

Our ref: ARC_PPC_00_XX_RP_G_0012-10569 /OMD/Geotechnical Letter Report

Richard Hutchinson
The Challenger Group,
140 Lee Lane,
Horwich,
Bolton,
BL6 7AF

09 September 2024

Dear Richard

**ADDITIONAL GROUND INVESTIGATION FOR THE CHALLENGER GROUP
ALBANY ROAD, CHORLTON**

Further to your recent instruction Patrick Parsons (PP) have undertaken an additional phase of ground investigation at Albany Road, Chorlton between 19 and 23 August 2024. This work followed an initial phase of ground investigation undertaken by Patrick Parsons in May 2023, and a post-demolition phase of ground investigation in August 2024, which highlighted that a piled foundation solution would likely be required for the proposed development.

The additional ground investigation works comprised two cable percussive boreholes to provide additional data to inform pile design. The two additional cable percussive boreholes were positioned across the proposed building footprint and were drilled to a maximum depth of 11.49m below existing ground level (begl) (CP02) where the boreholes refused in natural very dense granular soils of the Wilmslow Sandstone Formation.

Ground Conditions

Made ground was recorded within both exploratory hole locations to a maximum depth of 1.90m begl (CP02). The Made Ground recorded across the site was generally a brown/grey slightly clayey slightly silty slightly gravelly sand. The gravel was subangular to subrounded fine to coarse quartzite and brick.

Superficial Deposits were recorded beneath the Made Ground soils to a maximum depth of 8.60m begl (CP02) and were generally recorded as a firm, becoming stiff and very stiff, brown sandy slightly gravelly silty clay with subrounded gravel of mudstone and sandstone.

Beneath the Superficial Deposits the Wilmslow Sandstone Formation was recorded to a maximum depth of 11.49m begl (CP01). This unit was recorded as a very dense brown slightly gravelly clayey sand with gravel generally comprising subangular to subrounded fine to coarse mudstone and sandstone. Both cable percussive boreholes were terminated at the limit of this technique within this formation due to the density of the encountered soils.

Groundwater was not recorded in either borehole.

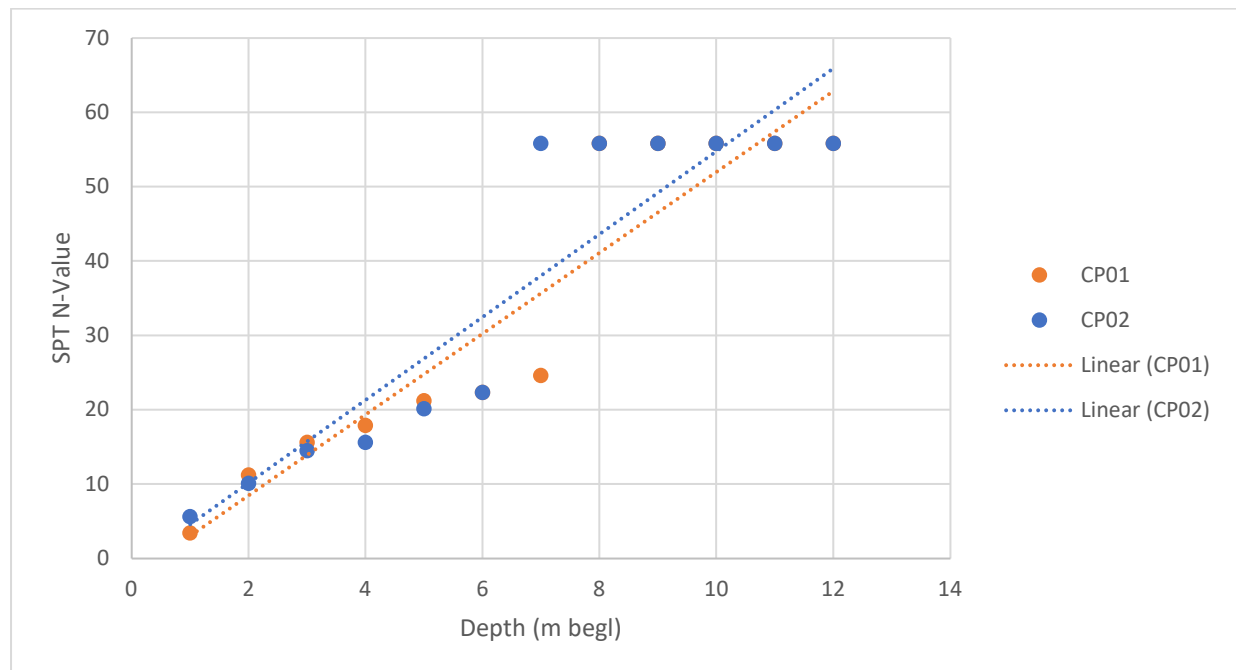
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The corrected SPT-N60 values within the natural soils across the site are presented in the table below.

