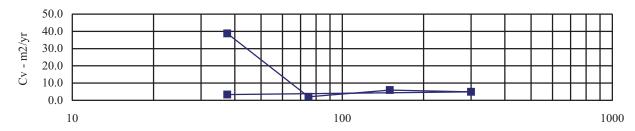
BS 1377: Part 5: 1990

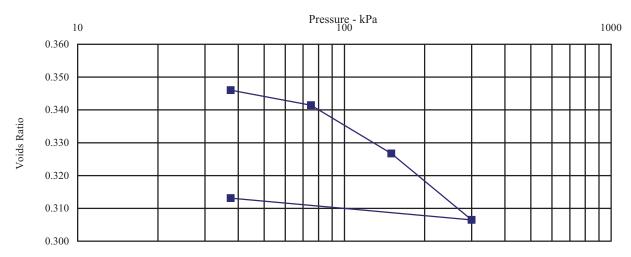
Depth (m): **Hole Number: BH9** 7.50-7.95

Sample Number: **Sample Type:** U

Initial Conditions		Pres	sure Ra	nge	Mv	Cv	Specimen location	
Moisture Content (%):	13		kPa		m2/MN	m2/yr	within tube:	Top
Bulk Density (Mg/m3):	2.20	0	-	37.5	0.239	38.776	Method used to	
Dry Density (Mg/m3):	1.95	37.5	-	75	0.091	2.021	determine CV:	t90
Voids Ratio:	0.358	75	-	150	0.146	5.977	Nominal temperature	
Degree of saturation:	94.8	150	-	300	0.102	4.873	during test 'C:	20
Height (mm):	20.05	300	-	37.5	0.019	3.345	Remarks:	
Diameter (mm)	75.02						See summary of soils descri	ption.
Particle Density (Mg/m3):	2.65							
Assumed								



Pressure -kPa



	Checked by	Date	Approved by	Date
	Ste	11/08/14	Ste	11/08/14
PHASE 2 LIVERP	OOL BUSIN	NESS	Contrac	t No.
PARK, S	PEKE.		PSL14/3	3631
			Page	of

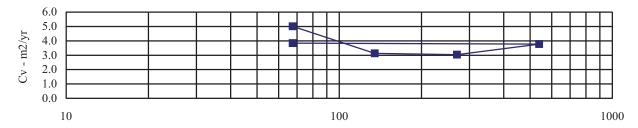


BS 1377: Part 5: 1990

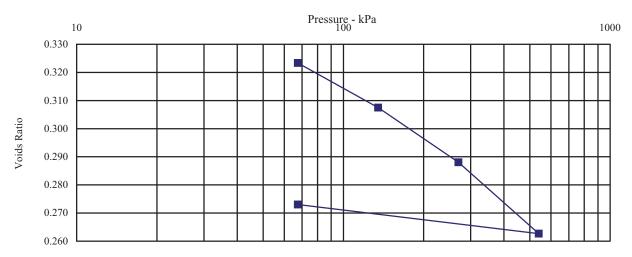
Hole Number: BH9 Depth (m): 13.50-13.95

Sample Number: Sample Type: U

Initial Conditions		Pres	sure Ra	nge	Mv	Cv	Specimen location	
Moisture Content (%):	13		kPa		m2/MN	m2/yr	within tube:	Тор
Bulk Density (Mg/m3):	2.21	0	-	67.5	0.301	5.007	Method used to	
Dry Density (Mg/m3):	1.96	67.5	-	135	0.178	3.123	determine CV:	t90
Voids Ratio:	0.351	135	-	270	0.110	3.040	Nominal temperature	
Degree of saturation:	95.9	270	-	540	0.073	3.775	during test 'C:	20
Height (mm):	20.01	540	-	67.5	0.017	3.840	Remarks:	
Diameter (mm)	75.02						See summary of soils descri	ption.
Particle Density (Mg/m3):	2.65							
Assumed								



Pressure -kPa



		Checked by	Date	Approved by	Date
		Ble	11/08/14	Sle	11/08/14
PSL	PHASE 2 LIVERP	OOL BUSIN	NESS	Contrac	t No.
nal Soils Laboratory	PARK, S	PEKE.		PSL14/3	3631
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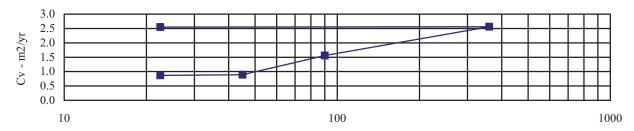
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BS 1377: Part 5: 1990

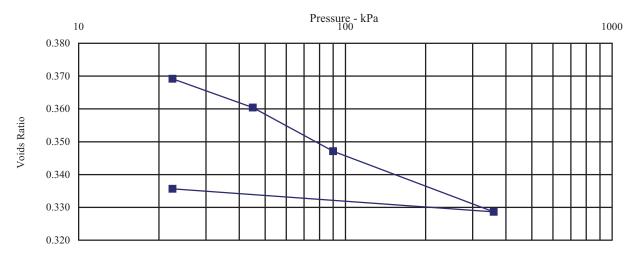
Depth (m): **Hole Number: BH10** 4.50-4.95

Sample Number: **Sample Type:** U

Initial Conditions		Pres	sure Ra	nge	Mv	Cv	Specimen location	
Moisture Content (%):	14		kPa		m2/MN	m2/yr	within tube:	Top
Bulk Density (Mg/m3):	2.27	0	-	22.5	0.444	0.869	Method used to	
Dry Density (Mg/m3):	1.99	22.5	-	45	0.284	0.893	determine CV:	t90
Voids Ratio:	0.383	45	-	90	0.218	1.559	Nominal temperature	
Degree of saturation:	103.2	180	-	360	0.076	2.558	during test ' C:	20
Height (mm):	20.22	180	-	22.5	0.034	2.552	Remarks:	
Diameter (mm)	75.02						See summary of soils descri	ption.
Particle Density (Mg/m3):	2.75							
Assumed								



Pressure -kPa



	Checked by	Date	Approved by	Date
	Ste	11/08/14	Ste	11/08/14
PHASE 2 LIVERP	OOL BUSIN	NESS	Contrac	t No.
PARK, S	PEKE.		PSL14/3	3631
			Page	of



LABORATORY REPORT



4043

Contract Number: PSL14/3632

Client's Reference: Report Date: 15 September 2014

Client Name: Arc Environmental

Solum House Unit 1 Elliott Court

St Johns Road, Meadowfield

Durham DH7 8PN

For the attention of: Matt Bradford

Contract Title: Phase 3 Liverpool Business Park, Speke

Date Received: 24/7/2014 Date Commenced: 24/7/2014 Date Completed: 13/8/2014

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

R Gunson A Watkins M Beastall
(Director) (Leherstery Mor

(Director) (Director) (Laboratory Manager)

D Lambe S Royle

(Senior Technician) (Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,

Doncaster DN4 0AR

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Page 1 of

M.Sus-

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Depth m	Description of Sample
TPA		8	2.00	Brown slightly gravelly very sandy CLAY.
TPB		B	1.00	Dark brown slightly gravelly silty SAND.
TPC		В	2.00	Brown slightly gravelly sandy CLAY.
TPD		В	2.00	Brown slightly gravelly sandy CLAY.
TPE		В	3.00	Brown slightly gravelly very sandy CLAY.
TPF		В	2.00	Brown slightly gravelly sandy CLAY.
BHA		D	4.00	Brown slightly gravelly sandy CLAY.
BHB		D	5.00	Brown slightly gravelly sandy CLAY.
BHC		В	3.50-4.00	Brown slightly gravelly sandy CLAY.
BHD		D	3.20	Brown slightly gravelly sandy CLAY.
BHE		D	3.00	Brown slightly gravelly sandy CLAY.
BHA		В	1.50-2.00	Greyish brown slightly gravelly clayey SAND.
BHD		В	1.50 - 3.00	Dark grey mottled reddish brown gravelly clayey silty SAND.
TPB		В	3.00	Brown slightly gravelly very sandy CLAY.
TPF		В	1.00	Greyish brown clayey SAND.
BHB		В	1.50 - 3.00	Dark brown slightly gravelly very clayey very silty SAND.
BHE		D	1.00	Dark grey mottled reddish brown very gravelly clayey silty SAND.
BHA		n	4.50-4.95	Firm reddish brown slightly gravelly slightly sandy CLAY.
BHA		n	7.50-7.95	Stiff reddish brown slightly gravelly slightly sandy CLAY.

	Professional Soils Laboratory
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Compiled by	Date	Checked by	Date	Approved by	Date
Mal	13/08/14	M. Suss	13/08/14	M. bus	13/08/14
BUASE 3.1	MEDDO	Adva Sanisha looqaani tasana	DL	Contract No:	PSL14/3632
LHASEST	IVENTO	JE DOSINESS FA		Client Ref:	14-156

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

	Hole Number	Sample Number	Sample Type	Depth	Description of Sample
U 6.00-6.45 U 4.50-4.95 U 3.50-3.95 U 3.50-3.95 U 7.50-7.95 U 3.50-3.95 U 6.00-6.45	i i				THE STATE OF THE S
U 4.50-4.95 U 3.50-3.95 U 7.50-7.95 U 3.50-3.95 U 6.00-6.45	BHB) =		Stiff reddish brown slightly gravelly condy CI AV
U 3.50-3.95 U 7.50-7.95 U 3.50-3.95 U 6.00-6.45	BHC		n		Stiff reddish brown slightly gravelly sandy CLAY.
U 7.50-7.95 U 3.50-3.95 U 6.00-6.45	BHD		n	3.50-3.95	Firm reddish brown slightly gravelly sandy CLAY.
U 3.50-3.95 U 6.00-6.45	BHD		n	7.50-7.95	Firm reddish brown sandy CLAY.
U 6.00-6.45	BHE		n	3.50-3.95	Hard reddish brown sandy CLAY.
	BHE		n	6.00-6.45	Hard reddish brown sandy CLAY.

