Appendix B Definition of geo-environmental terms

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Definition of environmental risk/hazard terms used in this report.

Based on CIRIA report C552 'Contaminated land risk assessment – A guide to good practice'.

Risk classifications and likely action required:

Very high risk

High probability that severe harm could arise to a designated receptor from an identified hazard OR there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised is likely to result in substantial liability. Urgent investigation and remediation are likely to be required.

High risk

Harm is likely to arise to a designated receptor from an identified hazard. This risk, if realised, is likely to result in substantial liability. Urgent investigation is required and remedial works may be necessary in the short term and are likely over the long term.

Moderate risk

It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is likely that the harm would be relatively mild. Investigation is normally required to clarify risks and to determine potential liability. Some remedial works may be required in the long term.

Low risk

It is possible that harm could arise to a designated receptor from an identified hazard but it is likely that this harm, if realised, would at worst normally be mild.

Very low risk

It is a low possibility that harm could arise to a designated receptor. On the event of such harm being realised it is not likely to be severe.

Appendix B Definition of geo-environmental terms

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Gaseous contamination -

Extract copy of table 3 of BS8485:2007 Solutions scores

PROTECTION ELEMENT/SYSTEM			SCORE	COMMENTS
a) Venting/dilution (see Annex A of BS848		annan a' a farainn ann an t-saon a' annan an t-saonairtean an t-		
Passive sub-floor ventilation (venting layer of formed using gravel, geocomposites, polyst	can be a clear void or yrene void formers,	Very good performance	2.5	Ventilation performance in accordance with Annex A of BS8485.
etc) ^{A)}		Good performance	1	If passive ventilation is poor this is generally unacceptable and some form of active system will be required.
Subfloor ventilation with active abstraction/	pressurization (ventin	g lavers can be a	-	There have to be robust management systems in
clear void or formed using gravel, geocompo	osites, polystyrene void	d formers, etc)A)	2.5	place to ensure the continued maintenance of any ventilation system.
				Active ventilation can always be designed to meet good performance.
				Mechanically assisted systems come in two mair forms: extraction and positive pressurization
Ventilated car park (basement or undercroft)		4	Assume car park is vented to deal with car exhaust fumes, designed to Building Regulations Document F and IStructE guidance.
b) Barriers			k	guidence.
Floor Slabs	a ser and a second s			It is good practice to install ventilation in all
Block and beam floor slab				foundation systems to effect pressure relief as a minimum.
Reinforced concrete ground bearing floor sla	ıb		0.5	
Reinforced concrete ground bearing for penetrations that are cast into slab	undation raft with	limited service	1.5	Breaches in floor slabs such as joints have to be effectively sealed against gas ingress in order to
Reinforced concrete cast in situ suspended s and water bars around all slab penetrations a	lab with minimal servi and at joints	ice penetrations	1.5	maintain these performances.
Fully tanked basement			2	
c) Membranes				
Taped and sealed membrane to reasonable current good practice with validation ^{B), C)}	e levels of workmans	hip/in line with	0.5	The performance of membranes is heavily dependent on the quality and design of the installation, resistance to damage after
Proprietary gas resistant membrane to reas with current good practice under independer	onable levels of work nt inspection (CQA) ^{B), C}	manship/in line	1	installations, and the integrity of joints.
Proprietary gas resistant membrane in workmanship/in line with current good prac and independent validation.	nstalled to reasona tice under CQA with i	ble levels of ntegrity testing	2	
d) Monitoring and detection (not applicable	to non-managed prop	erty, or in isolatio	on)	
ntermittent monitoring using hand held equi			0.5	Where fitted, permanent monitoring system
Permanent monitoring and alarm system A)	Installed in the und venting/dilution sy		2	ought to be installed in the underfloor venting/dilution system in the first instance but
	Installed in the buil		1	can also be provided within the occupied space as a fail safe.
) Pathway Intervention		•	•	
Pathway intervention		an a	-	This can consist of site protection measures for off-site or on-site sources (see Annex A of BS8485)

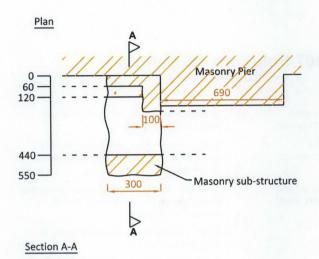
NOTE In practice the choice of materials might well rely on factors such as construction method and the risk of damage after installation. It is important to ensure that the chosen combination gives an appropriate level of protection.

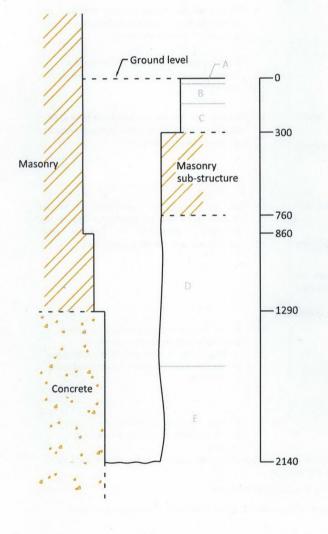
^{A)} It is possible to test ventilation systems by installing monitoring probes for post installation validation.

⁸⁾ If a 200g DPM material is to function as a gas barrier it should be installed according to BRE 212)/BRE 414), being taped and sealed to all penetrations.

^{C)} Polymeric Materials > 1 200g can be used to improve confidence in the barrier. Remember that their gas resistance is little more than the standard 1 200g (proportional to thickness) but their physical properties mean that they are more robust and resistant to site damage.

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- Key
- Black bituminous bound GRAVEL. A (MADE GROUND)
- Grey unreinforced CONCRETE. В (MADE GROUND)
- Loose brown and grey coarse SAND and GRAVEL with many С cobbles and boulders of concrete, brick and sandstone. Gravel consists of brick, concrete, slate, ash, clinker and sandstone. (MADE GROUND)
- Firm dark brown very sandy gravelly CLAY. Gravel consists of D brick, concrete, slate, ash, flint and marl. (MADE GROUND)
- Firm light brown mottled orange brown and dark brown sandy Е slightly gravelly CLAY. Gravel consists of flint and brick. (MADE GROUND)

Notes

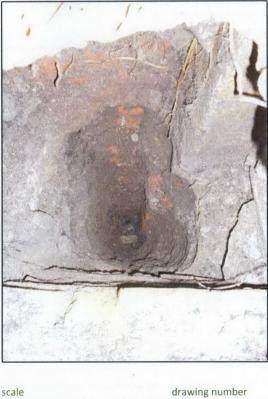
- **Observed** features Assumed features

1. Disturbed samples taken at 0.14m, 0.71m and 1.6m.

2. All dimensions shown in millimeters.

3.Groundwater encountered at 2.0m

Photographic record of TP02a



1:20 @ A4

TP02a

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Plan showing trial pit excavation at location TP02a

title

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Key

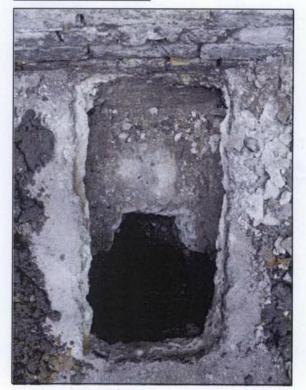
- A Black bituminous bound GRAVEL. (MADE GROUND)
- B Grey unreinforced CONCRETE. (MADE GROUND)
- C Loose brown and grey coarse SAND and GRAVEL with many cobbles and occasional boulders of brick and concrete. Gravel consists of brick, concrete, flint, slate and ash. (MADE GROUND)
- Firm orange brown sandy slightly gravelly CLAY. Gravel consists of flint, brick, marl and ash. (MADE GROUND)
- Medium dense dark brown clayey gravelly SAND. Gravel consists of flint, brick, ash and relic plant material. (MADE GROUND)

Notes

Observed features Assumed features

- 1. Disturbed sample taken at 0.9m.
- 2. All dimensions shown in millimeters.

