

Jersey Wharf

Piling Risk Assessment

Ref: 077879-CUR-00-XX-RP-GE-002

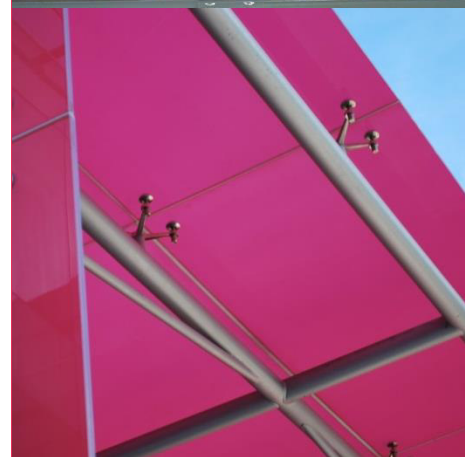
Revision: P01

Issue Date: 01 February 2023

Client Name: Manchester Life

Client Address: Unit 5, Royal Mill, 17 Redhill Street, Manchester, M4 5BA

Site Address: Jersey Street, Manchester M4 6JW



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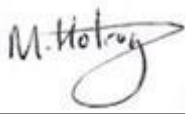
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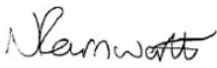
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1.0 Introduction

In January 2023 Curtins were instructed by Manchester Life to undertake a Piling Risk Assessment of a site located off Jersey Street, Manchester, M4 6JW where piled foundations are proposed.

The proposed development on site comprises a construction of several structures comprising residential high-rise buildings with some commercial use to the ground floor. The proposed development plans are included within *Appendix A* of this report.

The site investigations undertaken by E3P 2019 and Curtins 2021 only include the eastern section of Plot C due to access restrictions.

The bedrock geology underlying the site (Manchester Marls Formation) corresponds with a Secondary B Aquifer classification. This Aquifer Classification corresponds to the Manchester Marls Formation. The bedrock surrounding the site, of the Chester Formation and the Collyhurst Sandstone Formation, correspond with a Principal Aquifer designation, and as such a piling risk assessment (PRA) has been produced in order to identify the risks associated with a piled foundation solution, should piles be installed in/on the bedrock.

This report has been written to address this recommendation and support discharge of a related pre-commencement planning condition requirement for a piling risk assessment where applicable.

It is understood that the preferred piling methodology is Continuous Flight Auger (CFA) Piles to a depth of between 20-25m bgl.

The findings of this risk assessment should be reviewed upon completion of additional investigation and Remediation Strategy.

1.1 Scope

This piling risk assessment provides an overview of the site's ground and groundwater conditions and considers the potential risks associated with the adoption of Continuous Flight Auger (CFA) to groundwater.

The report identifies appropriate risk management and monitoring protocols that can be adopted to ensure any residual risk is brought within adequate and practicable limits.

It should be noted at this stage that investigation has only been undertaken in the east of the site, as the western portion was inaccessible. Further investigation will be required in the southwest to assess the risk to the Secondary B and Principal Aquifers beneath and to the west of the site, respectively.

1.2 References

In preparation of this report reference has been made to the following key guidance document:

- Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention National Groundwater & Contaminated Land Centre report NC/99/73 (EA Report 2001) (Ref. 1).

Reference is also made to the following geo-environmental reports undertaken for the site:

- E3P (2020) Phase I Geoenvironmental Site Assessment Land at Jersey Street, Ancoats, Manchester Report Ref. 13-729-R1 (Ref.2).
- E3P (2020) Parcel C Phase II Geoenvironmental Site Assessment Land at Jersey Street, Ancoats, Manchester Report Ref. 13-350-R3 (Ref.3).
- Curtins (2021) Interpretive Geo-Environmental and Geotechnical Letter Report for Back of Ancoats, Plot C Ref. 076740-CUR-00-XX-RP-GE-003-V01 (Ref.4).

It is assumed that the client is in receipt of these reports and that they will also be submitted to and accepted by Manchester Council to discharge relevant planning conditions.

2.0 The Site

This section of the report summarises the site setting, history, geology, hydrogeology, hydrology and environmental conditions at the site with reference to the geo-environmental reports referenced previously. It is not the intention of this report to duplicate these reports, with the information below providing the background information to support the piling risk assessment and recommendations. For further background information the full reports should be consulted.

E3P previously carried out a ground investigation in 2019 and report for Plot C to provide preliminary characterisation of the geo-environmental and geotechnical site conditions (Ref.1 and 2). Curtins have undertaken a supplementary intrusive investigation in 2021 (Ref.4). The information provided within these reports are summarised below.

2.1 The Site Setting

The site hereby known as 'Ancoats Plot C', located off Jersey Street, Manchester M4 6JW. It must be noted that this ground investigation is part of a wider site, including Plots A, B and C, this letter report refers only to Plot C. A site location plan is presented in *Figure 2.1* with the site boundary outlined in red and Labelled C.

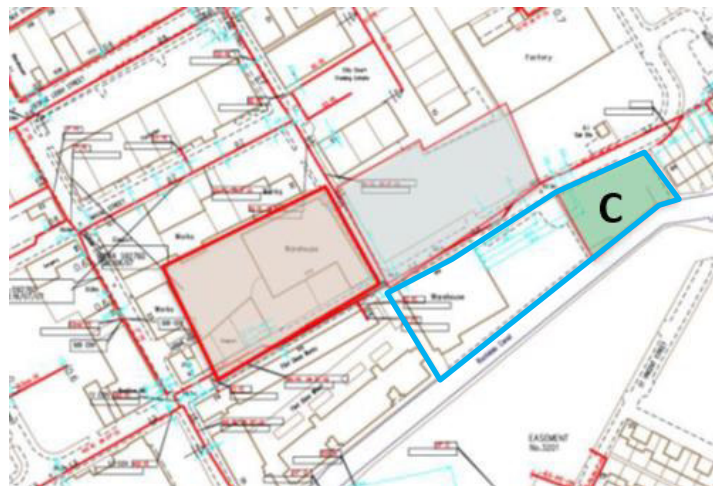


Figure 2.1 – Site Location Plan (Site Boundary shown in Blue).

The site is located off Jersey Street, Manchester M4 6JW. The Plot C site is currently split into two distinct parcels of land; the area in the east is vacant land which is fenced to prevent access to the public; while the area to the west is occupied by Easy Equipment, with a warehouse on the western boundary and the remainder of the site occupied by tarmac car parking and a container. The site is bound by Jersey St to the north and the Rochdale Canal to the south.