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ompiled by	Date	Checked by	Date	Approved by	Date
Mas	13/08/14	M. A.S.	13/08/14	11.600	13/08/14
BUASE 31	Men	Adva Seinisila Tocadaini te asvita	70	Contract No:	PSL14/3632
rhase s l	IVENTO	JL DUSINESS FA	NN.	Client Ref:	14-156

SUMMARY OF SOIL CLASSIFICATION TESTS

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

	Remarks			Low plasticity CL.		Intermediate plasticity CI.	Intermediate plasticity CI.	Low plasticity CL.	Intermediate plasticity CI.										
%	Passing	.425mm		94		91	93	94	92	95	94	93	92	92					
Plasticity	Index	%	Clause 5.4	16		20	19	17	20	19	19	19	19	21					
Plastic	Limit	%	Clause 5.3	16	NP	19	19	15	18	18	18	19	19	18					
Liquid	Limit	%	Clause 4.3/4.4	32		39	38	32	38	37	37	38	38	39					
Particle	Density	Mg/m	Clause 8.2																
Dry	Density	Mg/m	Clause 7.2																
Bulk	Density	Mg/m	Clause 7.2																
Moisture	Content	%	Clause 3.2	16	18	18	22	16	18	16	16	17	15	16					
	Depth	ш		2.00	1.00	2.00	2.00	3.00	2.00	4.00	5.00	3.50-4.00	3.20	3.00					
	Sample	Type		В	В	В	В	В	В	D	D	В	D	D					
	Sample Sample	Number																	
	Hole	Number		TPA	TPB	TPC	TPD	TPE	TPF	BHA	BHB	BHC	BHD	BHE					

*: Liquid Limit and Plastic Limit Wet Sieved. SYMBOLS: NP: Non Plastic



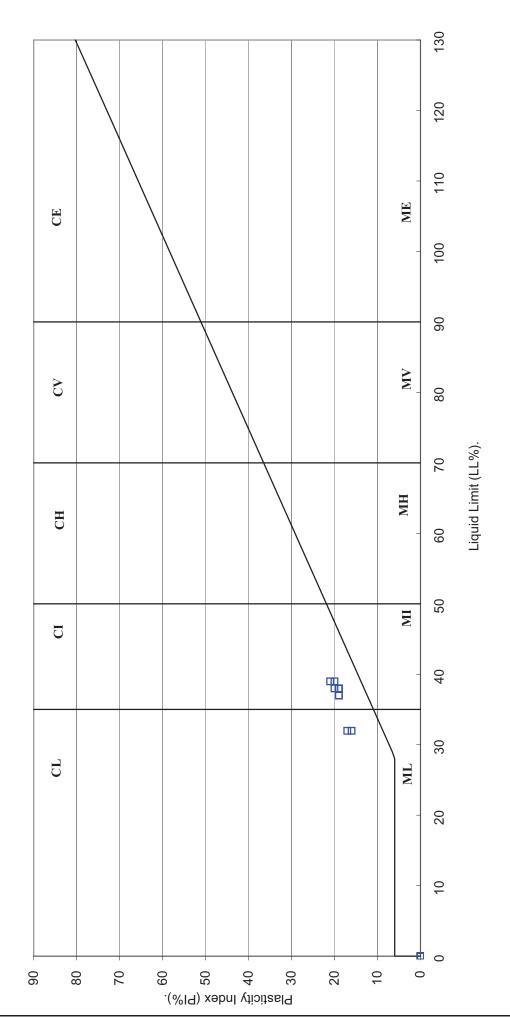
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Mas	13/08/14	4.Ses	13/08/14	J. En	13/08/14
DUACE 3 I IVE		AAAAS AA VA SSANISHA TOOAAAXI I E ASV HA	9713	Contract No:	PSL14/3632
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PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

(B.S.5930: 1999)



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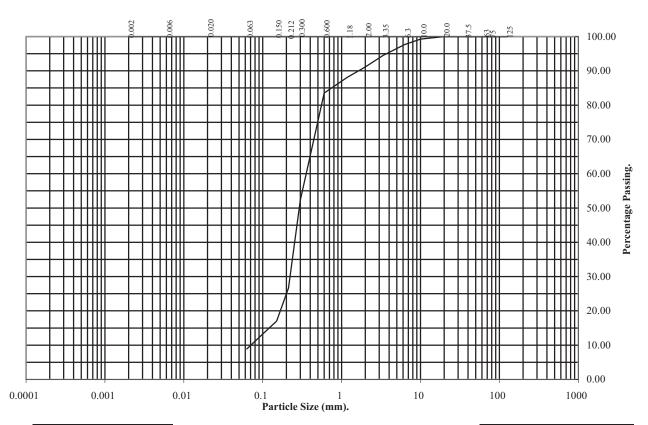
Compiled by	Date	Checked by	Date	Approved by	Date
Mas	13/08/14	N. Sus	13/08/14	4.Ses	13/08/14
BHASE 2 I IVE		anado na va soanisha kwadani i as ina	4714	Contract No:	PSL14/3632
FILASE 3 LIVE.	RECOUL B	USINESS FARN, SFI	ENE.	Client Ref:	14-156

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BS1377 : Part 2 : 1990 Wet Sieve, Clause 9.2

Hole Number: BHA Depth (m): 1.50-2.00

Sample Number: Sample Type: B



BS Test	Percentage
Sieve	Passing
125	100
75	100
63	100
37.5	100
20	100
10	99
6.3	98
3.35	94
2	91
1.18	88
0.6	84
0.3	52
0.212	27
0.15	17
0.063	9

Soil	Total
Fraction	Percentage
Cobbles Gravel Sand Silt / Clay	0 9 82 9

Re	m	ar	<u>ks</u>	

See summary of soil descriptions.

Checked By	Date	Approved By	Date
M. Sen	13/08/14	M.Sus	13/08/14

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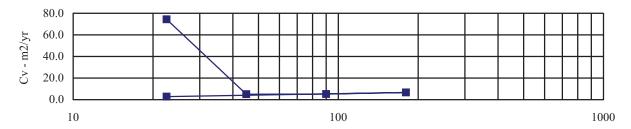
PHASE 3 LIVERPOOL BUSINESS PARK, SPEKE.

BS 1377: Part 5: 1990

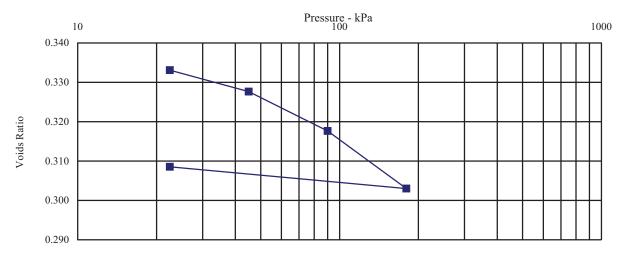
Hole Number: BHA Depth (m): 4.50-4.95

Sample Number Sample Type: U

Initial Conditions		Pres	sure Ra	nge	Mv	Cv	Specimen location	
Moisture Content (%):	12		kPa		m2/MN	m2/yr	within tube:	Top
Bulk Density (Mg/m3):	2.23	0	-	22.5	0.131	74.434	Method used to	
Dry Density (Mg/m3):	1.98	22.5	-	45	0.182	4.983	determine CV:	t90
Voids Ratio:	0.337	45	-	90	0.167	5.218	Nominal temperature	
Degree of saturation:	97.3	90	-	180	0.123	6.722	during test 'C:	
Height (mm):	20.09	180	-	22.5	0.027	2.829	Remarks:	
Diameter (mm)	75.02						See summary of soils description	
Particle Density (Mg/m3):	2.65							
Assumed								



Pressure -kPa



Checked by	Date	Approved by	Date
M. Sus	13/08/14	M. Sus	13/08/14

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PHASE 3, LIVERPOOL BUSINESS PARK, SPEKE.

Contract No.