Photographic record of TP02b



title

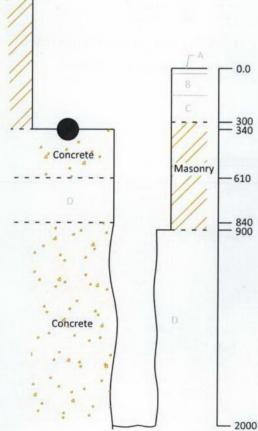
Plan showing trial pit excavation at location TP02b

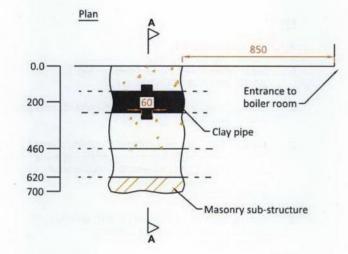
scale

drawing number

1:20 @ A4

TP02b

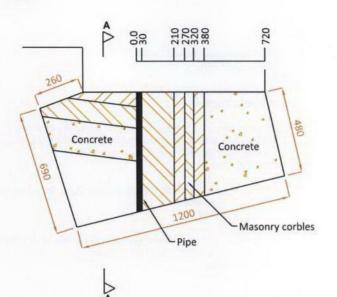




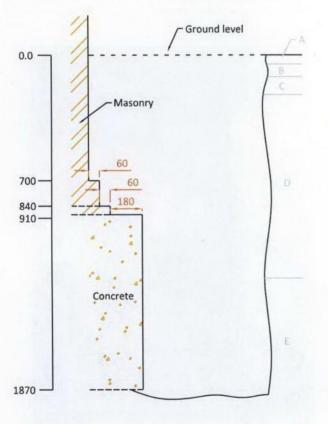
Section A-A

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Plan



Section A-A



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Key

- A Concrete paving slab.
- B Loose yellow brown fine and medium SAND. (MADE GROUND)
- C Medium dense pink coarse SAND and GRAVEL consistin (MADE GROUND)
- D Medium dense brown mottled black slightly clayey coarse gravelly SAND with some rootlets and many cobbles of brick and concrete. Gravels consist of brick, concrete, ash and slate. (MADE GROUND)
- E Firm dark brown slightly sandy slightly gravelly CLAY. Gravels consist of flint, brick and ash. (MADE GROUND)

TERMINATED AT 1.9m

Notes

---- Observed features

1. Disturbed samples taken at 0.5m and 1.25m.

2. All dimensions shown in millimeters.

Photographic record of TP07



scale

drawing number

TP07

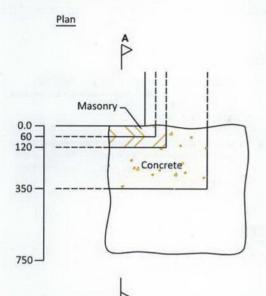
1:20 @ A4

REPORT REF: STG1672B-G01

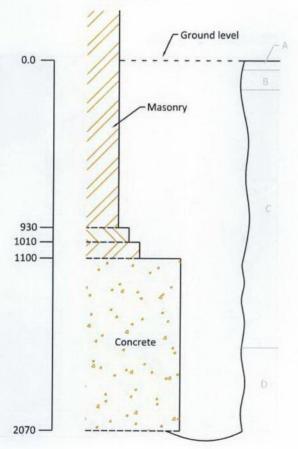
Plan showing trial pit excavation at location TP07

title

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Key

- A Concrete paving slab.
- B Loose yellow brown fine and medium SAND. (MADE GROUND)
- C Firm dark brown mottled black sandy gravelly CLAY with some cobbles of brick and concrete. Gravels consist of brick, concrete, tile, ash, chalk and marl. (MADE GROUND)
- D Medium dense dark brown silty gravelly organic SAND. Gravels consist of flint and relic plant material. (MADE GROUND)

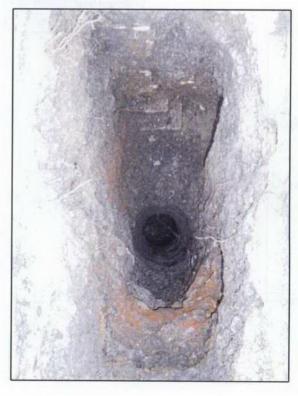
TERMINATED AT 2.0m

Notes

Observed features
 Assumed features

- 1. Disturbed samples taken at 0.5m and 1.6m. Bulk sample taken at 0.5m.
- 2. All dimensions shown in millimeters.

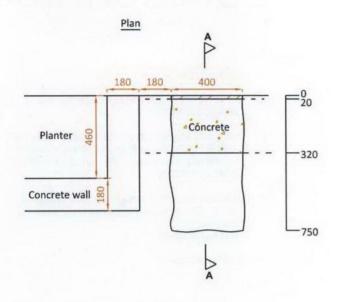
Photographic record of TP08



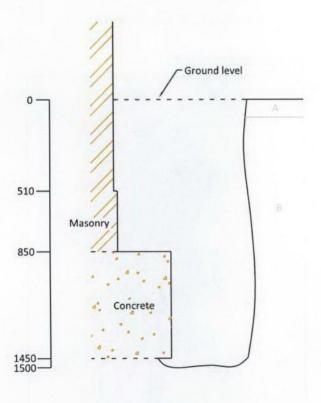
titlescaledrawing numberPlan showing trial pit excavation at location TP081:20@A4TP08

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Section A-A



title

Plan showing trial pit excavation at location TP09

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Key

- Grass onto loose brown slightly slity slightly gravelly organic SAND. Gravel consists of concrete, brick, flint and slate. (MADE GROUND)
- B Medium dense brown mottled black clayey silty gravelly coarse SAND with cobbles of brick and concrete. Gravel consists of brick, concrete, flint and ash.
 (MADE GROUND)

Notes

- Observed features
 Assumed features
- 1. Disturbed samples taken at 0.5m and 1.0m.
- 2. All dimensions shown in millimeters.

Photographic record of TP09



scale

drawing number

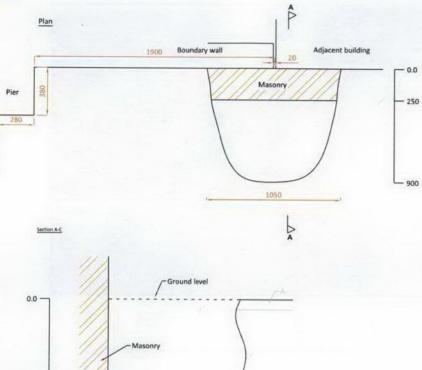
1:20 @ A4

TP09

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Key

- A Black bituminous bound GRAVEL. (MADE GROUND)
- B Loose dark brown and grey coarse SAND and GRAVEL with many cobbles of brick and concrete and some boulders of concrete. Gravel consists of brick, concrete, slate, metal, tile, ash and marl. (MADE GROUND)
- C Firm orange brown sandy gravelly CLAY. Gravel consists of flint, brick, ash and relic plant material. (MADE GROUND)

Notes

----- Observed features

---- Assumed features

1. Disturbed samples taken at 0.1m and 1.0m.

2. All dimensions shown in millimeters.

3. Terminated at 2.6m.

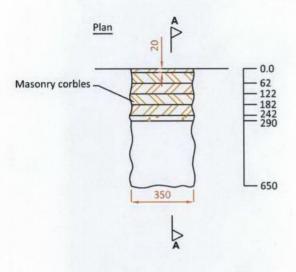
Photographic record of TP10



title	scale	drawing number
Plan showing trial pit excavation at location TP10	1:20 @ A3	TP10

REPORT REF: STG1672B-G01

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Key

A Medium dense grey brown slightly clayey slightly grave SAND with many roots and rootlets. Gravel consists of flint, slate, brick, concrete and ceramic material. (MADE GROUND)

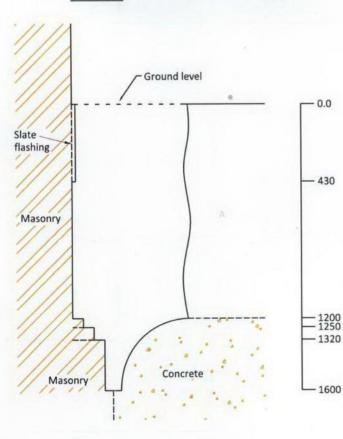
Notes

Photographic record of TP11

Observed features

- --- Assumed features
- 1. Disturbed samples taken at 0.5m and 1.0m.
- 2. All dimensions shown in millimeters.
- 3. Terminated at 1.6m due to concrete obstruction.

Section A-A



title

Plan showing trial pit excavation at location TP11

scale 1:20 @ A4 drawing number

TP11

Standard Key to borehole records Cable and tool percussion drilling

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Key to legends (extract from BS5930 table 11)

Soils

Sedimentary rocks

Topsoil		Chalk
Made ground		Limestone
Boulders & Cobbles		Sandstone
Gravel	$\hat{\mathbf{x}} \times \hat{\mathbf{x}} \times \hat{\mathbf{x}}$	Siltstone
Sand		Mudstone
Silt		Shale
Clay		Coal
Peat/Organic clays	ింిం	Conglomerate
	Made ground Boulders & Cobbles Gravel Sand Silt Clay	Made ground Boulders & Cobbles Gravel Sand Silt Clay

Composite soil types are signified by combined symbols.

Key to 'test result' columns

Column header	Explanation									
Type and depth	Records depth that the test was carried out ie at 2.1m or between 2.1 and 2.55m									
Result	P – Pocket penetrometer result V – Hand held shear vane result (KN/m2)	Carried out on undisturbed samples								
	SPT – Standard penetration test result (uncorrected) CPT - Cone penetration test result (uncorrected)	Seating blows recorded in brackets								
Casing depth	Records depth of casing when SPT or CPT was carried o	put								
Water depth	Records depth of water when SPT or CPT was carried o	put.								

