

APPENDIX 1 BOREHOLE RESULTS AND LAB TESTS FOR 109 FORTIS GREEN

Project Title Fortis Green					Hole Ref. WS01					
Client Fortis Properties Limited					Project No. LNE2076					
Plant used Premier Rig					Start Date 28/07/2014		End Date 28/07/2014			
Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing		
Strike	Well					Type	Depth From To	Depth (m) (SPT Type)	Result	
		0.06	MADE GROUND: Asphalt	101.13						
		0.35	MADE GROUND: Grey very sandy GRAVEL of angular to subangular fine to coarse possible limestone. [SUB-BASE]	100.84		DJVV	0.45	0.50	PID = 5.7 ppm	
		0.56	MADE GROUND: Red and grey sandy GRAVEL of angular to subrounded fine to coarse brick and concrete.	100.63		DJVV	0.60	0.70	PID = 0.8 ppm	
		0.90	Soft brown mottled orange silty CLAY with rare gravel of flint. [GLACIAL TILL]	100.29		D	0.90	1.00	1.00 (S) N=27 (4.4,5.6,8,8)	
			Firm orangish brown occasionally mottled grey sandy gravelly CLAY. Gravel is subrounded to subangular fine to coarse chalk, quartzite, flint and rare coal. [GLACIAL TILL]						2.00 (S) N=23 (4.4,4.6,6,7)	
			Becomes stiff from 2.5m							
		3.00	End of hole at 3.00 m	98.19					3.00 (S) N=24 (3.4,5.6,6,7)	
REMARKS					SOIL SAMPLE TYPE		IN-SITU TESTS		GROUNDWATER	
1. No groundwater encountered. 2. Borehole terminated at 3.0mbgl due to rig sloping on obstruction. 3.No visual or olfactory evidence of contamination encountered. 4. Borehole backfilled with arising's.					D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial		SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Core PID - Photo Ionisation Detector (ppm)		☒ Groundwater strike ▼ Standing groundwater level	
					EASTING 527934.92		NORTHING 189577.16		GROUND LEVEL 101.19	
					LOGGED BY AM		SCALE 1:35		SHEET Sheet 1 of 1	
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Project Title Fortis Green					Hole Ref. WS02				
Client Fortis Properties Limited					Project No. LNE2076				
Plant used Premier Rig					Start Date 28/07/2014				
					End Date 28/07/2014				
Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing	
Strike	Well					Type	Depth From To	Depth (m) (SPT Type)	Result
		0.05	MADE GROUND: Asphalt	100.82					
		0.13	CONCRETE	100.74					
		0.45	MADE GROUND: Very soft dark brown sandy very gravelly CLAY. Gravel is angular to subrounded fine quartzite and brick.	100.42		DJVV	0.30	0.30	PID = <0.1 ppm
			Firm orangish brown mottled grey sandy very gravelly CLAY. Gravel is subrounded to subangular fine to coarse chalk and flint. [GLACIAL TILL] Becomes stiff at 1.0m			DJVV	0.60	0.90	PID = <0.1 ppm
								1.00 (S)	N=15 (2,2,3,3,4,5)
								2.00 (S)	N=17 (3,3,3,4,5,5)
			Becomes dark greyish brown at 3.0m					3.00 (S)	N=16 (3,4,4,3,4,5)
						D	4.00	4.00 (S)	N=25 (4,4,5,6,7,7)
								5.00 (S)	N=24 (4,5,5,6,6,7)
		6.00	End of hole at 6.00 m	94.87		D	6.00		
REMARKS			SOIL SAMPLE TYPE		IN-SITU TESTS		GROUNDWATER		BW&B CONSULTANCY ENVIRONMENT INFRASTRUCTURE BUILDINGS Environment Group 5th Floor Waterfront House Station Street Nottingham NG2 3DQ Tel : 0115 9241100 Fax : 0115 9503966
1. No groundwater encountered.			D - 500g to 1kg Disturbed		SV - Hand Shear Vane		☐ Groundwater strike		
2. Borehole terminated at 6.0mbgl due to having reached required depth.			B - 5kg to 20kg Disturbed		HP - Hand Penetrator		▼ Standing groundwater level		
3. No visual or olfactory evidence of contamination encountered.			U - 100mm dia. Undisturbed		N = SPT blows over 300mm				
4. Borehole installed with gas and groundwater monitoring well to 6m			J - 250ml Amber Glass Jar		S = Split Spoon Sampler				
			V - Glass Vial		C = Solid Cone				
			PID - Photo Ionisation Detector (ppm)						

