECHNICAL DESIGN

27. On 1st April 2010, BS EN 1997-1:2004 (Eurocode 7: Geotechnical Design – Part 1) became the mandatory baseline standard for geotechnical ground investigations.
28. In terms of geotechnical design for foundations, slopes, retaining walls and earthworks, EC7 sets guidance on design procedures including specific guidance on the numbers and spacings of boreholes for geotechnical design, there are limits to methods of ground investigation and the quality of data obtained and there are also prescriptive methods of assessing soil strengths and methods of design. Unless otherwise explicitly stated, the work has not been undertaken in accordance with EC7. A standard geotechnical interpretative report will not meet the requirements of the Geotechnical Design Report (GDR) under Eurocode 7. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. The report is likely to represent a Ground Investigation Report (GIR) under the Eurocode 7 guidance.



DETAILED QUANTITATIVE RISK ASSESSMENTS AND REMEDIATION AND ENABLING WORK STRATEGY REPORTS

29. These reports build upon previous report versions and associated notes. The scope of the investigation, further testing and monitoring and associated risk assessments were selected based on the specific development and land use scenario proposed by the Client and may not be appropriate to another form of development or scheme layout. The risk assessment and opinions provided are based on currently available approaches in the generation of Site-Specific Assessment Criteria relating to contamination concentrations and are not considered to represent a risk in a specific land use scenario to a specific receptor. No liability can be accepted for the retrospective effects of any future changes or amendments to these values, associated models or associated guidance.
30. The outputs of the Detailed Quantitative Risk Assessments are based upon the manipulation of standard risk assessment models. These are our interpretation of the risk assessment criteria.
31. Before adoption on-site, assessment criteria will need to be discussed and agreed upon with the Regulatory Authorities prior to adoption on site. The regulatory discussion and engagement process may result in an alternative interpretation being determined and agreed. The process and timescales associated with the Regulatory Authority engagement are not within the control of E3P. All costs and programmes presented as a result of this process should be validated by a quantity surveyor and should be presumed to be indicative.
32. E3P does not accept liability for any subcontract work that has not been completed in strict accordance with an approved E3P Remediation and Enabling Works Strategy.

GEOTECHNICAL DESIGN REPORT (GDR)

33. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. All the relevant information needs to be provided to allow for a GDR to be produced.

MONITORING (INCLUDING REMEDIATION MONITORING REPORTS AND BUILD PHASE MITIGATION)

34. These reports are factual and comprise monitoring, normally groundwater and ground gas and data provided by contractors as part of earthworks or remedial works.
35. The data is presented and will be compared with assessment criteria.

APPENDIX II

GLOSSARY





TERMS

ACM	Asbestos-containing material	MMP	Materials management plan
ADS	Acoustic design statement	ND	Not detected
AST	Above-ground storage tank	NDP	Nuclear density probe
BGS	British Geological Survey	NMP	Noise management plan
BSI	British Standards Institute	NPSE	Noise policy statement for England
BTEX	Benzene, toluene, ethylbenzene, xylenes	NR	Not recorded
CA	Coal Authority	PAH	Polycyclic aromatic hydrocarbon
CBR	California bearing ratio	PCB	Polychlorinated biphenyl
CIEH	Chartered Institute of Environmental Health	PI	Plasticity index
CIRIA	Construction Industry Research Association	PID	Photo ionisation detector
CLEA	Contaminated land exposure assessment	POS	Public open space
CML	Council of Mortgage Lenders	PPE	Personnel protective equipment
CoC	Contaminants of concern	ProPG	Professional practice guidance
CSM	Conceptual site model	QA	Quality assurance
DNAPL	Dense non-aqueous phase liquid (chlorinated solvents, PCB)	SGV	Soil guideline value
DWS	Drinking water standard	SPH	Separate-phase hydrocarbon
EA	Environment Agency	SPT	Standard penetration test
EQS	Environmental quality standard	SVOC	Semi-volatile organic compound
FFL	Finished floor level	TPH	Total and speciated petroleum hydrocarbon
GAC	General assessment criteria	TPH CWG	Total Petroleum Hydrocarbon (Criteria Working Group)
GL	Ground level	UKWIR	United Kingdom Water Infrastructure Risk
GSV	Gas screening value	UST	Underground storage tank
HCV	Health criteria value	VCC	Vibro-concrete column
ICSM	Initial conceptual site model	VOC	Volatile organic compound
LEL	Lower explosive limit	VRSC	Vibro-replacement stone columns
LMRL	Lower method reporting limit	VSC	Vibro-stone columns
LNAPL	Light non-aqueous phase liquid (petrol, diesel, kerosene)	WHO	World Health Organisation
MCV	Moisture condition value	WRAP	Waste and Resources Action Programme



MIBK	Methyl isobutyl ketone	WTE	Water table elevation
m	Metres	ppm	Parts per million
km	Kilometres	mg/m³	Milligram per metre cubed
% v/v	Percent volume in air	m bgl	Metres below ground level
mb	Millibars (atmospheric pressure)	m bcl	Metre below cover level
l/hr	Litres per hour	mAOD	Metres above ordnance datum (sea level)
µg/l	Micrograms per litre (parts per billion)	kN/m²	Kilonewtons per metre squared
ppb	Parts per billion	µm	Micrometre
mg/kg	Milligrams per kilogram (parts per million)		

APPENDIX III

COAL AUTHORITY MINING

REPORT





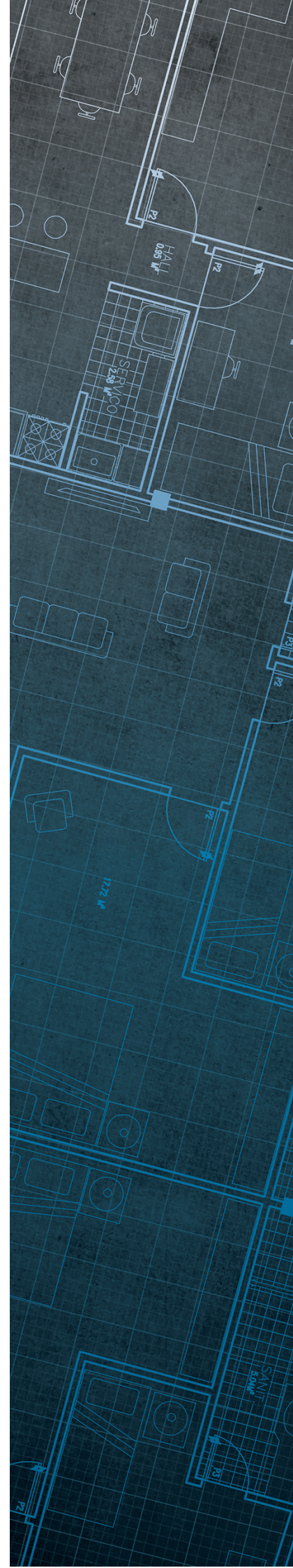
The Coal
Authority

Consultants Coal Mining Report

47, Pitsford Road, Manchester
Greater Manchester
M40 8G

Date of enquiry:	27 September 2022
Date enquiry received:	27 September 2022
Issue date:	27 September 2022