Key to 'sampling' columns

Column header	Explanation
From (m) To (m)	Records depth of sampling
Туре	U100 (32) – Undisturbed sample 100mm diameter sampler with number of blows of driving equipment required to obtain sample D – Disturbed sample
	B – Bulk disturbed sample J – Disturbed sample placed in sealed amber jar
	W – Water sample

Water observations

Described at foot of log

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	DESCRIPTION		LEGENI			TEST R	ESULTS			MPLING	
				(m)	TYPE & DEPTH (m)	RESULT	CASING DEPTH (m)	WATER LEVEL (m)	FROM (m)	TO (m)	TYPE
Grey concrete pavir	ng slab onto loos	e orange fine	****	X 0.0	1	1	1		1.000		В
SAND.			XXXX	80.15							
(MADE GROUND)				₩							
Dark brown, red an	d vallow brown			₩							
SAND and GRAVEL				₩							
brick.		c) chait and		× 1.2	SPT	(1) 1	-	DRY	1.2		D
(MADE GROUND)		/		₩	1.2m				1.2	1.7	в
		· · · · · · · · · · · · · · · · · · ·		×							
Firm brown slightly		CLAY. Gravel		×							
consists of flint and (MADE GROUND)	asn.			2.3	P 2.3m	113			2.3	1	D
		A		2.5	1 2.30	115			2.5		
Stiff orange brown	slightly sandy sli	ghtly gravelly									
CLAY. Gravel consis		andstone.								-	
(LYNCH HILL GRAVE	EL)	1	1	3.0	SPT 3m	(2) 12	-	DRY	3.0		D
Chiff and war at iff -	rango brawn Cl				P 3.0m	217			1	-	
Stiff and very stiff o (LYNCH HILL GRAVE	-	A1.			-	-					-
	,			<u> </u>					1		
					P 4.0m	133			4.0		D
				33							-
							3.0		4.5		U100
				4.8	P 4.95m	138					(55)
Stiff and very stiff g	revish brown Cl	AV 0 1m thick			1 4.35	150	a de antena		4.95		D
bed of flint/claysto							-				
(LONDON CLAY)	•				P 5.5m	138			5.5		D
									1		
					SPT 6m	(2) 11	3.0	DRY	6.0		D
					P 6.0m	158	5.0	DIT	0.0		
							and and any second				
									7.2		D
					SPT	(7) 15	3.0	DRY	7.5		D
					7.5m	-					
					P 7.5m	175				-	
											1
					P 8.5m	>225			8.5	I	D
•					. 0.5111	-223			5.5		2
· · · · · · · · · · · · · · · · · · ·						l				.l	
GROUNDWATER OBS	ERVATIONS			TITLE							
Depth struck (m)	Behaviour	Depth Sealed (m)		Cable ar	nd Tool	Percus	ssive Bo	rehole	Reco	rd	
7.2	Rising to 6.95m after 20 mins	7.5	1	DRILLING						DRAW	ING No
	2.02. 20 mm/3			150mm	- GL to 3	35m	STG1	.672B-()2		
					ATES			ND LEVE	L		
				N/A			N/A				
	TION		1	DATE OF E		NC		HOLE No	I		
STANDPIPE INSTALLA				10.03.10)		BHO	2			
in/A			i								

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	(m)	TYPE & DEPTH (m)	RESULT	CASING	WATER	FROM		TY
· · · · · · · · · · · · · · · · · · ·				DEPTH(m)	LEVEL (IIII	(m)	(m)	
LT_T_T_						9.0	9.45	1110
						9.0	9.45	010
		D C C		-		0.45	-	-
		P 9.5m	>225	-		9.45		D
						10.0		D
		SPT	(5) 21	3.0	DRY	10.5		D
		10.5m						
			1				ł	
		· .	ĺ					
			-			11.5		D
							1	
		SPT	(5) 22	3.0	DRY	120		D
			,	5.0		12.0		5
		12111						
								1
								~
						13.0		D
		and the second sec						
			(4) 24	3.0	DRY	13.5		D
		13.5m						
						14.5		D
						15.0	15.45	U10
						1		
	222 222					15.45		D
			-					
						16.0		D
						-		
		SPT	(4) 24	3.0	DRY	16.5		D
					1			-
			200 P					
				. The date of				
						17.5		D
				Ì				
			an named a second					
						1		
	• • • • • • •				i			
		1 - 1 -		_				
E								
							RAWIN	GΝ
	150mm -	GL to 35	m	STG167	72B-02			
	CO-ORDINA	TES		GROUNE	LEVEL			
					/			
								
1	DATE OF EX	CAVATION		BOREHO	LE No			
E .	epth Sealed (m) 5	5 DRILLING DI 150mm - CO-ORDINA N/A	apth Sealed (m) 5	spr (5) 21 10.5m SPT (5) 22 12m SPT (5) 22 12m SPT (4) 24 13.5m SPT (4) 24 16.5m (4) 24 16.5m (4) 24 16.5m Cable and Tool Percussi DRILLING DIAMETER RANGE 150mm - GL to 35m CO-ORDINATES N/A	SPT (5) 21 3.0 SPT (5) 22 3.0 SPT (5) 22 3.0 SPT (4) 24 3.0 SPT (5) 22 3.0 SPT (4) 24 3.0 SPT (5) 22 3.0	SPT (5) 21 3.0 DRY 10.5m (5) 22 3.0 DRY 12m (5) 22 3.0 DRY 12m (4) 24 3.0 DRY 13.5m (4) 24 3.0 DRY 13.5m (4) 24 3.0 DRY 16.5m (4) 24 3.0 DRY 17.5m (4) 24 3.0 DRY 18.5m	SPT (5) 21 3.0 DRY 10.5 10.5m (5) 21 3.0 DRY 10.5 SPT (5) 22 3.0 DRY 12.0 12m 12m 13.0 DRY 12.0 12m 13.5m (4) 24 3.0 DRY 13.0 SPT (4) 24 3.0 DRY 13.5 13.5m (4) 24 3.0 DRY 13.5 13.5m (4) 24 3.0 DRY 15.0 15.0 15.5m 16.5m 15.45 16.0 SPT (4) 24 3.0 DRY 16.5 16.5m 16.5m 16.0 15.45 16.0 SPT (4) 24 3.0 DRY 16.5 16.0 15.5m 16.5m 15.0 17.5 SPT (4) 24 3.0 DRY 16.5 16.0 15.5m 16.5m 17.5 17.5 SPT (4) 24 3.0 DRY 16.5 15.5m 16.5m 17.5 17.5 17.5 </td <td>SPT (5) 21 3.0 DRY 10.5 10.5m SPT (5) 22 3.0 DRY 12.0 11.5 12m 13.0 DRY 12.0 12m 12m 13.0 DRY 12.0 13.0 SPT (4) 24 3.0 DRY 12.0 13.0 SPT 14.5 14.5 15.45 15.0 15.45 15.45 15.45 15.45 16.0 SPT 16.0 16.0 16.0 17.5 16.5m SPT (4) 24 3.0 DRY 16.5 16.0 SPT 16.5m 16.0 17.5 16.0 17.5 17.5 17.5 SPT 10.0AMETER RANGE LOCATION PLAN ON DRAWING 17.5 17.5 17.5 17.5 17.5 STG1672B-02 CO-ORDINATES GROUND LEVEL N/A N/A N/A 17.5</td>	SPT (5) 21 3.0 DRY 10.5 10.5m SPT (5) 22 3.0 DRY 12.0 11.5 12m 13.0 DRY 12.0 12m 12m 13.0 DRY 12.0 13.0 SPT (4) 24 3.0 DRY 12.0 13.0 SPT 14.5 14.5 15.45 15.0 15.45 15.45 15.45 15.45 16.0 SPT 16.0 16.0 16.0 17.5 16.5m SPT (4) 24 3.0 DRY 16.5 16.0 SPT 16.5m 16.0 17.5 16.0 17.5 17.5 17.5 SPT 10.0AMETER RANGE LOCATION PLAN ON DRAWING 17.5 17.5 17.5 17.5 17.5 STG1672B-02 CO-ORDINATES GROUND LEVEL N/A N/A N/A 17.5