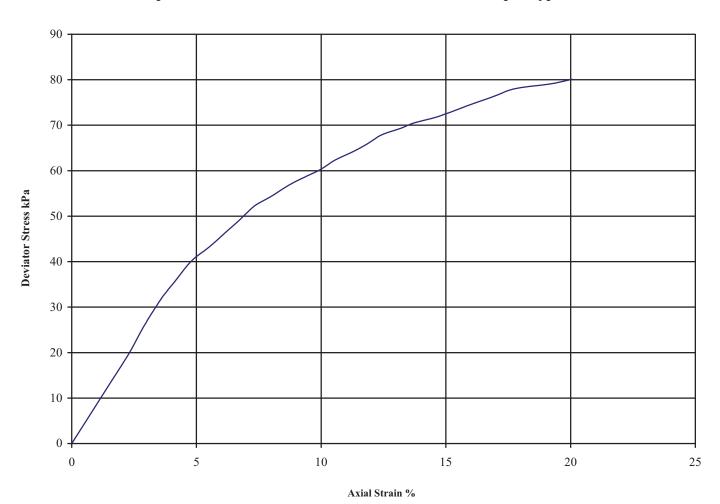
PSL14/3632

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without measurement of Pore Pressure B.S. 1377: Part7: Clause 8: 1990

Hole Number: Depth (m): **BHA** 4.50-4.95

Sample Type: Sample Number: \mathbf{U}



Diamete	er (mm):	102.0	Height (mm):	150.0	Test:	100 n	nm Single	Stage. Undisturbed		
Specimen	Moisture	Bulk	Dry	Cell	Corr. Max.	Shear	Failure	Mode	Remarks		
	Content	Density	Density	Pressure	Deviator	Strength	Strain	of	Sample taken from Bottom of tube		
	(%)	(Mg/m3)	(Mg/m3)	(kPa)	Stress	Cu	(%)	Failure	Rate of strain = 2.6 %/min		
					(kPa)	(kPa)			Latex Membrane used 0.4 mm thickness,		
				θ_3	$(\theta_1 - \theta_3)_f$	$^{1}/_{2}(\theta_{1}-\theta_{3})_{f}$			Correction applied 0.33 kPa		
A	14	2.17	1.90	90	80	40	20.1	Compound	See summary of soil descriptions.		

			,	Checked	Date	Approved	Date
				N.bus	13/08/14	N.bus	13/08/14
PSL Professional Saile Laboratory	PHASE 3 LIV	/ERPOOI RK, SPEK	NESS			act No: 4/3632	

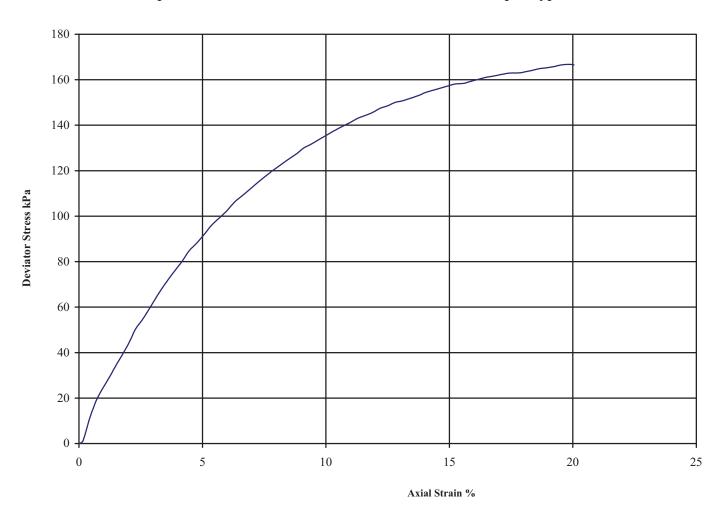
Professional Soils Laboratory

PSLR031 Issue 1 Jun 06 Page

without measurement of Pore Pressure B.S. 1377: Part7: Clause 8: 1990

Hole Number: BHA Depth (m): 7.50-7.95

Sample Number: Sample Type: U



Diamete	er (mm):	102.0	Height (mm):	210.0	Test:	100 n	nm Single	Stage. Undisturbed			
Specimen	Moisture	Bulk	Dry	Cell	Corr. Max.	Shear	Failure	Mode	Remarks			
	Content	Density	Density	Pressure	Deviator	Strength	Strain	of	Sample tak	en from E	Bottom of tu	ibe
	(%)	(Mg/m3)	(Mg/m3)	(kPa)	Stress	Cu	(%)	Failure	Rate of strain = 1.9 %/min			
					(kPa)	(kPa)			Latex Membrane used 0.4 mm thickness,			
				θ_3	$(\theta_1 - \theta_3)_f$	$^{1}/_{2}(\theta_{1}-\theta_{3})_{f}$			Correction	applied	0.33	kPa
A	15	2.22	1.93	150	167	83	19.9	Compound	See summary of soil descriptions.			
									Checked	Date	Approved	Date
									N. bus	13/08/14	M.bus	13/08/14

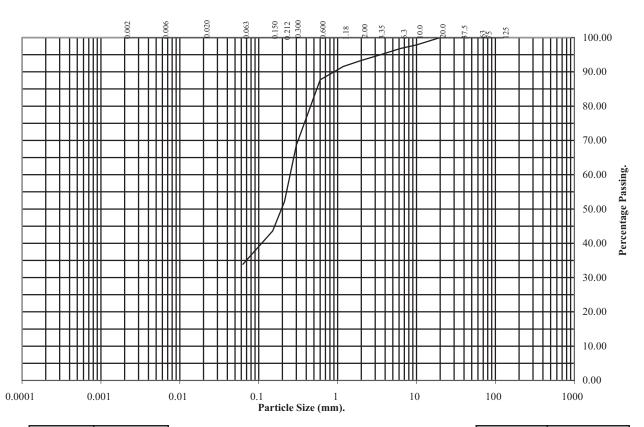


PHASE 3 LIVERPOOL BUSINESS PARK, SPEKE.

BS1377 : Part 2 : 1990 Wet Sieve, Clause 9.2

Hole Number: BHB Depth (m): 1.50-3.00

Sample Number: Sample Type: B



BS Test	Percentage				
Sieve	Passing				
125	100				
75	100				
63	100				
37.5	100				
20	100				
10	98				
6.3	97				
3.35	95				
2	93				
1.18	92				
0.6	88				
0.3	69				
0.212	52				
0.15	44				
0.063	34				

Soil	Total
Fraction	Percentage
Cobbles Gravel Sand Silt / Clay	0 7 59 34

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See summary of soil descriptions.

Checked By	Date	Approved By	Date
M. Sus	13/08/14	M. Sus	13/08/14

PSLProfessional Soils Laboratory

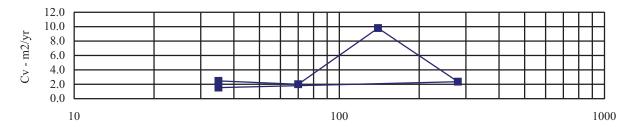
PHASE 3 LIVERPOOL BUSINESS PARK, SPEKE.

BS 1377: Part 5: 1990

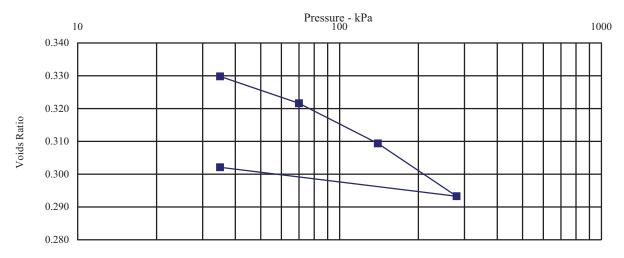
Hole Number: BHB Depth (m): 3.50-3.95

Sample Number Sample Type: U

Initial Conditions		Pressure Range		Mv	Cv	Specimen location		
Moisture Content (%):	14	kPa		m2/MN	m2/yr	within tube:		
Bulk Density (Mg/m3):	2.26	0	-	35	0.096	2.460	Method used to	
Dry Density (Mg/m3):	1.99	35	-	70	0.176	2.010	determine CV:	t90
Voids Ratio:	0.334	70	-	140	0.133	9.809	Nominal temperature	
Degree of saturation:	108.5	140	-	280	0.088	2.347	during test ' C:	20
Height (mm):	20.23	280	-	35	0.028	1.523	Remarks:	
Diameter (mm)	75.09						See summary of soils description.	
Particle Density (Mg/m3):	2.65							
Assumed								



Pressure -kPa



Checked by	Date	Approved by	Date
M.Sus	13/08/14	N. Sen	13/08/14

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PHASE 3, LIVERPOOL BUSINESS PARK, SPEKE.

Contract No.

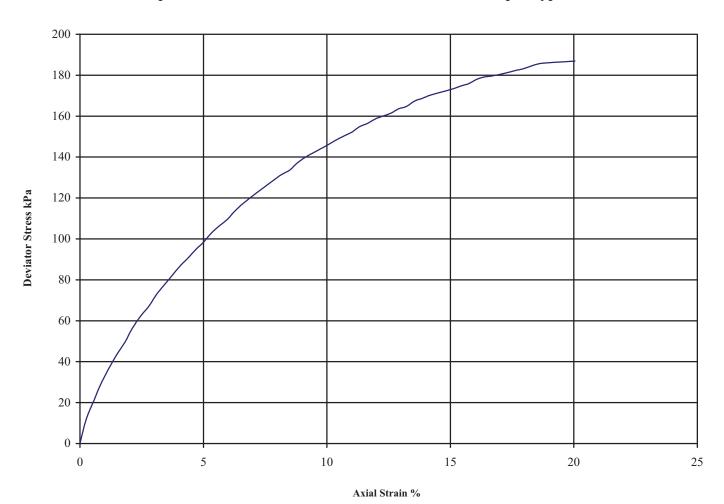
PSL14/3632

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without measurement of Pore Pressure B.S. 1377: Part7: Clause 8: 1990