Our reference:	51003314104001
Your reference:	GS-9081814



Consultants

Coal Mining Report

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

Client name

GROUNDSURE LIMITED

Enquiry address

47, Pitsford Road, Manchester
Greater Manchester
M40 8G

How to contact us

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

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

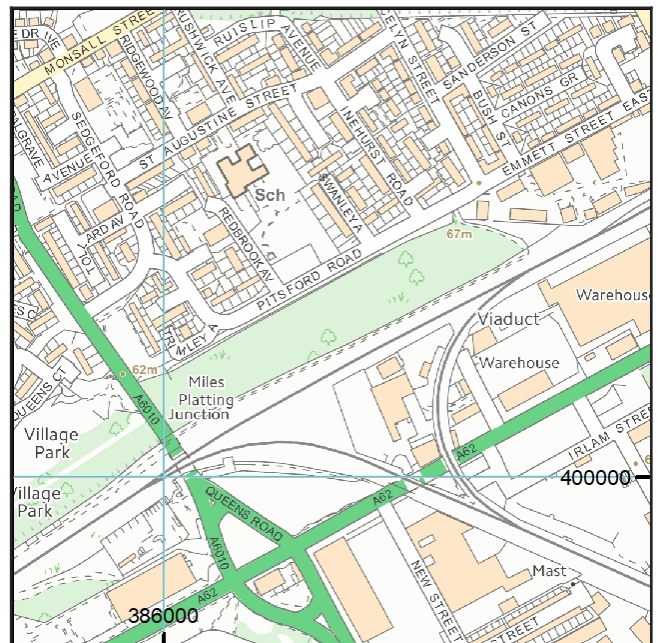
www.groundstability.com

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



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

Ordnance Survey Licence number: 100020315

Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	PARKER	Coal	35BJ	137	Beneath Property	17.9	South-West	80	1935
unnamed	ROGER	Coal	35AM	524	Beneath Property	16.2	South	180	1964
unnamed	CROMBOUK E	Coal	3597	540	Beneath Property	16.9	South-West	120	1936
unnamed	ROGER	Coal	35AN	542	Beneath Property	17.2	South-West	180	1964
unnamed	CROMBOUK E	Coal	359F	607	South	21.0	South-West	120	1924
unnamed	ROGER	Coal	35AY	622	South-East	16.1	South-West	180	1961
unnamed	ROGER	Coal	35AL	630	South-West	17.4	South	180	1967
unnamed	ROGER	Coal	35AZ	636	South	20.8	South-West	180	1963

Probable unrecorded shallow workings

None.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers

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

11471	NW1172	NW645
NW644		

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

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
DOCTOR	Coal	No	Within	N/A	117

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

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

Site investigations

None recorded within 50 metres of the enquiry boundary.

Remediated sites

None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence

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

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

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

Mine gas

None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

Section 3 – Licensing and future mining activity

Future underground mining

None recorded.

Coal mining licensing

None recorded within 200 metres of the enquiry boundary.

Court orders

None recorded.

Section 46 notices

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

Withdrawal of support notices

The property is in an area where a notice to withdraw support was given in 1963.