Project Title Fortis Green					Hole Ref. WS03		
Client Fortis Properties Limited					Project No. LNE2076		
Plant used Premier Rig					Start Date 29/07/2014	End Date 29/07/2014	
Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples	In-situ Testing
Strike	Well					Type	Depth From To
		0.35	CONCRETE	100.36			
		0.60	MADE GROUND: Orange brown and grey sandy GRAVEL. <i>End of hole at 0.60 m</i>	100.11			
REMARKS			SOIL SAMPLE TYPE D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial	IN-SITU TESTS SV - Hand Shear Vane HP - Hand Penetrometer N - SPT blows over 300mm S - Split Spoon Sampler C - Solid Cone PID - Photo Ionisation Detector (ppm)	GROUNDWATER ☒ Groundwater strike ☐ Standing groundwater level		
			EASTING 527922.98	NORTHING 189579.45	GROUND LEVEL 100.71		
			LOGGED BY AM	SCALE 1:35	SHEET Sheet 1 of 1		

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Project Title Fortis Green					Hole Ref. WS04				
Client Fortis Properties Limited					Project No. LNE2076				
Plant used Premier Rig					Start Date 28/07/2014		End Date 28/07/2014		
Groundwater		Depth	Description of Strata	Level	Legend	Samples		In-situ Testing	
Strike	Well	(m)		(mAOD)		Type	Depth From	To	Depth (m) (SPT Type)
		0.18	CONCRETE	100.53					
		0.40	MADE GROUND: Grey GRAVEL of angular to subangular fine to coarse possible limestone and brick. [SUB-BASE]	100.31		DJVV	0.50	0.70	PID = 0.9 ppm
		1.00	MADE GROUND: Soft orangish grey slightly silty CLAY. Gravel is angular to subangular fine to coarse flint. Slight hydrocarbon odour and black staining noted. Concrete obstruction at 0.8mbgl. <i>End of hole at 1.00 m</i>	99.71					
REMARKS			SOIL SAMPLE TYPE		IN-SITU TESTS		GROUNDWATER		
1. No groundwater encountered. 2. Borehole terminated at 1.0mbgl due to rig sloping on obstruction. 3. Slight hydrocarbon odour and black staining noted from 0.5m to 1.0mbgl. 4. Borehole backfilled with arising's.			D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial		SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone PID - Photo Ionisation Detector (ppm)		☒ Groundwater strike ☐ Standing groundwater level		
			EASTING		NORTHING		GROUND LEVEL		
			-		-		100.71		
			LOGGED BY		SCALE		SHEET		
			AM		1:35		Sheet 1 of 1		



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Project Title Fortis Green					Hole Ref. WS05				
Client Fortis Properties Limited					Project No. LNE2076				
Plant used Premier Rig					Start Date 28/07/2014		End Date 28/07/2014		
Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing	
Strike	Well					Type	Depth From To	Depth (m) (SPT Type)	Result
		0.19	CONCRETE	100.51					
		0.77	MADE GROUND: Orange brown clayey sandy GRAVEL of angular to subangular fine to coarse possible limestone. [SUB-BASE]	99.93					
		1.00	MADE GROUND: Very soft dark brown sandy very gravelly CLAY. Gravel is angular to subangular fine to coarse quartzite, brick and concrete. Very slight hydrocarbon odour noted and pockets of black staining. Concrete obstruction at 0.45mbgl. <i>End of hole at 1.00 m</i>	99.70					
REMARKS			SOIL SAMPLE TYPE		IN-SITU TESTS		GROUNDWATER		
1. No groundwater encountered. 2. Borehole terminated at 1.0mbgl due to rig sloping on obstruction. 3. Very slight hydrocarbon odour noted and pockets of black staining. 4. Borehole backfilled with arising's.			D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial		SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone PID - Photo Ionisation Detector (ppm)		☒ Groundwater strike ▼ Standing groundwater level		
			EASTING		NORTHING		GROUND LEVEL		
			-		-		100.70		
			LOGGED BY		SCALE		SHEET		
			AM		1:35		Sheet 1 of 1		