2.2 Site History

The former canal arm ran along the western boundary of Parcel C known as Prussia Street Arm and is infilled during the mid 20th century. The earliest mapping shows this parcel with industrial units noted from 1948 as a sheet metal works featuring a chimney to the north east of the parcel. This configuration as an engineering works remains until the late 1990's when the site is demolished.

2.3 Hydrogeology and Hydrology

The site, corresponding with the underlying solid geology, is underlain by a Secondary B Aquifer within the bedrock (Manchester Marl Formation) described as:

Red marl (calcareous mudstone and siltstone) with thin beds of fossiliferous marine limestone and dolomite; locally green; sandy in places especially in top part; local breccias and pebbly beds.

The geology to the east of the site corresponds with the Collyhurst Sandstone Formation (Principal Aquifer), described as:

Soft red sandstone with abundant beds of sand grains alternating with beds of fine-grained sharp sand, with some interbedded grey sandstone locally.

The geology approximately 125m west of the site is recorded as the Chester Formation (Principal Aquifer), described as:

Reddish brown, cross-bedded, pebbly sandstones with subordinate beds of red-brown mudstone

The site is not situated within a Source Protection Zone (SPZ). There are no active groundwater abstraction points located within 1km of the site.

The BGS record superficial Glacial Till, overlying the Manchester Marl Formation.

The nearest surface water feature is along the southern boundary to the south which is the Rochdale Canal.

There are no surface water abstractions within 1km.

There are no discharge consents within 250m of the site.

2.4 Ground Conditions

The following sections present a summary of the ground conditions identified during the E3P 2019 and Curtins 2021 intrusive investigation. The exploratory hole logs are presented in *Appendix B*.

2.4.1 Made Ground

Made Ground soils were recorded in all exploratory hole locations from ground level to 2.50m bgl. The surface covering was either a concrete slab, concrete with a brick layer or tarmacadam, underlain by either granular or cohesive Made Ground with occasional cobbles.

The 2019 E3P investigation of the eastern side of the site recorded a thickness of Made Ground between 0.80m and 2.30m bgl. Large obstructions including brick and concrete was encountered, including former brick walls. The Made Ground comprised black gravel with frequent cobbles. The gravel consisted of sandstone, ash, mudstone, concrete and brick.

Curtins 2021 investigation recorded a maximum depth of Made Ground at 2.50m bgl. Granular deposits were recorded as dark brown very sandy angular to subangular fine to coarse gravel of ash, brick, clinker, glass and concrete with low cobble content and low boulder content. Cohesive deposits were generally blue-black sandy gravelly clay with gravel of brick, ash, concrete, porcelain, terracotta, clinker and glass.

Anthropogenic fragments typically comprise brick, concrete, ash, glass, porcelain and clinker.

Obstructions were encountered in window sample boreholes WS-C4, WS-C4A and WS-C4B at 0.45-0.70m due to brick foundations.

2.4.2 Superficial Deposits

Glacial Till was recorded in exploratory holes where progressed through the Made Ground, from depths of between 1.40m and 3.00m bgl. Soils were predominantly cohesive with interbedded granular deposits encountered between 10.40m to 10.50m bgl. Cohesive deposits comprised of soft to firm, becoming stiff brownish grey slightly sandy slightly gravelly Clay. Deeper cohesive deposits, below 14.00m bgl, were recorded as firm greyish brown slightly sandy gravelly Clay underlain by very stiff brown sandy Clay. The cable percussive boreholes investigated to depths in excess of 10m bgl, with a maximum proven depth of 18.50m bgl.

The interbedded granular deposits were encountered between 10.40 to 10.50m bgl and recorded as dense to very dense brown fine to coarse Sand.

2.4.3 Bedrock (Manchester Marl Formation)

The Manchester Marl Formation bedrock was encountered within R-C1A, recorded underlying the Glacial Till from 18.50m bgl (32.33m AOD). Mudstone was encountered from 18.50m bgl to 25.88m bgl which was overlying Sandstone. The Mudstone was described as a highly weathered extremely weak to weak brown thinly laminated Mudstone. Which appears to be highly weathered in the upper strata (recovered as stiff brown slightly sandy clay). Sandstone was described as medium strong to strong reddish brown and grey medium to coarse grained

Sandstone to 29.60m bgl overlying an extremely weak reddish brown medium grained Sandstone.

2.4.4 Groundwater

Groundwater was encountered within Glacial Till in WS-C1 to WS-C3 and TP-C1 to TP-C3 at elevations of between 47.42m to 46.96m AOD.

An iridescent sheen was observed in water in R-C1A, with a slight hydrocarbon odour observed in Made Ground at 1.50-2.10m bgl. Groundwater level within this borehole could not be recorded due to water flush being used during borehole progression.

TP-C2 and TP-C4 also recorded iridescent sheens on the groundwater within Made Ground, encountered at 1.40m and 2.10m bgl respectively. Strong hydrocarbon odours were observed at the base of the cohesive Made Ground soils in these trial pits.

2.5 Unexploded Ordnance

The site is located in Manchester, noted to be within a UXO Moderate Risk Area. The contractor should undertake their own risk assessment prior to commencement of piling activities.

2.6 Contamination Risk Assessments and Remediation

E3P Contamination Risk Assessment

E3P 2019 site investigation obtained 32 soil samples, which comprised of Made Ground and natural soils, and undertook environmental chemistry testing. Samples were tested for a broad suite of contamination as identified in the E3P Phase II Report (Ref. 3).

Contamination risk assessments and recommendations undertaken by E3P are summarised below.

2.6.1 Soils

The E3P 2019 site investigation environmental chemistry results were compared with Generic Assessment Criteria for soils with respect to human health for a '*Residential end use*'. Several exceedances were identified including elevated metals and non-volatile PAHs, all within the Made Ground samples.

E3P submitted four samples for asbestos analysis of which one sample was positive for asbestos which was confirmed at <0.001% ν/ν during asbestos quantification.

2.6.2 Controlled Waters

E3P collected three canal surface water samples for analysis from the Rochdale Canal in January 2020. No exceedances were identified against E3Ps criteria, the criteria was not provided.

E3P have undertaken a Tier 1 controlled waters risk assessment for leachate analysis and groundwater samples against the Drinking Water Standards (DWS). Within the leachate samples lead exceeded the DWS values within one sample (TP116 at 0.80m bgl).

No groundwater samples were obtained from the superficial or bedrock deposits beneath the site.

The risk to groundwater underlying the site (Secondary B aquifer) within the E3P report (Ref. 3) was considered Low on the basis that the site is underlain by low-permeable cohesive deposits and exceedances recorded were within Made Ground strata.