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DESCRIPTION		LEGEND	DEPTH		, TEST RI	SULTS		And a subset of the second second	PLING	
			(m)	TYPE & DEPTH (m)	RESULT	CASING DEPTH (m)		FROM (m)	TO (m)	TYPE
Very stiff greyish brown CLAY (descr continued from previous page).	ription			SPT 18m		3.0	DRY	18.0		D
(LONDON CLAY)										
			-					19.0		D
						7.5		19.5		U100 (100)
								19.95		D
Hard brown, orange brown, red bro	wn, blue grey		20.2							
and green slightly silty CLAY. (LAMBETH GROUP)				P 21.0m	>225			21.0		D
								21.5	22.0	в
				SPT 22m	(13) 50	75	DRY	22.0		D
				5112211	for 250mm		DAT	22.0		,
				P 23.0m	> 2 75			23.0		D
				P 23.0m	>225			23.0		D
						reader and the second second second				
				SPT 24m	(9) 45	7.5	DRY	24.0		D
								a and a constant of the		
				P 25.0m	>225			25.0	and a second sec	D
								1111 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
						7.5		26.0 26.45		U100 (100) D
								20.45		
GROUNDWATER OBSERVATIONS			T-1 TLE				1	<u>.</u>)	. <u>i</u>
Depth struck (m) Behaviour 7.2 Rose to 6.95m after 20 mins	Depth Sealed (m) 7.5	DF		d Tool I	R RANGI	E LOCA				NG No
		cc	50mm - D-ORDIN /A	GL to S	35M		L672B-I IND LEVE			
STANDPIPE INSTALLATION				XCAVATIO	ON		HOLE No			

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DESCRIPTION	LEGEND	DEPTH (m)		TEST R	ESULTS			MPLING	
			TYPE & DEPTH (m	RESULT	CASING DEPTH (m)	WATER	FROM (m)	TO (m)	TY
Hard brown, orange brown, red brown, blue grey			P 27.0m	1	000 111 (111)		27.0		D
and green slightly silty CLAY (description continued							27.0		2
from previous page).									
(LAMBETH GROUP)		1							
		1							
		1	SPT 28m	1	7.5	DRY	28.0		D
		-	P 28.0m	>225					
		1						-	
		1						1	
		1	:					l	1 1
		-	P 29.0m	>225			29.0	i İ	D
		4							
		-							
		-							
							!		1
		-	SPT 30m	(26) 51	5) 51	DRY	30.0		D
		1		for				i	
				225mm					
			1						}
		1							
							21.0		-
		1					31.0		D
									1
					7.5		32.0	32.45	U10
			-						(100
							32.45		D
							33.0		D
				-					
			SPT 34m	(33) 50	76	DRY	24.0		_
			511 5411	(55) 50 for	1.3	DIL	34.0		D
				70mm					
						2			
• • • • • • • • • • • • • • • • • • •		25.0							
BOREHOLE TERMINATED AT 35.0m		35.0			-				
1. Refer to key at beginning of this appendix for									
explanation of symbols	1				• •	······		•	
explanation of symbols GROUNDWATER OBSERVATIONS	TITLE		Telle			enole f	record	d	
explanation of symbols GROUNDWATER OBSERVATIONS Depth struck (m) Behaviour Depth Sealed (m)	Cabl	e and	Tool P						
explanation of symbols GROUNDWATER OBSERVATIONS Depth struck (m) Behaviour Depth Sealed (m) 7.2 Rose to 6.95m 7.5m	Cabl	e and			LOCATIO	ON PLAN	ON DF	RAWIN	IG N
explanation of symbols GROUNDWATER OBSERVATIONS Depth struck (m) Behaviour Depth Sealed (m)	Cabl	e and		RANGE		ON PLAN	ON DF	RAWIN	IG N
explanation of symbols GROUNDWATER OBSERVATIONS Depth struck (m) Behaviour Depth Sealed (m) 7.2 Rose to 6.95m 7.5m	Cabl DRILL 150r CO-O	e and	AMETER GL to 3	RANGE	LOCATIO STG16 GROUN	ON PLAN 72B-02	I ON DF 2	RAWIN	IG Ni
explanation of symbols GROUNDWATER OBSERVATIONS Depth struck (m) Behaviour Depth Sealed (m) 7.2 Rose to 6.95m 7.5m	Cabl DRILL 150r CO-O N/A	le and ING DI mm - RDINA	AMETER GL to 3	range 5m	LOCATIC STG16	DN PLAN 72B-02 D LEVEL	I ON DF 2	RAWIN	IG N

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	DESCRIPTION		LEGENI	D DEPTH (m)	TYPE &	TEST R	CASING	WATER	SA FROM	MPLING TO	TYP
			****	юc	DEPTH (m)	RESULT	DEPTH (m)			(m)	ļ
Black bituminous b SAND and GRAVEL consists of mixed ig MADE GROUND)	and COBBLES of	granite. Gravel		0.0					0.0	0.5	В
Firm becoming stiff CLAY with occasion consists of flint, con MADE GROUND)	al cobbles of co	ncrete. Gravel		1.7	SPT 1m P 1.0m	(2) 7 129		DRY	1.0	- N. M. C. MARINE CO. C. M. C. MARINE CO. C. M.	D
Stiff orange brown (LYNCH HILL GRAV)		ntly sandy CLAY.			P 2.0m	88			2.0		D
							1.5		2.5	2.95	(45)
· · · · · · ·			12222	2.8	P 2.9m	133			2.9		D
Very stiff orange b Gravel consists of f (LYNCH HILL GRAV	lint.	elly CLAY.			SPT (c) 3m	(3) 20	3.0	DRY	3.0	3.5	В
Stiff brown slightly Gravel consists of 1	lint.	velly CLAY.		3.9	SPT 4m P 4.0m	(4) 14 108	4.0	DRY	4.0		D
(LYNCH HILL GRAV	LYNCH HILL GRAVEL)			4.8					5 		-
Stiff becoming very becoming slightly s					P 5.0m	113	An Andrea Andrea an Ma		5.0		D
(LONDON CLAY)					SPT 5.5m	(3) 12	4.0	DRY	5.5		D
					P 5.5m	142	and the second se				
					P 6.5m	138	And and a second second second		6.5 6.6	7.0	D B
					D.7.4m	100	7.0		7.0	7.45	(80)
					P 7.4m	163			7.4	And a second	D
					P 8.0m	175		_	8.0		D
					SPT 8.5m P 8.5m	(5) 23 208	7.0	DRY	8.5		D
	EDVATIONS			TITLE							
GROUNDWATER OBS Depth struck (m) 3.0m	BERVATIONS Behaviour Rising to 2.9m after 15 minutes	Depth Sealed 4.0m		Cable an			LOCAT	ION PLA			ING N
6.6m	Rising to 6.35 after 15 minutes	7.0m	(150mm · co-ordin/		85m	GROU	672B-0			
	arter 15 minutes			N/A			N/A				
STANDPIPE INSTALL 7.0m – Water or	-	ing STG1672B-05)		DATE OF E 12.03.10		N	BOREF BH03	HOLE No			

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	DESCRIPTION		LEGEND	DEPTH (m)	TYPE &	1231 8		WATER	FROM	TO	5 TYF
						RESULT	CASING DEPTH (m)			(m)	111
Stiff becoming ve	ery stiff greyish b	rown slightly silty			-					1	
CLAY.											
LONDON CLAY)					P 9.5m	192			9.5		D
								5.5	1		
					CDT	(4) 24	7.0	DBV	10.0		_
					SPT	(4) 24	7.0	DRY	10.0		D
					10m						
				P 10.0m	221						
					P 11.0m	221			11.0		D
										1	
									-		
										i	
							7.0		12.0	12.4	U10
											(80)
					P 12.5m	200	r :		12.45	1.00	D
											-
					D 12 0	102			12.0		~
					P 13.0m	192			13.0		D
											i
					(7) 25	7.0	DRY	13.5		D	
					13.5m						
					P 13.5m	>225					
				-							
					P 14.5m	>225			14.5		D
					SPT	(9) 29.	70	DRY	15.0		D
				i	15m	(0) 20.	1.0	2	15.0		5
						>225					
					F 15.011	~~~					
				i							
				1	P 16.0m	>225			16.0		
					1						1
				- + 1			7.0		16.5	16.9	U100
				1							(100
				Ì	an in the second						
				:					16.95		D
								1	17.5		D
				1							
					r or rik Maaa			Ì			
CDOUND344777 -=	CE01/47:00:0				b.		n i i i i i i i i i i i i i i i i i i i				
GROUNDWATER OB Depth struck (m)		Donth Coole	TITLE	ار مد ما	Tool D	FO				ام	
3.0m	Behaviour Rising to 2.9m	Depth Sealed 4.0m	Ì		Tool Pe						
	after 15 minutes	4.0m			AMETER R GL to 35		LOCATIO			RAWI	NG No
6.6m	Rising to 6.35 after 15 minutes	7.0m	CO⊦OR N/A	RDINAT	ΈS		GROUNI N/A	D LEVEL			
	ATION (refer to Down	ing STG1673B OF	DATE (AVATION		BOREHC	DLE No			
JURNOFIEL INSTALL	ATION (refer to Draw	101212128-02)	12.03	3.10			BH03				
7.0m – Water O			1								