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

Payments to owners of former copyhold land

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

Section 4 – Further information

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

Development advice

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

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

Section 5 – Data definitions

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

Past underground coal mining

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

Probable unrecorded shallow workings

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

Spine roadways at shallow depth

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

Mine entries

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

Abandoned mine plan catalogue numbers

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

Outcrops

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

Geological faults, fissures and breaklines

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

Opencast mines

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

Coal Authority managed tips

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

Site investigations

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

Remediated sites

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

Coal mining subsidence

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

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

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

Mine gas

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

Mine water treatment schemes

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

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

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

Future underground mining

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

Coal mining licensing

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

Court orders

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

Section 46 notices

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

Withdrawal of support notices

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

Payment to owners of former copyhold land

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

APPENDIX IV

DRAWINGS

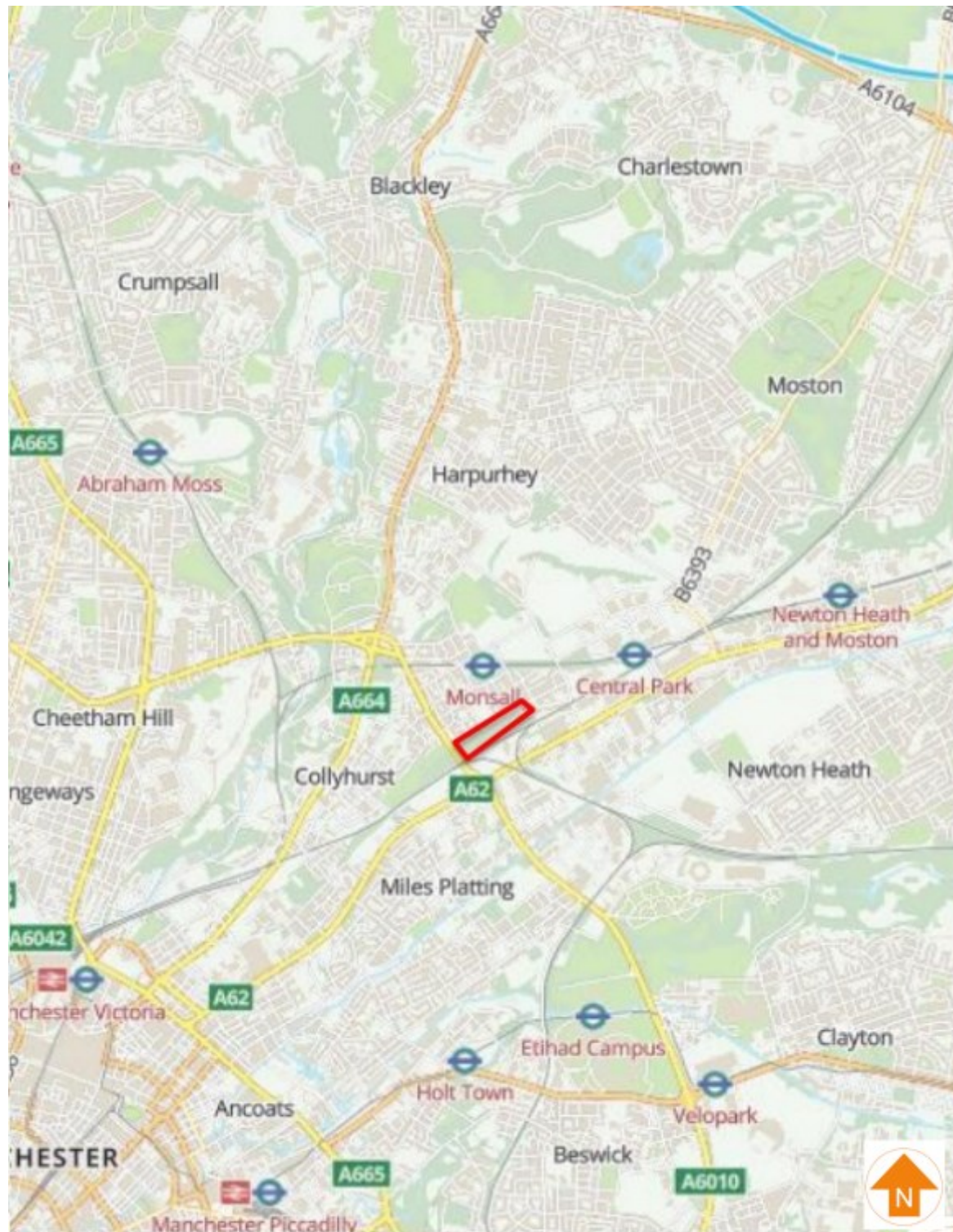


Pitsford Road

Coal Mining Site Investigation & Risk Assessment
August 24

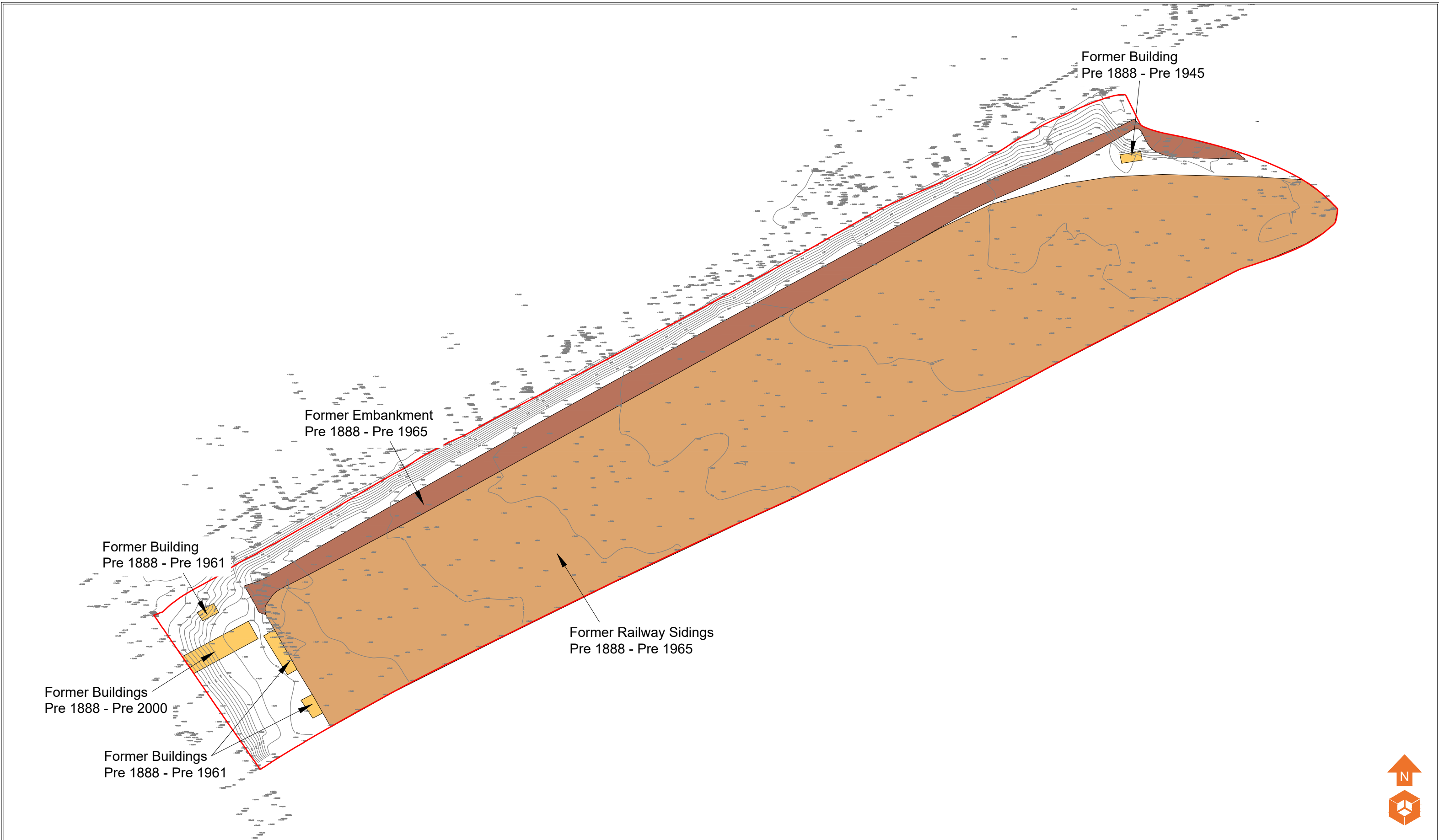


DRAWING 17-302-001 – Site Location Plan





						Notes:	Client:	Job No:	Date:	 Environmental Engineering Partnership Ltd Taylor Road, Trafford Park Urmston, Manchester, M41 7JQ Tel: 0161 707 9612 E-mail: info@e3p.co.uk Website: www.e3p.co.uk
							Bellway Homes	17-302	11.04.2024	
								Drawing No: 002	Scale: NTS @ A3	
P1	REVA	11.04.2024	OW	HM	ND	Job Title:	Pitsford Road, Manchester	Drawing Title:	Proposed Development Plan	The client must not amend any drawing, design or other intellectual property produced by E3P Ltd without permission in writing from E3P Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, E3P Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.
Phase	Issue	Date	Drawn	Checked	PM					



Historical Features

- Former Buildings
- Former Railway Sidings
- Former Embankment

Notes:

P1	REVA	11.04.2024	OW	HM	ND
Phase	Issue	Date	Drawn	Checked	PM

Client:

Bellway Homes

Job Title:

