

Appendix 9.19

RoC Consulting, Addendum Note, Preliminary
Ground Investigation Technical Note: Plots
NT02, NT03, NT04 Dantzic Street, reference
4328-ROC-ZZ-XX-TN-ES-P2TN, dated 27
September 2022.

Addendum Note

Preliminary Ground Investigation Technical Note

for

Plots NT02, NT03, NT04 Dantzie
Street



27/09/2022



**COMPLEX CHALLENGES ...
MADE SIMPLE**

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1.0 Introduction

Further to our forthcoming Phase 2 Site Investigation Report, this addendum report has been produced to provide interim summary information.

The main site investigation works are now complete, although monitoring remains ongoing and further retaining wall works are planned. As previously mentioned, we also expect further works to be required in NT03 following removal of the mound.

A Hole Location Plan showing the location of investigation locations is presented in Appendix A. Also included is a drawing summarising technical finding of the retaining wall investigations.

2.0 Ground Conditions

Draft rotary borehole investigation logs are presented in Appendix B. Generally, the site geology is close to that anticipated in the Phase 1 Site Investigation Report. This is summarised in the Table below.

Geology	Description	Depth to base (m)
Made Ground	Predominantly gravels of demolition waste with brick, concrete and obstructions	0.90 to 3.00
Devensian Till	Predominantly clay	2.00 to 12.00
Chester Formation	Predominantly sandstone	NT02 and NT03 only to maximum depth of 19.60m
Manchester Marls	Predominantly mudstone	To termination in all rotary boreholes, proven to maximum depth of 25.10m

Generally, core recovery and RQDs across the site have been good although in places the Manchester Marls have been weathered to a clay, potentially as a result of the faulting recorded on geological maps.

Geotechnical laboratory testing results are presented in Appendix C.

We have also encountered significant obstructions in trial pits in several location, including large concrete boulders and former structures, as typical for a brownfield site of this type.

The location of the suspected retaining wall in the Network Rail mound in NT03 has also been investigated through hand pit investigations. A summary drawing of these findings is presented in Appendix A. Generally, no evidence of the presence of such a structure has yet been observed.

3.0 Environmental Observations

Visual and olfactory evidence of contamination has been observed in a small number of locations. Most notably we have observed solvent odours beneath the warehouse in NT02 in RBH203. This is similar to the location where contamination was observed in the previous site investigation. Initial testing has recorded some exceedances of volatile compounds in soil samples from this location. There were 5 other observations of solvents and oils, again all in NT02.

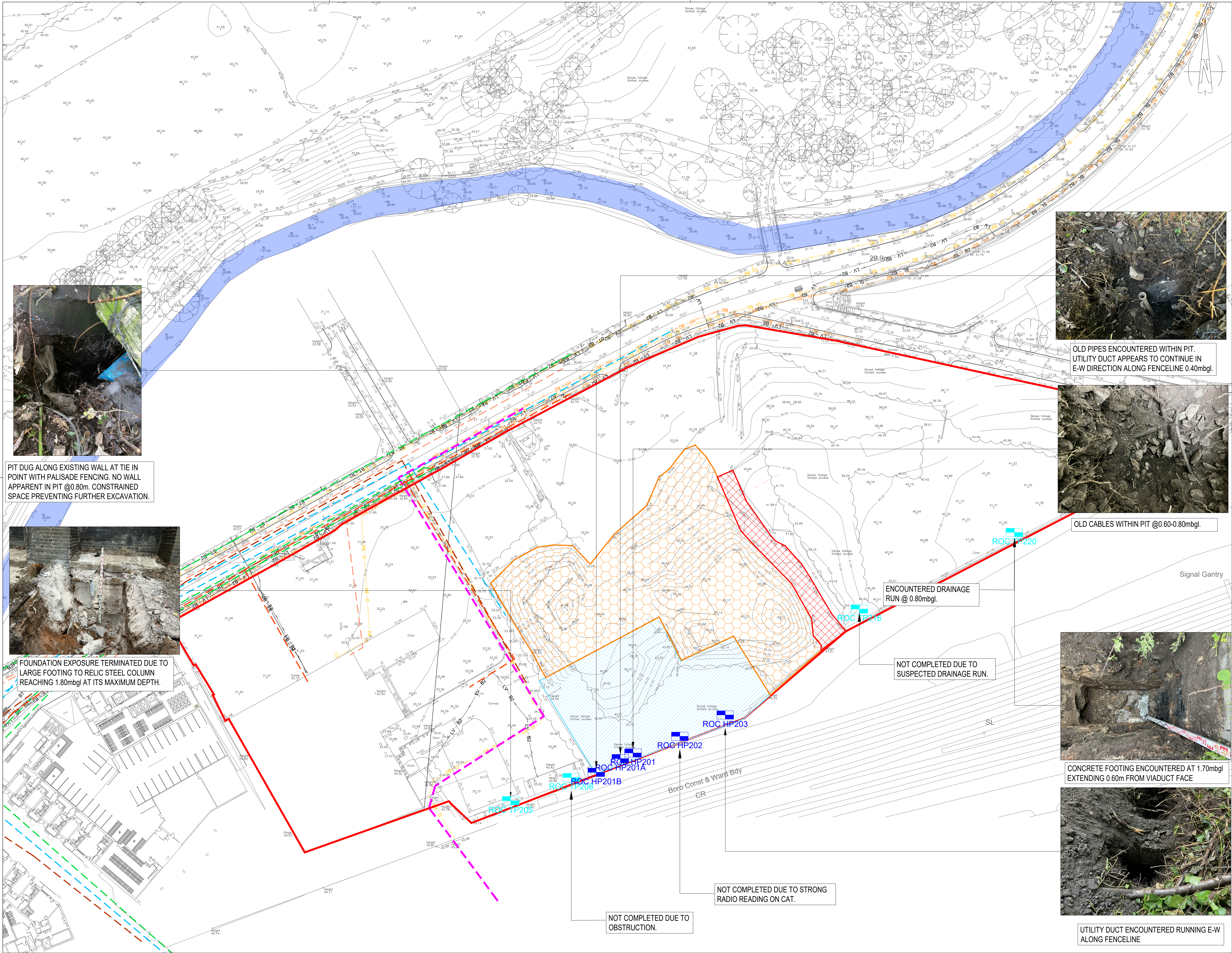
A small area of Plot NT04 appears to have been infilled with domestic waste which was encountered in TP214. This material was not encountered at any neighbouring exploratory holes suggesting the extent of this landfilling to be limited to the immediate vicinity of TP214. Fly tipping was also noted to be present across Plot NT04 with discarded plastic, bottles and kerosene containers with some residual product still contained within them. This, along with the above areas of visual and olfactory evidence of contamination, have been subject to laboratory testing.

Environmental testing is currently pending, and a full assessment will be presented in the Phase 2 Site Investigation Report. In particular due to access limitations, water sampling has not yet been undertaken in the location of RBH203 where potential risks of solvent contamination have been identified. It should be noted that asbestos contamination was noted to be present on Plot NT04 prior to the start of the site investigation works although the supplied testing does not quantify the amount of asbestos present in each sample. RoC Consulting also encountered asbestos during site investigation works on Plots NT02 and NT04 with five positive ID's reported. Asbestos was reported to generally comprise loose fibres, cement and loose insulation comprised of Chrysotile and Amosite and presents a potential waste and human health risk which will be assessed fully in the Phase 2 Report.



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APPENDIX A – DRAFT HOLE LOCATION PLAN, NETWORK RAIL MOUND INVESTIGATION DETAIL



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NOTES

- PROPOSED GROUND INVESTIGATIONS**
- ROC HP201 ROC PROPOSED HAND PIT (NETWORK RAIL MOUND AND VIADUCT WALL INVESTIGATION)
 - ROC TP201 ROC PROPOSED TRIAL PIT (GROUND CONTAMINATION AND EXISTING FOUNDATION EXPOSURE)
- SITE FEATURES**
- APPROX SITE BOUNDARY
 - RIVER IRK
 - NETWORK RAIL LAND OWNERSHIP (ASSUMED)
 - RYAN TOPSOIL LTD MOUND
 - CUTAWAY UNSAFE TO ACCESS
 - APPROX LOCATION OF BT ASSETS
 - APPROX LOCATION OF UIU COMBINED SEWER
 - APPROX LOCATION OF ENW LV CABLES
 - APPROX LOCATION OF CADENT MP MAINS
 - APPROX LOCATION OF CADENT LP MAINS
 - APPROX LOCATION OF UIU WATER
- DRAWING NOTES**
- TO BE READ IN CONJUNCTION WITH ROC CONSULTING PHASE 1 DESKTOP STUDY REF: 4328-ROC-ZZ-XX-DR-ES-PH01/TS
 - EXPLORATORY HOLE LOCATIONS SHOWN AT APPROXIMATE EXTENTS
 - EXISTING SITE LEVEL INFORMATION TAKEN FROM PARAGON SURVEYS TOPOGRAPHICAL SURVEY REF PS-2158-TS-00
 - PROPOSED DEVELOPMENT LAYOUT TAKEN FROM INFORMATION PROVIDED BY CLIENT IN MAR 2022
 - EXISTING UTILITY LOCATIONS APPROXIMATED FROM SUPPLIED UTILITY PLANS AND PRECISION UTILITY MAPPING GPS SURVEY REF: PLUM-11843-LI-OR-0001 REV02 (SHEETS 7 & 10)
 - ROC CONSULTING ACCEPTS NOT RESPONSIBILITY FOR ANY DAMAGES OR LOSS ARISING AS A RESULT OF THE USE OF THIS DRAWING



OLD PIPES ENCOUNTERED WITHIN PIT. UTILITY DUCT APPEARS TO CONTINUE IN E-W DIRECTION ALONG FENCELINE 0.40mbgl.



OLD CABLES WITHIN PIT @ 0.60-0.80mbgl.