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	DESCRIPTION		LEGEND	DEPTH (m)		TEST RE				APLING	
				1117	TYPE & DEPTH (m)	RESULT	CASING DEPTH (m)	WATER LEVEL (m)	FROM (m)	TO (m)	TΥ
tiff becoming very	stiff greyish bro	wn slightly silty			SPT	(11)	7.0	DRY	18.0		D
LAY (description c					18m	30				4 Marco - 1944 P	
LONDON CLAY)					P 18.0m	204					
· · · · · · · · · · · · · · · · · · ·											
					P 19.0m	>225			19.0		D.
					1 15.011				1510		
					SPT	(10)	7.0	DRY	19.5		D
					19.5m	38	7.0	DI	15.5		0
					19.50	50				1.01	
				20.1			1. TA 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.				
		brown mottlad		20.1					20.2		~
lard brown, red br		brown mottleu		1	P 20.2m	>225			20.2		D
rey and black CLA				ł							
LAMBETH GROUP)	1			-							
							7.0		21.0		U1
											(10
					P 21.4m	>225			21.4		D
				4							
					P 22.0m	>225			22.0		D
]	4						
]	SPT	(17)	7.0	DRY	22.5		Ð
]	22.5m	50 for	1				
						235					
						mm					
				1							
]					23.5		D
							1		23.5	-	0
								1			
					· · · · ·	(1.0)					-
				1	SPT	(10)	7.0	DRY	24.0		D
					24m	49		-	1		
					P 24.0m	>225					
								-			1
									25.0		D
				1			1				U1
				1			7.0		25.5	25.95	(10
				1							
					1				25.95		D
]							
]	P 26.5	>225			26.5	-	D
				3						-	
				3)				1. J. 2000	
]			-		1	1 1	
				ся С		• • • • • • • • •		· · · · · · · ·			
GROUNDWATER OBS		Denth Carles	TITI Cal		d Tool I	Dorcus	civo Ro	rehole	Reco	rd	
Depth struck (m)	Behaviour Bising to 2 9m	Depth Sealed 4.0m									
3.0m	Rising to 2.9m after 15 minutes	+.0III			IAMETER					RAWI	NG
	arter 15 minutes		150)mm ·	GL to 3	35m	STG1	672B-0)2		
	Rising to 6.35	7.0m	CO-	ORDIN	ATES		GROU	ND LEVE	L		
6.6m	after 15 minutes		N//				N/A				
6.6m			1	-							
6.6m											
6.6m STANDPIPE INSTALLA	TION Inforto De-	ing \$TG16720 ()5)		TE OF E	XCAVATIO	N	BOREF BH03	HOLE No			

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DESCRIPTION	LEGEND	DEPTH (m)		TEST RESULTS			1	MPLING	
		(···)	TYPE & DEPTH (m)	RESULT	CASING DEPTH (m)		FROM (m)	TO (m)	TY
Hard brown, red brown and orange brown mottled			SPT	(12)	7.0	DRY	27.0	1	D
grey and black CLAY (description continued from				1	7.0	DKI	27.0	í.	
previous page).			27m	45					
LAMBETH GROUP)				\$					
							1		
							28.0		D
			P 28.5m	>225				ł	
			SPT	(15)	7.0	DRY	28.5		D
			28.5m	50 for					
				255m					
				mm					
							29.5		5
							29.5		D
									(
					7.0		30.0	30.4	
		:						1	(100
			P 30.5m	>225			30.4	1	D
]								
			1				31.0		D
			SPT	(21)	7.0	DRY	31.5		D
		1	31.5m	50 for		DAT	51.5		5
			51.511	180					
				mm					
									_
							32.5		D
		1							
			SPT	(29)	7.0	DRY	33.0		D
			33m	50 for					
				150		1			
				mm					
							34.5		
									U100
			1		7.0		34.5		
							J-1.J	J-1.0J	,100
							34.9		D
		35.0					34.9		J
OREHOLE TERMINATED AT 35.0m <u>OTES</u>									
 Refer to key at beginning of this appendix for explanation of symbols 			And a second						
		с. ж.й.		k	e inclui		· · · · ii		
GROUNDWATER OBSERVATIONS	TITLE	¹	Tallo						
Depth struck (m) Behaviour Depth Sealed 3.0m Rising to 2.9m 4.0m					ve Bore				
3.0m Rising to 2.9m 4.0m after 15 minutes	DRILLI	NG DIA	METER R	ANGE	LOCATIO	N PLAN	ON DF	RAWIN	IG No
GIGE 13 HIMAGS			GL to 35		STG167				
6.6m Rising to 6.35 7.0m									
after 15 minutes	CO-OR N/A		5		GROUNE	LEVEL			
					-				
	1		AVATION		BOREHO	LE No			
STANDPIPE INSTALLATION (refer to Drawing STG1672B-05)	12.03				BH03				

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			,									
	DESCRIPTION		LEGENI	D	DEPTH (m)		TEST R	y	MATCO	SA FROM	MPLING	ТҮРЕ
					• •	TYPE & DEPTH (m)	RESULT	CASING DEPTH (m)	WATER LEVEL (m)	3	(m)	ITPE
Grass onto loose br	own slightly silty	/ slightly	XXXX	\otimes	0.0			ļ		0.0	0.5	в
gravelly organic SAI			\times	∞	D.1			*			0.0	-
		ists of concrete,	*****	₩,	J. 1			complete a				
brick, flint and slate	2.	/	×***	▓.					5	Ĩ.		
(MADE GROUND)		/	XXXX	▓.								
			****	82								
Stiff dark brown an	d orange brown	slightly silty		₩.		SPT (c)	(3) 9	-	DRY	1.0	1.5	В
slightly gravelly CLA	Y. Gravel consis	sts of brick, ash		XX -		1.0m					1	
and concrete.				₩.		P 1.0m	96					1
(MADE GROUND)			XXXX	$\underline{\infty}$	1.6							1
		ere and many end							}	1		
Stiff orange brown	slightly sandy sli	ghtly gravelly							1		-	
CLAY. Gravel consi		0										i
(LYNCH HILL GRAVE						SPT	(5) 13	15	DRY	2.5		D
						2.5m	(3) 13	1.5	Ditt			-
						P 2.5m	113			ł		
			[=====				1			1		
												1
					3.5	P 3.5m	150			3.5		D
Very stiff brown me	ottled orange br	own sandy									-	
CLAY.												
(LYNCH HILL GRAVI	EL)											
•												
						SPT	(5) 17	1.5	DRY	4.5		D
						4.5m			-			
						P 4.5m	150			i		
							100					
				22							1	
				224 	5.4	P 5.5m	140			5.5		D
		CI AV			5.4	P 5.5m	146			5.5		U
Very stiff greyish b	rown slightly slit	Y CLAY.				-						
(LONDON CLAY)												
								1.5		6.0	6.45	U100
						1						(55)
						P 6.45m	142			6.45		D
								Readout 74 to				
					6.9			A - property		6.9	7.3	в
Dark brown clayey	GRAVEL and CO	BBLES of	O C	0						7.0		D
claystone.					7.3							
(LONDON CLAY)		/	/===			SPT	(5) 17	7.5	DRY	7.5		D
• • • • • • • • • • • • • • • • • • •	-					7.5m						14 M
Very stiff greyish b	rown slightly silt	V CLAY.				P 7.5m	163		1			1
(LONDON CLAY)		•					-					
						P 8.5m	171		1	8.5		D
										5.5		-
												4
									A Laker et la ser ser s	. 1	· · · · · · · · · · · · · · · · · · ·	
GROUNDWATER OBS	ERVATIONS			TITLE								
Depth struck (m)	Behaviour	Depth Sealed		Cab	le an	d Tool I	Percus	sive Bo	rehole	Reco	ord	
6.9m	Rising to 6.65m	7.5m		DRILL	ING [RANG				DRAW	ING No
	after 15 minutes		1			- GL to 2			672B-			
22.6m	Dising to 31 Fm											
23.6m	Rising to 21.5m after 15 minutes	-	1		RDIN	ATES			ND LEVE	:L		
	arter 15 minutes			N/A				N/A				
				DATE	OFE	XCAVATIO	N	BORE	HOLE No)		
STANDPIPE INSTALLA	ATION		4)3.10			BH04				
N/A			ł									