Hole Number: BHB Depth (m): 3.50

Sample Number: Sample Type: U



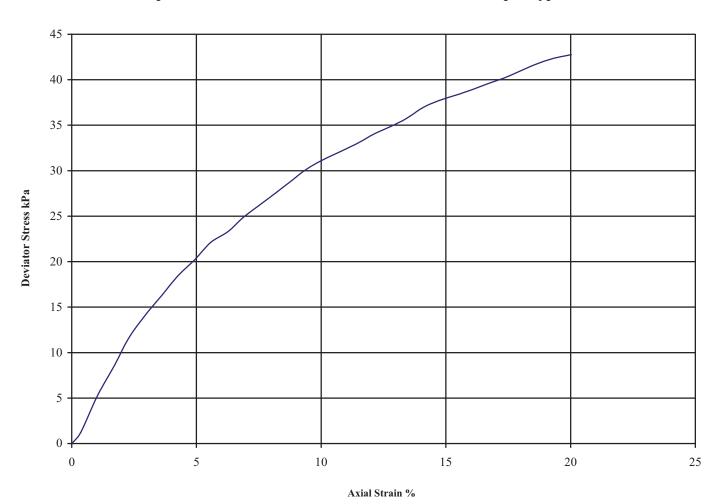
Diamete	er (mm):	102.0	Height (mm):	210.0	Test:	100 n	nm Single	Stage. Undisturbed	
Specimen	Moisture	Bulk	Dry	Cell	Corr. Max.	Shear	Failure	Mode	Remarks	
	Content	Density	Density	Pressure	Deviator	Strength	Strain	of	Sample taken from Bottom of tube	
	(%)	(Mg/m3)	(Mg/m3)	(kPa)	Stress	Cu	(%)	Failure	Rate of strain = 1.9 %/min	
					(kPa)	(kPa)			Latex Membrane used 0.4 mm thickness	
				θ_3	$(\theta_1 - \theta_3)_f$	$^{1}/_{2}(\theta_{1}-\theta_{3})_{f}$			Correction applied 0.33 kPa	
A	14	2.20	1.93	70	187	93	20.0	Compound	See summary of soil descriptions.	

	200	P	SIL Soils Labo		PHAS		/ERPOC		INESS	N.buS		act No: 4/3632	13/08/14
	A	14	2.20	1.93	70	187	93	20.0	Compound	See summa	ary of soil	description	S.
A 14 2.20 1.93 70 187 93 20.0 Compound See summary of soil descriptions.					٠,	(01 03)1	, 2(°1 °3)1			Concention	appirea	0.55	KI U

without measurement of Pore Pressure B.S. 1377: Part7: Clause 8: 1990

Hole Number: BHB Depth (m): 6.00-6.45

Sample Number: Sample Type: U



Diameter (mm): 102.0		Height (mm):		185.0	Test:	100 n	nm Single	Stage. Undisturbed		
Specimen	Moisture	Bulk	Dry	Cell	Corr. Max.	Shear	Failure	Mode	Remarks	
	Content	Density	Density	Pressure	Deviator	Strength	Strain	of	Sample taken from Bottom of tube	
	(%)	(Mg/m3)	(Mg/m3)	(kPa)	Stress	Cu	(%)	Failure	Rate of strain = 2.1 %/min	
					(kPa)	(kPa)			Latex Membrane used 0.4 mm thickness,	
				θ_3	$(\theta_1 - \theta_3)_f$	$^{1}/_{2}(\theta_{1}-\theta_{3})_{f}$			Correction applied 0.33 kPa	
A	14	1.93	1.69	120	43	21	20.0	Compound	See summary of soil descriptions.	
		•	•				•			

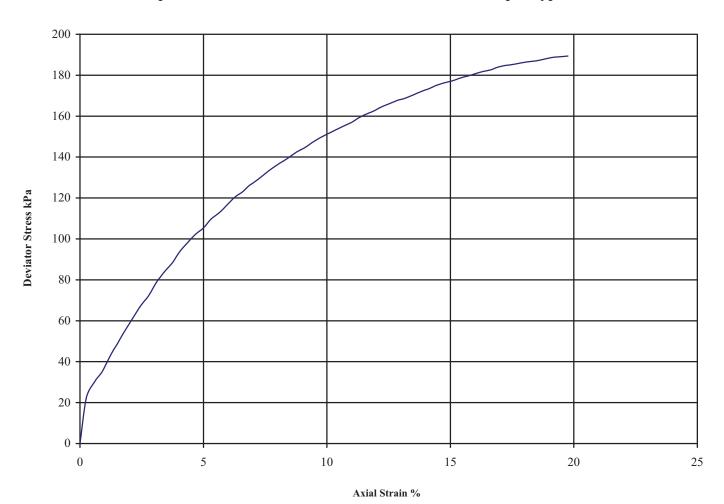
Date 13/08/14

		Checked	Date	Approved
		N.Su.	13/08/14	N.bus
Professional Soils Laboratory	PHASE 3 LIVERPOOL BUSINESS PARK, SPEKE.			act No: 4/3632

without measurement of Pore Pressure B.S. 1377: Part7: Clause 8: 1990

Hole Number: BHC Depth (m): 4.50-4.95

Sample Number: Sample Type: U



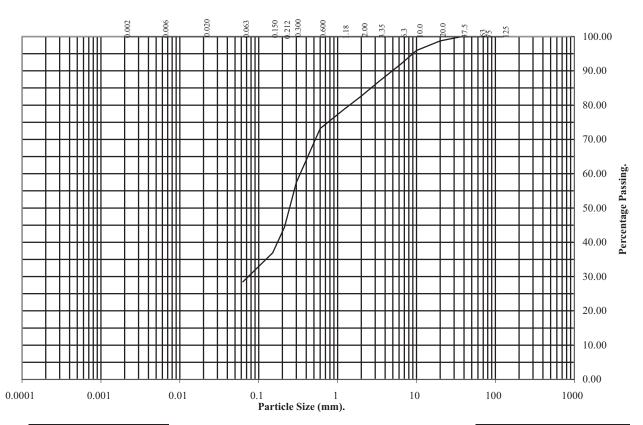
Diamete	er (mm):	102.0	Height (mm):	210.0	Test:	100 n	nm Single	Stage. Undisturbed	
Specimen	Moisture	Bulk	Dry	Cell	Corr. Max.	Shear	Failure	Mode	Remarks	
	Content	Density	Density	Pressure	Deviator	Strength	Strain	of	Sample taken from Bottom of tube	
	(%)	(Mg/m3)	(Mg/m3)	(kPa)	Stress	Cu	(%)	Failure	Rate of strain = 1.9 %/min	
					(kPa)	(kPa)			Latex Membrane used 0.4 mm thickness,	
				θ_3	$(\theta_1 - \theta_3)_f$	$^{1}/_{2}(\theta_{1}-\theta_{3})_{f}$			Correction applied 0.33 kPa	
A	13	2.27	2.01	90	189	95	19.8	Compound	See summary of soil descriptions.	

Professional Soils Laboratory				PHA		/ERPOC RK, SPE		INESS			act No: 4/3632		
									N.Su.S	13/08/14	N. bus	13/08/14	
									Checked	Date	Approved	Date	
A 13 2.27 2.01 90 189 95 19.8 Compound									See summary of soil descriptions.				
	L			,	(1 3/1	2 (1 3/1		L		TI			

BS1377 : Part 2 : 1990 Wet Sieve, Clause 9.2

Hole Number: BHD Depth (m): 1.50-3.00

Sample Number: Sample Type: B



BS Test	Percentage
Sieve	Passing
125	100
75	100
63	100
37.5	100
20	99
10	96
6.3	92
3.35	87
2	83
1.18	79
0.6	73
0.3	57
0.212	44
0.15	37
0.063	28

Soil	Total
Fraction	Percentage
Cobbles Gravel Sand Silt / Clay	0 17 55 28

Remarks:

See summary of soil descriptions.

Checked By	Date	Approved By	Date
NKS	13/08/14	111.5	13/08/14

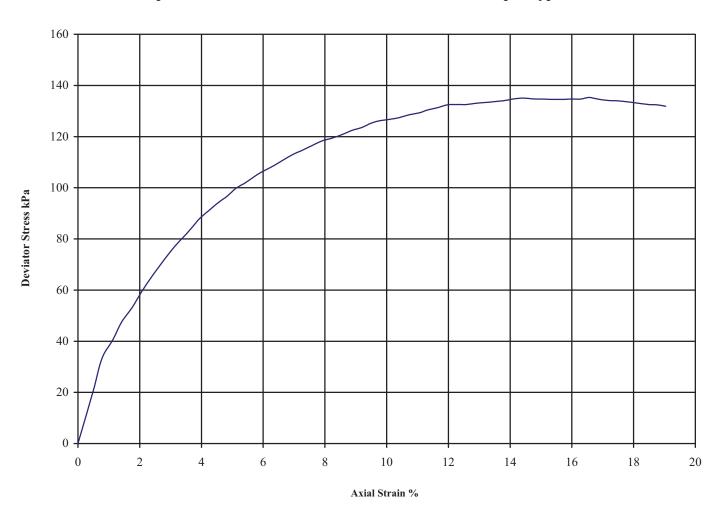
PSLProfessional Soils Laboratory

PHASE 3 LIVERPOOL BUSINESS PARK, SPEKE.

without measurement of Pore Pressure B.S. 1377: Part7: Clause 8: 1990

Hole Number: BHD Depth (m): 3.50

Sample Number: Sample Type: U



Diamete	er (mm):	102.0	Height (mm):	210.0	Test:	100 n	nm Single	Stage. Undisturbed		
Specimen	Moisture	Bulk	Dry	Cell	Corr. Max.	Shear	Failure	Mode	Remarks		
	Content	Density	Density	Pressure	Deviator	Strength	Strain	of	Sample taken from Bottom of tube		
	(%)	(Mg/m3)	(Mg/m3)	(kPa)	Stress	Cu	(%)	Failure	Rate of strain = 1.9 %/min		
					(kPa)	(kPa)			Latex Membrane used 0.4 mm thickness,		
				θ_3	$(\theta_1 - \theta_3)_f$	$^{1}/_{2}(\theta_{1}-\theta_{3})_{f}$			Correction applied 0.34 kPa		
A	14	2.10	1.84	70	135	68	16.6	Compound	See summary of soil descriptions.		