In addition, E3P note that it is expected that the Made Ground would be mostly removed as part of enabling works and basement construction removing the much of the potential contamination source.

2.6.3 Ground Gas

E3P completed one gas monitoring visit dated 9th December 2019 summarised within the Phase II Geoenvironmental Site Assessment (Ref.3).

The E3P report has stated the concentration of methane (CH₄) was at 0.1% v/v in both boreholes WS111 and WS112 on this visit. Maximum Carbon dioxide (CO₂) was recorded at 0.5% v/v in WS112. A maximum flow was recorded at 0.1 l/hr within both boreholes.

The E3P report has concluded the GSV is below <0.07 therefore the site may be provisionally classified as a Characteristic Situation 1 (CS-1) not requiring ground gas protection measures. However E3P state that an allowance of CS-2 should be given until the full gas monitoring data set is complete and the wider site is investigated.

2.6.4 Aggressive Ground Conditions

The E3P 2019 site investigation chemical analyses for pH and soluble sulphate content showed that soils meet Class DS-1, Aggressive Chemical Environment for Concrete Classification (ACEC) AC-1s in accordance with BRE Special Digest 1 (2005).

Curtins Contamination Risk Assessment

During Curtins 2021 site investigation a programme of environmental chemistry testing was undertaken on soil samples obtained of the Made Ground (3 no.). Samples were tested for a broad suite of contamination as identified in the Interpretive Geo-Environmental and Geotechnical Letter Report.

Contamination risk assessments and recommendations undertaken by Curtins are summarised below.

2.6.5 Soils

The Phase 2 investigation environmental chemistry results were compared with Generic Assessment Criteria for soils with respect to human health for a '*Residential without Home Ground Produce*' end use for a 6% w/w SOM for Made Ground. Several exceedances were identified including cyanide, arsenic, lead and dibenzo(ah)anthracene.

Loose insulation and loose fibres of Chrysotile and Amosite asbestos were positively identified in the Made Ground sample from WS-C4B at 0.60m bgl, recording 0.508% by weight. No asbestos containing materials (ACMs) were visually identified in the exploratory holes on site.

2.6.6 Controlled Waters

Curtins also found the site to be underlain by low permeability Glacial Till onsite which will limit migration of contamination. No further risk assessment was provided.

2.6.7 Aggressive Ground Conditions

The site has been classified in accordance with BRE Special Digest 1. Based on Curtins 2021 laboratory test results it was considered that the Design Sulphate Classes and ACEC classes of DS-1 AC-1 being appropriate for the Made Ground, Superficial deposits and Bedrock.

2.6.8 Remediation Strategy

A Remediation Strategy will be required for the site along with further GI in uncharacterised areas. Upon completion of the strategy, this risk assessment may be updated to reflect changes to potential contamination sources, including contamination within shallow Made Ground soils and perched water within Made Ground.

3.0 Piling Risk Assessment

It is understood that at the current design stage, the adoption of Continuous Flight Auger (CFA) piles at a depth of between c.20 to 25m bgl and socketed into mudstone and/or sandstone bedrock is considered to be the preferred piling solution. This method has been selected with consideration of minimal ground vibration, as well as groundwater protection aspects.

CFA piles essentially involve driving a large auger into the ground, with soils within the radius of the auger brought to surface and replaced with concrete on withdrawal of the auger. The displacement of the surrounding ground is governed by the speed of rotation of the auger relative to the speed of vertical penetration. Theoretically, it is possible to adjust the speeds so that the volume of soils displaced laterally and removed as arisings is equal to the volume of concrete placed.

Within the EA Report (2001), the six Source-Pathway-Receptor scenarios are identified as:

- 1. Creation of preferential pathways, through a low permeability layer (an aquitard), to allow potential contamination of an underlying aquifer;*
- 2. Creation of preferential pathways, through a low permeability surface layer, to allow upward migration of landfill gas, soil gas or contaminant vapours to the surface;*
- 3. Direct contact of site workers and others with contaminated soil arising which have been brought to the surface;*
- 4. Direct contact of the piles or engineered structures with contaminated soil or leachate causing degradation of pile materials (where the secondary effects are to increase the potential for contaminant migration);*
- 5. The driving of solid contaminants down into an aquifer during pile driving; and*
- 6. Contamination of groundwater and, subsequently, surface waters by concrete, cement paste or grout.*

This piling risk assessment tabulated overleaf address aspects 1, 4, 5 and 6 above only, in keeping with the objectives of this report (assessing the risk to groundwater). Other aspects should be appropriately dealt with through engineering design and suitable on-site management. The risk assessment methodology follows that presented in *Appendix C*.

Piling Risk Assessment

TABULATED RISK ASSESSMENT: CFA Piles

Aspect	Potential Consequence	Potential Probability	Potential Risk	Risk Management Options Available	Resultant Risk
1. Creation of preferential pathways, through a low permeability layer (an aquitard), to allow potential contamination of an underlying aquifer.	Mild Pollution of non-classified groundwater resources in groundwater. Site overlies a Secondary B aquifer associated with the Manchester Marl Formation. Principal Aquifer east of the site associated with the Collyhurst Sandstone Formation, and approximately 125m west associated with the Chester Formation.	Low Likelihood - Visible evidence of contamination (iridescent sheen on perched water surfaces) identified in shallow soils. However generally low permeable superficial deposits overlying the aquifer. - Risk to groundwater considered to be Low from ground investigation. - CFA piling method essentially self-sealing with concrete and therefore no resultant pathway. - Additional ground investigation and a Remediation Strategy to be produced for the site.	Low	Not required.	Low
4. Direct contact of the piles or engineered structures with contaminated soil or leachate causing degradation of pile materials (where the secondary effects are to increase the potential for contaminant migration).	Mild Damage to sensitive buildings/structures/services or the environment.	Unlikely Soluble sulphate concentrations in soils generally meet a Design Sulphate class of DS-1 AC-1 for Made Ground soils, natural soils and bedrock.	Very Low	Not required.	Very Low
5. The driving of solid contaminants down into an aquifer during pile driving.	Mild Pollution of non-classified groundwater resources in groundwater. Site overlies a Secondary B aquifer associated with the Manchester Marl Formation. Principal Aquifer east of the site associated with the Collyhurst Sandstone Formation, and approximately 125m west associated with the Chester Formation.	Low Likelihood Above considerations, plus: Arisings brought to surface using CFA methodology, with speed of auger rotation to be matched with downward force to avoid driving soils down.	Low	Speed of auger rotation to be matched with downward force to avoid driving soils down.	Low

