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Our Ref: GRM/P9324/SALR.1
Date: 15th April 2021

Paul Layton
AJP
1 Dale Street
Liverpool
L2 2ET

Dear Paul,

RE: Soakaway Testing at Christie Hospital, Manchester

Further to your instruction GRM have attended the above site between 22nd March and 24th March 2021 to carry out soakaway testing in general accordance with BRE 365 methodology.

This investigation took the form of the excavation of exploratory trial pits with subsequent infiltration testing. Soakaway testing was carried out in the trial pits to assess the overall suitability of the ground for use as soakaway drainage. The test pits were positioned by the Client in the south eastern area of the site. An exploratory hole location plan and logs for the Soakaway Pits are presented in Appendix A and B, respectively.

Although only two soakaway pits were requested, due to the low permeability strata identified in soakaway pits SA01 and SA02 an additional pit, SA03 was excavated to target the deeper underlying Wilmslow Sandstone Formation.

Ground Conditions

The trial pits were advanced to depths ranging between 1.5m and 2.2m below existing ground level (begl). Tarmac was encountered in all pits from surface to 0.15m begl. Made ground comprised of loose, brown and grey sandy GRAVEL and was encountered below the tarmac to depths ranging between 0.4m and 0.55m begl.

Glacial deposits were encountered below the made ground and consisted of firm to stiff, medium to high strength, brown and light grey silty sandy slightly gravelly CLAY in SA01. A thin layer (up to 0.4m thick) of loose fine to coarse sand between the made ground and clay strata was encountered in SA02 and SA03. Medium dense sand of the Wilmslow Sandstone Formation was encountered below the Glacial Till strata in SA03 from a depth of 1.8m begl.



Land Appraisal | Environmental | Geotechnical | Design | Mining | Inspections

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The sidewalls of the trial pits were stable during excavation and were shored up with soakaway crates prior to the tests.

A summary of infiltration in the two initial pits are presented in the table below:

Soakaway Pit reference	Calculated Infiltration Rate (m/s)
	Test 1
SA01	Dropped 0.18m over 24 hours
SA02	Dropped 0.24m over 24 hours

Infiltration rates were unable to be calculated due to the poor permeability of the strata. The third test pit, SA03, recorded a drop of 0.15m in 1.5 hours. However due to time constraints was not fully completed.

Overall, the testing undertaken to date suggests that the ground and infiltration rates at the proposed locations are unlikely to be sufficient for the currently proposed soakaway drainage scheme. However, the final assessment should be undertaken by the project's drainage engineer.

I trust that the above is sufficient for your current purposes, however if you have any queries please do not hesitate to contact us.

Yours sincerely

Russell Hurcombe
MGeoSci (Hons) FGS
Senior Engineering Geologist

 Site Boundary

 Proposed Structure

	Soakaway Pit
	Rotary Openhole Borehole
	Rotary Cored Borehole



CLIENT:	The Alan Johnston Partnership
PROJECT:	Christie Car Park, Wilmslow Road, Manchester
TITLE:	Exploratory Hole Location Plan

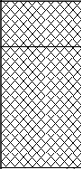
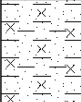
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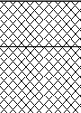
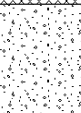
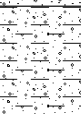
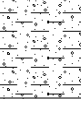
		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Trial Pit Log			Trial Pit No SA01 Sheet 1 of 1	
Site Name: Christie Hospital Carpark, Manchester							Ground Level (mAOD) 36.00	
Client: AJP					GRM Project Ref: P9324		Coordinates 385173 E 392373 N	

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20	ES		0.15	35.85		Black TARMACADAM. MADE GROUND	
	0.55	D		0.55	35.45		Loose, brown and light brown, very sandy GRAVEL with medium cobble content. Gravel is fine to coarse, angular to subangular brick and concrete. Sand is fine to coarse. Cobbles are angular to subangular brick and concrete. MADE GROUND	
	0.80	D		0.90	35.10		Firm, medium strength, dark brown, silty, sandy CLAY. Sand is fine to coarse. GLACIAL DEPOSITS	
	1.00	D	HVP=60 HVP=64 HVP=64				Firm becoming stiff, medium strength becoming high strength, brown and light grey, slightly sandy, slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium, angular to subrounded coal and sandstone. GLACIAL DEPOSITS	
	1.50	D	HVP=75 HVP=78 HVP=88	1.50	34.50	End of Pit at 1.50m		