CONCRETE FOOTING ENCOUNTERED AT 1.70mbgl EXTENDING 0.60m FROM VIADUCT FACE

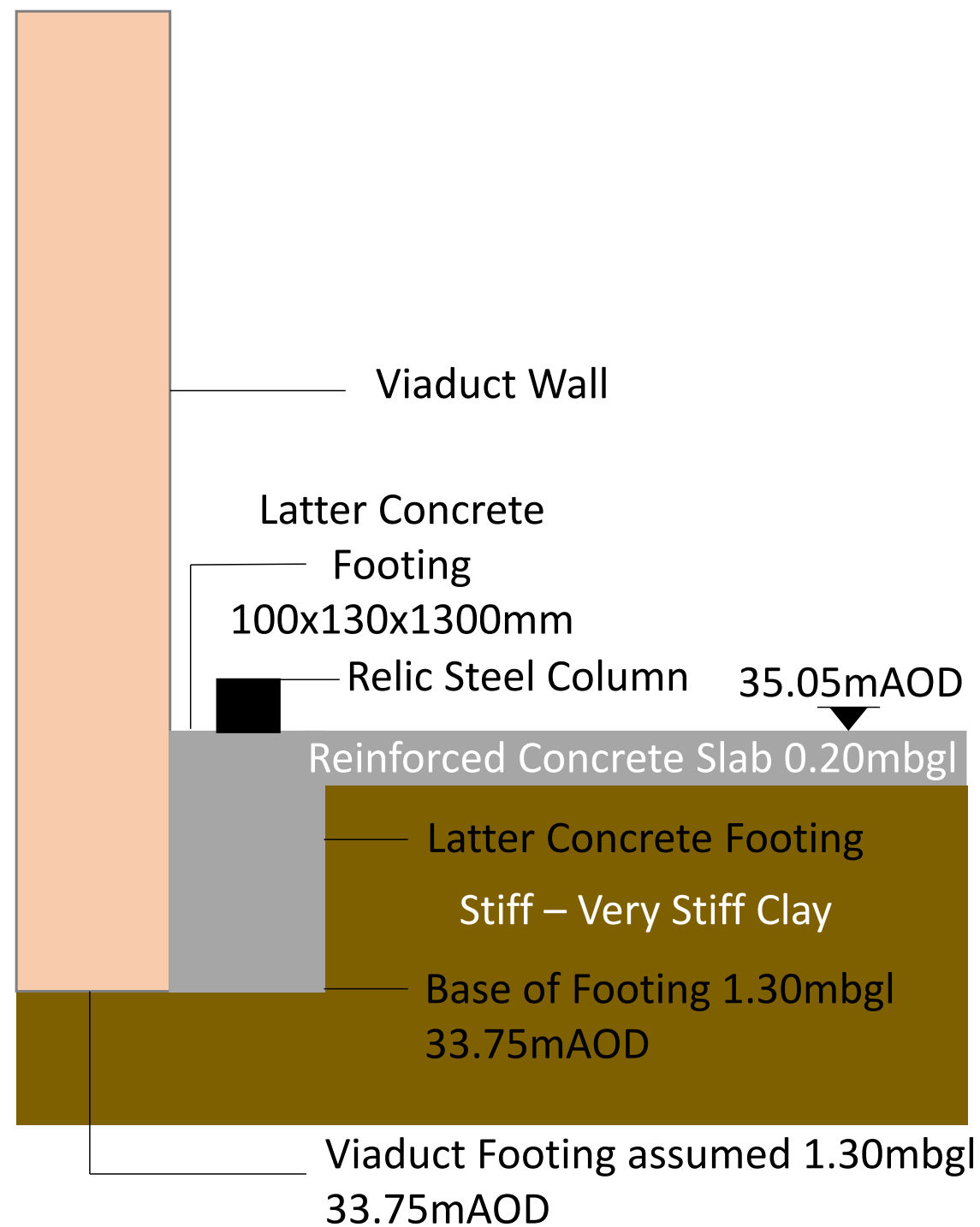


UTILITY DUCT ENCOUNTERED RUNNING E-W ALONG FENCELINE

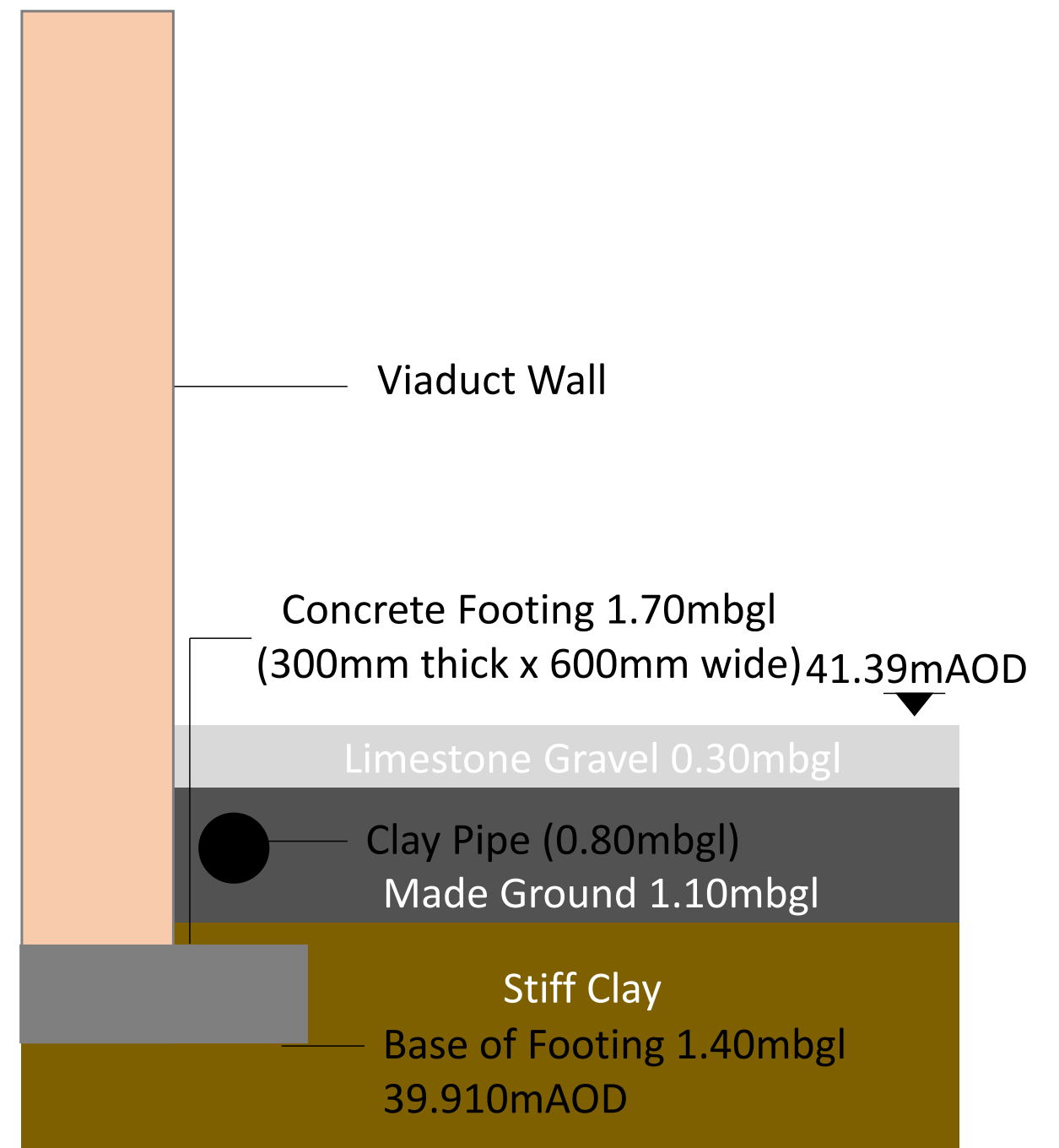
INFORMATION

RIBA STAGE			
ROC CONSULTING			
Commercial Wharf 6 Commercial Street Manchester M15 4PZ T 0161 214 5390 W rocconsulting.com			
DRAWN RM	DATE APR 2022	SCALES 1:500	
CHECKED LR	DATE APR 2022	THE ABOVE SCALES APPLY WHEN PLOTTED AT A1 SIZE - DO NOT SCALE	
APPRVD. LR	DATE APR 2022	EMAIL FOR DRAWINGS info@rocconsulting.com	

CLIENT	
FAR EAST CONSORTIUM INTERNATIONAL LTD	
PROJECT TITLE	
PLOTS NT02, NT03 & NT04 NORTHERN GATEWAY	
DRAWING TITLE	
EXPLORATORY HOLE LOCATION PLAN (NETWORK RAIL)	
DRAWING No. 4328-ROC-ZZ-XX-DR-ES-ES104	REV. 05
4328 © R&Cp Ltd.	



TP208 Foundation Exposure



TP220 Foundation Exposure

	JOB NO	4328	SKETCH NO	4328-ROC-ZZ-XX-SK-ES-ESK110	DRAWN BY : RM 02/09/2022
	PROJECT TITLE	Plots NT02-NT04	SKETCH TITLE	Viaduct Foundation Exposure Sections	



COMPLEX CHALLENGES ...
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APPENDIX B – DRAFT ROTARY BOREHOLE LOGS

Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 11/07/2022 - 12/07/2022		
Location: Manchester			Contractor: DMW Drilling Ltd			Co-ords: E384597.08 N399455.18		
Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH201		Hole Type RO+RC		Level 31.40m AoD		Logged By RM		Page Number Sheet 1 of 6

Well	Water	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
							0.15	31.25		Dark brown wood chippings (MADE GROUND) Grey Concrete (MADE GROUND)	
							0.50	30.90		Dark greyish brown clayey gravelly medium to coarse ashy SAND. Gravel is fine to coarse subangular to angular of brick and sandstone (MADE GROUND)	
							0.90	30.50		Soft light brown slightly silty sandy CLAY (DEVENSIAN TILL)	1
							2.00	29.40		Reddish brown SAND recovered from open hole drilling (SUSPECTED CHESTER FORMATION)	2
											3
											4
											5

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
11.80 25.10	140 85	13.20	140					0.00	25.10								

Remarks 1. Location CAT scanned before breaking ground 2. Groundwater was observed at 4.83mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 21.00 and 25.00mbgl.																	
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Rotary Core Log

Project Name: Plots NT02-NT04				Client: FEC				Date: 11/07/2022 - 12/07/2022			
Location: Manchester				Contractor: DMW Drilling Ltd				Co-ords: E384597.08 N399455.18			
Project No. : 4328				Crew Name: D.G, L.L				Drilling Equipment: Massenza MI3			
Borehole Number RBH201		Hole Type RO+RC		Level 31.40m AoD		Logged By RM		Scale 1:25		Page Number Sheet 2 of 6	

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
											Reddish brown SAND recovered from open hole drilling (SUSPECTED CHESTER FORMATION)	6
												7
												8
												9
												10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
11.80 25.10	140 85	13.20	140					0.00	25.10								

Remarks 1. Location CAT scanned before breaking ground 2. Groundwater was observed at 4.83mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 21.00 and 25.00mbgl.																	
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Rotary Core Log

Project Name: Plots NT02-NT04				Client: FEC				Date: 11/07/2022 - 12/07/2022			
Location: Manchester				Contractor: DMW Drilling Ltd				Co-ords: E384597.08 N399455.18			
Project No. : 4328				Crew Name: D.G, L.L				Drilling Equipment: Massenza MI3			
Borehole Number RBH201		Hole Type RO+RC		Level 31.40m AoD		Logged By RM		Scale 1:25		Page Number Sheet 3 of 6	

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
											Reddish brown SAND recovered from open hole drilling (SUSPECTED CHESTER FORMATION)	11
		11.80 - 13.20		102	102	102	85mm	11.80	19.60		Reddish brown mudstone recovered as CLAY (MANCHESTER MARLS FORMATION)	12
		13.20 - 14.60		101	87	76	85mm	13.23	18.17		Extremely weak reddish brown MUDSTONE joints horizontal close to medium spaced completely weathered to clay in places (MANCHESTER MARLS FORMATION)	13
								13.59	17.81	xxxxxxx	Extremely weak grey SILTSTONE joints horizontal closely spaced (MANCHESTER MARLS FORMATION)	14
								13.77	17.63	xxxxxxx	Extremely weak reddish brown MUDSTONE completely weathered to clay in places (MANCHESTER MARLS FORMATION)	14
								14.17	17.23	xxxxxxx	Very weak grey SILTSTONE joints horizontal closely spaced (MANCHESTER MARLS FORMATION)	15
								14.22	17.18	xxxxxxx	Very weak reddish brown MUDSTONE joints horizontal closely spaced (MANCHESTER MARLS FORMATION)	15
											...at 14.42 to 14.62mbgl non intact	15

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
11.80	140	13.20	140					0.00	25.10								
25.10	85																

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 4.83mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 21.00 and 25.00mbgl.



Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 11/07/2022 - 12/07/2022		
Location: Manchester			Contractor: DMW Drilling Ltd			Co-ords: E384597.08 N399455.18		
Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH201		Hole Type RO+RC		Level 31.40m AoD		Logged By RM		Page Number Sheet 4 of 6

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
W1		14.60 - 16.10		95	78	56	85mm				Very weak reddish brown MUDSTONE joints horizontal closely spaced (MANCHESTER MARLS FORMATION) ...at 15.18 to 15.30mbgl assumed zone of core loss ...at 15.30 to 15.35mbgl gravelly clay infill	16
		16.10 - 17.60		100	95	77					...at 16.02 to 16.10mbgl non intact ...at 16.02 to 16.20mbgl band of weak grey siltstone ...at 16.60 to 16.65mbgl gravelly clay infill	
		17.60 - 19.10		69	44	34					...at 17.64 to 17.69mbgl non intact ...at 17.74 to 17.88mbgl becoming destructured Weak grey SILTSTONE (MANCHESTER MARLS FORMATION)	
		19.10 - 20.60		98	98	69					Weak reddish brown MUDSTONE joints horizontal closely spaced (MANCHESTER MARLS FORMATION) ...at 18.29 to 18.48mbgl destructured ...at 18.74 to 19.10mbgl assumed zone of core loss ...at 19.40 to 19.45mbgl becoming destructured	
		19.85 19.90		11.55 11.50	Weak interbedded MUDSTONE and							

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
11.80 25.10	140 85	13.20	140					0.00	25.10								

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 4.83mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 21.00 and 25.00mbgl.



Rotary Core Log

Project Name: Plots NT02-NT04		Client: FEC		Date: 11/07/2022 - 12/07/2022	
Location: Manchester		Contractor: DMW Drilling Ltd		Co-ords: E384597.08 N399455.18	
Project No. : 4328		Crew Name: D.G, L.L		Drilling Equipment: Massenza MI3	
Borehole Number RBH201	Hole Type RO+RC	Level 31.40m AoD	Logged By RM	Scale 1:25	Page Number Sheet 5 of 6

[illegible]

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
11.80 25.10	140 85	13.20	140					0.00	25.10								

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 4.83mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 21.00 and 25.00mbgl.



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Location: Manchester		Contractor: DMW Drilling Ltd		Co-ords: E384597.08 N399455.18	
Project No. : 4328		Crew Name: D.G, L.L		Drilling Equipment: Massenza MI3	
Borehole Number RBH201	Hole Type RO+RC	Level 31.40m AoD	Logged By RM	Scale 1:25	Page Number Sheet 6 of 6

[illegible]

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
11.80 25.10	140 85	13.20	140					0.00	25.10								

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 4.83mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 21.00 and 25.00mbgl.



Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 13/07/2022		
Location: Manchester			Contractor: DMW Drilling Ltd			Co-ords: E384638.05 N399446.26		
Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH202		Hole Type RO+RC		Level 32.76m AoD		Logged By RM		Page Number Sheet 1 of 5

Well	Water	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
							0.10	32.66		Asphalt (MADE GROUND)	
							1.35	31.41		Black gravelly SAND. Gravel is fine to coarse sub angular to angular of brick, slate and slag. Occassional fragments of wood, metal, plastic and glass (MADE GROUND)	1
							1.65	31.11		Soft dark brown sandy slightly gravelly CLAY. Gravel is fine to medium sub angular to angular of brick (MADE GROUND)	
							2.00	30.76		Stiff light brown mottled orangish brown and white slightly sandy slightly gravelly CLAY. Gravel is fine rounded of sandstone and mudstone (DEVENSIAN TILL)	2
										Reddish brown fine to medium SAND (WEATHERED CHESTER FORMATION)	
											3
											4
											5

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
7.00	140	12.00	140					0.00	25.00								
9.40	85																
9.40	140																
25.00	85																

Remarks 1. Location CAT scanned before breaking ground 2. Groundwater was observed at 6.30mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 21.00 and 25.00mbgl.																	
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Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 13/07/2022		
Location: Manchester			Contractor: DMW Drilling Ltd			Co-ords: E384638.05 N399446.26		
Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH202		Hole Type RO+RC		Level 32.76m AoD		Logged By RM		Page Number Sheet 2 of 5

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
											Reddish brown fine to medium SAND (WEATHERED CHESTER FORMATION)	6
												7
												8
												9
							85mm	9.90	22.86		Mudstone recovered as stiff reddish brown	10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
7.00	140	12.00	140					0.00	25.00								
9.40	85																
9.40	140																
25.00	85																

Remarks 1. Location CAT scanned before breaking ground 2. Groundwater was observed at 6.30mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 21.00 and 25.00mbgl.																	
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Rotary Core Log

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Project No. : 4328				Crew Name: D.G, L.L				Drilling Equipment: Massenza MI3			
Borehole Number RBH202		Hole Type RO+RC		Level 32.76m AoD		Logged By RM		Scale 1:25		Page Number Sheet 3 of 5	

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description									
				TCR	SCR	RQD														
		9.90 - 11.50		102	26	20		11.14	21.62		Mudstone recovered as stiff reddish brown slightly sandy CLAY (MANCHESTER MARL FORMATION)	11								
		11.50 - 13.00		99	36	32		85mm	11.61	21.15		Extremely weak reddish brown MUDSTONE joints horizontal closely spaced (MANCHESTER MARLS FORMATION)	12							
									12.54	20.22		Mudstone recovered as very stiff reddish brown CLAY (MANCHESTER MARLS FORMATION)		13						
									12.72	20.04		Very weak grey and yellow SILTSTONE with occasional reddish brown staining. Bedding horizontal thickly laminated (MANCHESTER MARLS FORMATION)		13						
									13.00 - 14.50	103	85	71		85mm	13.01	19.75		Weak reddish brown MUDSTONE joints horizontal closely spaced (MANCHESTER MARLS FORMATION)	14	
															13.09	19.67		Weak reddish brown MUDSTONE with occasional grey spotting. Bedding horizontal joints horizontal closely spaced (MANCHESTER MARLS FORMATION)		14
		13.16		19.60		Grey fine to medium angular siltstone GRAVEL (MANCHESTER MARLS FORMATION)		14												
		14.45		18.31		Weak reddish brown MUDSTONE with occasional grey patches joints horizontal close to medium spaced (MANCHESTER MARLS FORMATION)		15												
									14.58	18.18		Medium strong grey and yellow thickly laminated SILTSTONE with reddish brown patches (MANCHESTER MARLS FORMATION)	15							
		14.74		18.02		Strong grey and yellow SILTSTONE (MANCHESTER MARLS FORMATION)		15												
		14.96		17.80		Strong grey and yellow SILTSTONE (MANCHESTER MARLS FORMATION)		15												
14.99	17.77		Strong grey and yellow SILTSTONE (MANCHESTER MARLS FORMATION)	15																

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
7.00	140	12.00	140					0.00	25.00								
9.40	85																
9.40	140																
25.00	85																

Remarks 1. Location CAT scanned before breaking ground 2. Groundwater was observed at 6.30mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 21.00 and 25.00mbgl.																	
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Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 13/07/2022		
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Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH202		Hole Type RO+RC		Level 32.76m AoD		Logged By RM		Page Number Sheet 4 of 5

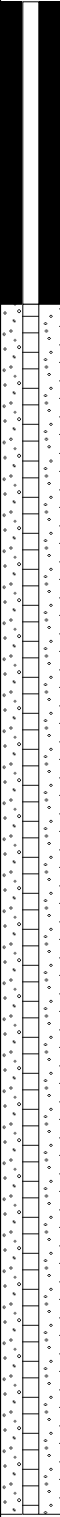
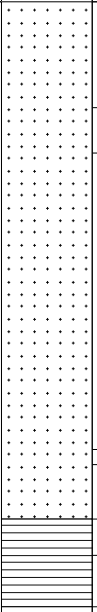
Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
		14.50 - 16.00		96	85	57		15.71	17.05		Weak reddish brown MUDSTONE joints horizontal closely spaced (MANCHESTER MARLS FORMATION)	
											Strong light brown and yellow SILSTONE joints horizontal closely spaced (MANCHESTER MARLS FORMATION)	
											Very weak reddish brown MUDSTONE joints horizontal closely spaced (MANCHESTER MARLS FORMATION)	
							85mm	16.02	16.74		Reddish brown fine to coarse sub angular GRAVEL of mudstone (MANCHESTER MARLS FORMATION)	16
		16.00 - 17.50		93	70	10					Very weak reddish brown MUDSTONE joints horizontal very close to closely spaced (MANCHESTER MARLS FORMATION)	
											...at 16.26 to 16.29mbgl band of weak grey siltstone	
							85mm	17.28	15.48		Weak light grey SILTSTONE (MANCHESTER MARLS)	
								17.28	15.48		Reddish brown fine to coarse sub angular to angular mudstone GRAVEL (MANCHESTER MARLS FORMATION)	
								17.50	15.26		...at 17.39 to 17.50mbgl assumed zone of core loss	
											Weak light grey fine to medium grained SANDSTONE joints horizontal closely spaced (MANCHESTER MARLS FORMATION)	18
		17.50 - 19.00		98	58	43		17.92	14.84		...at 17.60mbgl reddish brown stained crack	
								17.98	14.78		Very weak reddish brown MUDSTONE (MANCHESTER MARLS FORMATION)	
								18.13	14.63		Weak grey and yellow thickly laminated SILTSTONE (MANCHESTER MARLS FORMATION)	
											Weak reddish brown MUDSTONE joints horizontal very closely to closely spaced (MANCHESTER MARLS FORMATION)	
											...at 18.69 to 19.00mbgl assumed zone of core loss	19
											...at 19.10 to 19.13mbgl 60 degree fracture	
		19.00 - 20.50		91	81	56		19.45	13.31		Weak light grey SILTSTONE joints horizontal closely spaced (MANCHESTER MARLS FORMATION)	
								19.59	13.17		Strong reddish brown fine grained SANDSTONE joints horizontal close to medium spaced (MANCHESTER MARLS)	20

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
7.00	140	12.00	140					0.00	25.00								
9.40	85																
9.40	140																
25.00	85																

Remarks 1. Location CAT scanned before breaking ground 2. Groundwater was observed at 6.30mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 21.00 and 25.00mbgl.																	
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Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 13/07/2022		
Location: Manchester			Contractor: DMW Drilling Ltd			Co-ords: E384638.05 N399446.26		
Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH202		Hole Type RO+RC		Level 32.76m AoD		Logged By RM		Page Number Sheet 5 of 5

Well	Water	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
		20.50 - 22.00		89	80	75	85mm			Strong reddish brown fine grained SANDSTONE joints horizontal close to medium spaced (MANCHESTER MARLS FORMATION)	21
										...at 20.35 to 20.50mbgl assumed zone of core loss	
										...at 21.48 to 21.53mbgl clay infill	22
										Weak reddish brown MUDSTONE with some inter bedded grey SILTSTONE joints are horizontal closely spaced (MANCHESTER MARLS)	
							21.71	11.05		...at 21.83 to 22.00mbgl assumed zone of core loss	23
							22.00	10.76			
											24
											25
End of Borehole at 25.000m											

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
7.00	140	12.00	140					0.00	25.00								
9.40	85																
9.40	140																
25.00	85																

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 6.30mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 21.00 and 25.00mbgl.