		Checked	Date	Approved	Date
		N.bus	13/08/14	N.bus	13/08/14
Det	DHASE 2 I IVEDDOOL DUSINESS		Contra	at Na	

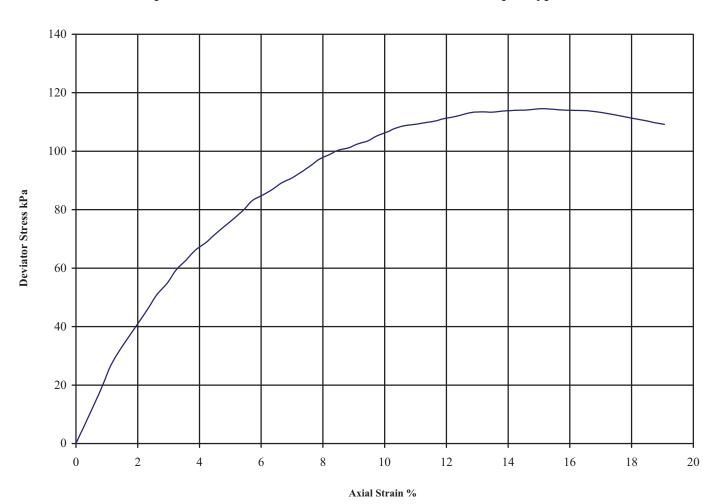


PHASE 3 LIVERPOOL BUSINESS PARK, SPEKE.

without measurement of Pore Pressure B.S. 1377: Part7: Clause 8: 1990

Hole Number: BHD Depth (m): 7.50-7.95

Sample Number: Sample Type: U



Diamete	er (mm):	102.0	Height (mm):	210.0	Test:	100 mm Single		Stage. Undisturbed		
Specimen	Moisture	Bulk	Dry	Cell	Corr. Max.	Shear	Failure	Mode	Remarks		
	Content	Density	Density	Pressure	Deviator	Strength	Strain	of	Sample taken from Bottom of tube		
	(%)	(Mg/m3)	(Mg/m3)	(kPa)	Stress	Cu	(%)	Failure	Rate of strain = 1.9 %/min		
					(kPa)	(kPa)			Latex Membrane used 0.4 mm thickness,		
				θ_3	$(\theta_1 - \theta_3)_f$	$^{1}/_{2}(\theta_{1}-\theta_{3})_{f}$			Correction applied 0.34 kPa		
A	19	2.15	1.81	150	115	57	15.0	Compound	See summary of soil descriptions.		

							Checked	Date	Approved	Date
							N.bus	13/08/14	N.bus	13/08/14
P	STA	PHAS	SE 3 LIV	ERPOC	DL BUSI	NESS		Contra	act No:	

PSLR031 Issue 1 Jun 06 Page of .

Professional Soils Laboratory

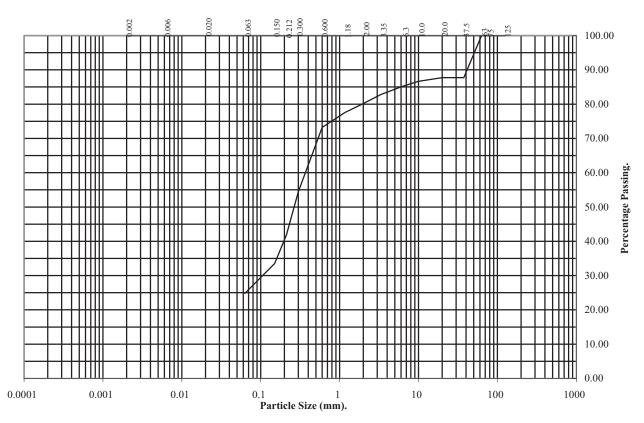
PARK, SPEKE.

PSL14/3632

BS1377 : Part 2 : 1990 Wet Sieve, Clause 9.2

Hole Number: BHE Depth (m): 1.00

Sample Number: Sample Type: D



BS Test	Percentage
Sieve	Passing
125	100
75	100
63	100
37.5	88
20	88
10	87
6.3	85
3.35	83
2	80
1.18	78
0.6	73
0.3	54
0.212	42
0.15	34
0.063	25

Soil	Total
Fraction	Percentage
Cobbles Gravel Sand Silt / Clay	0 20 55 25

Remarks:

See summary of soil descriptions.

Checked By	Date	Approved By	Date		
M. Sus	13/08/14	M. bus	13/08/14		

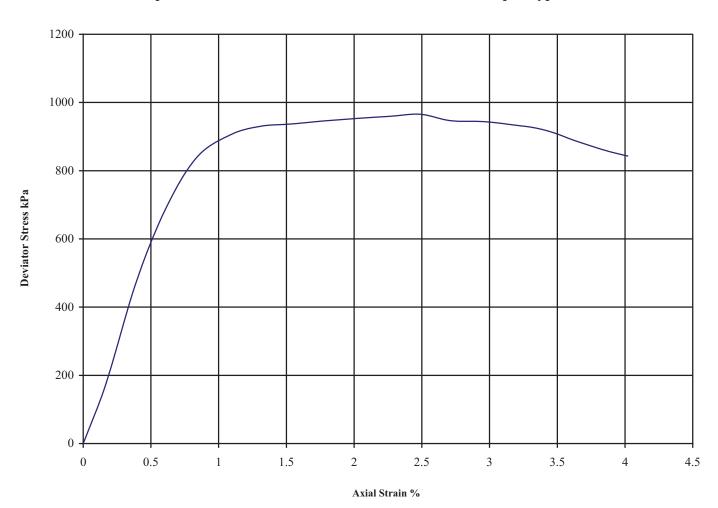
PSLProfessional Soils Laboratory

PHASE 3 LIVERPOOL BUSINESS PARK, SPEKE.

without measurement of Pore Pressure B.S. 1377: Part7: Clause 8: 1990

Hole Number: Depth (m): **BHE** 3.50

Sample Number: **Sample Type:** U



Diameter (mm): 38.0		38.0	Height (mm):		76.0	Test:	38 m	m Single S	Stage. Undisturbed			
Specimen	Moisture	Bulk	Dry	Cell	Corr. Max.	Shear	Failure	Mode	Remarks			
	Content	Density	Density	Pressure	Deviator	Strength	Strain	of	Sample taken from Bottom of tube			ıbe
	(%)	(Mg/m3)	(Mg/m3)	(kPa)	Stress	Cu	(%)	Failure	Rate of strain = 1.9 %/min			
					(kPa)	(kPa)			Latex Membrane used 0.4 mm thickness,			
				θ_3	$(\theta_1 - \theta_3)_f$	$^{1}/_{2}(\theta_{1}-\theta_{3})_{f}$			Correction	applied	0.99	kPa
A	8.3	2.22	2.05	70	966	483	2.5	Brittle	See summary of soil descriptions.			ıs.
								Checked	Date	Approved	Date	



PHASE 3 LIVERPOOL BUSINESS PARK, SPEKE.

Contract No: PSL14/3632

N.Sus

13/08/14

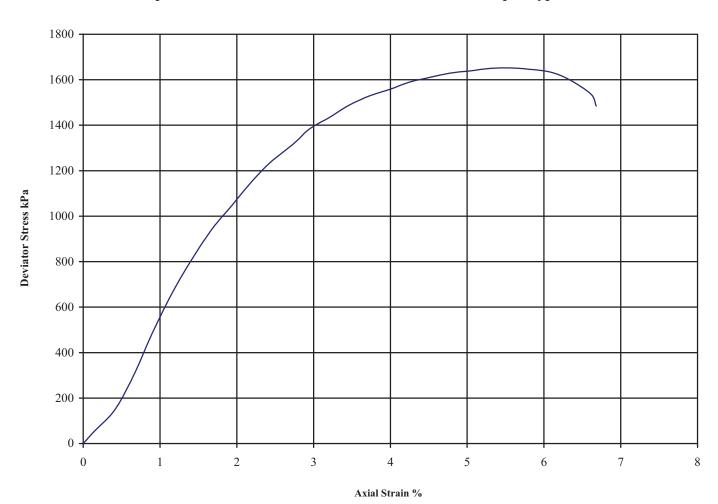
N. Sus

13/08/14

without measurement of Pore Pressure B.S. 1377: Part7: Clause 8: 1990

Hole Number: Depth (m): 6.00 **BHE**

Sample Number: **Sample Type:** U



Diamete	er (mm):	38.0	Height (mm):	76.0	Test:	38 m	m Single S	Stage.	Undistu	bed	
Specimen	Moisture	Bulk	Dry	Cell	Corr. Max.	Shear	Failure	Mode		Ren	narks	
	Content	Density	Density	Pressure	Deviator	Strength	Strain	of	Sample tal	ken from E	Bottom of tu	ibe
	(%)	(Mg/m3)	(Mg/m3)	(kPa)	Stress	Cu	(%)	Failure	Rate of str	ain = 1.9 %	%/min	
					(kPa)	(kPa)			Latex Men	nbrane use	ed 0.4 mm t	hickness,
				θ_3	$(\theta_1 - \theta_3)_f$	$^{1}/_{2}(\theta_{1}-\theta_{3})_{f}$			Correction	applied	0.97	kPa
A	8.5	2.22	2.04	120	1652	826	5.5	Brittle	See summ	ary of soil	description	s.
									Checked	Date	Approved	Date



PHASE 3 LIVERPOOL BUSINESS PARK, SPEKE.