Piling Risk Assessment

Aspect	Potential Consequence	Potential Probability	Potential Risk	Risk Management Options Available	Resultant Risk
6. Contamination of groundwater and, subsequently, surface waters by concrete, cement paste or grout.	Mild Pollution of non-classified groundwater resources in groundwater. Site overlies a Secondary B aquifer associated with the Manchester Marl Formation. Principal Aquifer east of the site associated with the Collyhurst Sandstone Formation, and approximately 125m west associated with the Chester Formation.	Low Likelihood Above considerations but accounting for potential for 'bleeding' of concrete.	Low	Cement content of the concrete will need to be closely monitored so that this in itself does not 'bleed' into groundwater.	Low

4.0 Summary and Recommendations

Additional investigation is required in the west of the site to further assess the shallow ground conditions. A Remediation Strategy will also be required. The risk assessment presented herein is based on existing information for the site only, and has concluded that there is a Low risk to contamination of groundwater beneath the site to the underlying Secondary B Aquifer, or Principal Aquifers to the east or west, from the use of CFA piling, providing that the following risk management measures are put in place:

- *Speed of auger rotation needs to be matched with downward force to avoid driving soils down; and*
- *Cement content of the concrete will need to be closely monitored so that this in itself does not 'bleed' into groundwater.*
- *Suitable sulphate resistant concrete should be used for all substructures to remain in contact with Made Ground soils meeting a DS-1 DS class and AC-1 ACEC class in accordance with BRE Special Digest 1:2005 Concrete in Aggressive Ground guidance.*

The findings of this risk assessment should be reviewed upon completion of additional investigation and Remediation Strategy.

The following considerations should also be taken into account:

- *The piling contractor should prepare and submit relevant method statements for approval prior to piling works commencing;*
- *Where arisings are generated, they should be classified, handled and disposed of in compliance with relevant best practice and regulatory requirements;*
- *The piling contractor should make allowance for the provision of appropriate PPE based on chemical analysis results within the Phase 2 Ground Investigation Report;*
- *The piling contractor undertaking excavations should undertake their own risk assessments with regard to UXO risk at the site; and*
- *In the event of uncovering any areas of unexpected contamination during the piling works, including odorous or stained soils, works should be ceased with the advice of the appointed environmental consultant sought immediately.*

This document should be forwarded to the Planning Authority for discharge of a relevant planning condition where applicable, before piling works commence to disclose that there is a low risk to groundwater from the proposed use of CFA piling on site where the above risk management measures are adhered to.

5.0 References

1. Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention National Groundwater & Contaminated Land Centre report NC/99/73 (EA Report 2001).
2. E3P (2020) Phase I Geoenvironmental Site Assessment Land at Jersey Street, Ancoats, Manchester Report Ref. 13-729-R1 (Ref.2).
3. E3P (2020) Parcel C Phase II Geoenvironmental Site Assessment Land at Jersey Street, Ancoats, Manchester Report Ref. 13-350-R3 (Ref.3).
4. Curtins (2021) Interpretive Geo-Environmental and Geotechnical Letter Report for Back of Ancoats, Plot C Ref. 076740-CUR-00-XX-RP-GE-003-V01 (Ref.4).

Appendix A – Drawings

- Development Plans
- Curtins Exploratory Hole Location Plan

Do not scale drawing. Figured dimensions to be worked to in all cases.

Where products have been specified, PRP have reviewed applicable products

doubt, product manufacturers and suppliers must confirm that each product is fit for its intended use and provide such evidence as may reasonably be

Where the contractor wishes to propose alternative products, representative

the employer demonstrating that their proposed alternative has equal or better performance.

CDM REGULATIONS 2015: All current drawings and specifications for the project must be read in conjunction with the Designer's Hazard and

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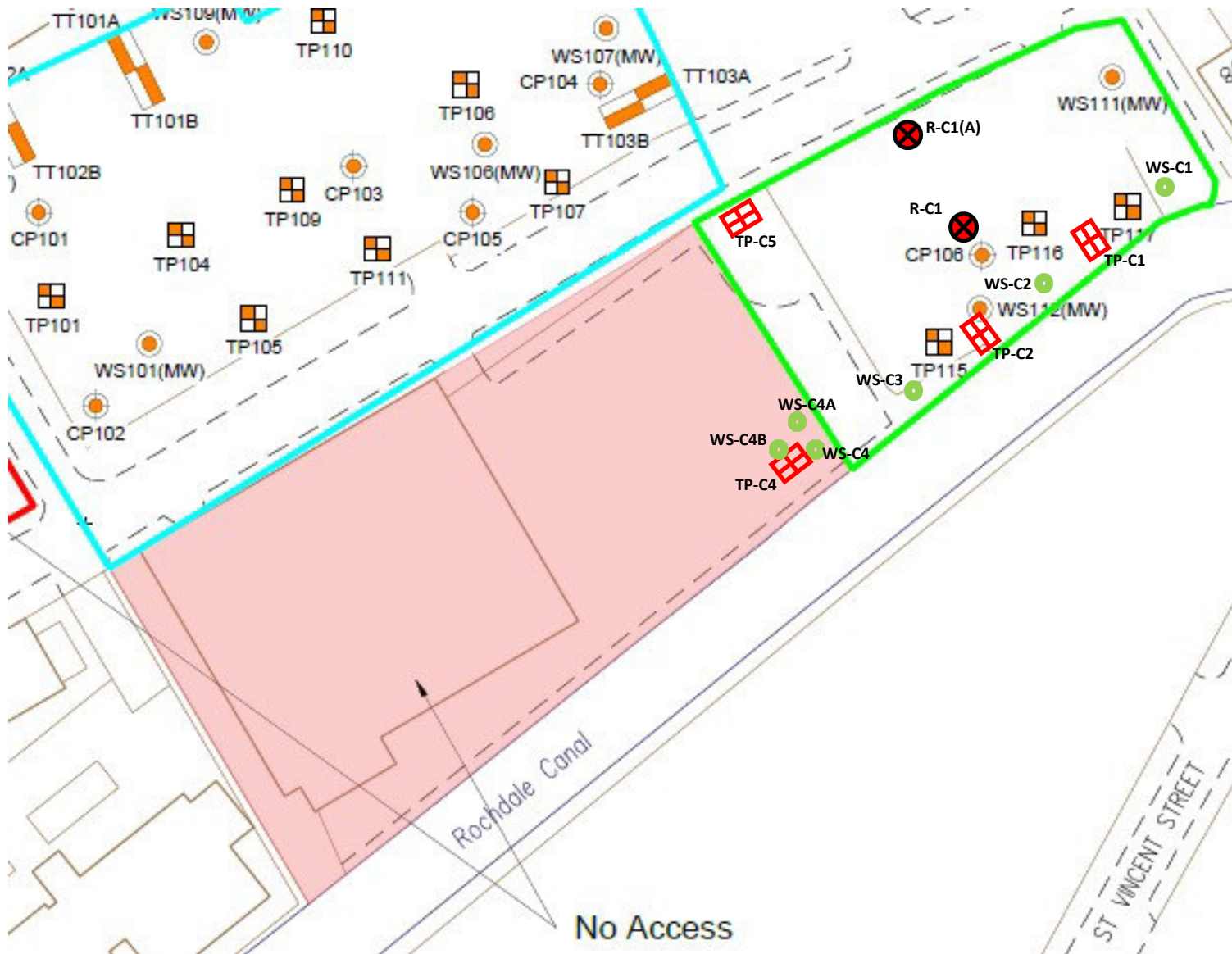