Rotary Core Log

Project Name: Plots NT02-NT04				Client: FEC				Date: 25/07/2022 - 27/07/2022			
Location: Manchester				Contractor: DMW Drilling Ltd				Co-ords: E384619.36 N399403.83			
Project No. : 4328				Crew Name: D.G, L.L				Drilling Equipment: Massenza MI3			
Borehole Number RBH203		Hole Type RO+RC		Level 33.59m AoD		Logged By RM		Scale 1:25		Page Number Sheet 1 of 4	

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
								0.30	33.29		Grey reinforced CONCRETE (MADE GROUND)	
								1.20	32.39		Black gravelly SAND. Gravel is fine to coarse sub angular to angular of brick, clinker and slag. Frequent whole and half brick cobbles (MADE GROUND)	1
											Reddish brown fine SAND. Very strong solvent odour (CHESTER FORMATION)	2
												3
												4
												5

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
5.00	140	4.50	150					0.00	19.50								
6.50	85	16.00	140														
8.00	140																
9.50	85																
10.50	140																

Remarks 1. Location CAT scanned before breaking ground 2. Groundwater was observed at 6.88mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 10.00 and 15.00mbgl.																	
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Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 25/07/2022 - 27/07/2022		
Location: Manchester			Contractor: DMW Drilling Ltd			Co-ords: E384619.36 N399403.83		
Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH203		Hole Type RO+RC		Level 33.59m AoD		Logged By RM		Page Number Sheet 2 of 4

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
		5.00 - 6.50		31	9	0					Reddish brown fine SAND. Very strong solvent odour (CHESTER FORMATION)	
											...at 5.47 to 6.50mbgl assumed zone of core loss	6
												7
							85mm	8.00	25.59		Very weak reddish brown fine grained SANDSTONE interbedded with bands of fine sand joints are horizontal closely spaced (CHESTER FORMATION)	8
		8.00 - 9.50		90	34	22						9
											...at 9.37 to 9.50mbgl assumed zone of core loss	10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
5.00	140	4.50	150					0.00	19.50								
6.50	85	16.00	140														
8.00	140																
9.50	85																
10.50	140																

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 6.88mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 10.00 and 15.00mbgl.



Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 25/07/2022 - 27/07/2022		
Location: Manchester			Contractor: DMW Drilling Ltd			Co-ords: E384619.36 N399403.83		
Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH203		Hole Type RO+RC		Level 33.59m AoD		Logged By RM		Page Number Sheet 3 of 4

Well	Water	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
										Very weak reddish brown fine grained SANDSTONE interbedded with bands of fine sand joints are horizontal closely spaced (CHESTER FORMATION)	
							85mm			...at 10.50 to 11.30mbgl recovered as sand	
		10.50 - 12.00		53	0	0				...at 11.30 to 12.00mbgl assumed zone of core loss	11
							85mm			...at 12.00 to 12.67mbgl recovered as sand	12
		12.00 - 13.50		45	0	0				...at 12.67 to 13.50mbgl assumed zone of core loss	13
							85mm			...at 13.50 to 13.64mbgl recovered as sand	
										...at 13.70 to 13.77mbgl band of grey siltstone	
										...at 13.77 to 15.00mbgl assumed zone of core loss	14
		13.50 - 15.00		18	9	0					
							85mm				15

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
5.00	140	4.50	150					0.00	19.50								
6.50	85	16.00	140														
8.00	140																
9.50	85																
10.50	140																

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 6.88mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 10.00 and 15.00mbgl.



Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 25/07/2022 - 27/07/2022		
Location: Manchester			Contractor: DMW Drilling Ltd			Co-ords: E384619.36 N399403.83		
Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH203		Hole Type RO+RC		Level 33.59m AoD		Logged By RM		Page Number Sheet 4 of 4

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
		15.00 - 16.50		85	68	31	85mm	15.07	18.52		Very weak reddish brown fine grained SANDSTONE interbedded with bands of fine sand joints are horizontal closely spaced (CHESTER FORMATION)	16
											Very weak reddish brown MUDSTONE joints horizontal closely spaced (MANCHESTER MARLS FORMATION)	
											...at 15.14 to 15.23mbgl non intact	
											...at 15.45 to 15.57mbgl non intact	
											...at 15.84 to 15.89mbgl yellowish grey siltstone	
											...at 16.08 to 16.10mbgl sand infill	
											...at 16.27 to 16.50mbgl assumed zone of core loss	
		16.50 - 18.00		90	90	0						17
											...at 17.85 to 18.00mbgl assumed zone of core loss	18
								19.50	14.09			19
												20
											End of Borehole at 19.500m	

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
5.00	140	4.50	150					0.00	19.50								
6.50	85	16.00	140														
8.00	140																
9.50	85																
10.50	140																

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 6.88mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 10.00 and 15.00mbgl.



Rotary Core Log

Project Name: Plots NT02-NT04				Client: FEC				Date: 12/08/2022			
Location: Manchester				Contractor: DMW Drilling Ltd				Co-ords: E384721.68 N399517.64			
Project No. : 4328				Crew Name: D.G, L.L				Drilling Equipment: Massenza MI3			
Borehole Number RBH205		Hole Type RO+RC		Level 31.38m AoD		Logged By RM		Scale 1:25		Page Number Sheet 1 of 5	

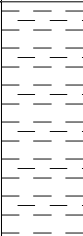
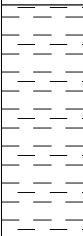
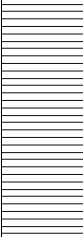
Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description						
				TCR	SCR	RQD											
								2.00	29.38		Brown sandy fine to coarse sub angular to angular GRAVEL of brick and concrete (MADE GROUND) `	1					
												Firm to stiff brown slightly gravelly CLAY. Gravel is fine sub rounded of mudstone and sandstone (DEVENSIAN TILL)	2				
													3				
													4				
													5				
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
6.00	140	3.00	150					0.00	25.00								
18.00	85	6.00	140														
25.00	140																

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 6.88mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 10.00 and 15.00mbgl.

Rotary Core Log

Project Name: Plots NT02-NT04				Client: FEC				Date: 12/08/2022			
Location: Manchester				Contractor: DMW Drilling Ltd				Co-ords: E384721.68 N399517.64			
Project No. : 4328				Crew Name: D.G, L.L				Drilling Equipment: Massenza MI3			
Borehole Number RBH205		Hole Type RO+RC		Level 31.38m AoD		Logged By RM		Scale 1:25		Page Number Sheet 2 of 5	

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description						
				TCR	SCR	RQD											
							85mm	5.80	25.58		Firm to stiff brown slightly gravelly CLAY. Gravel is fine sub rounded of mudstone and sandstone (DEVENSIAN TILL)	6					
											Stiff reddish brown mottled grey slightly silty CLAY (DEVENSIAN TILL)						
		7.50 - 9.00		75	0	0		7.50	23.88		Reddish brown mudstone recovered as soft slightly gravelly CLAY. Gravel is fine to coarse subangular of MUDSTONE (MANCHESTER MARLS FORMATION)	8					
		9.00 - 10.50		51	12	0		9.00	22.38		Very weak reddish brown MUDSTONE bedding horizontal closely spaced (MANCHESTER MARLS FORMATION) ...at 9.05 to 9.57mbgl clay infill ...at 9.76 to 10.50mbgl assumed zone of core loss	9					
											10						
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
6.00	140	3.00	150					0.00	25.00								
18.00	85	6.00	140														
25.00	140																

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 6.88mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 10.00 and 15.00mbgl.

Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 12/08/2022		
Location: Manchester			Contractor: DMW Drilling Ltd			Co-ords: E384721.68 N399517.64		
Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH205		Hole Type RO+RC		Level 31.38m AoD		Logged By RM		Page Number Sheet 3 of 5

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description						
				TCR	SCR	RQD											
							85mm	10.50	20.88		Very weak reddish brown MUDSTONE bedding horizontal closely spaced (MANCHESTER MARLS FORMATION)						
		10.50 - 12.00		53	19	7	85mm	Very weak reddish brown MUDSTONE joints horizontal closely spaced (MANCHESTER MARLS) ...at 10.50 to 10.64mbgl non intact ...at 10.69 to 10.72mbgl non intact ...at 10.79 to 11.12mbgl non intact	11								
		12.00 - 13.50		91	0	0	85mm	...at 11.30 to 12.00mbgl assumed zone of core loss									
		13.50 - 15.00		89	49	37	85mm	...at 12.00 to 13.37mbgl destructured	12								
									...at 13.37 to 13.50mbgl assumed zone of core loss ...at 13.50 to 13.99mbgl destructured								
								...at 14.11 to 14.37mbgl clay infill									
								...at 14.54 to 14.70mbgl non intact									
								...at 14.84 to 15.00mbgl assumed zone of core	14								
							85mm					15					
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
6.00	140	3.00	150					0.00	25.00								
18.00	85	6.00	140														
25.00	140																

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 6.88mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 10.00 and 15.00mbgl.



Rotary Core Log

Project Name: Plots NT02-NT04				Client: FEC				Date: 12/08/2022			
Location: Manchester				Contractor: DMW Drilling Ltd				Co-ords: E384721.68 N399517.64			
Project No. : 4328				Crew Name: D.G, L.L				Drilling Equipment: Massenza MI3			
Borehole Number RBH205		Hole Type RO+RC		Level 31.38m AoD		Logged By RM		Scale 1:25		Page Number Sheet 4 of 5	

Well	Water	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
		15.00 - 16.50		87	47	34	15.92	15.46	xxxxxxx	Very weak reddish brown MUDSTONE joints horizontal closely spaced (MANCHESTER MARLS) ...at 14.84 to 15.00mbgl assumed zone of core loss	16
							16.12	15.26	xxxxxxx	Weak grey fine to medium grained SANDSTONE (MANCHESTER MARLS)	
		16.50 - 18.00		85	39	31	18.00	13.38		Weak reddish brown MUDSTONE completely weathered to clay in place joint are horizontal closely spaced (MANCHESTER MARL FORMATION) ...at 17.02 to 17.70mbgl recovered as clay	17
											18
											19
											20

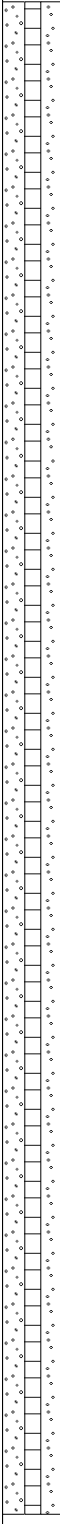
Remarks																
1. Location CAT scanned before breaking ground 2. Groundwater was observed at 6.88mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 10.00 and 15.00mbgl.																

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 6.88mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 10.00 and 15.00mbgl.