Contract No: PSL14/3632

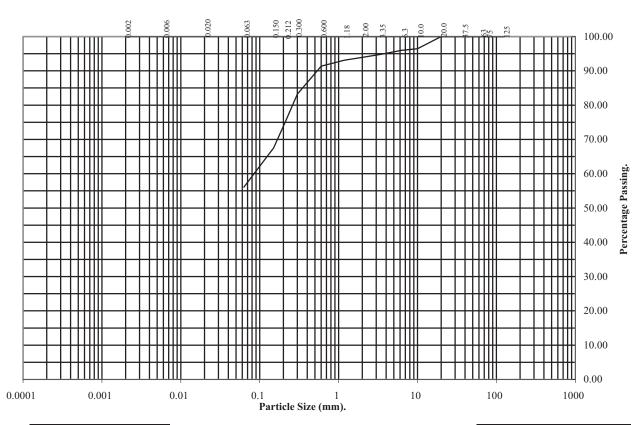
13/08/14

13/08/14

BS1377 : Part 2 : 1990 Wet Sieve, Clause 9.2

Hole Number: TPB Depth (m): 3.00

Sample Number: Sample Type: B



BS Test	Percentage
Sieve	Passing
125	100
75	100
63	100
37.5	100
20	100
10	96
6.3	96
3.35	95
2	94
1.18	93
0.6	91
0.3	83
0.212	75
0.15	68
0.063	56

Soil	Total
Fraction	Percentage
Cobbles Gravel Sand Silt / Clay	0 6 38 56

|--|

See summary of soil descriptions.

Checked By	Date	Approved By	Date
M. Sus	13/08/14	M. Sus	13/08/14

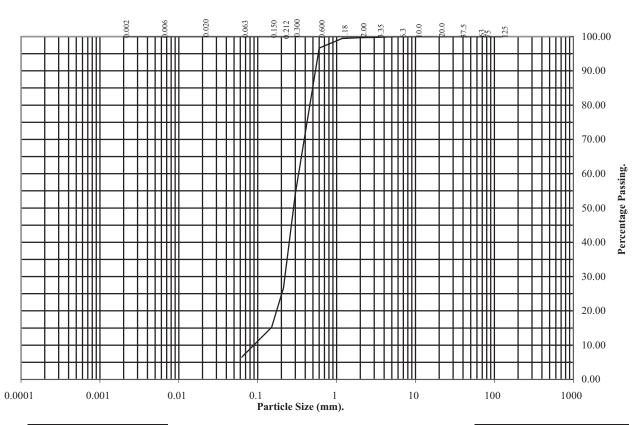
PSU
Professional Soils Laboratory

PHASE 3 LIVERPOOL BUSINESS PARK, SPEKE.

BS1377 : Part 2 : 1990 Wet Sieve, Clause 9.2

Hole Number: TPF Depth (m): 1.00

Sample Number: Sample Type: B



BS Test	Percentage
Sieve	Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	99
0.6	97
0.3	54
0.212	27
0.15	15
0.063	7

Soil	Total
Fraction	Percentage
Cobbles Gravel Sand Silt / Clay	0 0 93 7

	Remarks:	
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See summary of soil descriptions.

Checked By	Date	Approved By	Date
NKS	13/08/14	111.5	13/08/14

PSLProfessional Soils Laboratory

PHASE 3 LIVERPOOL BUSINESS PARK, SPEKE.



APPENDIX V

Ground Contamination Risk Assessment Data: Methodology Notes for Off-Site Disposal CL:AIRE Statistical Analysis Sheets



Ground Contamination Risk Assessment

Assessment Framework:-

Ground contamination risk assessments are undertaken to identify potential risks from historical and recent land contamination on a given site and enable appropriate risk management actions to be undertaken in accordance with the regulatory context of the site and any future development. There are a range of technical approaches to the assessment of chemical contaminants in the UK, all of which broadly fit within a tiered/phased approach and the current UK approach is set out in the Defra and Environment Agency Publication: CLR 11: Model Procedures for the Management of Land Contamination (*Defra/EA 2004*).

ARC's approach to undertaking ground contamination risk assessments is based on the tiered/phased framework in accordance with CLR11, and for Human Health, the recently updated CLEA (Contaminated Land Exposure Assessment) framework and model for assessing potentially contaminated land in the UK. This framework and model is based primarily on the following publications and software: Science Reports SC050021/SR2 (EA 2008b Human Health toxicological assessment of contaminants in soil) and SC050021/SR3 (Updated technical background to CLEA model – replaces the previous guidance documents CLR9, CLR10 and Briefing notes 1 – 4); Science Report SC050021/SR4 (CLEA Software (version 1.06 beta) handbook) and the new CLEA software (replaces Science Report SC050021/H CLEA UK Handbook (draft) and the CLEA UK Software version 1.0 beta), along with the publication of a review of body weight and height data used within the Contaminated Land Exposure Assessment model (CLEA), Project no. SC050021/Technical Review 1.

At present, the SGV's (Soil Guidance Values) published as part of the previous CLEA UK Handbook (draft) and software (version 1.0 beta), have been withdrawn along with guidance documents CLR7 and CLR8, and replacement of the SGV values, using the updated model and software (version 1.06), is currently ongoing, and the new guidance documents for CLR7 & CLR8 have yet to be published. Currently, Defra and the EA have published TOX and SGV reports for the following select substances: Benzene, Toluene, Ethylbenzene, Xylenes, Arsenic, Cadmium, Mercury, Nickel, Selenium and Phenol. Although updated SGV values have been calculated for the aforementioned analytes, at present for the majority of the potential contaminants, relevant data is yet to be made available for the new model. According to Defra and the EA, the schedule for publication of the remaining reports will depend on various factors, and they anticipate publishing the remaining TOX and SGV reports for Cyanide, Lead, Dioxins, Dioxin-like Polychlorinated Biphenyls and Polycyclic Aromatic Hydrocarbons during the remainder of 2010.

When considering ground contamination risk assessments for Controlled Waters (groundwater and surface waters), ARC follows the EA guidance on Remedial Targets Methodology, Hydrogeological Risk Assessment for Land Contamination, 2006.

Methodology:-

During this transitional period, prior to the publication of all the new SGV values for the above mentioned analytes, ARC consider that the most appropriate methodology for completing a ground contamination risk assessment for soils on this site will be to utilise the recently published SGV values (Benzene, Toluene, Ethylbenzene, Xylenes, Arsenic, Cadmium, Chromium (III & VI), Mercury, Nickel, Selenium and Phenol), combined with the former CLEA model SGV's based on the CLEA UK software and other newly published and recognised GAC's (generic assessment criteria) for the remaining analytes. It is widely recognised by ground contamination risk assessment practitioners that the new CLEA model will generally result in higher SGV and GAC (generic assessment criteria) values for the standard end uses, and consequently continued use of the former CLEA model will result in a slightly more conservative assessment.

For general soil surface contamination, the new SGV value for inorganic Mercury can be compared with chemical analysis for total mercury content, as the concentrations of elemental and methylmercury compounds are likely to be very low, in accordance with Science Report SC050021 / Mercury SGV. In addition, the updated SGV values are based upon a Soil Organic Matter (SOM) content of 6%, in line with the most recent Defra and EA guidance. Once all the relevant data is available, a reassessment of the ground contamination present on this site can be carried out, if felt necessary, as this may result in a reduction in the scope of remediation works (if required). It should be noted that guidance document CLR11: Model Procedures for the Management of Land Contamination has not been withdrawn.



Ground Contamination Risk Assessment (Cont'd)

Methodology (Cont'd):-

ARC ground contamination risk assessments, in accordance with CLR11, are based on the established *source-pathway-receptor* pollutant linkage methodology and 'suitable for use' approach (Part IIA, EPA 1990 - inserted through Section 57 EA 1995), and adopts the tiered/phased approach beginning with a preliminary assessment (also referred to a desk top study). If potential pollutant linkages are identified from the preliminary assessment, for both Human Health and/or Controlled Waters, then Level 1 Quantitative Risk Assessments are appropriate guideline values. For soils these typically comprise soil guideline values (SGV's), generic assessment criteria (GAC) or site specific assessment criteria (SSAC) and for controlled waters, Environmental Quality Standards (EQS) or UK Drinking Water Standards.

Where any Level 1 criteria have been exceeded, various courses of action are available for recommendation, in order to try and 'break' the pollutant linkage by designing into the proposed development works and/or by recommending appropriate remediation works, i.e. removal of source, treatment of contaminants, installation of permanent barriers, etc. and/or by carrying out more detailed site specific quantitative risk assessment (DQRA, i.e. Level 2 or above). Completing further DQRA for any contaminants present, can take into account factors such as the introduction of physical barrier and the actual availability of plausible contaminant migration pathways, as well as site specific data such as the type, properties and characteristics (permeability, porosity, density, etc.) of the soil present on site, groundwater depth and flow, site specific exposure criteria and values, and contaminant retardation, attenuation, dilution and degradation. Similarly, when considering potential risks to off-site receptors, these are considered by assessing the potential risks to on-site receptors, as well as the potential mobility of any contaminants present within either the soils or water/groundwater below this site.

