

REPORT ON COAL MINING RELATED SITE INVESTIGATIVE WORKS

UNDERTAKEN AT OSBOURNE'S YARD

MILES PLATTING, MANCHESTER M40 7PS

Prepared for:-

**LK Consult Limited
29 Eton Business Park
Eton Hill Road
Radcliffe
M26 2ZS**

On Behalf Of:-

MPH Ancoats Ltd

**The Land Consultancy Limited
Fairweather House
4 Parker Lane
Whitestake
Preston
Lancashire
PR4 4JX**

**T190 SFK (TLC1140) rep RP LKConsult 250621 (Rev A)
June 2021**

**Project Quality Assurance
Information Sheet**

***Report on Coal Mining Related Site Investigative Works undertaken at Osbourne's Yard,
Miles Platting, Manchester M40 7PS.***

Report Number : TLC1140

Report Status : Final

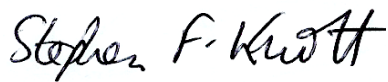
Survey Dates : 10th to 14th May 2020

Report Date : June 2021

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On behalf of : MPH Ancoats Ltd

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Fairweather House
4 Parker Lane
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Preston
Lancashire
PR4 4JX



Written by : _____
Stephen F. Knott B.Sc. (Hons), Ph.D., F.G.S.
Director

Report Issue Record		
Revision	Date of Issue	Comments
0	28/06/2021	First Issue
A	30/06/2021	Minor typos corrected. Section 6.0 text changed slightly. Drawing No. TLC1150/03 amended.

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1.0 INTRODUCTION

- 1.1 LK Consult Ltd has been appointed to support a planning application by MPH Ancoats Ltd, for the proposed construction of a block of five storey residential apartments on the site of a former petrol filling station, known as Osbourn's yard, on the north-western side of Oldham Road, Miles Platting, Greater Manchester, M40 7PS.
- 1.2 The site location and an aerial view of the current site position are shown on Drawing Nos. TLC1140/01 and 02 in Appendix A. An outline development plan is included as Drawing No. TLC1140/03.
- 1.3 A desk-based coal mining risk assessment (CMRA) was prepared for the site by Renaissance Civil and Structural Engineering (Renaissance) in August 2020, which indicated that the northern end of the site could be at risk of being affected by historic unrecorded shallow coal mine workings.
- 1.4 LK Consult Ltd approached TLC to review the potential for the site to be affected by shallow coal seams/workings (and mine entries), and to provide advice related to investigating the site using rotary drill holes.
- 1.5 TLC was subsequently instructed by LK Consult Ltd to investigate the site for mining related legacy issues. Specifically, LK Consult's remit to TLC included:
 - scoping the amount of site investigation work required to investigate the property for shallow coal seams/workings;
 - obtaining permission from The Coal Authority to carry out the site investigation work; and,
 - producing a factual and interpretive report on the findings of the site investigation work. This report would indicate whether the site is actually affected by shallow coal seams/workings, and whether the consolidation of shallow workings/potential workings is necessary prior to development works proceeding.

1.6 Limitations

- 1.6.1 The assessment and interpretation of the factual data obtained as part of this investigation has been undertaken in accordance with generally accepted consulting practice, and in line with the following document: CIRIA, C758D dated 2019 and entitled 'Abandoned mine workings manual'.
- 1.6.2 The conclusions and recommendations made in this report are limited to those which can be made based on the findings of this survey and information provided by third parties. TLC assumes all third-party data to be true and correct. No responsibility can be accepted by TLC for inaccuracies in the information supplied by any other party.
- 1.6.3 Ground conditions can change rapidly, especially in areas of Made Ground; however, it is assumed that the ground conditions observed are typical and representative of the site as a whole. The ground conditions have been determined from a limited number of exploratory holes, therefore only a small percentage of the total area of the property has been investigated. Conclusions drawn from the ground investigation should be read in this context. TLC cannot accept responsibility for any situations resulting from locally unforeseen ground conditions occurring between exploratory holes.
- 1.6.4 This report is written in the context of an agreed scope of works and should not be used in a different context. Furthermore, new information, improved practices and changes in

legislation may require a re-interpretation of the report in whole or in part after its original submission. TLC reserves the right to alter its conclusions and recommendations in the light of further information which may become available. This report is provided for the sole use of the Client and is confidential to them and their professional advisors.