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	DESCRIPTION		LEGEND	DEPTH (m)	TYPE &	1531 M	ESULTS CASING	WATER	54 FROM	TO	ТУ
					DEPTH (m)	RESULT	DEPTH (m)			(m)	
Very stiff greyish t	prown slightly si	Ity CLAY		9.0	SPT 9m	(6) 20	7.5	DRY	9.0		D
(description contin					P 9.0m	200					
(LONDON CLAY)		page/.			r 9.0m	200					
										1	
											1
				10.0	P 10.0m	>225			10.0		D
					:					-	
					1						
				11.0	1		7.5		11.0	11.45	111
										5	(75
					P 11.45m	212			11.45		D
					, 11'+'''	213	-		11.40)	0
				17.0	D 40 6						
				12.0	P 12.0m	192			12.0		D
					SPT	(7) 27	7.5	DRY	12.5		D
					12.5m						
					P 12.5m	142					
				13.0							
					P 13.5m	204			13.5		D
				14.0	SPT	(7) 30	7.5	DRY	14.0		D
				11.0	14.0m	(7) 50	/.5	DRI	14.0		
						247					
					P 14.0m	217					
				1						1	
				45.0							
				15.0	P 15.0m	196			15.0		D
				16.0			7.5		16.0	16.45	U10
											(80)
					P 16.45m	196			16.45		(, D
						-					-
									1		
				17.0	P 17.0m	196			17.0		D
							-		±1.0		-
					SPT	(10)	7.5	DRY	17.5		D
						43			11.0		0
				1	P 17.5m	>225			1		
							i.				
GROUNDWATER OBSI	ERVATIONS		TITLE								
Depth struck (m)	Behaviour	Depth Sealed	Cable	e and	Tool Pe	rcussi	ve Bore	hole R	ecor	d	
6.9m	Rising to 6.65m	7.5m			METER R						с ×
	after 15 minutes				GL to 24		STG167			N	GΝ
23.6m	Disingto 21 F					111	21010	28-02			
23.0(1)	Rising to 21.5m after 15 minutes	-	CO-OR	DINAT	ΈS		GROUND	LEVEL			
	arter 13 minutes		N/A				N/A				
					AVATION		ROBELIO	I C NIż			
			DATE				BOREHO	LE NO			
STANDPIPE INSTALLA	HON		15.03	2 10			BH04				

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	DESCRIPTION		LEGE	ND DI	DEPTH (m)		TEST RE		14/4752		MPLING	-
					····/	TYPE & DEPTH (m)	RESULT	CASING DEPTH (m)	WATER LEVEL (m)	FROM (m)	TO (m)	TYI
ery stiff grevish bi	rown slightly silty	CLAY			18.0	P 18.0m	>225		·····	18.0		B
	ued from previous											
ONDON CLAY)		. = .				P 18.5m	221			18.5		D
•												
					19.0	SPT	(12) 39	7.5	DRY	19.0		D
						19.0m						
						P 19.0m	225					
												-
									1			
					20.0	P 20.0m	>225			20.0		D
						i.				20.2		D
												1
						1				-	-	
					21.0					21.0	21.4	U1
												(10
						P 21.4m	>225	1		21.4		D
					22.0			A COMPANY OF MANY		22.0		D
						-						
						SPT	(13) 51	7.5	DRY	22.5		D
						22.5m						
						P 22.5m	>225			•		
			H		23.0					Ē		
							2 20		1		-	
	· · · · · · · · · · · · · · · · · · ·				23.6		(15)	7.5	21.5	23.6		D
/erv dense light b	rown clayey SAND).			.	23.6m	53 for					A REPORT OF A
LAMBETH GROUP			de la composición Alternativa		24.0		225		1			1
		,					mm					
OREHOLE TERMI	NATED AT 24.0m					1	-					- 1910 - V. NAMARO
						ļ						
<u>IOTES</u>								-				
1 Defer to k	ey at beginning of	thic appendix f	or									
 Refer to k explanation 	of symbols	this appendix in										
	,									and other management		
						•						
			ĺ			-						
												4
						1 1		1	: 1 1	1		
				TITLE								
		Depth Sealed				d Tool I	Percus	sive Bo	rehole	Reco	rd	
GROUNDWATER OB		vepui seaieu										
Depth struck (m)	Behaviour	7.5m		108111	ling [DIAMETER	KANG	: LUCA			UKAW	ING
		7.5m				CI +- 1	24~~	CTC4	6770 4	າວ		
Depth struck (m)	Behaviour Rising to 6.65m after 15 minutes	7.5m			mm ·	- GL to 2	24m	STG1	.6728-0	02		
Depth struck (m)	Behaviour Rising to 6.65m after 15 minutes Rising to 21.5m	7.5m -		150 co-0	RDIN		24m	GROU	.672B-(
Depth struck (m) 6.9m	Behaviour Rising to 6.65m after 15 minutes	7.5m -		150	RDIN		24m					
Depth struck (m) 6.9m	Behaviour Rising to 6.65m after 15 minutes Rising to 21.5m	7.5m -		150 co-0 N/A	DRDIN			grou N/A		L		

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(EST OBSERVATIONS

Ition GU

W47FR LEVEL Head of water

above groundwater tevel (H)

1.89

1.81

1.76

1.72

1.69

1.66

1.63

1.61

1.59

1.56

1.54

1.50

1.48

1.46

1.43

1.40

1.28

1.08

1.00

0.850

0.760

0.690

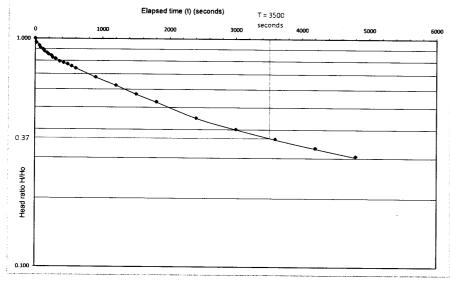
0.630

0.580

1.180

THORNO DEDLU

The basic time lag (T) is obtained from the plot of the head ratio H/Ho (log scale) against elapsed time t (seconds). The basic time lag corresponds to a value of H/Ho = 0.37 where Ho denotes the head at the start of the test and H is time measured head at the elapsed time t. The plot and identification of T is shown below.



Adopting the basic time lag method

k = permeability =
$$\frac{A}{FT}$$

Where F = intake factor (adopting fig 7D of BS5930)

$$F = \frac{2\pi L}{ln\left[\frac{L}{D} + \sqrt{1 + \left(\frac{L}{D}\right)^2}\right]} = 8.25$$

Then

Borehole dimensions:

$k = \frac{0.0123}{8.25 \times 3500} = 4.26 \times 10^{-7} \text{ms}^{-1}$	Borehole depth: Length of slotted casing under test	7.0m
0.25X 3500	Length of slotted casing under test	L= 6.0m
	Diameter of borehole	D = 0.125m
	Cross sectional area	A = 0.0123m
	Groundwater level	G = 2.52m

OF SCHOLING	LEGEND DEPTH		resto
	(m)	11Mf	WATER
Black bituminous bound material onto grey coarse SAND	0.0	(seconds)	(teor
and GRAVEL and COBBLES of granite. Gravel consists of	/	0	0.63
mixed igneous lithologies.		18	0.71
(MADE GROUND)	*****	60	0.76
		78	0.8
Firm becoming stiff dark brown sandy very gravelly CLAY	*****	120	0.83
with occasional cobbles of concrete. Gravel consists of	XXXXX	138	0.86
	XXXXXX	180	0.89
flint, concrete, brick and wood.	00000001.7		
(MADE GROUND)		198	0.91
$(1,2,\ldots,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,$		240	0.93
Stiff orange brown slightly silty slightly sandy CLAY.		258	0.96
(LYNCH HILL GRAVEL)	XXXXXX	300	0.98
(LINCH HILL GRAVEL)	2.8	360	1.02
- State of constraints and the second and the state of the second state of the second state of the second space of all second space of the seco		420	1.04
Very stiff orange brown sandy gravelly CLAY. Gravel		480	1.06
consists of flint.	XXXXXX	540	1.09
(LYNCH HILL GRAVEL)		600	1.12
(900	1.24
	3.9	1200	1.34
Stiff brown slightly silty slightly gravelly CLAY. Gravel		1500	1.44
consists of flint.		1800	1.52
(LYNCH HILL GRAVEL)	XXXXXX	2400	1.67
		3000	1.76
		3600	1.83
Stiff becoming very stiff greyish brown CLAY becoming		4200	1.89
slightly silty at 8m depth.		4800	1.94
(LONDON CLAY)		-000	1.54
· · · · · · · · · · · · · · · · · · ·			

BASE OF STANDPIPE INSTALLATION AT 7.0m

DESCRIPTION

BOREHOLE TERMINATED AT 10.0m DEPTH

Co-ordinates Gr N/A N,	ound level /A	****	Title Falling Head Test	carried out in accordance with
	ethod of excavation ABLE PERCUSSIVE			ection 25.4) and CIRIA special e Investigation Manual'
Groundwater observations BC Groundwater at 3m and 6m		į	Location BH03	Location plan on Drawing number STG1672B-02