Rotary Core Log

Project Name: Plots NT02-NT04				Client: FEC				Date: 12/08/2022			
Location: Manchester				Contractor: DMW Drilling Ltd				Co-ords: E384721.68 N399517.64			
Project No. : 4328				Crew Name: D.G, L.L				Drilling Equipment: Massenza MI3			
Borehole Number RBH205		Hole Type RO+RC		Level 31.38m AoD		Logged By RM		Scale 1:25		Page Number Sheet 5 of 5	

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
												

Rotary Core Log

Project Name: Plots NT02-NT04				Client: FEC				Date: 14/07/2022			
Location: Manchester				Contractor: DMW Drilling Ltd				Co-ords: E384701.70 N399491.17			
Project No. : 4328				Crew Name: D.G, L.L				Drilling Equipment: Massenza MI3			
Borehole Number RBH206		Hole Type RO+RC		Level 32.00m AoD		Logged By RM		Scale 1:25		Page Number Sheet 1 of 5	

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description						
				TCR	SCR	RQD											
								2.00	30.00		Brown sandy GRAVEL. Gravel is fine to coarse sub angular to angular of brick and concrete (MADE GROUND)	1					
													Firm to stiff brown slightly gravelly CLAY. Gravel is fine sub rounded of mudstone and sandstone (DEVENSIAN TILL)	2			
														3			
														4			
														5			
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
5.80	140	7.20	140					0.00	25.00								
19.20	85																
25.00	140																

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 5.74mbgl. 3. Upon complete borehole was installed was a 50mm diameter standpipe with a response zone between 21.00 and 25.00mbgl.

Rotary Core Log

Project Name: Plots NT02-NT04				Client: FEC				Date: 14/07/2022			
Location: Manchester				Contractor: DMW Drilling Ltd				Co-ords: E384701.70 N399491.17			
Project No. : 4328				Crew Name: D.G, L.L				Drilling Equipment: Massenza MI3			
Borehole Number RBH206		Hole Type RO+RC		Level 32.00m AoD		Logged By RM		Scale 1:25		Page Number Sheet 2 of 5	

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description						
				TCR	SCR	RQD											
		5.80 - 7.20		90	0	0	85mm	5.80	26.20		Firm to stiff brown slightly gravelly CLAY. Gravel is fine sub rounded of mudstone and sandstone (DEVENSIAN TILL)	6					
							85mm				Stiff reddish brown mottled grey slightly silty CLAY (DEVENSIAN TILL)						
		85mm		...at 6.80mbgl becoming very stiff	7												
				...at 6.95 to 7.20mbgl assumed zone of core loss													
				7.20 - 8.70	93	43		21	85mm	7.65	24.35	Very weak yellowish brown fine grained SANDSTONE joints horizontal closely spaced (CHESTER FORMATION)	8				
												...at 7.76 to 8.05mbgl fine to coarse sub angular to angular sandstone gravel					
				85mm	7.93	24.07		Weak reddish brown fine grained SANDSTONE (CHESTER FORMATION)									
								...at 7.93 to 8.05mbgl non intact									
								...at 8.18 to 8.30mbgl non intact									
							...at 8.50 to 8.64mbgl non intact										
...at 8.64 to 8.70mbgl assumed zone of core loss																	
8.70	23.30	Very weak reddish brown fine grained SANDSTONE recovered primarily as gravel with some small tabular sandstone discs (CHESTER FORMATION)	9														
		9.20		22.80	Soft reddish brown gravelly CLAY. Gravel is fine to medium sub angular to angular of mudstone lithorelicts (CHESTER FORMATION)												
9.41	22.59		Weak reddish brown fine to medium grained SANDSTONE with occasionally clayey sand infill joints horizontal closely to medium spaced (CHESTER FORMATION)														
		...at 9.76 to 10.20mbgl assume zone of core loss	10														
Hole Diameter			Casing Diameter		Chiselling			Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
5.80	140	7.20	140					0.00	25.00								
19.20	85																
25.00	140																

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 5.74mbgl. 3. Upon complete borehole was installed was a 50mm diameter standpipe with a response zone between 21.00 and 25.00mbgl.

Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 14/07/2022		
Location: Manchester			Contractor: DMW Drilling Ltd			Co-ords: E384701.70 N399491.17		
Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH206		Hole Type RO+RC		Level 32.00m AoD		Logged By RM		Page Number Sheet 3 of 5

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPL)	Depth (m)	Level (m)	Legend	Stratum Description						
				TCR	SCR	RQD											
							85mm	11.70	20.30		Weak reddish brown fine to medium grained SANDSTONE with occasionally clayey sand infill joints horizontal closely to medium spaced (CHESTER FORMATION) ...at 9.76 to 10.20mbgl assume zone of core loss ...at 10.38 to 10.55mbgl clayey sandy gravel fine to medium sub angular to angular of sandstone ...at 10.74-10.87mbgl clayey sandy gravel fine to coarse sub angular to angular of sandstone ...at 10.87 to 11.48mbgl occassional fine gravel inclusions and black speckling at joints	11					
		10.20 - 11.70		98	74	72							...at 11.48 to 11.70mbgl assumed zone of core loss				
										85mm	13.82 13.97	18.18 18.03	 	Sandstone recovered as reddish brown clayey sandy sub angular fine to coarse sandstone GRAVEL (CHESTER FORMATION) ...at 12.12 to 13.20mbgl assumed zone of core loss	12		
		11.70 - 13.20		42	0	0											
										85mm	14.70 14.86	17.30 17.14	 	Reddish brown fine to coarse sub angular mudstone GRAVEL (MANCHESTER MARLS FORMATION)	14		
13.20 - 14.70	67	43	38														
												15					
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
5.80 19.20 25.00	140 85 140	7.20	140					0.00	25.00								

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 5.74mbgl. 3. Upon complete borehole was installed was a 50mm diameter standpipe with a response zone between 21.00 and 25.00mbgl.



Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 14/07/2022		
Location: Manchester			Contractor: DMW Drilling Ltd			Co-ords: E384701.70 N399491.17		
Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH206		Hole Type RO+RC		Level 32.00m AoD		Logged By RM		Page Number Sheet 4 of 5

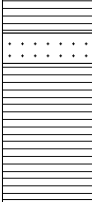
Well	Water	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
		14.70 - 16.20		100	81	54	85mm	16.20	15.80	Weak reddish brown MUDSTONE joints are horizontal closely spaced (MANCHESTER MARLS FORMATION) ...at 15.26mbgl becoming weak dark reddish brown mudstone	16
		16.20 - 17.70		94	45	43	85mm	16.86	15.14	Grey and reddish brown fine to coarse sub angular to subrounded siltstone and mudstone GRAVEL (MANCHESTER MARLS FORMATION)	17
		17.70 - 19.20		100	88	83	85mm	18.36	13.64	Weak reddish brown MUDSTONE joints are horizontally closely spaced (MANCHESTER MARLS FORMATION) ...at 17.20 to 17.70mbgl becoming very weak reddish brown mudstone ...at 17.70 to 18.04mbgl becoming weak reddish brown mudstone ...at 18.18 to 18.30mbgl fine to coarse sub angular to angular sandstone gravel	18
		19.20 - 20.70		84	62	37	85mm	19.09	12.91	Very strong grey fine to medium grained SANDSTONE. Joints are horizontal medium spaced with occasional black patches and reddish brown staining with up to 20mm penetration (MANCHESTER MARLS FORMATION)	19
							85mm	19.20	12.80	Grey sub fine to coarse sub angular to angular sandstone GRAVEL (MANCHESTER MARLS FORMATION)	20
							85mm	19.63	12.37	Very weak reddish brown MUDSTONE completely weathered to clay in places joints are horizontal closely spaced (MANCHESTER MARLS FORMATION)	20
							85mm	19.66	12.34	...at 19.42 to 19.54mbgl becoming reddish brown clayey fine to medium sub angular to angular gravel of mudstone	20
							85mm	19.76	12.24		20

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
5.80	140	7.20	140					0.00	25.00								
19.20	85																
25.00	140																

Remarks 1. Location CAT scanned before breaking ground 2. Groundwater was observed at 5.74mbgl. 3. Upon complete borehole was installed was a 50mm diameter standpipe with a response zone between 21.00 and 25.00mbgl.																	
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Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 14/07/2022		
Location: Manchester			Contractor: DMW Drilling Ltd			Co-ords: E384701.70 N399491.17		
Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH206		Hole Type RO+RC		Level 32.00m AoD		Logged By RM		Page Number Sheet 5 of 5

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description								
				TCR	SCR	RQD													
								20.15	11.85		Very weak grey SILTSTONE (MANCHESTER MARLS FORMATION)								
								20.25	11.75		Very soft reddish brown slightly gravelly CLAY. Gravel is fine to medium sub angular to angular of mudstone (MANCHESTER MARLS FORMATION)								
								20.70	11.30		Very weak reddish brown MUDSTONE inter-bedded with bands of weak grey SILTSTONE. Completely weathered to clay in places (MANCHESTER MARLS FORMATION)								
											Strong light grey fine to medium grained SANDSTONE (MANCHESTER MARLS FORMATION)								
																			Medium strong reddish brown MUDSTONE joints horizontal closely spaced (MANCHESTER MARLS FORMATION)

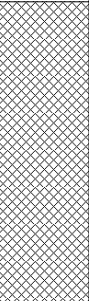
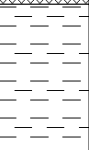
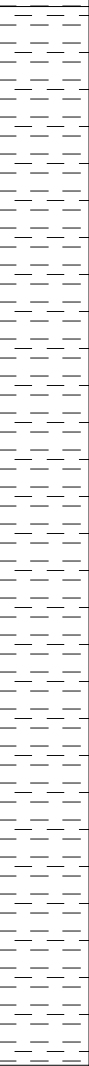
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
5.80	140	7.20	140					0.00	25.00								
19.20	85																
25.00	140																

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 5.74mbgl. 3. Upon complete borehole was installed was a 50mm diameter standpipe with a response zone between 21.00 and 25.00mbgl.

Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 10/08/2022 - 11/08/2022		
Location: Manchester			Contractor: DMW Drilling Ltd			Co-ords: E384797.90 N399510.73		
Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH207		Hole Type RO+RC		Level 36.17m AoD		Logged By RM		Page Number Sheet 1 of 5

Well	Water	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
							1.00	35.17		Brown gravelly SAND. Gravel is fine to coarse rounded to angular of brick, mudstone and sandstone (MADE GROUND)	1
							1.50	34.67		Stiff brown slightly gravelly CLAY. Gravel is fine to emdium sub rounded to rounded of sandstone and mudstone (DEVENSIAN TILL)	
										Very stiff reddish brown slightly gravelly CLAY. Gravel is fine to medium rounded of mudstone (DEVENSIAN TILL)	2
											3
											4
											5

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
6.00	140	1.50	150					0.00	25.00								
19.50	85	6.00	140														
25.00	140																

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 7.92mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 20.00 and 25.00mbgl.

Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 10/08/2022 - 11/08/2022		
Location: Manchester			Contractor: DMW Drilling Ltd			Co-ords: E384797.90 N399510.73		
Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH207		Hole Type RO+RC		Level 36.17m AoD		Logged By RM		Page Number Sheet 2 of 5

Well	Water	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
										Very stiff reddish brown slightly gravelly CLAY. Gravel is fine to medium rounded of mudstone (DEVENSIAN TILL)	
		6.00 - 7.50					6.00	30.17		Very weak reddish brown MUDSTONE (MANCHESTER MARLS FORMATION) ...at 6.00 to 6.31mbgl non intact ...at 6.31 to 6.40mbgl becoming soft clay ...at 6.40 to 6.50mbgl non intact	6
				60	31	13	6.80	29.37		...at 6.72 to 6.75mbgl grey siltstone	
							6.89	29.28		Strong yellowish brown fine grained SANDSTONE with black spotting (MANCHESTER MARLS FORMATION) Very weak reddish brown MUDSTONE joints horizontal very closely spaced (MANCHESTER MARLS FORMATION) ...at 6.94 to 7.50mbgl assumed zone of core loss	7
		7.50 - 9.00					7.63	28.54		Very weak reddish brown and grey SILTSTONE (MANCHESTER MARLS FORMATION)	
							7.72	28.45		Mudstone recovered as soft to firm reddish brown gravelly CLAY. Gravel is fine to medium sub angular of mudstone (MANCHESTER MARLS FORMATION) ...at 8.29 to 8.37mbgl tabular discs of mudstone	8
				87	25	11	8.50	27.67		Very weak reddish brown MUDSTONE joints are horizontal closely spaced (MANCHESTER MARLS FORMATION) Soft to firm reddish brown gravelly CLAY. Gravel is fine to medium sub angular of mudstone (MANCHESTER MARLS FORMATION) ...at 8.79 to 9.00mbgl assumed zone of core loss	9
							8.66	27.51		Grey and yellow fine to coarse sub angular to sub rounded siltstone and sandstone GRAVEL (MANCHESTER MARLS FORMATION)	
		9.00 - 10.50					9.00	27.17		Very weak reddish brown MUDSTONE completely weathered to clay in places joints are horizontal closely spaced (MANCHESTER MARLS FORMATION)	10
				77	36	20	9.44	26.73			
							9.73	26.44			

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
6.00	140	1.50	150					0.00	25.00								
19.50	85	6.00	140														
25.00	140																

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 7.92mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 20.00 and 25.00mbgl.

Rotary Core Log

Project Name: Plots NT02-NT04		Client: FEC		Date: 10/08/2022 - 11/08/2022	
Location: Manchester		Contractor: DMW Drilling Ltd		Co-ords: E384797.90 N399510.73	
Project No. : 4328		Crew Name: D.G, L.L		Drilling Equipment: Massenza MI3	
Borehole Number RBH207	Hole Type RO+RC	Level 36.17m AoD	Logged By RM	Scale 1:25	Page Number Sheet 3 of 5

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
				TCR	SCR	RQD																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
W1		10.50 - 12.00			91	59	47	85mm	10.50	25.67	xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx Very weak reddish brown MUDSTONE completely weathered to clay in places joints are horizontal closely spaced (MANCHESTER MARLS FORMATION) ...at 9.40 to 9.53mbgl gravelly clay gravel fine to medium subangular of mudstone	11																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
6.00	140	1.50	150					0.00	25.00								
19.50	85	6.00	140														
25.00	140																

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 7.92mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 20.00 and 25.00mbgl.



Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 10/08/2022 - 11/08/2022		
Location: Manchester			Contractor: DMW Drilling Ltd			Co-ords: E384797.90 N399510.73		
Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH207		Hole Type RO+RC		Level 36.17m AoD		Logged By RM		Page Number Sheet 4 of 5

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description						
				TCR	SCR	RQD											
		15.00 - 16.50		73	25	13	85mm	18.00	18.17		Very weak reddish brown MUDSTONE (MANCHESTER MARLS FORMATION) ...at 14.81 to 15.00mbgl assumed zone of core loss ...at 15.00 to 15.13mbgl gravel is fine to coarse sub angular to sub rounded of mudstone ...at 15.32 to 15.70mbgl soft to firm clay	16					
											...at 15.74 to 15.88mbgl soft to firm clay						
											...at 16.03 to 16.14mbgl fine to medium sub angular mudstone gravel ...at 16.14 to 16.50mbgl assumed zone of core loss						
											...at 16.71 to 16.91mbgl clayey fine to medium sub angular mudstone gravel						
											...at 16.97 to 17.29mbgl clayey fine to medium sub angular mudstone gravel						
		16.50 - 18.00		89	29	8					...at 17.45 to 17.81 mbgl clayey fine to medium sub angular mudstone gravel	17					
											...at 17.81 to 18.00mbgl assumed zone of core loss						
											Reddish brown MUDSTONE (MANCHESTER MARLS)		18				
														19			
															20		
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
6.00	140	1.50	150					0.00	25.00								
19.50	85	6.00	140														
25.00	140																

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 7.92mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 20.00 and 25.00mbgl.

Rotary Core Log

Project Name: Plots NT02-NT04		Client: FEC		Date: 10/08/2022 - 11/08/2022	
Location: Manchester		Contractor: DMW Drilling Ltd		Co-ords: E384797.90 N399510.73	
Project No. : 4328		Crew Name: D.G, L.L		Drilling Equipment: Massenza MI3	
Borehole Number RBH207	Hole Type RO+RC	Level 36.17m AoD	Logged By RM	Scale 1:25	Page Number Sheet 5 of 5

[illegible]

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
6.00	140	1.50	150					0.00	25.00								
19.50	85	6.00	140														
25.00	140																

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 7.92mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 20.00 and 25.00mbgl.



Rotary Core Log

Project Name: Plots NT02-NT04				Client: FEC				Date: 03/08/2022 - 05/08/2022			
Location: Manchester				Contractor: DMW Drilling Ltd				Co-ords: E384757.48 N399461.38			
Project No. : 4328				Crew Name: D.G, L.L				Drilling Equipment: Massenza MI3			
Borehole Number RBH208		Hole Type RO+RC		Level 43.00m AoD		Logged By RM		Scale 1:25		Page Number Sheet 1 of 5	

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
								0.20	42.80		Light brown slightly silty gravelly SAND. Gravel is fine to coarse angular of ceramic and brick (MADE GROUND)	
								1.40	41.60		Dark brown gravelly SAND. Gravel is fine to coarse sub angular to sub rounded of clinker and brick (MADE GROUND)	1
								1.80	41.20		Firm brown slightly gravelly CLAY gravel is fine to medium angular of brick and clinker (MADE GROUND)	
											Firm to stiff light brown mottled grey slightly gravelly CLAY. Gravel is fine rounded of sandstone and mudstone (DEVENSIAN TILL)	2
												3
												4
												5

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
12.00	140	4.50	150					0.00	24.00								
24.00	85	12.00	140														

Remarks 1. Location CAT scanned before breaking ground 2. Groundwater was observed at 13.70mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 19.00 and 24.00mbgl.																	
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Rotary Core Log

Project Name: Plots NT02-NT04				Client: FEC				Date: 03/08/2022 - 05/08/2022			
Location: Manchester				Contractor: DMW Drilling Ltd				Co-ords: E384757.48 N399461.38			
Project No. : 4328				Crew Name: D.G, L.L				Drilling Equipment: Massenza MI3			
Borehole Number RBH208		Hole Type RO+RC		Level 43.00m AoD		Logged By RM		Scale 1:25		Page Number Sheet 2 of 5	

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
											Firm to stiff light brown mottled grey slightly gravelly CLAY. Gravel is fine rounded of sandstone and mudstone (DEVENSIAN TILL)	6
												7
												8
												9
												10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
12.00	140	4.50	150					0.00	24.00								
24.00	85	12.00	140														

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 13.70mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 19.00 and 24.00mbgl.

Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 03/08/2022 - 05/08/2022		
Location: Manchester			Contractor: DMW Drilling Ltd			Co-ords: E384757.48 N399461.38		
Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH208		Hole Type RO+RC		Level 43.00m AoD		Logged By RM		Page Number Sheet 3 of 5

Well	Water	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
										Firm to stiff light brown mottled grey slightly gravelly CLAY. Gravel is fine rounded of sandstone and mudstone (DEVENSIAN TILL)	11
		12.00 - 13.50		79	68	57	12.00 12.09	31.00 30.91		Reddish brown fine to medium sub angular mudstone and sandstone GRAVEL (MANCHESTER MARLS FORMATION) Strong reddish brown fine grained SANDSTONE joints are horizontal medium spaced (MANCHESTER MARLS FORMATION) ...at 12.75 to 12.80mbgl coarse sub angular sandstone gravel	12
							13.00	30.00		Weak reddish brown MUDSTONE joints are horizontal closely spaced (MANCHESTER MARLS FORMATION) ...at 13.21 to 13.50mbgl assumed zone of core loss	13
		13.50 - 15.00		81	64	42	13.50 13.69 13.85 14.10	29.50 29.31 29.15 28.90		Reddish brown slightly gravelly clayey SAND. Gravel is fine to medium subrounded of SANDSTONE (MANCHESTER MARLS FORMATION) Weak reddish brown clayey SANDSTONE (MANCHESTER MARLS FORMATION) Weak grey SILTSTONE joints are horizontal closely spaced (MANCHESTER MARLS FORMATION) Very weak reddish brown MUDSTONE completely weathered to clay in places joints are horizontal closely spaced (MANCHESTER MARLS FORMATION) ...at 14.10 to 14.15mbgl clay infill ...at 14.72 to 15.00mbgl assumed zone of core loss	14
											15

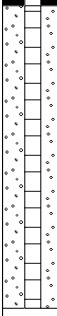
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
12.00	140	4.50	150					0.00	24.00								
24.00	85	12.00	140														

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 13.70mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 19.00 and 24.00mbgl.

Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 03/08/2022 - 05/08/2022		
Location: Manchester			Contractor: DMW Drilling Ltd			Co-ords: E384757.48 N399461.38		
Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH208		Hole Type RO+RC		Level 43.00m AoD		Logged By RM		Page Number Sheet 4 of 5

Well	Water	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
		15.00 - 16.50		93	50	44				Very weak reddish brown MUDSTONE completely weathered to clay in places joints are horizontal closely spaced (MANCHESTER MARLS FORMATION) ...at 15.00 to 15.16mbgl fine to medium sub angular to angular gravel ...at 15.25 to 15.48mbgl fine to medium subangular to angular mudstone gravel ...at 15.53 to 15.58mbgl soft clay ...at 15.70 to 15.80mbgl firm gravelly clay	16
										...at 16.07 to 16.17mbgl firm clay	
										...at 16.39 to 16.50mbgl assumed zone of core loss	
										...at 16.60 to 16.82mbgl fine to coarse sub angular gravel of mudstone	
		16.50 - 18.00		78	65	51		16.95	26.05	Strong reddish brown clayey fine grained SANDSTONE joints are horizontal closely spaced (MANCHESTER MARLS FORMATION)	17
								17.52	25.48	Weak reddish brown MUDSTONE joints are horizontal closely spaced (MANCHESTER MARLS FORMATION) ...at 17.58 to 17.61mbgl soft clay ...at 17.77 to 18.00mbgl assumed zone of core loss	
								18.00	25.00	Strong yellowish brown fine grained SANDSTONE (MANCHESTER MARLS FORMATION)	18
								18.21	24.79	Weak reddish brown MUDSTONE joints are horizontal closely spaced (MANCHESTER MARLS FORMATION)	
								18.44	24.56	...at 18.28 to 18.29 clay infilled fracture	
		18.00 - 19.50		86	81	60		18.66	24.34	...at 18.29 to 18.43mbgl becoming strong Strong grey SILTSTONE joints are horizontal closely spaced (MANCHESTER MARLS)	19
										Weak reddish brown MUDSTONE joints are horizontal closely spaced (MANCHESTER MARLS FORMATION) ...at 19.29 to 19.50mbgl assumed zone of core loss	
										...at 19.50 to 19.80mbgl non intact	
								19.89	23.11	Strong grey fine grained SANDSTONE /	20