2.0 SITE LOCATION AND DESCRIPTION

- 2.1 The site is known as Osbourne's Yard and is located off Oldham Road, Miles Platting, Manchester, M40 7PS. It is situated approximately 2.0km north-east of Manchester City Centre, and can be centred on National Grid Reference 385594, 399565, as shown on the site location plan presented in Drawing No. TLC1140/01 in Appendix A.
- 2.2 The site features a hand car wash beneath a covered area resembling a garage forecourt in the central part of the site. A single-storey brick building serving as an office space for the car wash is present immediately north-east of the car washing area. The central area of the site is surfaced with hardstanding comprising of a combination of concrete and tarmacadam.
- 2.3 The site covers approximately 0.25 hectares and is rectangular in shape (orientated north-east to south-west).
- 2.4 The site is at a ground elevation of about 60m aOD and slopes very gently down towards the south-west. A retaining wall circa 5m high of brick construction defines the western boundary. The northern boundary is partially enclosed with wire fencing, but is defined by Helga Street, which has been enveloped by overgrown vegetation in this area. The eastern boundary is open to Oldham Road, whereas the southern boundary is also open, but adjoins neighbouring commercial properties.
- 2.5 The site is set within a predominantly residential area, although in its immediate vicinity is bordered by small offices and takeaway restaurants to the south. Immediately to the west is a large Network Rail storage yard adjacent to other railway infrastructure.
- 2.6 Residential properties are located to the east, on the opposite side of Oldham Road, and also beyond the commercial properties which are immediately adjacent to the site in all directions.

3.0 PUBLISHED GEOLOGY AND MINING SUMMARY

3.1 The likely site geology and mining situation (coal focussed) was described by Renaissance in August 2020 and is summarised in the table below.

MADE GROUND	None indicated on BGS mapping across the majority of the site. BGS mapping does not display any Made Ground deposits on site, however historical site usage and the previous developments that have taken place mean that Made Ground deposits are likely to be present but probably less than 3m thick.
DRIFT	Devensian Glacial Till (Diamicton). The site is indicated to be underlain by glacial till, which is of Quaternary age. Glacial till, also known as diamicton generally consists of over-consolidated, unsorted, clays, silts, sands and gravels. Published geological records indicate that thicknesses of superficial soils could reach 15-20m.
ROCK	Carboniferous rock strata: Pennine Upper Coal Measures (Undifferentiated Strata) and named sandstone units. Undifferentiated Coal Measures strata often comprise of cyclical sequences of sandstone, siltstone, mudstone, coal seams and seat earths; marine bands and ironstone horizons are also occasionally present.
ROCK DIP & STRUCTURE	The bedrock of the Pennine Upper Coal Measures Formation is indicated to dip at an angle of about 18.4° towards the SW (from Coal Authority records – taken from a worked coal seam beneath the site – the Bradford Four Foot – see below).
FAULTING	Faulting is shown to be present in the general area, but none are considered to pose any specific risk to the site development.
COAL SEAMS	Based on the geological mapping information gained from the BGS maps, the Coal Authority Interactive Map viewer and the Coal Mining Consultants Report (presented within the Renaissance CMRA), a sequence of minable coal seams are recorded to be present beneath the site. The Renaissance CMRA identified that the Bradford Threequarters and Bradford Four Foot seams are expected to sub-crop to the north of the site – see Drawing No. TLC1140/04. The Bradford Threequarters was reported to be expected at a depth of 5.9m bgl at the north-eastern end of the site deepening to 26.3m bgl at the SW end. Notwithstanding the CMRA, it is not clear how these depth predictions equate with the expected thickness of glacial superficial soils. This is one of the issues that has been targeted by this intrusive investigation. The Charlotte coal seam is indicated to sub-crop just to the S of the site. If the BGS sub-crop position of this coal seam is correct it should not be present beneath the property due to the expected SW dip angle.
COAL AUTHORITY (CA) INFORMATION	The CA indicate that: • there are no recorded shallow coal mine workings beneath the site (known coal mining has taken place within the Bradford Four Feet coal seam though); • there is an identified risk of unrecorded shallow coal mine workings at the north-eastern end of the site; • the site is not affected by known mine entries. The nearest mine entry is located ≈75m SE. • there is a low risk of unrecorded mine entries, but it is not proposed to investigate this specifically; • the site and immediate surrounding area are not affected by known historical opencast coal mining. It should be noted that CA records are incomplete prior to 1872.
OTHER INFORMATION	The CA do not specifically indicate that the coal seams mentioned above are at high risk of succumbing to spontaneous combustion when entered into, worked or disturbed. However, the CA states that within the Lancashire coalfield, there could be a risk of spontaneous combustion where roof coal has been left following working. The CA also say that the majority of lower risk coal seams could also be at risk from suffering from spontaneous combustion depending upon the method by which they have been entered, worked or disturbed. No historical mining related incidents have been identified by Renaissance as having taken place on or in the near vicinity of the site.