Site Plan

Revision

Status

Drawn AH Checked FS Date 03/03/22 Scale @ A1 1:20



Key

E3P 2019 Investigation

Location Symbols

-  Approximate Window Sample Probehole Location
-  Approximate Trial Pit Location
-  Approximate Slit Trench Location
-  No Access
-  Parcel B
-  Parcel C

Curtins 2021 Investigation

-  Rotary Cored Boreholes
-  Window Samples
-  Machine Excavated Trial Pit

Scope of Works

- 2no Rotary Geobore S boreholes to max 30m bgl.
- 5no Window Sample boreholes up to 5m bgl.
- Machine excavated trial pits up to 3.5m bgl.

Back of Ancoats - Parcel C Exploratory Hole Location Plan



Appendix B – Exploratory Hole Logs

- Exploratory Hole Logs



Borehole Log

Borehole No.

R-C1

Sheet 1 of 2

Project Name: Man Life Back of Ancoats

Project No.
076740

Co-ords: -

Hole Type
CP+RC

Location: Ancoats, Manchester

Level: 50.90

Scale
1:40

Client: Manchester Life

Dates: 18/01/2021 - 19/01/2021

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20	50.70		MADE GROUND: Grey and reddish brown concrete and brick layer. MADE GROUND: Dark brown mottled black sandy gravelly clay. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of brick, concrete and clinker. <i>From 0.20 to 0.40m very gravelly.</i>	1
					1.50	49.40		Soft to firm brownish grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to medium of sandstone and mudstone.	2
									3
									4
									5
									6
									7
					8.00	42.90		Continued on next sheet	8

Remarks

Service inspection pit hand excavated from GL to 1.20m. Groundwater unable to be recorded due to flush. Terminated at 12.50m bgl due to bubbling in the Rochdale Canal adjacent.





Borehole Log

Borehole No.

R-C1

Sheet 2 of 2

Project Name: Man Life Back of Ancoats

Project No.
076740

Co-ords: -

Hole Type
CP+RC

Location: Ancoats, Manchester

Level: 50.90

Scale
1:40

Client: Manchester Life

Dates: 18/01/2021 - 19/01/2021

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.00		50 (25 for 85mm/50 for 30mm)	10.40	40.50		Stiff to very stiff brownish grey slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to medium of sandstone.	9
								Very dense brown fine to coarse SAND.	10
									11
									12
		12.50		50 (15,3/50 for 180mm)	12.50	38.40		End of borehole at 12.50 m	13
									14
									15
									16

Remarks

Service inspection pit hand excavated from GL to 1.20m. Groundwater unable to be recorded due to flush. Terminated at 12.50m bgl due to bubbling in the Rochdale Canal adjacent.





Borehole Log

Borehole No.

R-C1A

Sheet 1 of 4

Project Name: Man Life Back of Ancoats

Project No.
076740

Co-ords: -

Hole Type
CP+RC

Location: Ancoats, Manchester

Level: 50.83

Scale
1:40

Client: Manchester Life

Dates: 20/01/2021 - 22/01/2021

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20	50.63		MADE GROUND: Grey and reddish brown concrete and brick layer.	
								MADE GROUND: Dark grey slightly sandy slightly clayey angular to subangular fine to coarse gravel of ask, clinker, brick and concrete. Sand is fine to coarse.	
					1.10	49.73		MADE GROUND: Brownish grey slightly sandy gravelly clay. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of sandstone.	1
					1.50	49.33		MADE GROUND: Dark grey mottled black slightly sandy slightly clayey angular to subangular fine gravel of clinker and ash. Sand is fine to coarse. Iridescent sheen on water. Slight hydrocarbon odour.	2
					2.10	48.73		Soft brownish grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular fine to medium of sandstone.	3
									4
									5
									6
									7
									8

Continued on next sheet

Remarks

Service inspection pit hand excavated from GL to 1.20m. Groundwater unable to be recorded due to flush. SPT and Rotary Core details displayed on two separate logs - Borehole Log and Rotary Core Log.





Borehole Log

Borehole No.

R-C1A

Sheet 2 of 4

Project Name: Man Life Back of Ancoats

Project No.
076740

Co-ords: -

Hole Type
CP+RC

Location: Ancoats, Manchester

Level: 50.83

Scale
1:40

Client: Manchester Life

Dates: 20/01/2021 - 22/01/2021

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					10.50	40.33			9
									10
								Dense brown fine to coarse SAND.	11
									12
									13
		14.00		N=10 (1,1/1,1,3,5)	14.00	36.83			14
								Firm greyish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to medium of sandstone and chert.	15
		15.50		50 (4,7/50 for 170mm)					16
		15.50 - 15.60	D						
								Continued on next sheet	

Remarks

Service inspection pit hand excavated from GL to 1.20m. Groundwater unable to be recorded due to flush. SPT and Rotary Core details displayed on two separate logs - Borehole Log and Rotary Core Log.





Borehole Log

Borehole No.