Pitsford Road, Manchester

Job No:
17-302

Drawing No:
003

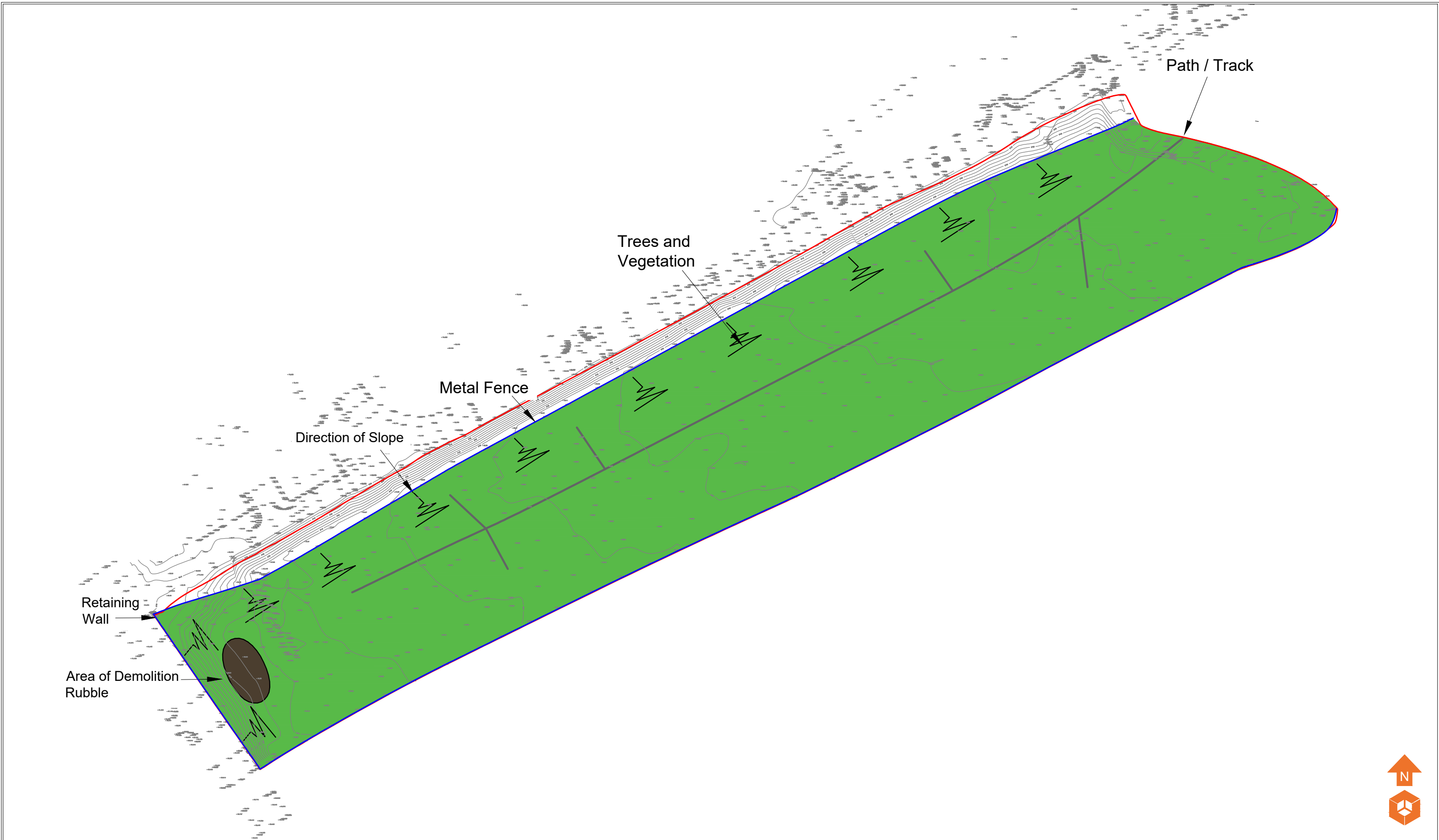
Date:
11.04.2024

Scale:
NTS @ A3



Environmental Engineering
Partnership Ltd
Taylor Road, Trafford Park
Urmston, Manchester, M41 7JQ
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

The client must not amend any drawing, design or other intellectual property produced by E3P Ltd without permission in writing from E3P Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, E3P Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.



Site Features

- Trees and Vegetation
- Path and Track
- Metal Fence
- Retaining Wall
- Knotweed
- Demolition Rubble
- Slope Direction

Notes:

P1	REVA	11.04.2024	OW	HM	ND
Phase	Issue	Date	Drawn	Checked	PM

Client:

Bellway Homes

Job Title:

Pitsford Road, Manchester

Job No:

17-302

Drawing No:

004

Date:

11.04.2024

Scale:

NTS @ A3

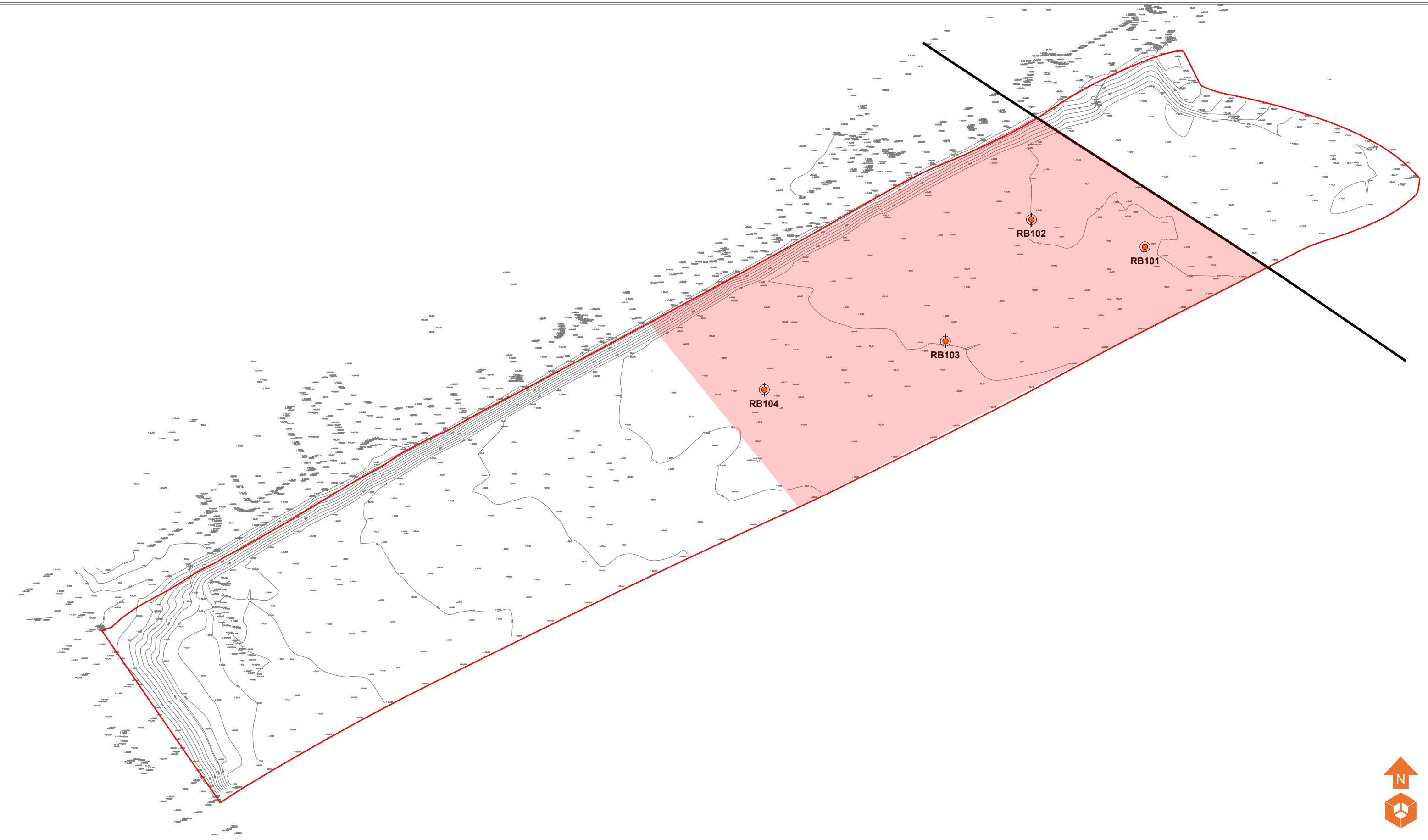
Drawing Title:

Site Features Plan



Environmental Engineering
Partnership Ltd
Taylor Road, Trafford Park
Urmston, Manchester, M41 7JQ
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

The client must not amend any drawing, design or other intellectual property produced by E3P Ltd without permission in writing from E3P Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, E3P Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.



Location Symbols

- Approximate Rotary Borehole Location
- Approximate Location of Coal Seam
- Approximate Area of Potential Workings

P1	REVB	26.07.2024	OW	JC	ND
P1	REVA	08.04.2024	OW	HM	ND
Phase	Issue	Date	Drawn	Checked	PM

Notes:					

Client:

Bellway Homes

Job Title:

Pitsford Road, Manchester

Job No:

17-302

Drawing No:

005(A)

Date:

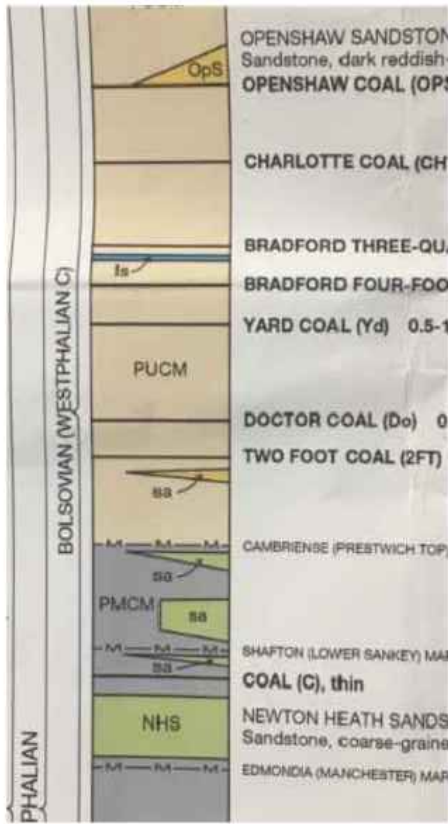
26.07.2024

Scale:

NTS @ A3

Environmental Engineering Partnership Ltd
Taylor Road, Trafford Park
Urmston, Manchester, M41 7JQ
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

The client must not amend any drawing, design or other intellectual property produced by E3P Ltd without permission in writing from E3P Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, E3P Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.



