Appendix B Site Investigation Data

G	GEA	Geote Widbury	echnica Barn Widb	& Environmenta pury Hill Ware SG12 7QE	al Associ	iates	Site 135 Shaftesbury Avenue, London WC2H 8AH		Borehole Number BH1
Boring Meth	nod ssion	Casing 200	Diamete Omm cas Omm cas	r ed to 6.00m ed to 6.50m	Ground	Level (mOD)	Client Capital Start Ltd		Job Number J17183
		Locatio	n		Dates 11 12	/10/2017- 2/10/2017	Engineer Price & Myers		Sheet 1/4
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Kater Sater
3.00-3.45	SPT(C) N60=3	3.00	1.90	3,2/1,1,0,1			MADE GROUND (dark brown silty sandy very grav with brick and concrete fragments and occasional fragments)	relly clay coal	
3.00	D					3.50	Medium dense orange-brown coarse gravelly SAN abundant fine to medium subangular to angular flir	D with nt gravel	
4.00-4.45 4.00	SPT(C) N60=17 B	4.00	2.60	2,4/3,4,5,4		(1.20)			
5.00-5.45 5.00	SPT N60=10 D	5.00	DRY	2,1/2,2,3,2			Firm becoming stiff at 12.50 m and very stiff from 1 dark brownish grey silty slightly sandy becoming very CLAY with frequent fine selenite crystals, occasion partings of light brown and orange-brown fine sand claystones, lignite, trace fossils, shell fragments ar nodules. Sand is fine.	6.00 m ery sandy al d and silt, nd pyrite	× × × × × × × × × × × × × × × × × × ×
6.00	D						Claystone		× · · · · · · · · · · · · · · · · · · ·
6.50-6.95	U								× × ×
7.00-7.45 7.00	SPT N60=12 D	6.50	DRY	2,3/3,2,3,3					× × × × × × × × × × × × × × × × × × ×
8.00-8.45 8.00	SPT N60=20 D	6.50	DRY	3,4/4,4,5,5					× · · · · · · · · · · · · · · · · · · ·
9.00	D								× × ×
9.50-9.95	U								× × ×
Remarks Piezometer i 50 mm diam	nstalled to 20 m dep eter groundwater mo	th with res	ponse zo andpipe	one at 19.21 m depth installed to 5 m depth				Scale (approx)	Logged By
Please see s Water added Trial pit exca	separate sheet for ac during drilling through wated to 2.5 m to fac	crued star gh the gra ilitate bore	nding time vel to ass ehole due	e sist drilling to infilled brick vaults	s present a	at borehole loc	ation	1:50	LB/CA
Groundwate	r monitoring visit (06/ r monitoring visit (30/	(11/17): 19	mm piez mm piez	zometer: 5.25 m zometer: 5.28 m, 50 n	nm standp	ipe: 4.39 m		Figure N J1718	u. 83.BH1

S	GEA	Geote Widbury	echnica Barn Widt	& Environmenta pury Hill Ware SG12 7QE	al Associates	Site 135 Shaftesbury Avenue, London WC2H 8AH		Borehole Number BH1
Boring Meth Cable Percus	od ssion	Casing 20 15	Diamete Omm cas Omm cas	r ed to 6.00m ed to 6.50m	Ground Level (mOD)	Client Capital Start Ltd		Job Number J17183
		Locatio	n		Dates 11/10/2017- 12/10/2017	Engineer Price & Myers		Sheet 2/4
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level Depth (mOD) (m) (Thickness)	Description		Kater Vater
10.00	D							× × × × × × × × × × × × × × × × × × ×
11.00-11.45 11.00	SPT N60=30 D	6.50	DRY	4,4/5,6,8,8				× × × × × × × × × × × × × × × × × × ×
12.00	D							× × ×
12.50-12.95	U							× × ·
13.00	D							× · · · · · · · · · · · · · · · · · · ·
14.00-14.45 14.00	SPT N60=30 D	6.50	DRY	4,4/5,6,8,8				× · · · · · · · · · · · · · · · · · · ·
15.00	D							× × ×
16.00 16.00-16.45	D U							× × ×
16.50-16.95	U							× × ×
17.00	D							x
18.00-18.45 18.00	SPT N60=32 D	6.50	DRY	4,4/6,7,8,8				× · · · · · · · · · · · · · · · · · · ·
19.00	D							× ×
19.50-19.95	U			11/10/2017:DRY 12/10/2017:12.30m	(29.70)			× × ×
Remarks Piezometer in 50 mm diame	nstalled to 20 m dep eter groundwater mo	th with res	sponse zo tandpipe	one at 19.21 m depth installed to 5 m depth	· · · · · ·		Scale (approx)	Logged By
Vater added Trial pit excav	eparate sheet for ac during drilling throu vated to 2.5 m to fac	crued star gh the gra cilitate bor	naing tim ivel to ass ehole due	e sist drilling e to infilled brick vaults	s present at borehole loo	cation	1:50	LB/CA
Groundwater Groundwater	monitoring visit (06, monitoring visit (30,	/11/17): 19 /11/17): 19) mm piez) mm piez	zometer: 5.25 m zometer: 5.28 m, 50 m	nm standpipe: 4.39 m		Figure N	0. 83 BH1