For the purpose of this report, preliminary and level 1 risk assessments consider two main categories of receptor, and these are as follows:

- On site Human Health (CLEA Model).
- Controlled Waters (groundwater) (EA Remedial Targets Methodology).

When considering the risk to construction workforce, the results of the screening can be used by the Main Contractor/Project Coordinator, when devising an adequate Site Health & Safety Plan, in accordance with current CDM Regulations, and when assessing the level of PPE required on site. Similarly, when considering the risks to building materials, again the results of the contamination screening can be used to determine the level of protection that may be required, and reference should be made to the utilities suppliers for their comments.

Level 1 - Human Health:-

Level 1 human health related assessments are based upon the current CLEA Model, with site values assessed against published Soil Guidance Values (SGV's), and where these values are not available against the published CIEM (Chartered Institute of Environmental Health)/LQM Generic Assessment Criteria (GAC), Atkins ATRISKsoil® SSV values and USEPA Region 9 Screening Values (2009). For statistical analysis, the site is assessed to delineate any potentially differing areas of contamination (averaging areas), based on the results of the preliminary investigation as well as the result of any visual, olfactory or analytical evidence following completion of the intrusive investigation works. Following this geographical delineation of the site, where generic or pervasive contaminants are anticipated, for each 'averaging area' under consideration, the results are assessed using the established methods of statistical analysis given in the CL:AIRE Guidance on Comparing Soil Contamination Data with a Critical Concentration (C_C), May 2008. In this case, the results of the sample population are assessed to determine whether they represent a normal or non-normal distribution and the statistical upper confidence limit is (95% percentile – UCL_{0.95}) is calculated and then compared with the chosen Level 1 Critical Concentration (C_C) value for the site (i.e. the appropriate SGV, GAC or SSV).

In addition, further statistical analysis is undertaken to determine whether the maximum concentration(s) recorded represent statistical outliers, i.e. potential 'hot spots', and where necessary these are removed from the sampling populations and a reassessment of the averaging areas/potential hot spot areas identified.



Ground Contamination Risk Assessment (Cont'd)

Methodology (Cont'd):-

Level 1 - Human Health (Cont'd):-

Where targeted screening is undertaken, i.e. speciated PAH's for 'ashy' type materials, screening for suspected organic contamination, etc., the maximum site values recorded (C_M) at each location have been compared to the chosen Level 1 Critical Concentration (C_C), with no requirement for statistical analysis to be undertaken on for these samples.

Level 1 - Controlled Waters:-

The Level 1 controlled waters risk assessment has been carried out (in accordance with the guidance; Remedial Targets Methodology, Hydrogeological Risk Assessment for Land Contamination, Environment Agency, 2006) by comparing samples of leachate, with the chosen Level 1 Critical Concentration (C_C) value, based on an appropriate water quality standard (EQS, UK Drinking Water, etc.), and which is also taken as the Level 1 Leachate Remedial Target (LTC₁).

The number of samples chosen for screening is determined by assessing the potential risk of contamination reaching a sensitive receptor, i.e. shallow groundwater, nearby surface water feature, etc., based on the results of the preliminary investigation, as well as olfactory, visual, anecdotal and analytical evidence collected during the intrusive investigation works.

Where the potential risk is considered to be low between 0% and c.25% of the samples are targeted for screening, c.25% to c.50% where the risk is considered to be moderate and c.75% to 100% where the risk is considered to be high. This is to ensure that the potential risk is adequately assessed without carrying out unnecessary testing. When considering any 'hot spots' identified, samples are specifically targeted for screening on a sample by sample and analyte by analyte basis.

Notes for Off-Site Disposal

When considering the removal of any materials from this site as a waste, to be disposed of at a landfill, it can be seen that where the uncontaminated natural strata (excluding any 'topsoil' or 'peat' materials) can be kept separate from any made ground or contaminated natural strata, then these materials can be considered as 'inert' and taken to an Inert Landfill Site.

Where made ground or contaminated natural strata is to be removed off site as a 'waste', a preliminary classification assessment, regarding off-site disposal, can be made utilising the contamination soils screening undertaken as part of the Level 1 Risk Assessment for Human Health. If there is sufficient screening to classify these materials as Non-Hazardous, then they can be disposed of at a Non-Hazardous Landfill. If insufficient preliminary screening has been undertaken to carryout the classification assessment, then further preliminary soils screening should be undertaken, where required.

If the results of the preliminary classification assessment indicate that the materials to be removed from site as a 'waste' should be classified as Hazardous Waste, then prior to disposal, full WAC screening should be completed so that these materials can be classified as either Stable Non-Reactive Hazardous Waste or Hazardous Waste, and disposed of at a suitable waste disposal facility.

If possible, removal of materials from site as a 'waste' should be kept to a minimum, however, if materials have to be removed to accommodate finished ground levels etc., it is recommended that the volume to be disposed of is calculated, as the amount of additional screening required, including any full WAC screening, will be dependant upon the volume of material to be disposed of.



CL:AIRE Statistical Analysis Calculation Sheet - Level 1 GQRA for Generic Contaminants

640 190 8600 33 68000 2330 1100 980 12000 540L	Client/client ref: Commercial Development Projects Ltd Project ref: 16-433 Site ref: Speke Data description: Contamination Screening Results Contaminant(3): Generic Solis - Commercial	Arsenic (total) (mg/kg)	Cadmium (total) (mg/kg)	Chromium Chromium (III) (mg/kg) (VI) (mg/kg)	Chromium (VI) (mg/kg)	Copper (total) (mg/kg)	Lead (total) (mg/kg)	Mercury (total) (mg/kg)	Nickel (total) (mg/kg)	Selenium (total) (mg/kg)	Zinc (total) (mg/kg)	Cyanide (free) (mg/kg)
shult shult <t< th=""><th>Test scenario: Planning Critical concentration, C_c</th><th>640</th><th>190</th><th>8600</th><th>33</th><th>68000</th><th>2330</th><th>1100</th><th>980</th><th>12000</th><th>730000</th><th>34</th></t<>	Test scenario: Planning Critical concentration, C _c	640	190	8600	33	68000	2330	1100	980	12000	730000	34
tin 22 0.05 19.9140987 0.02956043 0.65227273 0.652727273 0.652727273 0.652727273 0.652727273	Notes	S4UL	S4UL	S40L	S4UL	S40L	C4SL	S4UL	S40L	S40L	S4UL	ATRISK(SOIL) SSV - 2011
tion, solution, soluti	Sample size, n	22	22	22	22	22	22	22	22	22	22	22
tion, solution, soluti	Sample mean,	10.1201535	0.37752824	72.6923111	0.5	35.1066809	87.7176879	0.25	19.3378543	0.65227273	86.2635026	1
detects 0 11 0 22 0 22 3 3 <t< th=""><th>Standard deviation, s</th><th>10.5725975</th><th>0.61781115</th><th>14.8506198</th><th>0</th><th>43.7115427</th><th>174.483466</th><th>0</th><th>9.99140987</th><th>0.29756043</th><th>128.266792</th><th>0</th></t<>	Standard deviation, s	10.5725975	0.61781115	14.8506198	0	43.7115427	174.483466	0	9.99140987	0.29756043	128.266792	0
no Ves No No Ves No No <th< th=""><th>Number of non-detects</th><th>0</th><th>11</th><th>0</th><th>22</th><th>0</th><th>0</th><th>22</th><th>0</th><th>က</th><th>က</th><th>22</th></th<>	Number of non-detects	0	11	0	22	0	0	22	0	က	က	22
roach γes No No γes	Set non-detect values to:	2			2	2	2	2		2	2	2
roach Non-normal Normal Single value Non-normal Non-normal <th>Outliers?</th> <th>Yes</th> <th>Yes</th> <th>No</th> <th>No</th> <th>Yes</th> <th>Yes</th> <th>No</th> <th>Yes</th> <th>No</th> <th>Yes</th> <th>No</th>	Outliers?	Yes	Yes	No	No	Yes	Yes	No	Yes	No	Yes	No
io: Evidence level required: 95% 3	Distribution	Non-normal	Non-normal	Normal	Single value	Non-normal	Non-normal	Single value	Normal	Normal	Non-normal	Single value
or k₀) -279,439217 -1439.611812 -2693.262564 N/A -729.89307 -60.27640616 N/A 450.9778827 se limit 19.9454837 0.95167273 78.1404632 0.5 75.7287082 249.868729 0.25 23.003339 100% 100% 100% 100% 100% 100% 100% 100% μ < Cc	Statistical approach	3	3	3	3	3	3	3	3	3	3	3
cor k₀) -279,439217 -1439,611812 -2693,262564 N/A -7292,89307 -60,27640616 N/A 450,9778827 ca limit 19.9454837 0.95167273 78.1404632 0.5 75,7287082 249,868729 0.25 23.003339 100% 100% 100% 100% 100% 100% 100% 100% μ < Cc	Test scenario:					Evidence	evel required:					
ce limit 19.9454837 0.95167273 78.1404632 0.5 75.7287082 249.868729 0.25 23.003339 100% 100% 100% 100% 100% 100% 100% 100% 1 on: μ < Cc	t statistic, t ₀ (or k ₀)	-279.439217	-1439.611812	-2693.262564	N/A	-7292.89307	-60.27640616	N/A	-450.9778827	-189144.5386	-26691.23353	N/A
100% 100%	Upper confidence limit (on true mean concentration, μ)	19.9454837	0.95167273	78.1404632	0.5	75.7287082	249.868729	0.25	23.003339	0.76143682	205.464446	1
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Evidence level	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
μ < Cc μ < Cc	Base decision on:	2	1	2	2	2	2	2	2	2	2	2
Solve defend	Result	р < Сс	µ < Сс		р < Сс	р < Сс	р < Сс	р < Сс	р < Сс	μ < Cc	µ < Сс	р < Сс
Select daraset	Select dataset											