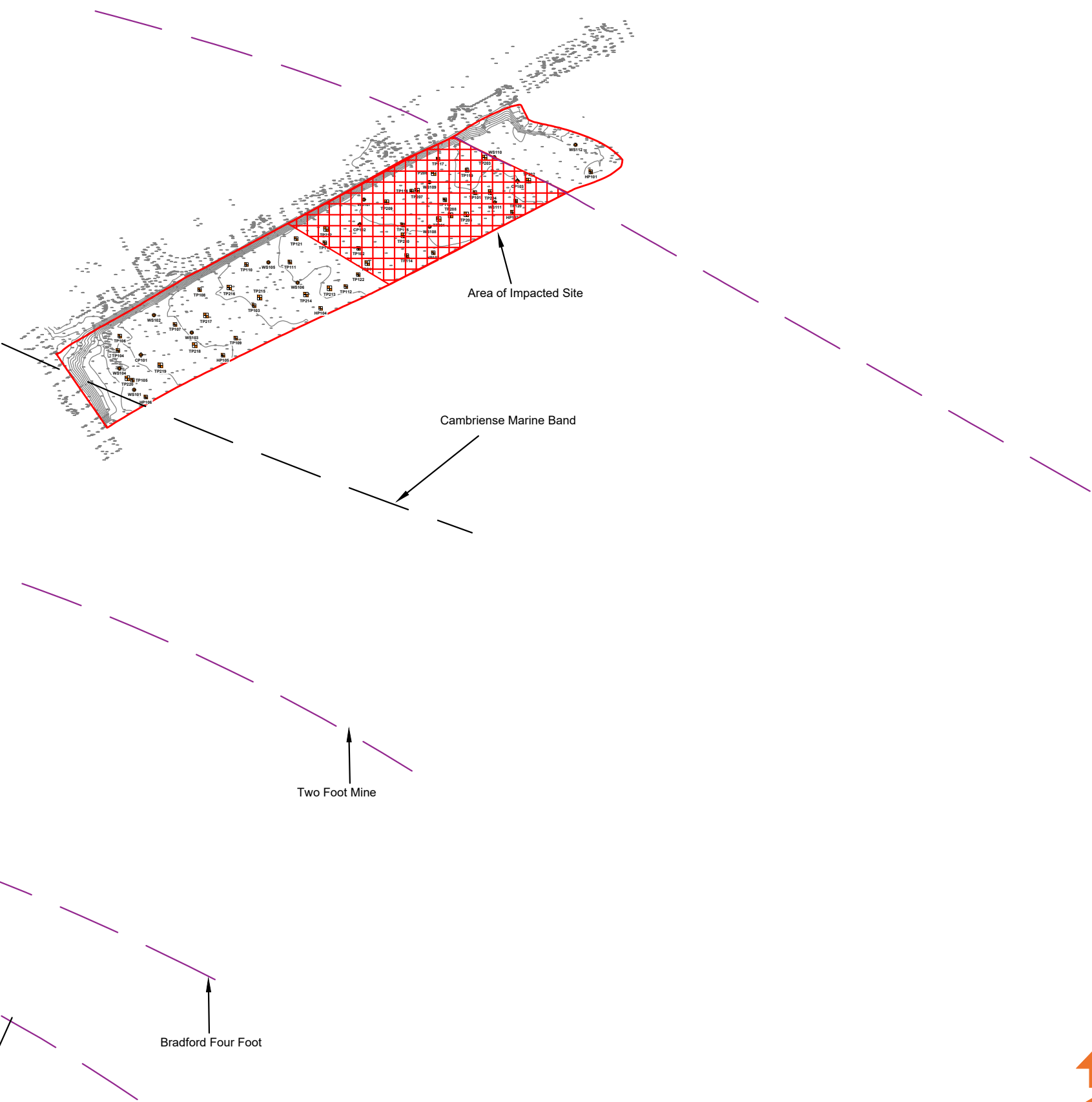
Generalised Vertical Section
Taken from BGS Sheet SJ89NE

Located to the South West

Located to the South West

Situated in South West of Site

Assumed Outcrop



Coal Mining

- Dip and Direction
- Area of Impact
- Coal Seam
- Marine Band

Notes:

P1	REVA	03.05.2024	OW	ND	ND
Phase	Issue	Date	Drawn	Checked	PM

Client:

Bellway Homes

Job Title:

Pitsford Road, Manchester

Job No:

17-302

Drawing No:

011

Date:

03.05.2024

Scale:

NTS @ A3



Environmental Engineering
Partnership Ltd
Taylor Road, Trafford Park
Urmston, Manchester, M41 7JQ
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

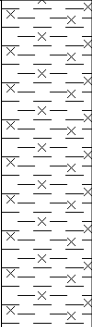
The client must not amend any drawing, design or other intellectual property produced by E3P Ltd without permission in writing from E3P Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, E3P Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.

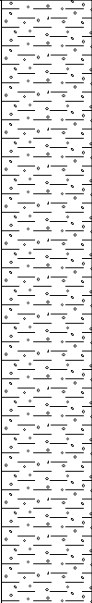
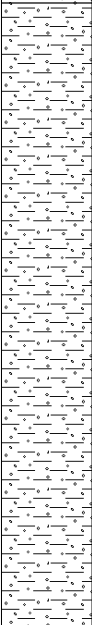
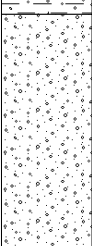
APPENDIX V

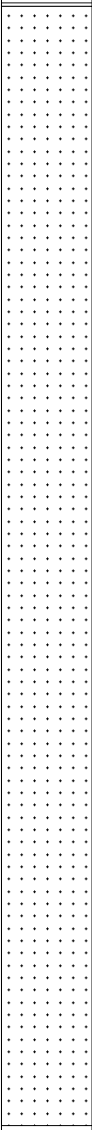
EXPLORATORY HOLE LOGS

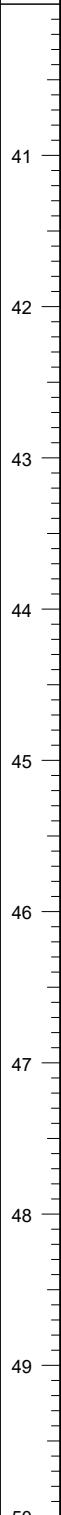


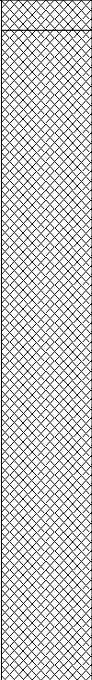
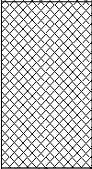
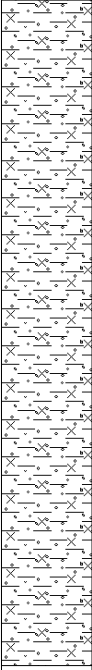
					Borehole Log			Borehole No. RB101		
Project Name: Pitsford Road					Project No. 17302		Co-ords: 386303E - 400221N		Sheet 1 of 5	
Location: Manchester					Level:			Hole Type BH		
Client: Bellway Homes Manchester					Dates: 23/07/2024			Scale 1:50		
								Logged By J. CLAYTON		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					0.20			MADE GROUND: Brown clayey fine to medium sand, with rootlets (Re-worked Topsoil).	1	
					2.00			MADE GROUND: Black sandy gravel. Gravel is fine to coarse, sub angular to sub rounded of ash.	2	
					4.60			MADE GROUND: Brown fine to medium sand (Anticipated sand fill).	3	
								Brown silty CLAY.	4	
									5	
									6	
									7	
									8	
									9	
									10	
Remarks										
1. Complete 2. Cased from 0.00-28.20 m bgl 3. W3W: trader.goats.teach										