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
12.00	140	4.50	150					0.00	24.00								
24.00	85	12.00	140														

Remarks 1. Location CAT scanned before breaking ground 2. Groundwater was observed at 13.70mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 19.00 and 24.00mbgl.																	
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Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 03/08/2022 - 05/08/2022		
Location: Manchester			Contractor: DMW Drilling Ltd			Co-ords: E384757.48 N399461.38		
Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH208		Hole Type RO+RC		Level 43.00m AoD		Logged By RM		Page Number Sheet 5 of 5

Well	Water	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
		19.50 - 21.00		92	60	15	20.13	22.87		Strong grey fine grained SANDSTONE / SILTSTONE (MANCHESTER MARLS FORMATION) ...at 20.10 to 20.13mbgl mudstone gravel infilled fracture Weak reddish brown MUDSTONE joints are horizontal closely spaced (MANCHESTER MARLS FORMATION) ...at 20.13 to 20.32mbgl becoming strong	
							21.00	22.00		...at 20.88 to 21.00mbgl assumed zone of core loss	21
		21.00 - 22.50		90	21	7	21.20	21.80		Grey fine to coarse sub angular sandstone GRAVEL (MANCHESTER MARLS FORMATION) Weak reddish brown MUDSTONE (MANCHESTER MARLS FORMATION) ...at 21.20 to 21.86mbgl destructure	
										...at 22.35 to 22.50mbgl assumed zone of core loss	22
		22.50 - 24.00		66	20	15				...at 22.50 to 22.82mbgl destructured	
										...at 23.49 to 24.00mbgl assumed zone of core loss	23
							24.00	19.00		End of Borehole at 24.000m	24
											25

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
12.00	140	4.50	150					0.00	24.00								
24.00	85	12.00	140														

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 13.70mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 19.00 and 24.00mbgl.



Rotary Core Log

Project Name: Plots NT02-NT04				Client: FEC				Date: 29/07/2022 - 02/08/2022			
Location: Manchester				Contractor: DMW Drilling Ltd				Co-ords: E384796.49 N399492.29			
Project No. : 4328				Crew Name: D.G, L.L				Drilling Equipment: Massenza MI3			
Borehole Number RBH209		Hole Type RO+RC		Level 40.46m AoD		Logged By RM		Scale 1:25		Page Number Sheet 1 of 5	

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
								0.40	40.06		Brown sandy fine to coarse sub angular to angular brick GRAVEL (MADE GROUND)	
								2.00	38.46		Grey sandy fine to coarse sub angular to angular brick and ceramic GRAVEL. Occasional whole and half brick cobbles and timber fragments (MADE GROUND) ...at 1.50 to 2.00mbgl becoming slightly clayey	1
								3.00	37.46		Greyish brown gravelly CLAY. Gravel is fine to coarse sub angular to angular of brick. Occasional glass fragments (MADE GROUND)	2
								4.00	36.46		Reddish brown slightly gravelly CLAY. Gravel is fine to medium sub rounded to rounded of mudstone (DEVENSIAN TILL)	3
								5.00	35.46		Reddish brown slightly gravelly clayey SAND. Gravel is fine to medium sub rounded to rounded of mudstone (DEVENSIAN TILL)	4
												5

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
12.00	140	4.50	150					0.00	24.00								
24.00	85	12.00	140														

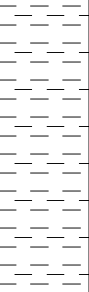
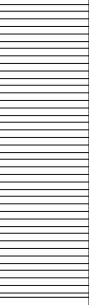
Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 12.32mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 12.00 and 17.00mbgl.



Rotary Core Log

Project Name: Plots NT02-NT04				Client: FEC				Date: 29/07/2022 - 02/08/2022			
Location: Manchester				Contractor: DMW Drilling Ltd				Co-ords: E384796.49 N399492.29			
Project No. : 4328				Crew Name: D.G, L.L				Drilling Equipment: Massenza MI3			
Borehole Number RBH209		Hole Type RO+RC		Level 40.46m AoD		Logged By RM		Scale 1:25		Page Number Sheet 2 of 5	

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
								6.00	34.46		Brown sandy gravelly CLAY. Gravel fine to coarse sub angular of mudstone (DEVENSIAN TILL)	6
								7.50	32.96		Reddish brown slightly gravelly clayey SAND. Gravel is fine to coarse sub angular of mudstone (DEVENSIAN TILL)	7
								9.00	31.46		Reddish brown slightly gravelly sandy CLAY. Gravel is fine to medium sub angular of mudstone (DEVENSIAN TILL)	8
											Extremely weak reddish brown MUDSTONE joints are horizontal closely spaced (MANCHESTER MARLS FORMATION)	9
												10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
12.00	140	4.50	150					0.00	24.00								
24.00	85	12.00	140														

Remarks 1. Location CAT scanned before breaking ground 2. Groundwater was observed at 12.32mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 12.00 and 17.00mbgl.																	
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Rotary Core Log

Project Name: Plots NT02-NT04		Client: FEC		Date: 29/07/2022 - 02/08/2022	
Location: Manchester		Contractor: DMW Drilling Ltd		Co-ords: E384796.49 N399492.29	
Project No. : 4328		Crew Name: D.G, L.L		Drilling Equipment: Massenza MI3	
Borehole Number RBH209	Hole Type RO+RC	Level 40.46m AoD	Logged By RM	Scale 1:25	Page Number Sheet 3 of 5

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description			
				TCR	SCR	RQD								
Well 1	Water	12.00 - 13.50		107	100	48	85mm	12.52	27.94		Extremely weak reddish brown MUDSTONE joints are horizontal closely spaced (MANCHESTER MARLS FORMATION)	11		
											...at 12.13 to 12.18mbgl firm to stiff reddish brown clay			
											...at 12.29 to 12.35mbgl firm reddish brown clay			
													Very weak reddish brown SILTSTONE (MANCHESTER MARLS FORMATION)	
														Soft to firm reddish brown slightly gravelly CLAY. Gravel is fine to medium sub angular of mudstone (MANCHESTER MARLS FORMATION)
											13.40		27.06	
													Strong yellowish brown fine grained SANDSTONE with grey, red and black staining joints are horizontal closely spaced (MANCHESTER MARLS FORMATION)	
														Strong yellowish brown and reddish brown SILTSTONE with black staining (MANCHESTER MARLS FORMATION)
														Weak reddish brown MUDSTONE joints are horizontal closely spaced (MANCHESTER MARLS FORMATION)
											13.50 - 15.00			87

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
12.00	140	4.50	150					0.00	24.00								
24.00	85	12.00	140														

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 12.32mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 12.00 and 17.00mbgl.



Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 29/07/2022 - 02/08/2022		
Location: Manchester			Contractor: DMW Drilling Ltd			Co-ords: E384796.49 N399492.29		
Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH209		Hole Type RO+RC		Level 40.46m AoD		Logged By RM		Page Number Sheet 4 of 5

Well	Water	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
		15.00 - 16.50		93	93	7				Mudstone recovered as very soft reddish brown slightly gravelly CLAY. Gravel is fine to medium sub rounded to sub angular of mudstone (MANCHESTER MARLS FORMATION) ...at 15.00 to 15.40mbgl becoming very gravelly ...at 15.40 to 15.70mbgl becoming slightly gravelly ...at 15.70 to 16.10mbgl becoming mottled grey silty sandy gravelly	16
							16.10	24.36		Strong grey SILTSTONE with some black staining joints are horizontal closely spaced (MANCHESTER MARLS FORMATION)	
							16.50	23.96		Mudstone recovered as reddish brown and gray fine to medium sub angular mudstone and siltstone GRAVEL (MANCHESTER MARLS FORMATION) ...at 16.80 to 18.00mbgl assumed zone of core loss	17
		16.50 - 18.00		20	0	0					
							18.00	22.46		Very soft reddish brown gravelly CLAY. Gravel is fine to coarse sub rounded to sub angular of mudstone (MANCHESTER MARLS FORMATION)	18
							18.58	21.88		Weak reddish brown MUDSTONE bedding horizontal joints are horizontal closely spaced (MANCHESTER MARLS FORMATION) ...at 18.70 to 18.95mbgl becoming stiff and very gravelly gravel is fine to medium subangular of mudstone	19
		18.00 - 19.50		97	97	46					
										...at 19.75 to 19.95mbgl very soft gravelly clay gravel is fine to medium sub angular of	20

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
12.00	140	4.50	150					0.00	24.00								
24.00	85	12.00	140														

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 12.32mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 12.00 and 17.00mbgl.



Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 29/07/2022 - 02/08/2022		
Location: Manchester			Contractor: DMW Drilling Ltd			Co-ords: E384796.49 N399492.29		
Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH209		Hole Type RO+RC		Level 40.46m AoD		Logged By RM		Page Number Sheet 5 of 5

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
		19.50 - 21.00		33	33	0	85mm	21.00	19.46		Weak reddish brown MUDSTONE bedding horizontal joints are horizontal closely spaced (MANCHESTER MARLS FORMATION) ...at 19.75 to 19.95mbgl very soft gravelly clay gravel is fine to medium sub angular of mudstone ...at 20.00 to 21.00mbgl assumed zone of core loss	21
		21.00 - 22.50		95	69	27					Weak reddish brown MUDSTONE completely weathered to clay in places joints are horizontal closely spaced (MANCHESTER MARLS FORMATION) ...at 21.00 to 21.10mbgl becoming clayey fine to coarse sub angular mudstone gravel ...at 21.30 to 21.60mbgl becoming clayey destructured ...at 21.60 to 21.76mbgl vertical fracture ...at 21.76 to 22.01mbgl 80 degree fracture ...at 22.10 to 22.21mbgl 80 degree fracture ...at 22.43 to 22.50mbgl assumed zone of core loss	
		22.50 - 24.00		97	0	0		24.00	16.46		Mudstone recovered as very soft reddish brown gravelly CLAY. Gravel is fine to medium sub angular to angular of mudstone (MANCHESTER MARLS FORMATION)	23
											End of Borehole at 24.000m	
												25

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
12.00	140	4.50	150					0.00	24.00								
24.00	85	12.00	140														

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 12.32mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 12.00 and 17.00mbgl.



Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 08/08/2022 - 09/08/2022		
Location: Manchester			Contractor: DMW Drilling Ltd			Co-ords: E384845.14 N399489.02		
Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH210		Hole Type RO+RC		Level 41.38m AoD		Logged By RM		Page Number Sheet 1 of 5

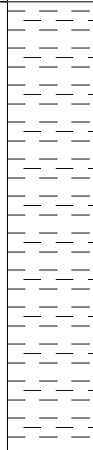
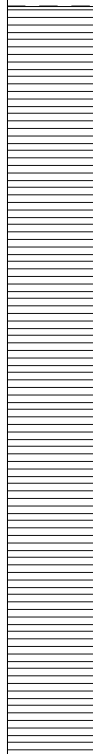
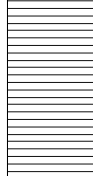
Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
								0.40 0.50 <				

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 12.52mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 20.00 and 25.00mbgl.