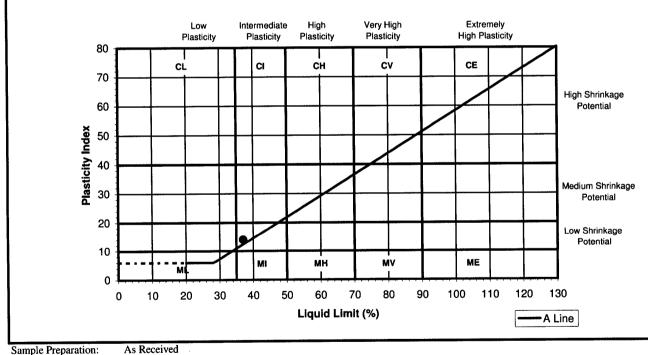
Determination of Atterberg Limits

Client:	Soiltechnics Limited	Report No:	50148492/10/1
Client Address:	Cedar Barn	Our Ref:	DAM0027040
	White Lodge, Walgrave		
	Northampton	Client Reference:	STG1672B
Postcode:	NN6 9PY	Sampled by:	Client
Contact:	Andy Keeler	Date Sampled:	11.03.10
		Date Received:	23.03.10
Site:	Coram Community Campus	Tested From:	23.03.10 to 25.03.10
		Sample Type:	Disturbed

Test Results:

Brown CLAY Description:

Laboratory Reference	Location	Depth	As Received Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	% Passing 425µm
45110959	BH02	3.00	N/A	37	23	14	100



Sample Preparation:

Estimated % passing 425µm

Certified that the laboratory testing was carried out in accordance with BS 1377-2: 1990: Method 4.4 and 5

Page: 1 of 1 Date: 01.04.10

Signed

M. Im

[✓] M. Carr - Section Manager [] D. Berrill - Laboratory Manager

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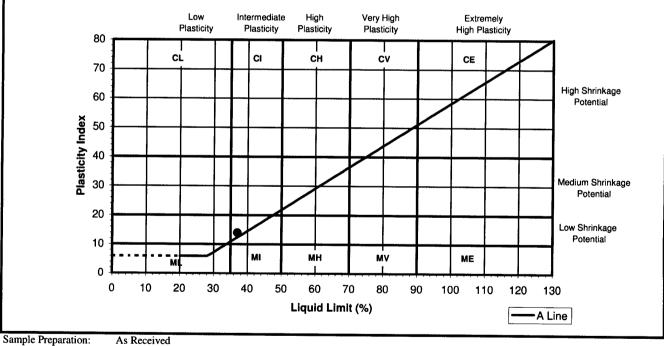




Determination of Atterberg Limits

Client:	Soiltechnics Limited	Report No:	50148492/10/2
Client Address:	Cedar Barn	Our Ref:	DAM0027040
	White Lodge, Walgrave		
	Northampton	Client Reference	STG1672B
Postcode:	NN6 9PY	Sampled by:	Client
Contact:	Andy Keeler	Date Sampled:	11.03.10
		Date Received:	23.03.10
Site:	Coram Community Campus	Tested From:	23.03.10 to 25.03.10
		Sample Type:	Disturbed
Test Results:			
Decemintian	Duran all shales and CLANC 141		

Description:	Brown slight	ly sandy CLA	Y with rare grave	el			
Laboratory Reference	Location	Depth	As Received Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	% Passing 425µm
45110960	BH03	2.00	N/A	37	23	14	95



As Received

Estimated % passing 425µm

Certified that the laboratory testing was carried out in accordance with BS 1377-2: 1990: Method 4.4 and 5

Page: 1 of 1 Date: 01.04.10

Signed

M. Im

[✓] M. Carr - Section Manager [] D. Berrill - Laboratory Manager

For and on behalf of Environmental Services Group Limited

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REPORT

EST

Determination of Particle Size Distribution

ient:	Soiltechnics Limited	Report No:	50148492/10/3	S	IEVE ANA	LYSIS
ient Address:	Cedar Barn	Our Ref:	DAM0027040	BS Sieve	Passing	Material
	White Lodge, Walgrave	Lab Ref:	45110961	(mm)	(%)	Specification
	Northampton			500	100	
stcode:	NN6 9PY	Client Ref:	STG1672B	300	100	
ntact:	Andy Keeler	Location:	BH02	125	100	
intuot.		Depth (m):	0.05-0.50	100	100	
e:	Coram Community Campus	Dopin (iii).		90	100	
c .	Coram Community Campus			75	100	
				63	100	
mpled by:	Client	Date Sampled:	11.03.10	50	95	
npled from:	Site	Date Received:	23.03.10	37.5	89	
-	Client	Sample Type:	Bulk	28	88	
oplier:				20	81	
urce:	Site	Sample Mass (kg):	0.4	20 14	76	
				10	70 (2	
				6.3	63	
scription:	Brown very clayey Sand and Gravel			5	61	
				3.35	58	
				2	55	
ecification:	Not Required			1.18	52	
				0.600	47	
				0.425	42	
mments:				0.300	34	
				0.212	30	
				0.150	29	
				0.063	24	<u>.</u>
100						
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80 70 50 50 90						
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80 70 70 50 50 30 20						
80 70 60 50 40 30 10	0.1	l Nominal apperture of te	10		00	
80 70 70 60 50 50 30 20 10 0 0.01		I Nominal apperture of te	10 st sieve (mm)		00	
80 70 70 50 50 30 10 0 0.01 ertified that th	e Particle Size Distribution was determine		10 st sieve (mm)		00	
80 70 70 50 50 40 30 10 0 0.01 ertified that th	e Particle Size Distribution was determine		10 st sieve (mm)		00	
80 70 70 70 70 70 70 70 70 70 7	e Particle Size Distribution was determine	ned in accordance with	10 st sieve (mm) n BS 1377 - 2 : 1990, M	ethod 9.2		
80 80 70 70 70 60 50 50 30 10 0 0.01 ertified that the lethod of Prep age: 1 of 1	ne Particle Size Distribution was determin paration: BS 1377 - 1 & 2 : 1990		10 st sieve (mm) n BS 1377 - 2 : 1990, M	ethod 9.2 . Carr - Secti	on Manage	
80 80 70 70 70 70 70 70 70 70 70 70 70 70 70	ne Particle Size Distribution was determine paration: BS 1377 - 1 & 2 : 1990 Signed:	ned in accordance with M · Luw	10 st sieve (mm) n BS 1377 - 2 : 1990, M	ethod 9.2 . Carr - Secti Berrill - Lal	on Manage	r

Environmental Services Group Ltd
2 Newton Close
Drayton Fields Industrial Estate
Daventry
Northants NN11 8RR

Telephone: +44 (0) 1327 703828

Facsimile: +44 (0) 1327 300154







Determination of Particle Size Distribution

	Client:	Soiltechnics Limited	Report No:	50148492/10/4	S	IEVE ANA	LYSIS
	Client Address:		Our Ref:	DAM0027040	BS Sieve	Passing	Material
-		White Lodge, Walgrave	Lab Ref:	45110962	(mm)	(%)	Specification
	Postcode:	Northampton NN6 9PY	Client Ref:	STG1672B	500 300	100 100	
-	Contact:	Andy Keeler	Location:	BH02	125	100	
-			Depth (m):	GL-0.50	100	80	
	Site:	Coram Community Campus	1		90	80	
					75	80	
أتزرقه	a	6 11			63	80	
-	Sampled by: Sampled from:	Client Site	Date Sampled: Date Received:	11.03.10 23.03.10	50 27.5	76 76	
	Supplier:	Client	Sample Type:	23.03.10 Bulk	37.5 28	76 71	
	Source:	Site	Sample Mass (kg):	6.1	20	65	
-					14	58	
-					10	51	
					6.3	44	
	Description:	Brown silty SAND with crushed concrete	and brick		5	41	
					3.35 2	38 35	
-	Specification:	Not Required			2 1.18	35 33	
					0.600	30	
					0.425	27	
-	Comments:				0.300	23	
					0.212	20	
					0.150 0.063	17 13	
				1	0.005	15	
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	80 au						
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	0.01		Nominal apperture of test	10 sieve (mm)	100	1	1000
		Particle Size Distribution was determined	in accordance with I	BS 1377 - 2 : 1990, Met	hod 9.2		
	Method of Prepa						
. 5-68	. .						
	Page: 1 of 1 Date: 01.04.10	Signed:	M. Im		Carr - Section errill - Labo		ager
- 11300)			If of Environmental S	Services Group Limited			0
-			ations expressed herein are outside	-			
		International In		e prior written approval of the issuing la ed Office: Askern Road, Carcroft, Donc			





Determination of Undrained Shear Strength in Triaxial Compression

Client: Contact: Site:	Soiltechnics Limited Cedar Barn White Lodge, Walgrave Northampton NN6 9PY Andy Keeler Coram Community Campus		Report No: Our Ref: Date Sampled: Date Received: Sampled By: Sampling Certificate: Sample Type:	50148492/10/5 DAM0027040 11.03.10 23.03.10 Client Not Received U100
Sample Details:	Laboratory Reference:	45110963	45110964	45110965
	Client Ref:	STG1672B	STG1672B	STG1672B
	Location:	BH02	BH02	BH02
	Depth (m):	4.50-4.95	15.00-15.45	26.00-26.45
	Initial Height (mm)	207	207	207
	Initial Diameter (mm)	101	102	103
	Bulk Density (Mg/m ³)	1.95	2.05	1.97
	Moisture Content (%)	32	21	27
	Dry Density (Mg/m ³)	1.48	1.69	1.55
Test Conditions:	Cell Pressure (kPa)	90	300	520
	Rate of Strain (mm/min.)	2.5	2.5	2.5
Failure Conditions:	Max Deviator Stress (kPa)	156	425	382
	Strain (%)	7.1	20.2	15.9
	Shear Strength (kPa)	78	212	191
Failure Diagram:				
Mode of Failure: Depth of test specime original sample (mm)		Barrel/Shear 26	Barrel 32	Shear 38

Sample Description:45110963Brown CLAY45110964Brown CLAY45110965Brown grey CLAY

Comments:Sample Preparation:UndisturbedOrientation:Maintaining sample direction.Membrane:Latex rubber 0.40mm thick.