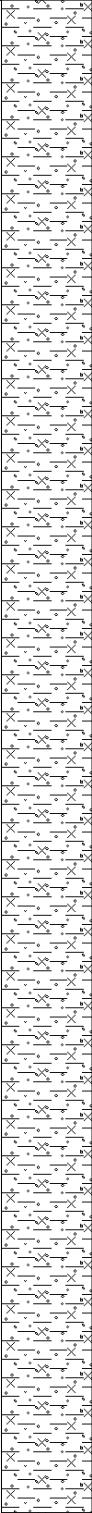
					Borehole Log			Borehole No. RB101 Sheet 2 of 5	
Project Name: Pitsford Road				Project No. 17302		Co-ords: 386303E - 400221N		Hole Type BH	
Location: Manchester						Level:		Scale 1:50	
Client: Bellway Homes Manchester						Dates: 23/07/2024		Logged By J. CLAYTON	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					12.20			Brown silty CLAY.	11
									12
									13
									14
									15
									16
									17
									18
									19
									20
									Remarks
1. Complete 2. Cased from 0.00-28.20 m bgl 3. W3W: trader.goats.teach									
									

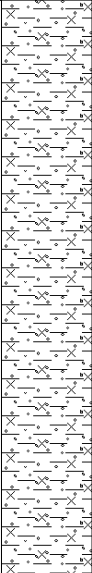
					Borehole Log			Borehole No. RB101 Sheet 3 of 5		
Project Name: Pitsford Road					Project No. 17302		Co-ords: 386303E - 400221N		Hole Type BH	
Location: Manchester					Level:			Scale 1:50		
Client: Bellway Homes Manchester					Dates: 23/07/2024			Logged By J. CLAYTON		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					24.00			Brown gravelly CLAY. Gravel is fine to coarse, angular to sub rounded of sandstone and mudstone (With occasional bands of fine to medium sand throughout).	21	
									22	
									23	
									24	
					28.20			Brown gravelly CLAY. Gravel is fine to coarse, angular to sub rounded of sandstone and mudstone (With occasional bands of gravel throughout).	25	
									26	
									27	
									28	
					29.80			Brown sandy GRAVEL. Gravel is fine to coarse, angular to sub rounded of mudstone.	29	
									30	
								Grey MUDSTONE.		
Remarks 1. Complete 2. Cased from 0.00-28.20 m bgl 3. W3W: trader.goats.teach										

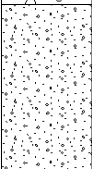
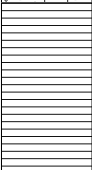
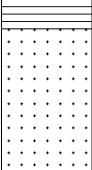
					Borehole Log			Borehole No. RB101	
Project Name: Pitsford Road					Project No. 17302		Co-ords: 386303E - 400221N		Hole Type BH
Location: Manchester					Level:			Scale 1:50	
Client: Bellway Homes Manchester					Dates: 23/07/2024			Logged By J. CLAYTON	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					31.40			Grey MUDSTONE.	31
					32.00			Grey MUDSTONE, with thin coal traces.	32
					32.60			Grey MUDSTONE.	33
								Reddish grey SANDSTONE (With occasional bands of deep red sandstone).	34
									35
									36
									37
									38
									39
									40
Remarks									
1. Complete 2. Cased from 0.00-28.20 m bgl 3. W3W: trader.goats.teach									

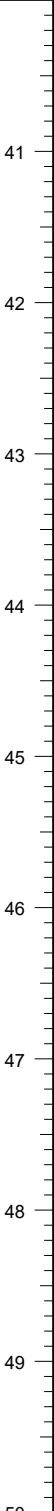
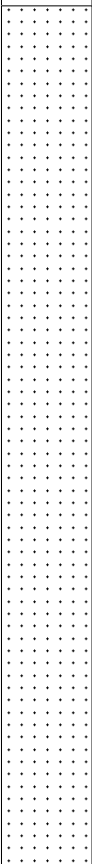
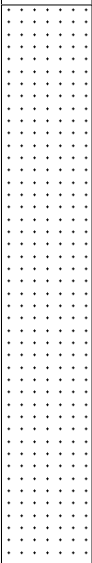
					Borehole Log			Borehole No. RB101 Sheet 5 of 5		
Project Name: Pitsford Road					Project No. 17302		Co-ords: 386303E - 400221N		Hole Type BH	
Location: Manchester					Level:			Scale 1:50		
Client: Bellway Homes Manchester					Dates: 23/07/2024			Logged By J. CLAYTON		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					40.30			Reddish grey SANDSTONE (With occasional bands of deep red sandstone).		
					40.50			Grey SANDSTONE.		
								Grey MUDSTONE (With bands of sandstone).		
				41.20			Reddish grey SANDSTONE.			
									42	
									43	
									44	
									45	
									46	
									47	
									48	
									49	
									50	
					50.00			End of Borehole at 50.00m		
Remarks 1. Complete 2. Cased from 0.00-28.20 m bgl 3. W3W: trader.goats.teach										

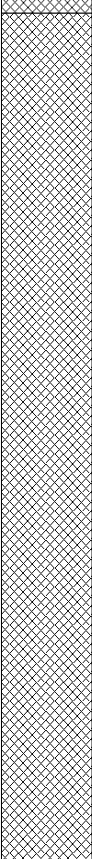
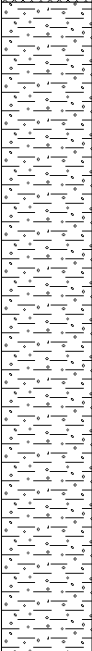
					Borehole Log			Borehole No. RB102 Sheet 1 of 5	
Project Name: Pitsford Road				Project No. 17302		Co-ords: 386267E - 400230N		Hole Type BH	
Location: Manchester						Level:		Scale 1:50	
Client: Bellway Homes Manchester						Dates: 25/07/2024		Logged By J. CLAYTON	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20			MADE GROUND: Brown clayey fine to medium sand, with rootlets (Re-worked Topsoil). MADE GROUND: Black clayey gravel. Gravel is fine to coarse, sub angular to sub rounded of ash, brick and concrete.	1
									2
							4.50		
					5.60			Brown silty slightly gravelly CLAY. Gravel is fine to coarse, angular to sub rounded of sandstone and mudstone (With occasional bands of fine to medium sand throughout).	6
									7
									8
									9
									10
Remarks 1. Complete 2. W3W: planet.kinks.bring									