R-C1A

Sheet 3 of 4

Project Name: Man Life Back of Ancoats

Project No.
076740

Co-ords: -

Hole Type
CP+RC

Location: Ancoats, Manchester

Level: 50.83

Scale
1:40

Client: Manchester Life

Dates: 20/01/2021 - 22/01/2021

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		17.00		N=50 (2,7/50 for 265mm)	17.00	33.83		From 15.50 to 17.00m very stiff.	
		17.70 - 18.00	D					Very stiff brown sandy CLAY. Sand is fine to medium.	17
		18.40 - 18.50	D		18.50	32.33		From 18.20 to 18.50m no recovery.	18
								Highly weathered extremely weak brown MUDSTONE, recovered as a stiff brown slightly sandy clay.	19
								From 18.50 to 19.07m no recovery.	
								From 19.07 to 19.85m highly fractured.	
					19.85	30.98		Weathered extremely weak brown thinly laminated MUDSTONE.	20
								19.85 to 20.00m 5 degrees, planar smooth.	
								From 20.00 to 20.50m no recovery.	
								From 20.50 to 20.61m recovered as non-intact core of clayey angular coarse gravel.	
								20.61 to 21.08m 0 - 10 degrees closely spaced, planar smooth.	
								At 20.90m clayey infill.	21
								From 21.08 to 21.21m highly fractured.	
								21.21 to 22.91m 0 - 10 degrees closely spaced to medium spaced, planar smooth and 1 No. discontinuity 50 degrees, undulating smooth.	
								From 21.95 to 22.10m recovered as a clay.	22
					23.00	27.83		From 22.91 to 23.00m recovered as non-intact core of angular cobbles.	23
								Weak brown thinly laminated MUDSTONE.	
								From 23.00 to 24.35m no recovery.	
									24

Continued on next sheet

Remarks

Service inspection pit hand excavated from GL to 1.20m. Groundwater unable to be recorded due to flush. SPT and Rotary Core details displayed on two separate logs - Borehole Log and Rotary Core Log.





Borehole Log

Borehole No.

R-C1A

Sheet 4 of 4

Project Name: Man Life Back of Ancoats

Project No.
076740

Co-ords: -

Hole Type
CP+RC

Location: Ancoats, Manchester

Level: 50.83

Scale
1:40

Client: Manchester Life

Dates: 20/01/2021 - 22/01/2021

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					25.88	24.95		From 24.35 to 24.50m recovered as non-intact core of angular fine to coarse gravel. From 24.50 to 24.73m no recovery. 24.73 to 25.88m 10 - 15 degrees closely spaced to medium spaced, planar smooth.	25
								Medium strong to strong reddish brown and grey medium grained SANDSTONE. 25.88 to 26.36m 0 - 10 degrees closely spaced, planar rough. From 26.36 to 27.50m no recovery.	26
					27.50	23.33		Medium strong reddish brown and grey medium to coarse grained SANDSTONE. 27.50 to 27.67m 1 No. discontinuity 10 degrees, planar rough. From 27.67 to 29.60m no recovery.	28
					29.60	21.23		Extremely weak reddish brown medium grained SANDSTONE. 29.60 to 29.91m 0 - 10 degrees extremely closely spaced to closely space, planar rough with sandy infill. From 29.91 to 30.00m recovered as non-intact core of angular fine to coarse gravel and angular cobbles. End of borehole at 30.00 m	30
					30.00	20.83			31
									32

Remarks

Service inspection pit hand excavated from GL to 1.20m. Groundwater unable to be recorded due to flush. SPT and Rotary Core details displayed on two separate logs - Borehole Log and Rotary Core Log.





Trial Pit Log

Trialpit No

TP-C1

Sheet 1 of 1

Project Name: Man Life Back of Ancoats

Project No.
076740Co-ords: -
Level: 50.82Date
04/02/2021

Location: Ancoats, Manchester

Dimensions
(m):

2

Depth
3.40

0.7

Scale
1:40Logged
ZH

Client: Manchester Life

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
▼				0.35	50.47		MADE GROUND: Grey and reddish brown concrete and brick layer.	
				0.85	49.97		MADE GROUND: Black gravelly fine to coarse sand with low cobble content. Gravel is angular to subangular fine to coarse of brick, porcelain and concrete. Cobbles are angular of brick.	1
				2.10	48.72		MADE GROUND: Dark brown mottled black slightly gravelly sandy clay with moderate cobble content. Sand is fine to coarse. Gravel is angular fine to coarse of porcelain, glass, brick and concrete. Cobbles are angular of terracotta, porcelain and brick.	2
				3.40	47.42		Firm dark grey mottled brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of sandstone.	3
							End of pit at 3.40 m	4
								5
								6
								7
								8

Remarks: Trial pit area scanned for services. Groundwater encountered at 3.40m bgl. Oily iridescent sheen noted on water.

Stability: Stable.





Trial Pit Log

Trialpit No

TP-C2

Sheet 1 of 1

Project Name: Man Life Back of Ancoats

Project No.
076740Co-ords: -
Level: 50.90Date
04/02/2021

Location: Ancoats, Manchester

Dimensions
(m):

2.1

Depth
3.00

0.7

Scale
1:40Logged
ZH

Client: Manchester Life

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
▼				0.25	50.65		MADE GROUND: Grey and reddish brown concrete and brick layer.	1
				0.70	50.20		MADE GROUND: Black very gravelly fine to coarse sand with low cobble content. Gravel is angular fine to coarse of brick and concrete. Cobbles are angular of brick.	
				1.40	49.50		MADE GROUND: Black mottled brown slightly sandy slightly gravelly clay. Sand is fine to coarse. Gravel is angular fine to medium of brick, ash, porcelain and clinker. Iridescent sheen on water. Strong hydrocarbon odour.	
				3.00	47.90		Firm grey mottled brown slightly gravelly very sandy CLAY. Sand is fine to medium. Gravel is angular to subangular fine to medium of sandstone.	2
							End of pit at 3.00 m	3
								4
								5
								6
								7
								8

Remarks: Trial pit area scanned for services. Groundwater encountered at 1.40m bgl. Oily iridescent sheen noted on water.

Stability: Stable.





Trial Pit Log

Trialpit No

TP-C3

Sheet 1 of 1

Project Name: Man Life Back of Ancoats

Project No.
076740Co-ords: -
Level: 49.99Date
04/02/2021

Location: Ancoats, Manchester

Dimensions
(m):

2

Depth
3.00

0.7

Scale
1:40Logged
ZH

Client: Manchester Life

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
▼								1
								2
								3
								4
								5
								6
								7
								8

Remarks: Trial pit area scanned for services. Groundwater encountered at 1.60m bgl. Oily iridescent sheen noted on water.

Stability: Stable.





Trial Pit Log

Trialpit No

TP-C4

Sheet 1 of 1

Project Name: Man Life Back of Ancoats

Project No.
076740Co-ords: -
Level: 50.29Date
04/02/2021

Location: Ancoats, Manchester

Dimensions
(m):

2

Depth
2.10

0.7

Scale
1:40Logged
ZH

Client: Manchester Life

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	1.30	ES		0.20	50.09		MADE GROUND: Black tarmacadam.	1
				1.20	49.09		MADE GROUND: Dark brown very sandy angular to subangular fine to coarse gravel of brick, clinker, glass and concrete with low cobble content and low boulder content with occasional rootlets. Sand is fine to coarse. Cobbles are angular of brick and scrap metal. Boulders are angular to subangular of brick and scrap metal.	
							MADE GROUND: Blue-black slightly sandy slightly gravelly clay. Sand is fine to coarse, Gravel is angular to subangular fine to coarse of brick. Water at base of pit with oily iridescent sheen. Strong hydrocarbon odour.	
				2.10	48.19		End of pit at 2.10 m	2
								3
								4
								5
								6
								7
								8

Remarks: Trial pit area scanned for services. Groundwater encountered at 2.10m bgl. Oily iridescent sheen noted on water.