Depth (m) below ground level	CP01 – N60	CP02 - N60
1.20	3.4	5.6
2.00	11.2	10.1
3.00/3.10	15.6	14.5
4.00	17.9	15.6
5.10	21.2	20.1
6.10/6.20	22.3	22.3
7.00/7.20	24.6	55.8
8.00/8.20	55.8	55.8
9.00/9.80	55.8	55.8
10.20/10.50	55.8	55.8
11.00	55.8	55.8
11.30/11.35	55.8	55.8

SPTs performed in the Wilmslow Sandstone Formation generally increased with depth confirming a general increase in strength with depth, with SPT N value refusals $>N=50$ were consistently recorded below 8m in both boreholes. The general trend of the increase in density is illustrated below.



Geotechnical Appraisal

It is understood that the site is to be developed to provide a four-storey apartment block with parking and soft landscaping.

Excavation Conditions

Shallow excavations in the soils encountered during the ground investigation should be easily achieved using conventional hydraulic equipment. Trench support may be required due to the site being underlain by locally granular strata and deep Made Ground soils. Full support should be provided to any excavation where person entry is required.

Groundwater was not encountered within the most recent investigation; however, groundwater ingress was encountered during the initial phase of investigation at a depth of 2.00m begl in WS04 and WS06.

Additionally, groundwater was also recorded at 1.60m begl during the subsequent monitoring programme. It is assumed these groundwater strikes are likely to represent perched water within the superficial soils rather than a continuous ground water body. Should groundwater be encountered upon excavation, sump pumping techniques should be adequate to control any ingress.

Buried Concrete

Based on the recorded water-soluble sulphate (13 mg/l - 773mg/l) and pH (7.3-9.2), the Made Ground and natural soils below the site (assuming mobile groundwater conditions) are characterised as DS-2 and the ACEC Class as AC-2 (in accordance with BRE Special Digest 1 (2005)). This equates to a DC-2 classification and as such in accordance with BS 8500 FND2 concrete would be suitable for unreinforced and reinforced concrete.

Foundations

A piled foundation solution will be required for all the proposed structures due to the height and anticipated loadings of the proposed buildings, and the unsuitable shallow ground conditions across the east of the site.

The two cable percussive boreholes were proposed to be advanced to a target depth of 17.00m begl based on an anticipated pile depth of approximately 11.00m to 12.00m begl. However, bedrock geology of the Wilmslow Sandstone Formation was encountered at approximately 8.00m begl increasing in density up to 11.49m begl where the boreholes were terminated at the limit of practical drilling by this technique. The presence of shallower than expected bedrock geology will likely result in a reduction of the anticipated pile depth.

It is anticipated that the piled foundations will be progressed into the underlying Wilmslow Sandstone Formation to carry their working load in a combination of end-bearing and skin friction. It is considered unlikely that the Superficial Deposits would provide sufficient pile skin friction alone for the proposed loadings. Pile type and depth should be confirmed by a specialist piling contractor.

We trust the above is suitable for your current requirements, should you have any queries please do not hesitate to contact us.

Yours sincerely,



Omar Dalvai
Engineer

enc. ARC-PPC-00-XX-DR-G-704-10569 – Exploratory Hole Location Plan
10569 – Exploratory Hole Logs

Cable Percussive Borehole Log

Borehole No.

CP01

Sheet 1 of 2

Project Name: Albany Road

Project No.
10569

Co-ords: 381788E - 394271N

Hole Type
CP

Location: Chorlton

Level:

Scale
1:50

Client: The Challenger Group

Dates: 21/08/2024

Logged By
OMD

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		1.20	SPT	N=3 (1,0/1,0,1,1)	1.70			MADE GROUND: Greyish brown slightly gravelly silty clayey sand. Gravel is subangular to subrounded fine to coarse quartzite, brick and concrete.	1
		2.00	SPT	N=10 (1,2/2,2,3,3)				Firm brown slightly silty slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse mudstone.	2
		3.00	SPT	N=14 (2,3/3,3,4,4)				(GLACIOFLUVIAL SHEET DEPOSITS)	3
		4.00	SPT	N=16 (3,3/3,4,4,5)					4
		5.10	SPT	N=19 (3,4/4,5,5,5)				Becoming stiff.	5
		6.10	SPT	N=20 (3,4/5,6,6,3)					6
		7.00	SPT	N=22 (4,4/4,5,6,7)					7
		8.00	SPT	50 (7,9/50 for 180mm)	8.00			Dense brown slightly gravelly clayey SAND. Gravel is subangular to subrounded fine to coarse mudstone and sandstone.	8
		9.00	SPT	50 (9,12/50 for 180mm)				(WILMSLOW SANDSTONE FORMATION)	9
								Continued on Next Sheet	10

Remarks

1) Location CAT scanned and handpit dug to 1.20m before commencing drilling. 2) No groundwater encountered. 3) Borehole backfilled with arisings.