Date Excavated: 22/03/2021		Groundwater Observations:	
Date Backfilled: 23/03/2021		No groundwater encountered	
Shoring: None			
Stability: Minor sidewall instability from 0.15m to 0.55m			
Plant Used: JCB 3CX		Reason for termination of Trial Pit:	
Logged by: JB		Target depth achieved	
General Remarks:			

Relative density is approximate and determined by observation only.		Version: PRELIM		Scale: 1:25	
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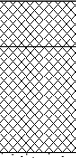
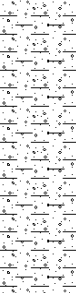
		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Trial Pit Log			Trial Pit No SA02 Sheet 1 of 1	
Site Name: Christie Hospital Carpark, Manchester							Ground Level (mAOD) 36.60	
Client: AJP					GRM Project Ref: P9324		Coordinates 385198 E 392405 N	

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20	ES		0.15	36.45		Black TARMAACADAM. MADE GROUND	
	0.50	D		0.40	36.20		Loose, brownish-grey, very sandy GRAVEL with medium cobble content. Gravel is fine to coarse, angular to subangular brick and concrete. Sand is fine to coarse. Cobbles are angular to subangular brick and concrete. MADE GROUND	
	1.00	D	HVP=108	0.80	35.80		Medium dense, orangish-brown, slightly gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular sandstone GLACIAL DEPOSITS	1
	1.00		HVP=108					
	1.00		HVP=112					
	1.50	D		1.50	35.10		Stiff, high strength, brown and grey, slightly sandy, slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium, angular to subangular coal, sandstone and mudstone. GLACIAL DEPOSITS	
	1.50		HVP=122					
	1.50		HVP=125					
	1.50		HVP=126				End of Pit at 1.50m	2
								3
								4

Date Excavated: 22/03/2021		Groundwater Observations:	
Date Backfilled: 23/03/2021		No groundwater encountered	
Shoring: None			
Stability: Minor sidewall instability from 0.15m to 0.40m			
Plant Used: JCB 3CX		Reason for termination of Trial Pit:	
Logged by: JB		Target depth achieved	
General Remarks:			

Relative density is approximate and determined by observation only.		Version: PRELIM		Scale: 1:25	
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		GRM Development Solutions Ltd Laurus House, First Avenue, Centrum 100, Burton-on-Trent, DE14 2WH Tel (HQ): 01283 551249 Email: info@grm-uk.com		Trial Pit Log			Trial Pit No SA03 Sheet 1 of 1	
Site Name: Christie Hospital Carpark, Manchester							Ground Level (mAOD) 36.03	
Client: AJP					GRM Project Ref: P9324		Coordinates 385166 E 392384 N	

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.15	35.88		Black TARMAACADAM. MADE GROUND	
				0.50	35.53		Loose, brown, very sandy GRAVEL with medium cobble content. Gravel is fine to coarse, angular to subangular brick and concrete. Sand is fine to coarse. Cobbles are angular to subangular brick and concrete. MADE GROUND	
				0.80	35.23		Loose to medium dense, brown and dark brown SAND. Sand is fine to coarse. GLACIAL DEPOSITS	
				1.80	34.23		Firm to stiff, medium to high strength, brown mottled grey and orangish-brown, slightly sandy, slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium, angular to subangular sandstone and coal. GLACIAL DEPOSITS	1
				2.20	33.83		Medium dense, orangish-brown and light brown SAND. Sand is fine to coarse. WILMSLOW SANDSTONE FORMATION <i>Becoming gravelly at 2.0m. Gravel is fine to coarse, angular to subangular sandstone.</i>	2
							End of Pit at 2.20m	
								3
								4

Date Excavated: 22/03/2021		Groundwater Observations:	
Date Backfilled: 23/03/2021		No groundwater encountered	
Shoring: None			
Stability: Minor sidewall instability from 0.15m to 0.80m			
Plant Used: JCB 3CX		Reason for termination of Trial Pit:	
Logged by: JB		Hard digging	
General Remarks:			

Relative density is approximate and determined by observation only.	Version: PRELIM	Scale: 1:25
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