3.2 In summary, desk study information, including the CMRA prepared by Renaissance, indicates that the risk of ground surface instability from the vertical migration of historic unrecorded coal workings at shallow depth cannot be ruled out. Therefore, it is considered that mitigation measures are required including the intrusive drilling investigation reported herein.

3.3 Renaissance considered that the greatest risk (moderate) to the proposed development was from the Bradford Threequarters coal seam, particularly at the north-eastern end of the site, where it is expected to be at its shallowest depth – the effect of the thickness of glacial superficial deposits could not be established by desk study alone. The proposed development was considered to be at low to moderate risk from recorded workings within the Bradford Four Feet coal seam and at very low risk from unrecorded workings within the Charlotte coal seam.

- 3.4 The site is not at risk from recorded mine entries. However, the site is considered to be at low risk from unrecorded mine entries. This risk will be mitigated at the construction stage.

4.0 FIELDWORKS

4.1 Open Hole Rotary Drilling

- 4.1.1 Open hole rotary drilling, to determine whether the property is actually affected by shallow coal seams/workings, has been undertaken at 3no. locations (RH1 to RH3) across the site. The boreholes have been positioned at the north-east end, central and south-western of the site end as shown on Drawing No. TLC1140/03 in Appendix A.
- 4.1.2 The drilling works were undertaken by Taylor Drilling Services Ltd (TDS) between the 10th and 14th May 2021, using a Commachio 205 rotary drilling rig fitted with a pcd drill bit. Each rotary hole was sunk to a depth of 40m bgl using a water flushing medium as required by the CA permit. Borehole records are presented in Appendix B.
- 4.1.3 The rotary holes were sited away from known service runs (LK Consult Ltd had obtained service plans and made these available to TLC). Hole locations were cleared with a cable avoidance tool. As a final check for services, hand pits were excavated to 1.20m depth. Rotary drilling commenced from the base of each hand pit.

4.2 General

- 4.2.1 Works were undertaken in accordance with a CA drilling permit, which covered 3no. boreholes to be drilled using water flush. A copy of the permit is included in Appendix C.
- 4.2.2 During drilling operations, gas readings were taken at regular intervals from around the mouth of the drill hole and from around the rig using a calibrated gas analyser.
- 4.2.3 Upon reaching completion depth, all drill holes were backfilled with a mixture of arisings and bentonite pellets.

5.0 GROUND CONDITIONS

5.1 Made Ground

- 5.1.1 All drill hole positions encountered Made Ground to depths of 1.50m (RH1), 0.80m (RH2) and 0.60m (RH3). Driller's descriptions indicate that this material mainly comprised of crushed brick.

5.2 Superficial Strata

- 5.2.1 Brown CLAY with sand bands was encountered at all drill hole locations beneath the Made Ground. This material is considered to be Glacial Till (diamicton).
- 5.2.2 The thickness of the CLAY was found to be consistent at all boreholes terminating at depths of between 15.50m bgl at RH2 and 16.00m bgl at RH3.
- 5.2.3 No specific features were recorded in the clayey soils and no groundwater was recorded.