Stability: Stable.





Trial Pit Log

Trialpit No

TP-C5

Sheet 1 of 1

Project Name: Man Life Back of Ancoats

Project No.
076740Co-ords: -
Level: 51.50Date
05/02/2021

Location: Ancoats, Manchester

Dimensions
(m):

1.9

Depth
1.70

0.7

Scale
1:40Logged
ZH

Client: Manchester Life

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				1.70	49.80		MADE GROUND: Black slightly sandy gravelly clay with moderate cobble content. Sand is fine to coarse. Gravel is angular of brick, porcelaina and glass. Cobbles are angular of brick.	1
							End of pit at 1.70 m	2
								3
								4
								5
								6
								7
								8

Remarks: Trial pit area scanned for services in embankment to the north of site. No groundwater encountered. Wall encountered along boundary between Jersey Street and Plot C.

Stability: Stable.





Borehole Log

Borehole No.

WS-c1

Sheet 1 of 1

Project Name: Man Life Back of Ancoats

Project No.
076740

Co-ords: -

Hole Type
WS

Location: Ancoats, Manchester

Level: 50.80

Scale
1:40

Client: Manchester Life

Dates: 25/01/2021 - 25/01/2021

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.35			0.35	50.45		MADE GROUND: Grey and reddish brown concrete and brick layer.	
		1.00			1.00	49.80		MADE GROUND: Black slightly sandy clayey angular to subangular fine to medium gravel of ash and brick with low cobble content. Sand is fine to coarse. Cobbles are angular of brick.	
		1.20		N=2 (0,0/0,0,1,1)				MADE GROUND: Brown mottled black slightly sandy slightly gravelly clay. Sand is fine to coarse. Gravel is angular to subangular fine to medium of ash, clinker and brick.	1
		2.00		N=3 (0,0/0,1,1,1)					2
		3.00		N=18 (1,2/2,2,5,9)	3.00	47.80		Firm brownish grey slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine of sandstone and mudstone.	3
		4.00		N=9 (0,0/0,3,3,3)	4.00	46.80		Firm to stiff brownish grey slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine of sandstone and mudstone.	4
		5.00		N=27 (5,5/5,6,7,9)					5
		5.45			5.45	45.35		End of borehole at 5.45 m	6
									7
									8

Remarks

Service inspection pit hand excavated from GL to 1.20m. Groundwater encountered at 3.00m bgl.





Borehole Log

Borehole No.

WS-C2

Sheet 1 of 1

Project Name: Man Life Back of Ancoats

Project No.
076740

Co-ords: -

Hole Type
WS

Location: Ancoats, Manchester

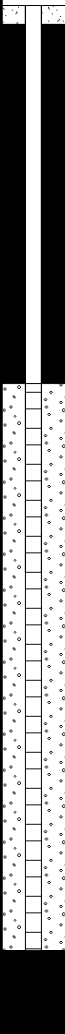
Level: 50.87

Scale
1:40

Client: Manchester Life

Dates: 25/01/2021 - 25/01/2021

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20			0.20	50.67		MADE GROUND: Concrete.	
		1.00	ES		0.95	49.92		MADE GROUND: Black slightly sandy clayey angular to subangular fine to coarse gravel of ash and brick with low cobble content. Sand is fine to coarse. Cobbles are angular of brick.	
		1.20		N=2 (1,1/1,0,1,0)					1
		2.00		N=6 (0,0/1,1,2,2)					2
		2.50			2.50	48.37		Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is angular to subangular fine of sandstone.	3
		3.00		N=18 (2,3/4,4,5,5)					
		4.00		N=16 (./3,3,5,5)	3.70	47.17		Stiff brownish grey slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine of sandstone and mudstone.	4
		5.00		N=20 (3,3/5,5,5,5)					5
		5.45			5.45	45.42		End of borehole at 5.45 m	6
									7
									8

Remarks

Service inspection pit hand excavated from GL to 1.20m. Groundwater encountered at 2.90m bgl.





Borehole Log

Borehole No.

WS-C3

Sheet 1 of 1

Project Name: Man Life Back of Ancoats

Project No.
076740

Co-ords: -

Hole Type
WS

Location: Ancoats, Manchester

Level: 49.96

Scale
1:40

Client: Manchester Life

Dates: 25/01/2021 - 25/01/2021

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20			0.20	49.76		MADE GROUND: Grey and reddish brown concrete and brick layer.	
		1.20		N=7 (1,1/1,2,2,2)	1.00	48.96		MADE GROUND: Black slightly sandy slightly clayey angular to subangular fine to medium gravel of ash and brick. Sand is fine to coarse.	1
		2.00		N=8 (1,1/2,2,2,2)	2.10	47.86		MADE GROUND: Brown mottled black slightly sandy gravelly clay. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of brick. <i>From 1.20 to 2.00m no recovery.</i>	2
		3.00		N=14 (2,2/3,3,4,4)				Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to medium of sandstone.	3
		4.00		N=8 (./2,2,2,2)					4
		5.00		N=13 (2,2/2,3,4,4)					5
					5.45	44.51		End of borehole at 5.45 m	6
									7
									8

Remarks

Service inspection pit hand excavated from GL to 1.20m. Groundwater encountered at 3.00m bgl.





Borehole Log

Borehole No.

WS-C4

Sheet 1 of 1

Project Name: Man Life Back of Ancoats

Project No.
076740

Co-ords: -

Hole Type
WS

Location: Ancoats, Manchester

Level: 50.19

Scale
1:40

Client: Manchester Life

Dates: 25/01/2021 - 25/01/2021

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.05	50.14		MADE GROUND: Concrete.	
					0.45	49.74		MADE GROUND: Dark brown sandy angular to subangular gravel of brick and ash with moderate cobble content. Sand is fine to coarse. Cobbles are angular of brick.	
								End of borehole at 0.45 m	
									1
									2
									3
									4
									5
									6
									7
									8

Remarks

Service inspection pit hand excavated from GL to 0.45m. Terminated at 0.45m bgl due to brick foundations - unable to advance past.





Borehole Log

Borehole No.