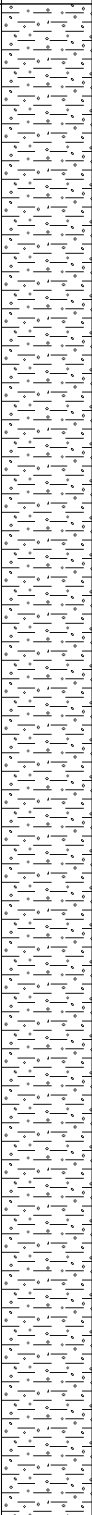
					Borehole Log			Borehole No. RB102	
Project Name: Pitsford Road					Project No. 17302		Co-ords: 386267E - 400230N		Hole Type BH
Location: Manchester					Level:			Scale 1:50	
Client: Bellway Homes Manchester					Dates: 25/07/2024			Logged By J. CLAYTON	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								Brown silty slightly gravelly CLAY. Gravel is fine to coarse, angular to sub rounded of sandstone and mudstone (With occasional bands of fine to medium sand throughout).	11
									12
									13
									14
									15
									16
									17
									18
									19
									20
									Remarks
1. Complete 2. W3W: planet.kinks.bring									
									

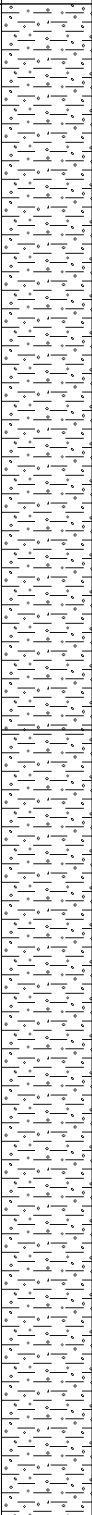
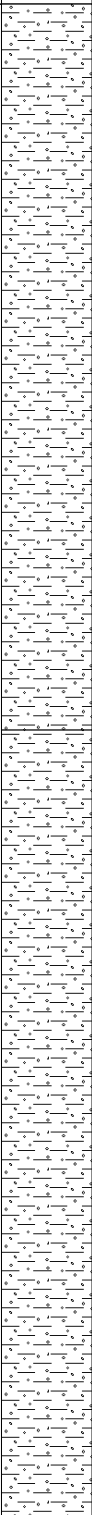
				Borehole Log				Borehole No. RB102 Sheet 3 of 5	
Project Name: Pitsford Road				Project No. 17302		Co-ords: 386267E - 400230N		Hole Type BH	
Location: Manchester						Level:		Scale 1:50	
Client: Bellway Homes Manchester						Dates: 25/07/2024		Logged By J. CLAYTON	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					23.80			Brown silty slightly gravelly CLAY. Gravel is fine to coarse, angular to sub rounded of sandstone and mudstone (With occasional bands of fine to medium sand throughout).	21
									22
									23
									24
									25
									26
									27
									28
									29
									30
									Remarks
1. Complete 2. W3W: planet.kinks.bring									
									

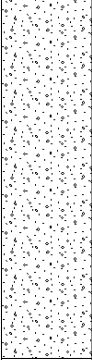
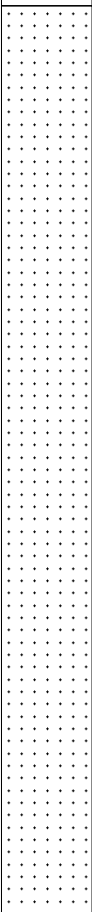
					Borehole Log			Borehole No. RB102		
Project Name: Pitsford Road					Project No. 17302		Co-ords: 386267E - 400230N		Sheet 4 of 5	
Location: Manchester					Level:			Hole Type BH		
Client: Bellway Homes Manchester					Dates: 25/07/2024			Scale 1:50		
								Logged By J. CLAYTON		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					30.30			Brown bouldery CLAY (With occasional bands of fine to medium sand and gravel throughout).	31	
								Brown gravelly fine to medium SAND. Gravel is fine to coarse, angular to sub rounded of mudstone and sandstone.		
								Grey MUDSTONE, with thin coal traces.		
								Grey MUDSTONE.		
								Reddish grey SANDSTONE.		
					31.40				32	
										
										
										
										
					32.60				33	
										
										
										
										
					33.80				34	
										
										
										
										
					38.60				35	
										
										
										
										
									36	
										
										
										
Remarks										
1. Complete 2. W3W: planet.kinks.bring										

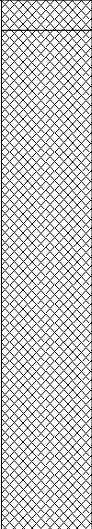
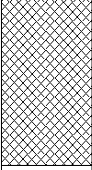
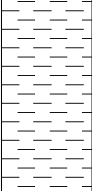
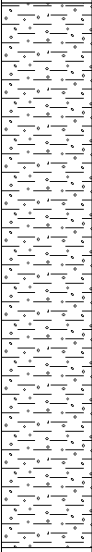
					Borehole Log			Borehole No. RB102 Sheet 5 of 5		
Project Name: Pitsford Road					Project No. 17302		Co-ords: 386267E - 400230N		Hole Type BH	
Location: Manchester					Level:			Scale 1:50		
Client: Bellway Homes Manchester					Dates: 25/07/2024			Logged By J. CLAYTON		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					40.60			Grey SANDSTONE.		
								Reddish grey SANDSTONE (With occasional bands of red sandstone).		
								Grey SANDSTONE (With occasional red bands).		
							End of Borehole at 50.00m			
Remarks 1. Complete 2. W3W: planet.kinks.bring										

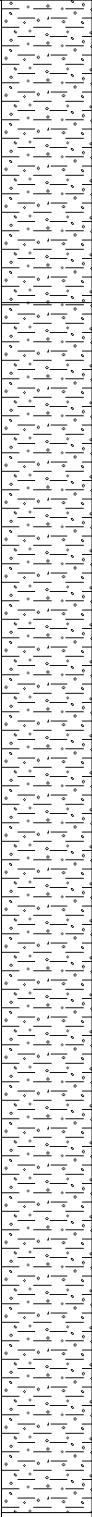
					Borehole Log			Borehole No. RB103 Sheet 1 of 5	
Project Name: Pitsford Road				Project No. 17302		Co-ords: 386240E - 400191N		Hole Type BH	
Location: Manchester						Level:		Scale 1:50	
Client: Bellway Homes Manchester						Dates: 25/07/2024		Logged By J. CLAYTON	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.10			MADE GROUND: Brown clayey fine to medium sand, with rootlets (Re-worked Topsoil). MADE GROUND: Black clayey sandy gravel. Gravel is fine to coarse, sub angular to sub rounded of ash and brick.	1
									3
									4
					5.00				5
					5.70			Brown gravelly CLAY. Gravel is fine to coarse, angular to sub rounded of mudstone and sandstone (With occasional bands of fine to medium sand throughout).	6
									7
									8
									9
									10
Remarks 1. Complete 2. W3W: prompting.wiping.appeal									