Rotary Core Log

Project Name: Plots NT02-NT04				Client: FEC				Date: 08/08/2022 - 09/08/2022			
Location: Manchester				Contractor: DMW Drilling Ltd				Co-ords: E384845.14 N399489.02			
Project No. : 4328				Crew Name: D.G, L.L				Drilling Equipment: Massenza MI3			
Borehole Number RBH210		Hole Type RO+RC		Level 41.38m AoD		Logged By RM		Scale 1:25		Page Number Sheet 2 of 5	

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description										
				TCR	SCR	RQD															
								6.50	34.88		Reddish brown slightly gravelly very sandy CLAY. Gravel is fine to medium sub rounded to sub angular of mudstone (DEVENSIAN TILL)	6									
											Very weak reddish brown MUDSTONE with bands of grey SILTSTONE / SANDSTONE (MANCHESTER MARLS FORMATION)		7								
		9.00 9.06	32.38 32.32		Weak grey SILTSTONE (MANCHESTER MARLS FORMATION)	9															
	Weak reddish brown MUDSTONE with orange, black and grey staining joints are horizontal closely spaced (MANCHESTER MARLS FORMATION)																				
9.67	31.71		...at 9.32 to 9.40mbgl clayey fine to coarse sub angular mudstone gravel	10																	
			...at 9.50 to 9.52mbgl assumed zone of core loss																		
											Weak grey SILTSTONE (MANCHESTER MARLS FORMATION)										
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush									
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)				
9.00	140	1.50	150					0.00	25.00												
22.50	85	9.00	140																		
25.00	140																				

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 12.52mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 20.00 and 25.00mbgl.

Rotary Core Log

Project Name: Plots NT02-NT04		Client: FEC		Date: 08/08/2022 - 09/08/2022	
Location: Manchester		Contractor: DMW Drilling Ltd		Co-ords: E384845.14 N399489.02	
Project No. : 4328		Crew Name: D.G, L.L		Drilling Equipment: Massenza MI3	
Borehole Number RBH210	Hole Type RO+RC	Level 41.38m AoD	Logged By RM	Scale 1:25	Page Number Sheet 3 of 5

[illegible]

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
9.00	140	1.50	150					0.00	25.00								
22.50	85	9.00	140														
25.00	140																

Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 12.52mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 20.00 and 25.00mbgl.



Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 08/08/2022 - 09/08/2022		
Location: Manchester			Contractor: DMW Drilling Ltd			Co-ords: E384845.14 N399489.02		
Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH210		Hole Type RO+RC		Level 41.38m AoD		Logged By RM		Page Number Sheet 4 of 5

Well	Water	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
		15.00 - 16.50		79	51	46				Weak reddish brown MUDSTONE completely weathered to clay in places (MANCHESTER MARLS FORMATION) ...at 15.00 to 15.25mbgl non intact ...at 15.35 to 15.53mbgl destructured ...at 15.62mbgl to 15.87destructured	16
		16.50 - 18.00		50	17	7				...at 16.18 to 16.50mbgl assumed zone of core loss ...at 17.23 to 18.00mbgl assumed zone of core loss	17
		18.00 - 19.50		49	0	0				Soft reddish brown slightly gravelly CLAY. Gravel is fine to medium sub angular of mudstone (MANCHESTER MARLS FORMATION) Reddish brown fine to coarse sub angular to angular mudstone GRAVEL (MANCHESTER MARLS FORMATION) ...at 18.73 to 19.50mbgl assumed zone of core loss	18
							18.00	23.38			
							18.33	23.05			
							19.50	21.88		Reddish brown fine to medium sub angular mudstone GRAVEL (MANCHESTER MARLS FORMATION)	
							19.72	21.66		Weak reddish brown MUDSTONE interbedded with weak grey SILTSTONE	
							19.98	21.40			20

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
9.00	140	1.50	150					0.00	25.00								
22.50	85	9.00	140														
25.00	140																

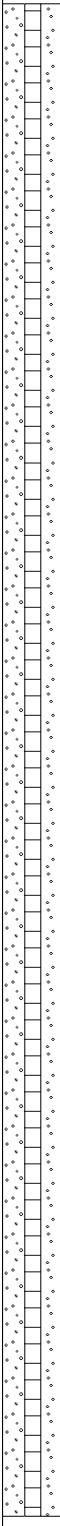
Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 12.52mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 20.00 and 25.00mbgl.



Rotary Core Log

Project Name: Plots NT02-NT04			Client: FEC			Date: 08/08/2022 - 09/08/2022		
Location: Manchester			Contractor: DMW Drilling Ltd			Co-ords: E384845.14 N399489.02		
Project No. : 4328			Crew Name: D.G, L.L			Drilling Equipment: Massenza MI3		
Borehole Number RBH210		Hole Type RO+RC		Level 41.38m AoD		Logged By RM		Page Number Sheet 5 of 5

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description							
				TCR	SCR	RQD												
		19.50 - 21.00		78	51	15		20.29	21.09		Weak reddish brown MUDSTONE interbedded with weak grey SILTSTONE (MANCHESTER MARLS FORMATION) ...at 19.82 to 19.98mbgl non intact ...at 20.20 to 20.29mbgl non intact ...at 20.33 to 20.37mbgl becoming grey ...at 20.37 to 20.44mbgl non intact Reddish brown fine to coarse sub angular mudstone GRAVEL (MANCHESTER MARLS) ...at 19.82 to 19.98mbgl non intact Reddish brown fine to medium sub angular mudstone GRAVEL (MANCHESTER MARLS FORMATION) ...at 20.20 to 20.29mbgl non intact Reddish brown fine to medium sub angular mudstone GRAVEL (MANCHESTER MARLS FORMATION) ...at 20.37 to 20.44mbgl non intact Weak reddish brown MUDSTONE (MANCHESTER MARLS FORMATION) ...at 20.70 to 21.00mbgl assumed zone of core loss	21						
								20.44	20.94									
								20.44	20.94									
																		
																		
																		
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Remarks

1. Location CAT scanned before breaking ground 2. Groundwater was observed at 12.52mbgl. 3. Upon completion borehole was installed was a 50mm diameter standpipe with a response zone between 20.00 and 25.00mbgl.





COMPLEX CHALLENGES ...
MADE SIMPLE

APPENDIX C – GEOTECHNICAL LABORATORY TESTING RESULTS

Reece McGuinness

ROC Consulting Ltd
Commercial Wharf
6 Commercial Street
Castlefield
Manchester
M15 4PZ

t: 0161 8339737

e: reece.mcguinness@roconsulting.com

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404

f: 01923 237404

e: reception@i2analytical.com

Analytical Report Number : 22-79465

Project / Site name: Plots NT02-NT04

Samples received on: 19/08/2022

Your job number: 4328

**Samples instructed on/
Analysis started on:** 19/08/2022

Your order number: 1792

Analysis completed by: 01/09/2022

Report Issue Number: 1

Report issued on: 05/09/2022

Samples Analysed: 11 soil samples



Signed:

Adam Fenwick
Technical Reviewer
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 22-79465
 Project / Site name: Plots NT02-NT04
 Your Order No: 1792

Lab Sample Number				2397685	2397686	2397687	2397688	2397689
Sample Reference				RBH202	RBH201	RBH207	RBH203	RBH210
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				16.36-16.44	14.32-14.38	6.80-6.89	15.23-15.30	10.24-10.35
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	5.1	7.4	4	4.9	6
Total mass of sample received	kg	0.001	NONE	0.3	0.3	0.3	0.3	0.5

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9.0	8.7	9.3	8.5	9.0
Total Sulphate as SO ₄	mg/kg	50	MCERTS	65	160	440	81	660
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	14	19	13	57	48
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0069	0.0094	0.0067	0.029	0.024
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	6.9	9.4	6.7	28.5	24.1
Total Sulphur	%	0.005	MCERTS	< 0.005	0.006	0.017	< 0.005	0.029

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 22-79465
Project / Site name: Plots NT02-NT04
Your Order No: 1792

Lab Sample Number				2397690	2397691	2397692	2397693	2397694
Sample Reference				RBH208	WS209	WS203	TP213	TP219
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				13.00-13.08	3.00	2.50	1.20	2.00
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	3.7	9.7	10	9.5	5.6
Total mass of sample received	kg	0.001	NONE	0.5	0.2	0.2	0.2	0.2

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.8	8.4	7.3	8.5	8.7
Total Sulphate as SO ₄	mg/kg	50	MCERTS	100	290	350	340	270
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	25	150	260	260	170
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.012	0.077	0.13	0.13	0.087
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	12.4	77.4	129	131	87.2
Total Sulphur	%	0.005	MCERTS	< 0.005	0.011	0.013	0.011	0.012

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 22-79465
 Project / Site name: Plots NT02-NT04
 Your Order No: 1792

Lab Sample Number				2397695
Sample Reference				TP215
Sample Number				None Supplied
Depth (m)				2.50
Date Sampled				Deviating
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	11
Total mass of sample received	kg	0.001	NONE	0.2

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9.1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	450
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	290
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.14
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	144
Total Sulphur	%	0.005	MCERTS	0.017

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 22-79465

Project / Site name: Plots NT02-NT04

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2397685	RBH202	None Supplied	16.36-16.44	Red clay.
2397686	RBH201	None Supplied	14.32-14.38	Red clay.
2397687	RBH207	None Supplied	6.80-6.89	Red clay with gravel.
2397688	RBH203	None Supplied	15.23-15.30	Red clay.
2397689	RBH210	None Supplied	10.24-10.35	Red clay with gravel.
2397690	RBH208	None Supplied	13.00-13.08	Brown sandy clay.
2397691	WS209	None Supplied	3	Brown clay and sand.
2397692	WS203	None Supplied	2.5	Brown clay and sand.
2397693	TP213	None Supplied	1.2	Brown clay and sand with gravel.
2397694	TP219	None Supplied	2	Brown sandy clay.
2397695	TP215	None Supplied	2.5	Brown clay and sand.

Analytical Report Number : 22-79465
Project / Site name: Plots NT02-NT04

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Sample Deviation Report



Analytical Report Number : 22-79465

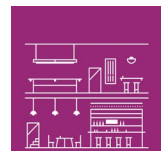
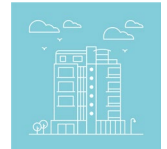
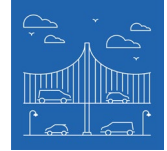
Project / Site name: Plots NT02-NT04

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
RBH201	None Supplied	S	2397686	a	None Supplied	None Supplied	None Supplied
RBH202	None Supplied	S	2397685	a	None Supplied	None Supplied	None Supplied
RBH203	None Supplied	S	2397688	a	None Supplied	None Supplied	None Supplied
RBH207	None Supplied	S	2397687	a	None Supplied	None Supplied	None Supplied
RBH208	None Supplied	S	2397690	a	None Supplied	None Supplied	None Supplied
RBH210	None Supplied	S	2397689	a	None Supplied	None Supplied	None Supplied
TP213	None Supplied	S	2397693	a	None Supplied	None Supplied	None Supplied
TP215	None Supplied	S	2397695	a	None Supplied	None Supplied	None Supplied
TP219	None Supplied	S	2397694	a	None Supplied	None Supplied	None Supplied
WS203	None Supplied	S	2397692	a	None Supplied	None Supplied	None Supplied
WS209	None Supplied	S	2397691	a	None Supplied	None Supplied	None Supplied



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RoCP Ltd
(Trading as RoC Consulting)
Commercial Wharf
6 Commercial Street
MANCHESTER
M15 4PZ

T | 0161 214 5390
W | www.rocconsulting.com