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Project Title Fortis Green					Hole Ref. WS06				
Client Fortis Properties Limited					Project No. LNE2076				
Plant used Premier Rig					Start Date 29/07/2014		End Date 29/07/2014		
Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing	
Strike	Well					Type	Depth From To	Depth (m) (SPT Type)	Result
		0.11	CONCRETE	100.72		DJVV	0.20	0.20	PID = 0.3 ppm
		0.45	MADE GROUND: Firm orange brown sandy gravelly CLAY. Gravel is subrounded to subangular fine to coarse brick, quartzite and occasional concrete.	100.38		D	0.50		
		0.90	Firm orangish brown slightly gravelly sandy CLAY with frequent organic plant matter. Gravel is angular to subrounded fine to coarse chalk and flint. [GLACIAL TILL]	99.93				1.00 (S)	N=15 (2,2,3,3,4,5)
			Stiff orangish brown silty sandy very gravelly CLAY. Gravel is subrounded to subangular fine to coarse chalk and flint. [GLACIAL TILL]			D	1.50		
						DJVV	1.60	1.60	PID = <0.1 ppm
								2.00 (S)	N=24 (3,4,6,5,6,7)
						D	2.50		
			becomes dark brown at 4.0mbgl.						
		6.00	End of hole at 6.00 m	94.83					
REMARKS 1. No groundwater encountered. 2. Borehole terminated at 6.0mbgl due to having reached required depth. 3. No visual or olfactory evidence of contamination encountered. 4. Borehole installed with gas and groundwater monitoring well to 6m			SOIL SAMPLE TYPE		IN SITU TESTS		GROUNDWATER		 CONSULTANCY ENVIRONMENT INFRASTRUCTURE BUILDINGS Environment Group 5th Floor Waterfront House Station Street Nottingham NG2 3DQ Tel : 0115 9241100 Fax : 0115 9503966
			D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial		SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone PID - Photo Ionisation Detector (ppm)		☒ Groundwater strike ☐ Standing groundwater level		
			EASTING 527931.40	NORTHING 189590.31	GROUND LEVEL 100.83				
			LOGGED BY AM	SCALE 1:35	SHEET Sheet 1 of 1				

Project Title Fortis Green					Hole Ref. WS07				
Client Fortis Properties Limited					Project No. LNE2076				
Plant used Premier Rig					Start Date 28/07/2014End Date 28/07/2014				
Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing	
Strike	Well					Type	Depth FromTo	Depth (m) (SPT Type)	Result
		0.14	CONCRETE	100.75		DJVV	0.200.30	0.20	PID = <0.1 ppm
		0.45	TOPSOIL: Dark brown sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse quartzite, brick and charcoal. [RELIC TOPSOIL] Stiff orangish brown mottled grey slightly gravelly silty sandy CLAY with occasional organic plant matter to 1.0m. Gravel is subangular to subrounded fine to coarse quartzite and flint with rare chalk. [GLACIAL TILL]	100.44		DJVV	0.600.70	0.60	PID = <0.1 ppm
								1.00 (S)	N=14 (2,3,3,3,4,4)
			becomes soft at 1.7mbgl.					2.00 (S)	N=18 (2,3,4,4,5,5)
			becomes very silty between 2.0m and 2.5mbgl.						
			becomes firm between 2.5m and 2.9mbgl.					3.00 (S)	N=22 (3,4,5,5,6,6)
		3.10	pocket of orange brown silty sand between 2.9m and 3.0mbgl.	97.79				4.00 (S)	N=19 (4,4,4,4,5,6)
			Stiff grey brown slightly gravelly silty sandy CLAY. Gravel is angular to subangular fine to coarse quartzite, chalk, flint and possible fine coal. [GLACIAL TILL]					5.00 (S)	N=27 (4,5,6,6,7,8)
								6.00 (S)	N=27 (4,5,5,6,7,9)
		6.00	End of hole at 0.00 m	94.89					
REMARKS									
1. No groundwater encountered. 2. Borehole terminated at 6.0mbgl due to having reached required depth. 3. No visual or olfactory evidence of contamination encountered. 4. Borehole installed with gas and groundwater monitoring well to 6m			SOIL SAMPLE TYPE		IN SITU TESTS		GROUNDWATER		