5.3 Pennine Upper Coal Measures Strata (CMS)

- 5.3.1 CMS, comprising of horizons of MUDSTONE, SILTSTONE and SANDSTONE were encountered within each drill hole and proven to 40.00m depth. A 0.40m thick coal seam was recorded in RH2 only at a depth of 19.80m bgl. This coal seam could be either the Charlotte coal seam or the Bradford Threequarters coal seam if the BGS plotted positions are out by ≈ 30 -50m.
- 5.3.2 It should be noted that evidence for the presence of coal workings can include any of the following: partial or total loss of the flushing medium, broken drilling, fast or loose drilling, or a sudden dropping of the drill string (indicating the presence of voids).
- 5.3.3 In the case of the current investigation, 100% flush returns were recorded throughout. Broken ground and voids were not recorded.
- 5.3.4 With a rock dip of around 18.4° down to the south-west, the RH2 coal seam would be expected to sub-crop ≈ 10 m north-east of RH2 and be present at around 33m depth in RH3. Therefore, the coal seam would not be expected to be encountered in RH1 which was sunk in the far north-east of the site. However, the coal seam should have been encountered in RH3 but wasn't – possible reasons for its absence in RH3 are given below:
- It has been removed by working and the workings have completely closed up following roof collapse – the collapse material was missed by the driller;
 - It has been removed by working and the workings were backfilled – the backfilled zone of weak material was missed by the driller;
 - The coal seam is impersistent across the site and was absent at the RH3 location;
 - The rock dip is much greater than 18.4° down to the SW – this would result in the coal seam being present at the RH3 position but at a depth greater than 40m;
 - It has been removed from the rock record between ≈ 16 -40m bgl by faulting.

5.4 Groundwater

- 5.4.1 No groundwater strikes were recorded by the drilling foreman. However, it should be noted that small groundwater entries may have been missed due to the water medium which was being used.

5.5 Ground Gas

- 5.5.1 No detectable concentrations of methane, carbon dioxide, carbon monoxide or hydrogen sulphide, or any oxygen depletions were measured during rotary drilling operations.

6.0 CONCLUSIONS AND RECOMMENDATIONS

- 6.1 Desk study research indicated that the site would be underlain by thin Made Ground and glacial superficial soils (Glacial Till/diamicton, perhaps in the order of 15-20m thick), over Coal Measures Strata (CMS) comprising of sandstone formations and undifferentiated strata. Rock dips were expected to be in the order of 18° and down to the south-west.
- 6.2 The Bradford Threequarters coal seam was identified as possibly being present at shallow depth. Known coal workings within the Bradford Four Feet seam have taken place beneath the site at depths of 77m bgl. The Charlotte coal seam is indicated to sub-crop just to the south of the site; however, provided that the BGS sub-crop position of this seam is correct, it should not pass beneath the site due to the south-westerly dip angle.
- 6.3 The Coal Authority (CA) are not aware of any shallow coal mining having had taken place beneath the site.
- 6.4 No known mine entries are indicated to be present within at least ≈75m of the site. It should be noted that the CA's records are incomplete before 1872.
- 6.5 TLC/Renaissance considered that the site was moderate risk of being affected by unrecorded shallow coal mining within the Bradford Threequarters coal seam, at low to moderate risk of being affected by workings within the Bradford Four Feet seam and at very low risk from unrecorded workings within the Charlotte coal seam. The site was considered to be at low risk from unrecorded mine entries.
- 6.6 To further investigate the shallow coal mining risk to the proposed development, 3no. rotary drill holes were sunk across the site to a depth of 40.00m bgl.
- 6.7 Thin Made Ground (0.60m to 1.50m thick) comprising mainly crushed brick was recorded at the ground surface.
- 6.8 Glacial soils were then encountered to a fairly consistent depth of between 15.50m bgl at RH2 and 16.00m bgl at RH3. This deposit comprised of a brown CLAY and most likely represents Glacial Till/diamicton.
- 6.9 CMS was encountered beneath the Glacial Till and was proven to 40m bgl. A coal seam was encountered in RH2 at 19.80m bgl (0.40m thick). It has not been possible to confirm the name of this seam – it could be the Bradford Threequarters or the Charlotte coal seam if the BGS plotted positions for these seams are out by ≈30-50m. No evidence for the presence of coal workings was identified within any of the drill holes.