WS-C4A

Sheet 1 of 1

Project Name: Man Life Back of Ancoats

Project No.
076740

Co-ords: -

Hole Type
WS

Location: Ancoats, Manchester

Level: 50.20

Scale
1:40

Client: Manchester Life

Dates: 25/01/2021 - 25/01/2021

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.05	50.15		MADE GROUND: Concrete. MADE GROUND: Dark brown sandy angular to subangular gravel of brick and ash with moderate cobble content. Sand is fine to coarse. Cobbles are angular of brick.	
					0.70	49.50		End of borehole at 0.70 m	
									1
									2
									3
									4
									5
									6
									7
									8

Remarks

Service inspection pit hand excavated from GL to 0.70m. Terminated at 0.70m bgl due to brick foundations - unable to advance past.





Borehole Log

Borehole No.

WS-C4B

Sheet 1 of 1

Project Name: Man Life Back of Ancoats

Project No.
076740

Co-ords: -

Hole Type
WS

Location: Ancoats, Manchester

Level: 50.20

Scale
1:40

Client: Manchester Life

Dates: 25/01/2021 - 25/01/2021

Logged By
ZH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10			0.10	50.10		MADE GROUND: Concrete.	
		0.60	ES		0.70	49.50		MADE GROUND: Dark brown sandy angular to subangular gravel of brick and ash with moderate cobble content. Sand is fine to coarse. Cobbles are angular of brick.	
								End of borehole at 0.70 m	
									1
									2
									3
									4
									5
									6
									7
									8

Remarks

Service inspection pit hand excavated from GL to 0.70m. Terminated at 0.70m bgl due to brick foundations - unable to advance past.



Appendix C – Risk Assessment Rationale

The qualitative risk assessment of environmental harm is designed to establish connecting links between a hazardous source to a potential receptor via an exposure pathway.

The qualitative risk assessment corresponds with the proposed piling operations on site.

Risk assessment is the process of collating known information on a hazard or set of hazards in order to estimate actual or potential risk to receptors. The receptor may be humans, a water resource, a sensitive local ecosystem or future construction materials. Receptors can be connected to the hazardous source by one or several exposure pathways such as direct contact for example. Risks are generally managed by isolating the receptor or intercepting the exposure pathway or by isolating or removing the hazard.

Without the three essential components of a source, pathway and receptor there can be no risk. Therefore, the presence of hazard on a site does not necessarily mean there is a risk.

By considering where a viable pathway exists which connects a source with a receptor the risk assessment in Section 3.0 and Table A4.1 identifies where pollutant linkage exists. If there is no pollutant linkage there is no risk and only where a pollutant linkage is established does the risk assessment, consider the level of risk.

The risk assessment considers the likelihood of a particular event taking place (accounting for the presence of the hazard and receptor and the integrity of the exposure pathway) in conjunction with the severity of the potential consequence (accounting for the potential severity of the hazard and the sensitivity of the receptor).

In the risk assessment the consequence of the hazard has been classified as severe or medium or mild or minor and the probability (likelihood) of the circumstances actually occurring classified as high likelihood or likely or low likelihood or unlikely.

The consequences and probabilities are subsequently cross-correlated to give a qualitative estimation of the risk using Department of the Environment risk classifications as detailed in the table below and as referenced in CIRIA C552.

		Consequence			
		Severe	Medium	Mild	Minor
Probability (Likelihood)	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate/Low Risk
	Likely	High Risk	Moderate Risk	Moderate/Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate/Low Risk	Low Risk	Very Low Risk
	Unlikely	Moderate/Low Risk	Low Risk	Very Low Risk	Very Low Risk

In accordance with DoE guidance, the following categorisation of **consequence** has been developed.

Piling Risk Assessment

Classification	Definition	Examples
Severe	Short-term (acute) risk to human health likely to result in "significant harm" as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution of sensitive water resource. Catastrophic damage to buildings/property. A short-term risk to a particular ecosystem or organisation forming part of such ecosystem.	High concentrations of cyanide on the surface of an informal recreation area. Major spillage of contaminants from site into controlled water. Explosion, causing building collapse (can also equate to a short-term human health risk if buildings are occupied).
Medium	Chronic damage to Human Health. Pollution of sensitive water resources. A significant change in a particular ecosystem or organism forming part of such ecosystem.	Concentration of a contaminant from site exceeds the generic or site-specific assessment criteria. Leaching of contaminants from a site to a Principal or Secondary A aquifer. Death of a species within a designated nature reserve. Lesser toxic and asphyxiate effects.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services. Damage to sensitive buildings/structures/services or the environment.	Pollution of non-classified groundwater (inc. Secondary B aquifers). Damage to building rendering it unsafe to occupy (e.g. foundation damage resulting in instability).
Minor	Harm, although not necessarily significant harm, which may result in a financial loss or expenditure to resolve. Non-permanent health effects to human health (easily prevented by means such as personal protective clothing, etc). Easily repairable effects of damage to buildings, structures and services.	The presence of contaminants at such concentrations that protective equipment is required during site works. The loss of plants in a landscaping scheme. Discoloration of concrete.

Piling Risk Assessment

In accordance with DoE guidance, the following categorisation of **probability** has been developed.

Classification	Definition
High Likelihood	There is a pollution linkage and an event that either appears very likely in the short term and almost inevitable over the long term or there is evidence at the receptor of harm or pollution.
Likely	There is a pollution linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.
Low Likelihood	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term.
Unlikely	There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long term.

In accordance with DoE guidance, the following categorisation of **risk** has been developed.

Classification	Definition
Very High Risk	There is a <i>high probability</i> that <i>severe harm</i> could arise to a designated receptor from an identified hazard at the site without appropriate further action.
High Risk	<i>Harm is likely to arise</i> to a designated receptor from an identified hazard at the site without appropriate further action.
Moderate Risk	<i>It is possible</i> that without appropriate further action <i>harm could arise</i> to a designated receptor. It is relatively <i>unlikely</i> that any such harm would be <i>severe</i> , and if any harm were to occur it is <i>more likely</i> that such harm would be <i>relatively mild</i> .
Low Risk	<i>It is possible</i> that <i>harm could arise</i> to a designated receptor from an identified hazard. It is <i>likely</i> that, at worst, if any harm was realised any effects would be <i>mild</i> .
Very Low Risk	The presence of an identified hazard does not give rise to the potential to cause harm to a designated receptor.

The term 'risk' in this instance refers to the risk that the source, pathway, receptor linkage for a given source of contamination is complete. It does not refer to immediate risk to individuals or features present on the site from potential contaminants and is intended to be used as a tool to assess the necessity of further investigation or risk management operations.

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