Cable Percussive Borehole Log

Borehole No.

CP01

Sheet 2 of 2

Project Name: Albany Road

Project No.
10569

Co-ords: 381788E - 394271N

Hole Type
CP

Location: Chorlton

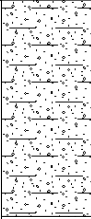
Level:

Scale
1:50

Client: The Challenger Group

Dates: 21/08/2024

Logged By
OMD

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.20	SPT	50 (9,12/50 for 150mm)	11.43			Dense brown slightly gravelly clayey SAND. Gravel is subangular to subrounded fine to coarse mudstone and sandstone.	11
		11.00	SPT	50 (25 for 115mm/50 for 125mm)				(WILMSLOW SANDSTONE FORMATION)	
		11.30	SPT	50 (25 for 135mm/50 for 0mm)				End of Borehole at 11.43m	
									12
									13
									14
									15
									16
									17
									18
									19
									20

Remarks

1) Location CAT scanned and handpit dug to 1.20m before commencing drilling. 2) No groundwater encountered. 3) Borehole backfilled with arisings.



Cable Percussive Borehole Log

Borehole No.

CP02

Sheet 1 of 2

Project Name: Albany Road

Project No.
10569

Co-ords: 381766E - 394254N

Hole Type
CP

Location: Chorlton

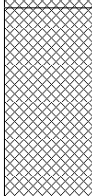
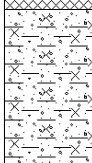
Level:

Scale
1:50

Client: The Challenger Group

Dates: 22/08/2024

Logged By
OMD

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		1.20	SPT	N=5 (1,1/1,1,2,1)	0.60			MADE GROUND: Grey sandy gravel. Gravel is subangular to subrounded fine to coarse quartzite, brick and concrete.	1
								MADE GROUND: Brown slightly clayey slightly silty slightly gravelly sand. Gravel is subangular to subrounded fine to coarse quartzite and brick.	
		2.00	SPT	N=9 (2,1/2,2,2,3)	1.90			Firm brown slightly sandy slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse mudstone and sandstone.	2
		3.10	SPT	N=13 (2,2/3,3,3,4)			(GLACIOFLUVIAL SHEET DEPOSITS)	3	
		4.00	SPT	N=14 (2,3/3,3,4,4)					4
		5.10	SPT	N=18 (3,3/4,4,5,5)					<i>Becoming stiff.</i>
		6.20	SPT	N=20 (3,4/4,5,5,6)					6
		7.20	SPT	N=50 (5,7/50 for 225mm)					7
		8.20	SPT	50 (8,10/50 for 180mm)	8.60				8
		9.80	SPT	50 (25 for 75mm/50 for 75mm)					Dense brown slightly gravelly clayey SAND. Gravel is subangular to subrounded fine to coarse sandstone.
							(WILMSLOW SANDSTONE FORMATION)		
								Continued on Next Sheet	10

Remarks

1) Location CAT scanned and handpit dug to 1.20m before commencing drilling. 2) No groundwater encountered. 3) Borehole backfilled with arisings.



Cable Percussive Borehole Log

Borehole No.

CP02

Sheet 2 of 2

Project Name: Albany Road

Project No.
10569

Co-ords: 381766E - 394254N

Hole Type
CP

Location: Chorlton

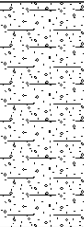
Level:

Scale
1:50

Client: The Challenger Group

Dates: 22/08/2024

Logged By
OMD

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.50	SPT	50 (25 for 70mm/50 for 75mm)	11.49			Dense brown slightly gravelly clayey SAND. Gravel is subangular to subrounded fine to coarse sandstone.	11
		11.00	SPT	50 (25 for 70mm/50 for 75mm)				(WILMSLOW SANDSTONE FORMATION)	
		11.35	SPT	50 (25 for 70mm/50 for 70mm)					
		End of Borehole at 11.49m							12
									13
									14
									15
									16
									17
									18
									19
									20

Remarks

1) Location CAT scanned and handpit dug to 1.20m before commencing drilling. 2) No groundwater encountered. 3) Borehole backfilled with arisings.