J17183.BH1

S	GEA	Geote Widbury B	echnica Barn Widb	& Environment	al Associates	Site 135 Shaftesbury Avenue, London WC2H 8AH		Borehole Number BH1
Boring Methor	od ssion	Casing 200 150	Diamete Omm cas Omm cas	r ed to 6.00m ed to 6.50m	Ground Level (mOD	Client Capital Start Ltd		Job Number J17183
		Location	n		Dates 11/10/2017- 12/10/2017	Engineer Price & Myers		Sheet 3/4
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level Depth (mOD) (m) (Thickness	Description		Kater Sater
20.00	D					Claystone		× · · · · · · · · · · · · · · · · · · ·
21.00-21.45 21.00	SPT N60=30 D	6.50	DRY	5,6/7,7,6,7				× × · · · · · · · · · · · · · · · · · ·
22.00	D							× × ×
22.50-22.95	U					Claystone		× × ×
23.00	D							× × × · · · · · · · · · · · · · · · · · · ·
24.00-24.45 24.00	SPT N60=33 D	6.50	DRY	5,6/7,8,7,8				× · · · · · · · · · · · · · · · · · · ·
25.00	D							× · · ·
25.50-25.95	U							× × ×
26.00	D							
27.00-27.45 27.00	SPT N60=37 D	6.50	DRY	4,6/7,8,9,10				× · · · · · · · · · · · · · · · · · · ·
28.00	D							× × ×
28.50-28.95	U							× <u> </u>
29.00	D SPT N60=38	6.50	DRY	5,7/7,8,9,11				x x x x x x x x x x x x x x x x x x x
Remarks Piezometer in	nstalled to 20 m dep	th with res	ponse zo	one at 19.21 m depth		1	Scale (approx)	Logged By
Please see se Water added	eparate sheet for ac during drilling throu vated to 2.5 m to fac	crued star gh the gra	nding time vel to ass	e sist drilling to infilled brick vault	s present at borehole lo	cation	1:50	LB/CA
Groundwater Groundwater	monitoring visit (06 monitoring visit (30	/11/17): 19 /11/17): 19	mm piez mm piez	zometer: 5.25 m zometer: 5.28 m, 50 r	nm standpipe: 4.39 m		Figure N J1718	o. 83.BH1

S	GEA	Geote Widbury	echnica Barn Widb	& Environmenta pury Hill Ware SG12 7QE	al Assoc	iates	Site 135 Shaftesbury Avenue, London WC2H 8AH		Borehole Number BH1
Boring Meth Cable Percus	od ssion	Casing 20	Diamete Omm cas Omm cas	r ed to 6.00m ed to 6.50m	Ground	Level (mOD)	Client Capital Start Ltd		Job Number J17183
		Locatio	n		Dates 11 12	/10/2017- 2/10/2017	Engineer Price & Myers		Sheet 4/4
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend Star
30.00	D								xx
31.00	D						Frequent pyrite nodules from 31.00 m to 34.00 r	n	× ×
31.50-31.95	U								× × ×
32.00	D								× × · · · · · · · · · · · · · · · · · ·
33.00-33.45 33.00	SPT N60=43 D	6.50	DRY	5,6/8,8,11,12					* <u>*</u> * * <u>*</u> * * <u>*</u> *
34.00	D								× × ×
34.50-34.95	U					34.40 (0.60)	Very stiff greenish bluish grey mottled reddish bro brown very silty slightly sandy CLAY. Sand is fine.	wn and	××
				12/10/2017:DRY		35.00	Complete at 35.00m		× • • • •
Remarks Piezometer in 50 mm diame	nstalled to 20 m dep eter groundwater mo	oth with res	sponse zo andpipe	one at 19.21 m depth installed to 5 m depth				Scale (approx)	Logged By
Please see se Water added Trial pit excav	eparate sheet for ac during drilling throu vated to 2.5 m to fac	crued star gh the gra cilitate bore	nding tim vel to ass ehole due	e sist drilling to infilled brick vaults	s present a	at borehole loc	cation	1:50	LB/CA
Groundwater Groundwater	monitoring visit (06 monitoring visit (30	/11/17): 19 /11/17): 19	mm piez mm piez	zometer: 5.25 m zometer: 5.28 m, 50 n	nm standp	ipe: 4.39 m		J1718	o. 83.BH1