6.10 Shallow Coal Mining

- 6.10.1 Shallow workings related ground subsidence events may manifest as localised crown hole collapses at the surface (which are related to workings roof failures), or can be associated with more extensive ground movements, typically associated with pillar collapse, floor heave, or a combination of roof and pillar failure. As there is limited evidence for structural damage caused by pillar failure compared with that resulting from roof collapses, the focus of engineering assessments of the potential for instability at the ground surface has focussed on roof collapses as the more likely mechanism of failure.
- 6.10.2 The limit height on void migration for roof collapses, where no appreciable surface subsidence can result is termed 'acceptable cover'. The calculation of the amount of acceptable cover is determined by the worked thickness of the seam (t) and the amount of

overlying rock cover (h) (and potentially overconsolidated glacial till cover). The acceptable cover criterion is generally referred to as ht.

- 6.10.3 According to CIRIA C758D, from the examination of mines within CMS, the height of collapse migration might exceptionally extend to 10t the height of the original extraction.
- 6.10.4 According to CIRIA C758D, soils overburden can contribute to the mitigation of the extent of void migration, which is based on the capability of soils to bulk in a subsidence scenario. Specifically, it is noted that thick superficial deposits (>10m) of a more brittle nature (e.g. heavily over-consolidated glacial till), can contribute to stability where there may otherwise be marginally insufficient rock cover. CIRIA C758D states that a commonly accepted rule of thumb is that competent Glacial Till may provide a contribution to the rock cover equivalent to half its thickness. However, the CA adopts the rule that the rock cover contribution should be >80%. The implication of this is that soil cover alone may not be sufficient to prevent upwardly migrating roof collapses above pillar and stall workings from causing subsidence effects at the ground surface. For this site, the competency of the encountered CLAY has not been proven, therefore the presence of this material has not been used in the calculation of 10t.
- 6.10.5 CIRIA C758D lists a number of circumstances where the acceptable cover criterion may need to be increased from 10t. These include:
- Where the strata dip is >20° (unlikely to be the case on this site).
 - Where there are strong groundwater flows within workings and/or where there are rising or falling groundwater levels. The deep groundwater regime beneath the site is unknown.
 - Where multi-seam extractions have taken place (unlikely to be the case on this site).
- 6.10.6 The rotary drill holes have established that there is a negligible risk from ground instability to the proposed development as a result of coal workings within the Bradford Four Foot coal seam.
- 6.10.7 However, the risk to the south-western portion of the proposed development from unrecorded shallow workings within the Bradford Threequarters (or Charlotte ?) coal seam is considered to be low to moderate. Consequently, it is advised that a programme of precautionary proof drilling (and pressure grouting if necessary) is carried out beneath and just beyond the south-western portion of the proposed building; Drawing No. TLC1140/03 in Appendix A displays the area where the works should take place. Holes should be sunk on an ≈12m grid spacing. The grid would need to be reduced significantly in the event that coal workings are proven/suspected.

6.11 General Advice

- 6.11.1 There remains a risk (albeit low) of encountering unrecorded mine entries during the redevelopment of the site. Mine entries are likely to manifest as potentially square, rectangular or circular areas of dark deep Made Ground (which may or may not be brick lined) surrounded by natural soils/weathered rock; mine shafts could also be potentially be capped – e.g. with a large block of concrete. A watching brief should be maintained during the site strip for the presence of unrecorded mine entries. If the presence of a mine entry is suspected, the affected area should be cordoned off immediately and the advice of a coal mining engineer sought.