Client/client ref: Commercial Development Projects Uril 1413 Project Int 16-43 Ste ref: Spoke Data description: Contamination Screening Results Contaminant(s): Speciated PAH (USEPA 16) - Commercial	Acenaphthen e (mg/kg)	Acenaphthyle e (mg/kg) ne (mg/kg)	Anthracene (mg/kg)	Anthracene Benzo(a)anth Benzo(a)pyre Benzo(b)) (mg/kg) racene ne (mg/kg) anthen (mg/kg) (mg/kg)	Benzo(a)pyre ne (mg/kg)		luor Benzo(ghi)pe Benzo(k)fluor e rylene anthene (mg/kg) (mg/kg)	Benzo(k)fluor anthene (mg/kg)	Chrysene (mg/kg)	Dibenz(ah)an thracene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno(123c d)pyrene (mg/kg)	Naphthalene (mg/kg)	Phenanthren e (mg/kg)	Pyrene (mg/kg)
Critical concentration, C _c	100000	100000	540000	180	36	45	4000	1200	350	3.6	23000	71000	510	1100	23000	54000
Notes	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% SOM)
Sample size, n	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
Sample mean, \overline{x}	0.295684	0.02069799	1.38268229	3.25425295	2.1536258	3.11783554	1.1328362	1.20952661	4.29656675	0.33484893	7.36794459	0.30475768	1.21460296	0.03902338	3.59850173	5.50938889
Standard deviation, s	0.69658855	0.69658855 0.04069783	4.7196557	11.4443154	6.66454023	10.2859837	3.31720798	3.87009222	15.9000368	1.08950698	25.3645392	0.79681479	3.70523184	0.063634	11.342763	18.47194
Number of non-detects	12	12	7	2	2	2	2	က	2	10	2	12	2	10	2	2
Set non-detect values to:	Half detection limit	Half detection limit	Half detection limit	Half detection limit Half detection	Half detection limit	limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit Half dete	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit
Outliers?	No	Yes	No	No	N _O	oN	N _O	_S	No	No	No	_S	No	_S	No	No
Distribution	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal
Statistical approach	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev
Test scenario:	Planning is true me	Planning is true mean lower than critical concentration (1) < (Cr)?) > 1) uoiteatuon	→	Fyidance	Evidence level required:	050%	lise Log-Normal distribution to test for outliers	ribution to test for o	wiffiers						
t obstitute t (calls)	1 LA LT CO	CC COCOFEO	40000000000	באטבטאט בט	22 4200004	47 740 42 F00	-	100000000000000000000000000000000000000	701 011 0	470004400	100 400	.000	700 7470777	17000 740 101	1,000,000	47744 20000
t statistic, t ₀ (or k ₀)	-625/4/.5844	-10/10393.33	-498/22.6931	-67.318/3647	-22.13699964	-17.74843588	-5254.61/119	-1350.2020/	-94.//2506	-13.06321462	-3951.286425	-388397.0292	-598.54395/3	-/5346.80/61	-883/.26391/	-12/41.29993
Upper confidence limit (on true mean concentration, μ)	0.99227255	0.06139582	6.10233799	14.6985683	8.81816604	13.4038193	4.45004419	5.07961883	20.1966035	1.42435591	32.7324838	1.10157247	4.9198348	0.10265738	14.9412647	23.9813289
Evidence level	100%	100%	100%	100%	100%	100%	100%	100%	100%	%66	100%	100%	100%	100%	100%	100%
Base decision on:	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level
Result	р < Сс	р < Сс	р < Сс	р < Сс	р < Сс	µ < Сс	р < Сс	µ < Сс	р < Сс	р < Сс	μ < Cc	р < Сс	μ < Cc	р < Сс	р < Сс	р < Сс
Select dataset	, \	Ò	ò	Ò	Ò	Ò	Ò	Ò	Ò	, O	Ο̈́	۸	۸	Ò	Ò	Ò
Back to data	Go to	Go to outlier test	st	Go to no	Go to normality test	St	Show in	Show individual summary	summary							



Client/client ref: Commercial Development Projects Ltd Project ref: 16-433	TPH Aliphatic ECS-EC6	TPH Aliphatic EC6-EC8	TPH Aliphatic EC8-EC10	TPH Aliphatic TP	TPH Aliphatic EC12-EC16	hatic TPH Aliphatic		TPH Aliphatic TPH Aromatic TPH	TPH Aromatic EC7-EC8	TPH Aromatic T EC8-EC10	FC10-EC12	TPH Aromatic EC12-EC16	TPH Aromatic EC16-EC21	TPH Aromatic EC21-EC35	TPH Aromatic EC35-EC44	
Site ref: Speke, Liverpool Data description: Contamination Results Contaminant(s): Speciated TPH (All/Aro Split) Test scenario; Planning	(6v/6m)	(6v/6)	(Bu (Bu)	(By (Bill)	(By (Bill)	(6v (6)	(6v /6)	(By /Bill)	(6v/6m)	(B) (B)	(fau /fa	(6v /6)	(6v /6)	(By (Bill)	(By (Bill)	
Critical concentration, C _c	12000	40000	11000	47000	00006	1800000	1800000	86000	180000	17000	34000	38000	28000	28000	28000	
Notes	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% S0M)	S4UL (6% S0M)	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% SOM)	S4UL (6% SOM)	
Sample size, n	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	0
Sample mean,	0.05	0.10454545	0.15454545	0.10454545 0.15454545 1.59090909 2.86363636	2.86363636	147.909091	88.1818182	0.005	0.005	0.005	0.5	0.54545455	0.54545455 3.68181818 3.95454545 0.63636364	3.95454545	0.63636364	No Data
Standard deviation, s	7.2776E-18	0.08790491	0.22633443	1.99772598 3.93122	3.93122697	141.635062	76.9049	9.097E-19	9.097E-19	9.097E-19	0	0.15075567	5.81494939	5.10124762	0.45226702	
Number of non-detects	11	7	9	7	က	0	0	11	11	11	11	10	2	2	10	
Set non-detect values to:	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Outliers?	#DIV/0!	No	Yes	No	No	No	Yes	ON	No	No	No	Yes	ON	ON	Yes	
Distribution	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Single value	Non-normal	Non-normal	Non-normal	Non-normal	
Statistical approach	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Test scenario:					Evidence	Evidence level required:	%26									
t statistic, t ₀ (or k ₀)	-5.46876E+21	-1509183.605	-161187.8522	-78026.76156	-75927.11796	-42146.58405	-77623.56053	-3.13544E+23	-6.56254E+23	-6.19796E+22	N/A	-835988	-15968.02943	-18201.89595	-205328.6667	
Upper confidence limit (on true mean concentration, µ)	0.05	0.22007514	0.45200717	4.21643541	8.03028081	334.054031	189.254658	0.005	0.005	0.005	0.5	0.74358632	11.3241589	10.6588983	1.23075895	
Evidence level	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Base decision on:	2	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2
Result	р < Сс	р < Сс	р < Сс	р < Сс	р < Сс	р < Сс	р < Сс	ээ > п	р < Сс	р < Сс	р < Сс	20 > п	2) > п	р < Сс	р < Сс	
Select dataset																





Clerit/client ref. Commercial Development Benzene Projects (mg/kg) Project ref. 16-433 Site ref. Speke, Uverpool Data description: Contamination Results Test severation: Parining Test severation: Parining	Critical concentration, C _c 90	Saul (6% SOM) Notes	Sample size, n 6	Sample mean, 0.005	Standard deviation, s 0	Number of non-detects 6	Set non-detect values to:	Outliers? No	Distribution Single value	Statistical approach 3	Test scenario:	t statistic, t _o (or k _o)	Upper confidence limit (0.005) (on true mean concentration, µ)	Evidence level 100%	Base decision on:	Result µ < Cc	Select dataset
Toluene (mg/kg)	180000	4) S4UL (6% SOM)	9	0.005	0	9	2 2	No	e Single value	3		N/A	0.005	100%	1	р < Сс	
Ethylbenzene m & p-Xylene (mg/kg)	27000	S4UL (6% S0M)	9	0.005	0	9	2	No	Single value	3		N/A	0.005	100%	2	п < Сс	
m & p-Xylene (mg/kg)	0000E	S4UL (6% SOM)	9	0.005	0	9	2	ON	Single value	3		N/A	0.005	100%	2	2) > п	
o-Xylene (mg/kg)	33000	S4UL (6% SOM)	9	0.005	0	9	2	No	Single value	3	Evidence	N/A	0.005	100%	1	р < Сс	
			0	No Data			2			3	Evidence level required:				2		
			0	No Data			2			3	95%				2		
			0	No Data			2			3					2		
			0	No Data			2			3					2		
			0	No Data			2			3					2		
			0	No Data			2			3					2		
			0	No Data			2			3					2		
			0	No Data			2			3					2		
			0	No Data			2			3					2		
			0	No Data			2			3					2		
			0	No Data						3					2		