Project Title					Fortis Green		Hole Ref.		WS08	
Client					Fortis Properties Limited		Project No.		LNE2076	
Plant used					Premier Rig		Start Date		End Date	
							29/07/2014		29/07/2014	
Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing		
Strike	Well					Type	Depth From To	Depth (m) (SPT Type)	Result	
		0.10	CONCRETE	100.60		DJVV	0.20	0.20	PID = 0.2 ppm	
		0.35	MADE GROUND: Soft dark brown sandy very gravelly CLAY. Gravel is angular to subrounded fine to coarse quartzite, brick, coal, flint, chert and clinker. Occasional glass fragments and ash pockets.	100.35		DJVV	0.45	0.45	PID = <0.1 ppm	
		0.80	Firm orangish brown mottled grey slightly gravelly sandy CLAY with frequent organic plant matter. Gravel is subrounded fine to coarse quartzite. [GLACIAL TILL]	99.90		D	1.00	1.00 (S)	N=11 (1,2,2,2,3,4)	
			Firm orange brown mottled grey silty sandy very gravelly CLAY. Gravel is angular to subrounded fine to coarse chalk and flint. [GLACIAL TILL] becomes stiff at 1.5mbgl.						2.00 (S)	N=23 (2,3,4,5,7,7)
						D	3.00	3.00 (S)	N=28 (3,3,4,7,8,9)	
									4.00 (S)	N=31 (5,5,6,7,8,10)
						D	5.00	5.00 (S)	N=29 (4,5,6,7,7,9)	
		6.00	End of hole at 0.00 m	94.70					6.00 (S)	N=33 (6,7,8,8,9,8)
REMARKS			SOIL SAMPLE TYPE			IN SITU TESTS		GROUNDWATER		 CONSULTANCY ENVIRONMENT INFRASTRUCTURE BUILDINGS Environment Group 5th Floor Waterfront House Station Street Nottingham NG2 3DQ Tel : 0115 9241100 Fax : 0115 9503966
1. No groundwater encountered.			D - 500g to 1kg Disturbed			SV - Hand Shear Vane		☐ Groundwater strike		
2. Borehole terminated at 6.0mbgl due to having reached required depth.			B - 5kg to 20kg Disturbed		HP - Hand Penetrometer		▼ Standing groundwater level			
3.No visual or olfactory evidence of contamination encountered.			U - 100mm dia. Undisturbed		N = SPT blows over 300mm					
4. Borehole installed with gas and groundwater monitoring well to 6m			J - 250ml Amber Glass Jar		S = Split Spoon Sampler					
			V - Glass Vial		C = Solid Cone					
			PID - Photo Ionisation Detector (ppm)							
			EASTING		NORTHING		GROUND LEVEL			
			527918.10		189599.80		100.70			
			LOGGED BY		SCALE		SHEET			
			AM		1:35		Sheet 1 of 1			

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Depth m	Description of Sample
WS01		D	0.90-1.00	Brown slightly gravelly sandy CLAY.
WS01A		D	2.00	Brown mottled grey slightly gravelly sandy CLAY.
WS02		D	4.00	Brown slightly gravelly sandy CLAY.
WS02		D	6.00	Grey slightly gravelly sandy CLAY.
WS04A		D	1.50	Brown mottled grey slightly gravelly sandy CLAY.
WS06		D	0.50	Brown mottled grey slightly gravelly slightly sandy CLAY.
WS06		D	2.50	Brown mottled grey slightly gravelly sandy CLAY.
WS08		D	1.00	Brown slightly gravelly very sandy CLAY.
WS08		D	3.00	Brown slightly gravelly sandy CLAY.
WS08		D	5.00	Brown gravelly sandy CLAY.