GEA

Standard Penetration Test Results

Site : 135 Shaftesbury Avenue, London WC2H 8AH

Client : Capital Start Ltd

Engineer : Price & Myers

Borehole	Base of	End of	End of	Test	Seating	g Blows	Blows	or each 7	5mm pen	etration		
Number	Borehole (m)	Seating Drive (m)	Test Drive (m)	Type	1	2	1	2	3	4	Result	Comments
BH1	3.00	3.15	3.45	CPT	3	2	1	1	0	1	N60=3	
BH1	4.00	4.15	4.45	CPT	2	4	3	4	5	4	N60=17	
BH1	5.00	5.15	5.45	SPT	2	1	2	2	3	2	N60=10	
BH1	7.00	7.15	7.45	SPT	2	3	3	2	3	3	N60=12	
BH1	8.00	8.15	8.45	SPT	3	4	4	4	5	5	N60=20	
BH1	11.00	11.15	11.45	SPT	4	4	5	6	8	8	N60=30	
BH1	14.00	14.15	14.45	SPT	4	4	5	6	8	8	N60=30	
BH1	18.00	18.15	18.45	SPT	4	4	6	7	8	8	N60=32	
BH1	21.00	21.15	21.45	SPT	5	6	7	7	6	7	N60=30	
BH1	24.00	24.15	24.45	SPT	5	6	7	8	7	8	N60=33	
BH1	27.00	27.15	27.45	SPT	4	6	7	8	9	10	N60=37	
BH1	30.00	30.15	30.45	SPT	5	7	7	8	9	11	N60=38	
BH1	33.00	33.15	33.45	SPT	5	6	8	8	11	12	N60=43	
1	1	1		1		1	1			1	1	

Job Number

J17183

Sheet 1 / 1

SUMMARY OF GEOTECHNICAL TESTING

			Sample	details		Class	sificatior	n Tests	3	Densit	y Tests	Undrained	d Triaxial Co	mpression	CI	hemical Te	sts	
Borehole / Trial Pit	Sample Ref	Depth (m)	Туре	Description	WC (%)	LL (%)	PL (%)	PI (%)	<425 μm (%)	Bulk Mg/m ³	Dry Mg/m³	Cell Pressure kPa	Deviator Stress kPa	Shear Stress kPa	рН	2:1 W/S SO4 (g/L)	W/S Mg (mg/L)	Other tests and comments
BH1		3.00	D	Greyish brown sandy gravelly silty CLAY														Particle Size Distribution
BH1		4.00	В	Greyish brown sandy GRAVEL														Particle Size Distribution
BH1		5.00	D	Yellow brown and brown CLAY with rare fine to medium gravel	22.7	60	26	34	98						8.5	0.06		
BH1		8.00	D	Dark brown CLAY	30.2	79	27	52	100						8.3	0.20		
BH1		9.50	U	Firm fissured dark brown silty CLAY	30.6					1.96	1.50	190	197	98				
BH1		12.50-12.95	U	Very stiff fissured dark brown silty CLAY	25.8					2.03	1.61	250	267	134				
BH1		14.00	D	Dark brown CLAY	25.6	71	24	47	100						8.6	0.12		
BH1		16.50	U	Very stiff fissured dark brown silty CLAY	26.2					1.99	1.58	330	361	180				
BH1		19.50	U	Very stiff fissured dark brown silty CLAY with rare medium gravel	29.3					1.98	1.53	390	213	106				
BH1		21.00	D	Dark brown CLAY	33.1	79	28	51	100						8.6	0.22		

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

Checked and Approved by	Project Number:	
CQL	GEO / 26549	()®
3 Dure	Project Name:	GEOLABS
	135 SHAFTSBURY AVENUE. LONDON WC2H 8AH	
S Burke - Senior Technician 03/11/2017	J17183	