APPENDICES

APPENDIX A

DRAWINGS



SITE LOCATION

NEAREST POSTCODE: M40 7PS

SITE LOCATION



KEY:



Approximate Site Location

The Land Consultancy Limited

Fairweather House, 4 Parker Lane, Whitestake, Preston PR4 4JX
Telephone: 01772 610609
Mobile: 07771 800859

Director

Stephen F. Knott B.Sc. (Hons), Ph.D., F.G.S.

TITLE:

Site Location Plan

PROJECT:

Osbourne's Yard, Miles Platting

PROJECT No:

TLC1140

DATE:

June 2021

SCALE:

NTS

DRAWN:

PS

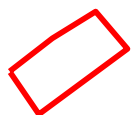
DWG No:

TLC1140/01

DO NOT SCALE



KEY:



Approximate Site Boundary

DO NOT SCALE

The Land Consultancy Limited

Fairweather House, 4 Parker Lane, Whitestake, Preston PR4 4JX
Telephone: 01772 610609
Mobile: 07771 800859

Director

Stephen F. Knott B.Sc. (Hons), Ph.D., F.G.S.

TITLE:

Site Boundary Plan

PROJECT:

Osbourne's Yard, Miles Platting

PROJECT No:

TLC1140

DATE:

June 2021

SCALE :