	Compiled by	Date	Checked by	Date	Approved by	Date
		18/08/14		18/08/14		18/08/14
	FORTIS GREEN.				Contract No:	PSL14/3883
					Client Ref:	ENV131962

SUMMARY OF SOIL CLASSIFICATION TESTS

(B.S. 1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Depth m	Moisture Content % Clause 3.2	Bulk Density Mg/m ³ Clause 7.2	Dry Density Mg/m ³ Clause 7.2	Particle Density Mg/m ³ Clause 8.2	Liquid Limit % Clause 4.3/4.4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	% Passing .425mm	Remarks
WS01		D	0.90-1.00	20				45	20	25	92	Intermediate plasticity CI.
WS01A		D	2.00	17				39	18	21	93	Intermediate plasticity CI.
WS02		D	4.00	17				41	19	22	92	Intermediate plasticity CI.
WS02		D	6.00	16				40	19	21	89	Intermediate plasticity CI.
WS04A		D	1.50	17				44	20	24	91	Intermediate plasticity CI.
WS06		D	0.50	29				62	24	38	92	High plasticity CH.
WS06		D	2.50	18				43	20	23	92	Intermediate plasticity CI.
WS08		D	1.00	17				34	17	17	85	Low plasticity CL.
WS08		D	3.00	16				39	18	21	87	Intermediate plasticity CI.
WS08		D	5.00	21				37	18	19	89	Intermediate plasticity CI.

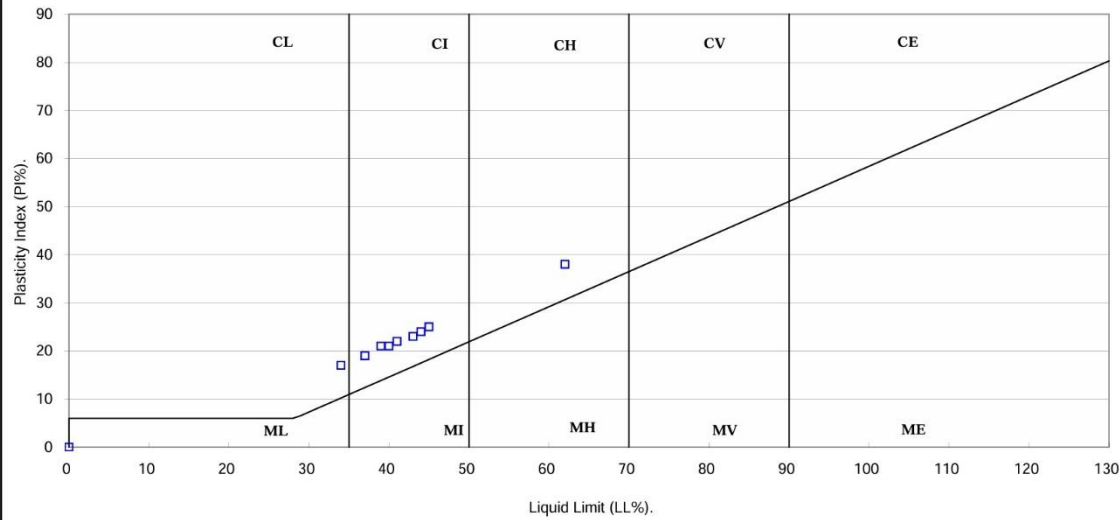
SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.

	Compiled by	Date	Checked by	Date	Approved by	Date
		18/08/14		18/08/14		18/08/14
	FORTIS GREEN.				Contract No:	PSL14/3883
					Client Ref:	LNE2076

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

(B.S.5930 : 1999)



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	FORTIS GREEN.				Contract No:	PSL14/3883
					Client Ref:	LNE2076