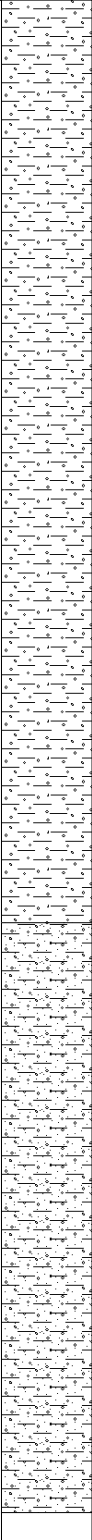
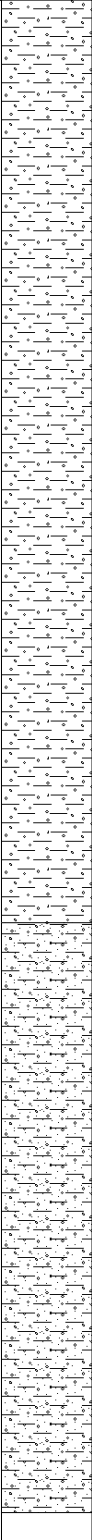
					Borehole Log			Borehole No. RB103 Sheet 2 of 5		
Project Name: Pitsford Road					Project No. 17302		Co-ords: 386240E - 400191N		Hole Type BH	
Location: Manchester					Level:			Scale 1:50		
Client: Bellway Homes Manchester					Dates: 25/07/2024			Logged By J. CLAYTON		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
								Brown gravelly CLAY. Gravel is fine to coarse, angular to sub rounded of mudstone and sandstone (With occasional bands of fine to medium sand throughout).	11	
									12	
									13	
									14	
									15	
									16	
									17	
									18	
									19	
									20	
									Remarks	
1. Complete 2. W3W: prompting.wiping.appeal										

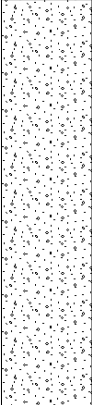
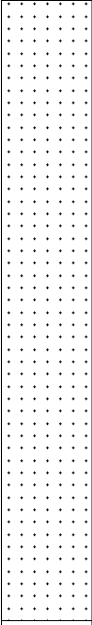
					Borehole Log			Borehole No. RB103 Sheet 3 of 5	
Project Name: Pitsford Road					Project No. 17302		Co-ords: 386240E - 400191N		Hole Type BH
Location: Manchester					Level:			Scale 1:50	
Client: Bellway Homes Manchester					Dates: 25/07/2024			Logged By J. CLAYTON	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					24.80			Brown gravelly CLAY. Gravel is fine to coarse, angular to sub rounded of mudstone and sandstone (With occasional bands of fine to medium sand throughout).	21
									22
									23
									24
									25
									26
									27
									28
									29
									30
									Remarks 1. Complete 2. W3W: prompting.wiping.appeal

					Borehole Log			Borehole No. RB103 Sheet 4 of 5	
Project Name: Pitsford Road				Project No. 17302		Co-ords: 386240E - 400191N		Hole Type BH	
Location: Manchester						Level:		Scale 1:50	
Client: Bellway Homes Manchester						Dates: 25/07/2024		Logged By J. CLAYTON	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					30.20			Brown gravelly CLAY. Gravel is fine to coarse, angular to sub rounded of mudstone and sandston. (With occasional bands of fine to medium sand and gravel throughout).	31
								Brown gravelly fine to medium SAND. Gravel is fine to coarse, angular to sub rounded of mudstone and sandstone.	
					32.70			Grey MUDSTONE.	33
					33.70			Grey MUDSTONE, with thin coal traces.	34
					34.00			Greyish red SANDSTONE (With occasional bands of red sandstone).	
									35
									36
									37
									38
									39
									40
Remarks									
1. Complete 2. W3W: prompting.wiping.appeal									

					Borehole Log			Borehole No. RB104 Sheet 1 of 5					
Project Name: Pitsford Road				Project No. 17302		Co-ords: 386183E - 400176N		Hole Type BH					
Location: Manchester						Level:		Scale 1:50					
Client: Bellway Homes Manchester						Dates: 24/07/2024		Logged By J. CLAYTON					
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description					
		Depth (m)	Type	Results									
					0.20			MADE GROUND: Brown clayey fine to medium sand, with rootlets (Re-worked Topsoil). MADE GROUND: Brown clayey sandy gravel. Gravel is fine to coarse, sub angular to sub rounded of ash and brick.	1				
												2	
													3
													4
													5
					3.50			MADE GROUND: Black clayey sandy gravel. Gravel is fine to coarse, sub angular to sub rounded of ash and brick.					
					4.00			MADE GROUND: Brown clay (anticipated fill).					
					5.10			Grey CLAY.	6				
												7	
					6.40			Brown gravelly CLAY. Gravel is fine to coarse, angular to sub rounded of mudstone and sandstone.	8				
												9	
									10				
Remarks 1. Complete 2. W3W: pram.mats.ants													
													

					Borehole Log			Borehole No. RB104		
Project Name: Pitsford Road					Project No. 17302		Co-ords: 386183E - 400176N		Sheet 2 of 5	
Location: Manchester					Level:			Hole Type BH		
Client: Bellway Homes Manchester					Dates: 24/07/2024			Scale 1:50		
								Logged By J. CLAYTON		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					12.00			Brown gravelly CLAY. Gravel is fine to coarse, angular to sub rounded of mudstone and sandstone.	11	
									12	
									13	
									14	
									15	
									16	
									17	
									18	
									19	
									20	
									Remarks	
1. Complete 2. W3W: pram.mats.ants										

					Borehole Log			Borehole No. RB104	
Project Name: Pitsford Road					Project No. 17302		Co-ords: 386183E - 400176N		Hole Type BH
Location: Manchester					Level:			Scale 1:50	
Client: Bellway Homes Manchester					Dates: 24/07/2024			Logged By J. CLAYTON	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					26.10			Brown gravelly CLAY. Gravel is fine to coarse, angular to sub rounded of mudstone and sandstone (With occasional bands of fine to medium sand throughout).	21
								22	
								23	
								24	
								25	
								26	
								27	
								28	
								29	
								30	
								Remarks	
1. Complete 2. W3W: pram.mats.ants									
									

					Borehole Log			Borehole No. RB104								
Project Name: Pitsford Road					Project No. 17302		Co-ords: 386183E - 400176N		Sheet 4 of 5							
Location: Manchester					Level:			Hole Type BH								
Client: Bellway Homes Manchester					Dates: 24/07/2024			Scale 1:50								
								Logged By J. CLAYTON								
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description								
		Depth (m)	Type	Results												
					30.40			Brown sandy gravelly CLAY. Gravel is fine to coarse, sub angular to sub rounded of mudstone and sandstone.	31 32 33 34 35 36 37 38 39 40							
							Brown gravelly fine to medium SAND. Gravel is fine to coarse, angular to sub rounded of mudstone and sandstone.									
								Grey MUDSTONE.								
								Dark grey MUDSTONE, with traces of coal.								
								Reddish grey SANDSTONE.								
					40.00											
					Remarks											
					1. Complete 2. W3W: pram.mats.ants											

					Borehole Log			Borehole No. RB104 Sheet 5 of 5	
Project Name: Pitsford Road				Project No. 17302		Co-ords: 386183E - 400176N		Hole Type BH	
Location: Manchester						Level:		Scale 1:50	
Client: Bellway Homes Manchester						Dates: 24/07/2024		Logged By J. CLAYTON	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					40.20			Greyish red SANDSTONE.	41
								Grey MUDSTONE (With bands of sandstone).	
									
									
									
									
									
									
									
									
					41.70			Reddish grey SANDSTONE.	42
									
									
									
									
									
									
									
									
									
									43
									
									
									
									
									
									
									
									
									
									44
									
									
									
									
									
									
									
									
									
									45
									
									
									
									
									
									
									
									
									
									46
									
									
									
									
									
									47
									48
									49
									50
End of Borehole at 50.00m									
Remarks 1. Complete 2. W3W: pram.mats.ants									
									