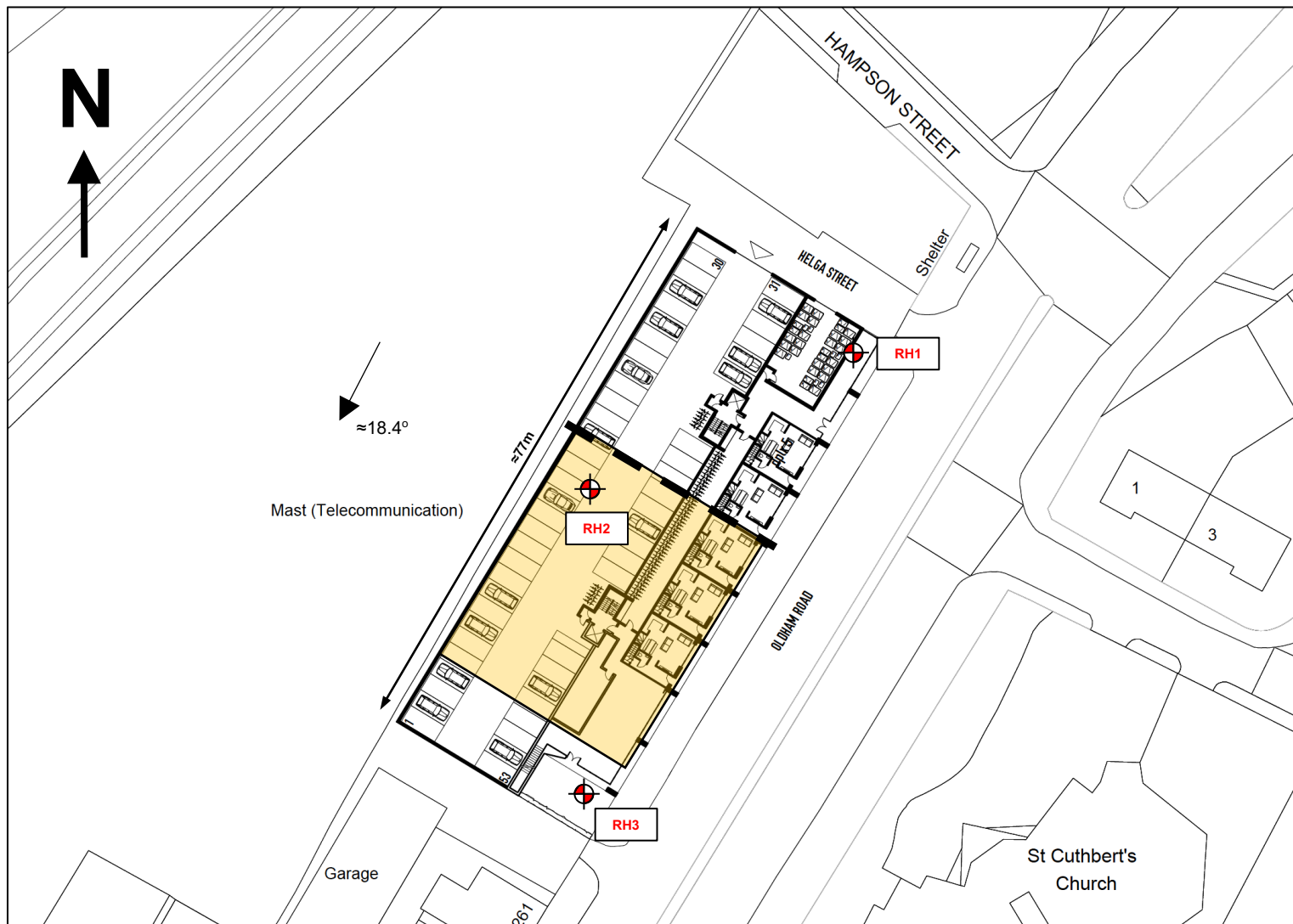
NTS

DRAWN :

PS

DWG No:

TLC1140/02



Reproduced from Elevate Architects Limited's Proposed Site Plan Drawing No. 100 Rev 08 dated 24/07/19

KEY



Rotary drill hole location



Approximate proof drilling area



Approximate coal seam sub-crop position



Approximate rock dip (from the Coal Authority)

THE LAND CONSULTANCY LIMITED

Fairweather House, 4 Parker Lane, Whitestake, Preston PR4 4JX
Tel: 01772 610609; M: 07771 800859
email: sfknott@thelandconsultancy.co.uk; www.thelandconsultancy.co.uk

Project:

Osbourne's Yard, Oldham Road, Miles Platting, Manchester M40 7PS

Title:

Proposed Development Plan displaying Rotary Drill Hole Locations

Scale:

As Shown

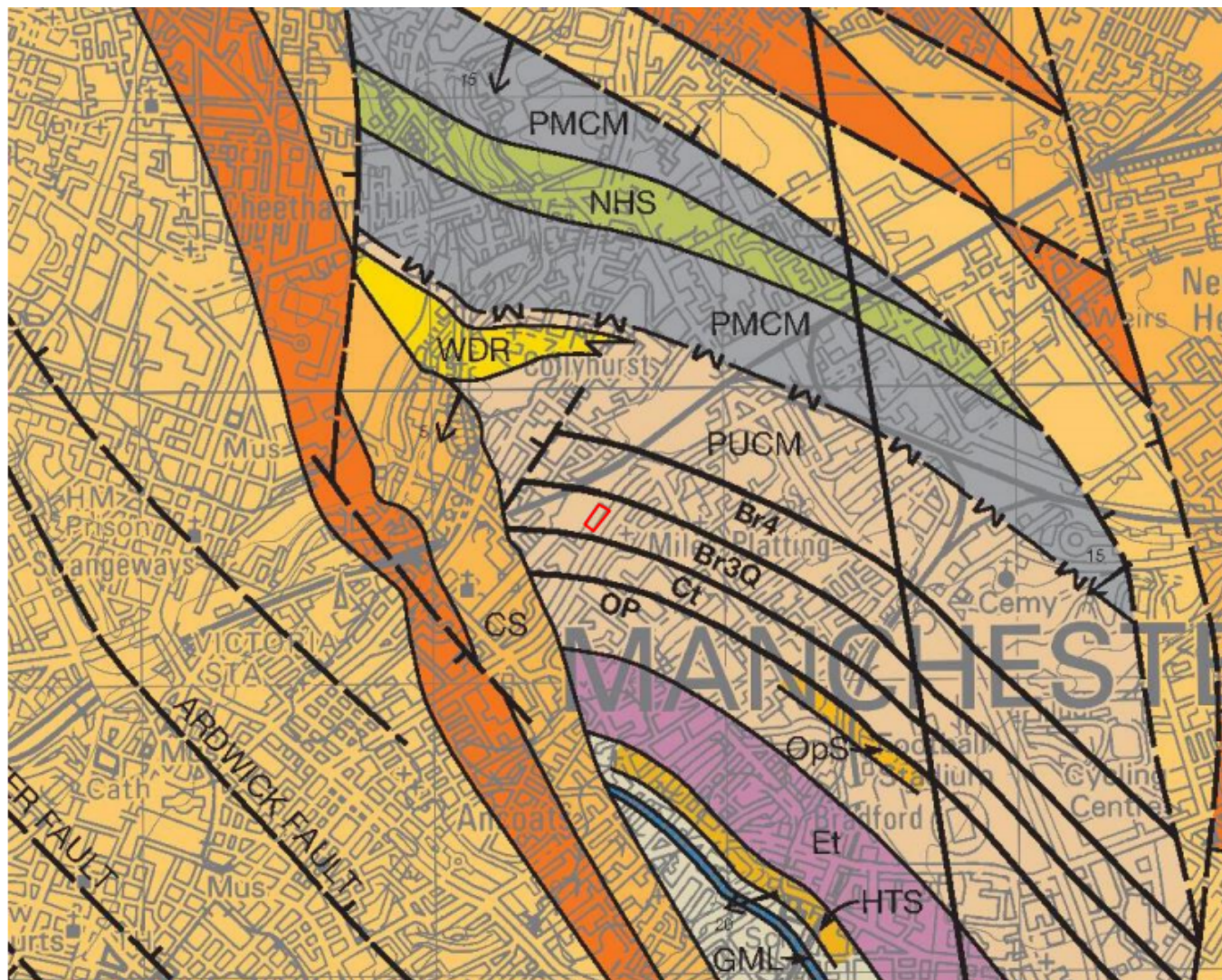
Drawn by:

SFK

Date:

29/06/2021

Drawing No.: TLC1140/03



KEY:



Approximate Site Location

The Land Consultancy Limited

Fairweather House, 4 Parker Lane, Whitestake, Preston PR4 4JX
Telephone: 01772 610609
Mobile: 07771 800859

Director

Stephen F. Knott B.Sc. (Hons), Ph.D., F.G.S.

TITLE:

Geological Context

PROJECT:

Osbourne's Yard, Miles Platting

PROJECT No:

TLC1140

DATE:

June 2021

SCALE:

NTS

DRAWN:

PS

DWG No:

TLC1140/04

DO NOT SCALE

APPENDIX B
ROTARY DRILL HOLE LOGS

[illegible]

[illegible]

[illegible]

[illegible]

APPENDIX C

COAL AUTHORITY PERMISSIONS CERTIFICATE



The Coal
Authority

Permit to Enter or Disturb Coal Authority Interests

Permit 21372

Name and Address of Permit Holder:

MPH Ancoats Ltd
The courtyard
Royal Mills
17 Redhill Street
Manchester
M4 5BA

Site Location:

Osbourne's Yard
Oldham Road
Miles Platting
Manchester
M40 7PS

This certificate hereby grants the above named Permit Holder a Permit to carry out:-

Investigation by three boreholes to 40m bgl to determine presence of shallow mine workings

within the Authority's interests at the identified site location above as shown on the Grant Permit Boundary (overleaf) for the period of 12 months from the granted date shown below. *The granting of this Permit does not constitute advice given by the Authority in relation to the proposed operations. It is the Permit Holder's responsibility to obtain appropriate health, safety, environmental, technical and legal advice.*

Conditions:

- *Water flush*
- *Gas Monitoring CO, CH₄, CO₂, O₂, H₂S at borehole and rig*
- *Operators undertaking the work must be in possession of this certificate and the Permit boundary plan at the time of works*
- *Appropriate borehole sealing without delay and to withstand site level changes*

Signed: Stuart Brown Granted Date: 08/02/2021

For and on behalf of The Coal Authority

Nominated Representative: Stuart Brown, Permitting Manager;

The Coal Authority, Permitting Office, 200 Lichfield Lane, Mansfield, Notts, NG18 4RG

Tel: 01623 637450; E-Mail: permissions@coal.gov.uk



The Coal
Authority

Granted Permit Boundary

Permit Ref: 21372

Permit Boundary:



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