Certified that the test was carried out in accordance with BS 1377-7 :1990, Method 8 Certified that the Moisture Content was determined in accordance with BS 1377-2:1990, Method 3.2

Signed:

Page Date: 1 of 1 01.04.10



[✓] M. Carr - Section Manager
 [] D. Berrill - Laboratory Manager

For and on behalf of Environmental Services Group Limited

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Environmental Services Group Ltd 2 Newton Close Drayton Fields Industrial Estate Daventry Northants NN11 8RR Telephone: +44 (0) 1327 703828

Facsimile: +44 (0) 1327 300154





TEST REPORT

Determination of Undrained Shear Strength in Triaxial Compression

Client: Contact: Site:	Soiltechnics Limited Cedar Barn White Lodge, Walgrave Northampton NN6 9PY Andy Keeler Coram Community Campus		Report No: Our Ref: Date Sampled: Date Received: Sampled By: Sampling Certificate: Sample Type:	50148492/10/6 DAM0027040 11.03.10 23.03.10 Client Not Received U100
Sample Details:	Laboratory Reference:	45110966	45110967	45110968
	Client Ref:	STG1672B	STG1672B	STG1672B
	Location:	BH03	BH03	BH04
	Depth (m):	21.00-21.45	30.00-30.45	11.00-11.45
	Initial Height (mm)	207	207	207
	Initial Diameter (mm)	101	103	103
	Bulk Density (Mg/m ³)	2.10	2.10	1.96
	Moisture Content (%)	21	23	26
	Dry Density (Mg/m ³)	1.74	1.70	1.55
Test Conditions:	Cell Pressure (kPa)	420	600	220
	Rate of Strain (mm/min.)	2.5	2.5	2.5
Failure Conditions:	Max Deviator Stress (kPa)	546	416	165
	Strain (%)	13.4	14.0	11.7
	Shear Strength (kPa)	273	208	83
Failure Diagram:				
45110967 Brown		Shear 36	Shear 22	Barrel 35

Comments: Sample Preparation: Undisturbed Orientation: Maintaining sample direction. Membrane: Latex rubber 0.40mm thick.

Certified that the test was carried out in accordance with BS 1377-7 :1990, Method 8

Certified that the Moisture Content was determined in accordance with BS 1377-2:1990, Method 3.2

Page Date:	1 of 1 01.04.10	Signed:	M. Im	[√] M. Carr - Section Manager [] D. Berrill - Laboratory Manager
		For and on be	half of Environmental Service	s Group Limited
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Depot Road Newmarket CB8 0AL Tel: 01638 606070

Soiltechnics Limited Cedar Barn. White Lodge, Walgrave Northampton NN6 9PY

FAO Andv Keeler 06 April 2010

Dear Andy Keeler

Test Report Number 87294 **Your Project Reference** STG1672B - Coram Community Campus

Please find enclosed the results of analysis for the samples received 24 March 2010.

All soil samples will be retained for a period of one month and all water samples will be retained for 7 days following the date of the test report. Should you require an extended retention period then please detail your requirements in an email to customerservices@chemtest.co.uk. Please be aware that charges may be applicable for extended sample storage.

If you require any further assistance, please do not hesitate to contact the Customer Services team.

Yours sincerely



⊿ Darrell Hall D Phil Hellier Keith Jones D John Crawford D Malcolm Avis

Director Director **Technical Manager Quality Manager** Director

Notes to accompany report:

- The sign < means 'less than'
- Tests marked 'U' hold UKAS accreditation
 - Tests marked 'M' hold MCertS (and UKAS) accreditation Tests marked 'N' do not currently hold UKAS accreditation
 - Tests marked 'S' were subcontracted to an approved laboratory



- n/e means 'not evaluated' i/s means 'insufficient sample' u/s means 'unsuitable sample'
- Comments or interpretations are beyond the scope of UKAS accreditation
- The results relate only to the items tested

Test Report 87294 Cover Sheet



Depot Road Newmarket CB8 0AL Tel: 01638 606070

Soiltechnics Limited Cedar Barn, White Lodge, Walgrave Northampton NN6 9PY

FAO Andy Keeler 31 March 2010

Dear Andy Keeler

Test Report Number87297Your Project ReferenceSTG1672B - Coram Community Campus

Please find enclosed the results of analysis for the samples received 24 March 2010.

All soil samples will be retained for a period of one month and all water samples will be retained for 7 days following the date of the test report. Should you require an extended retention period then please detail your requirements in an email to customerservices@chemtest.co.uk. Please be aware that charges may be applicable for extended sample storage.

If you require any further assistance, please do not hesitate to contact the Customer Services team.

Darrell Hall

Phil Hellier

Keith Jones

D John Crawford

D Malcolm Avis

Director

Director

Director

Technical Manager

Quality Manager

Yours sincerely

Authorised Signatory

Notes to accompany report:

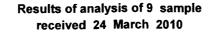
- The sign < means 'less than'
- Tests marked 'U' hold UKAS accreditation
- Tests marked 'M' hold MCertS (and UKAS) accreditation
- Tests marked 'N' do not currently hold UKAS accreditation
- Tests marked 'S' were subcontracted to an approved laboratory
- n/e means 'not evaluated'
- i/s means 'insufficient sample'
- u/s means 'unsuitable sample'
- Comments or interpretations are beyond the scope of UKAS accreditation
- The results relate only to the items tested

Test Report 87297 Cover Sheet

Soiltechnics Limited Cedar Barn, White Lodge, Walgrave Northampton NN6 9PY

FAO Andy Keeler

LABORATORY TEST REPORT





Report Date 01 April 2010

STG1672B - Coram Community Campus

	Batch No st LIMS ID ID				87297 AE80724 TP02b
Sample Depth Matrix	No				0.9m LEACHATE
SOP↓ 1010	Determinand↓ pH	CAS No∔ PH	Units↓ -	Ů	8.1
	Nitrate	14797558	mg I-1	U	12
	Cyanide (complex)	57125	mg I-1	U	< 0.05
	Cyanide (total)	57125	mg I-1	U	< 0.05
1000	Cyanide (free)	57125	mg I-1	U	< 0.05
1325	Sulfide	18496258	mg I-1	U	<0.05
	Sulfate	14808798	mg l-1	U	9.1
1450	Arsenic	7440382	µg 1-1	U	<1.0
	Boron	7440428	µg l-1	U	<20
	Beryllium	7440417	µg l-1	U	<1.0
	Cadmium	7440439	µg -1	U	<0.080
	Chromium (total)	7440473	µg -1	U	2.6
	Copper	7440508	μg I-1	U	<1.0
	Mercury	7439976	µg I-1	U	<0.50
	Nickel	7440020	µg -1	U	1.4
	Lead	7439921	µg -1	U	<1.0
	Selenium	7782492	µg l-1	U	<1.0
	Vanadium	7440622	µg l-1	U	1.2
	Zinc	7440666	µg I-1	U	<1.0
1800		91203	µg ŀ-¹	N	<0.1
	Acenaphthylene	208968	µg I-1	N	<0.1
	Acenaphthene	83329	µg I-1	N	<0.1
	Fluorene	86737	µg -1	N	<0.1
	Phenanthrene	85018	µg l-1	Ν	<0.1
	Anthracene	120127	µg l-1	N	<0.1
	Fluoranthene	206440	µg l-1	Ν	<0.1
	Pyrene	129000	µg -1	N	<0.1
	Benzo[a]anthracene	56553	µg I-1	N	<0.1
	Chrysene	218019	µg -1	Ν	<0.1
	Benzo[b]fluoranthene	205992	µg I-1	N	<0.1
	Benzo[k]fluoranthene	207089	µg I-¹	N	<0.1

All tests undertaken between 26-Mar-2010 and 31-Mar-2010

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

Column page 1 Report page 1 of 4 Report sample ID range AE80716 to AE80724