Test Report By GEOLABS Limited Bucknalls Lane, Garston, Watford, Hertfordshire, WD25 9XX

Client : Geotechnical & Environmental Associates Limited, Widbury Barn, Widbury Hill, Ware, Hertfordshire, SG12 7QE

SUMMARY OF GEOTECHNICAL TESTING

			Sample	details		Class	ificatior	n Tests		Densit	y Tests	Undraine	d Triaxial Co	mpression	Cł	nemical Te	sts	
Borehole / Trial Pit Samp	ple Ref	Depth (m)	Туре	Description	WC (%)	LL (%)	PL (%)	PI (%)	<425 μm (%)	Bulk Mg/m ³	Dry Mg/m³	Cell Pressure kPa	Deviator Stress kPa	Shear Stress kPa	рН	2:1 W/S SO4 (g/L)	W/S Mg (mg/L)	Other tests and comments
BH1		22.50	U	Very stiff fissured dark brown silty CLAY	26.0					2.00	1.59	450	327	163				
BH1		25.50	U	Very stiff fissured dark brown silty CLAY	24.4					1.98	1.59	510	492	246				
BH1		28.50	U	Very stiff fissured dark brown silty CLAY	21.9					1.99	1.63	570	548	274				
BH1		31.50	U	Very stiff fissured dark brown silty CLAY	22.4					1.99	1.63	630	688	344				
BH1		34.50	U	Very stiff fissured mottled red and light grey silty CLAY	19.2					2.06	1.72	690	637	319				

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

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Jome	135 SHAFTSBURY AVENUE I ONDON WC2H 8AH	GEOLABS
S Burke - Senior Technician		
03/11/2017	J1/183	

Test Report By GEOLABS Limited Bucknalls Lane, Garston, Watford, Hertfordshire, WD25 9XX

Client : Geotechnical & Environmental Associates Limited, Widbury Barn, Widbury Hill, Ware, Hertfordshire, SG12 7QE

BS EN ISO 17892-4 : 2016

PARTICLE SIZE DISTRIBUTION

Description

BH / TP No. Depth (m) Sample Type

BH1 3.00 D

Greyish brown sandy gravelly silty CLAY



63 µm



Particle Proportions								
Cobbles	0							
Gravel	25							
Sand	29							
Silt & Clay	46							



Client : Geotechnical & Environmental Associates Limited, Widbury Barn, Widbury Hill, Ware, Hertfordshire, SG12 7QE

GL:Version 1.79 - 19/09/2017

BS EN ISO 17892-4 : 2016

PARTICLE SIZE DISTRIBUTION

Greyish brown sandy GRAVEL

Description

BH / TP No.

BH1



Client : Geotechnical & Environmental Associates Limited, Widbury Barn, Widbury Hill, Ware, Hertfordshire, SG12 7QE

QUICK UNDRAINED TRIAXIAL COMPRESSION TEST

BH/TP No Depth (m) Sample Type

BH1 9.50 U Description:

Firm fissured dark brown silty CLAY

Specimen Details

Specimen conditions		Undisturbed
Length	(mm)	192.8
Diameter	(mm)	103.2
Moisture Content	(%)	30.6
Bulk Density	(Mg/m³)	1.96
Dry Density	(Mg/m³)	1.50
Test Details		
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.5
Axial displacement rate	(%/min)	2.1
Cell pressure	(kPa)	190
Strain at failure	(%)	7.3
Maximum Deviator Stress	(kPa)	197
Shear Stress Cu	(kPa)	98





Orientation of the sample	Vertical
Distance from top of tube mm	80



S Burke - Senior Technician 03/11/2017

Checked and Approved by: Project Number:

Project Name:

GEO / 26549



135 SHAFTSBURY AVENUE. LONDON WC2H 8AH J17183

QUICK UNDRAINED TRIAXIAL COMPRESSION TEST

BH/TP No Depth (m) Sample Type

BH1 12.50-12.95 U Description:

Very stiff fissured dark brown silty CLAY

Specimen Details

Specimen conditions		Undisturbed
Length	(mm)	202.8
Diameter	(mm)	102.7
Moisture Content	(%)	25.8
Bulk Density	(Mg/m³)	2.03
Dry Density	(Mg/m³)	1.61
Test Details		
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.8
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	250
Strain at failure	(%)	11.8
Maximum Deviator Stress	(kPa)	267
Shear Stress Cu	(kPa)	134



Orientation of the sample	Vertical
Distance from top of tube mm	190



S Burke - Senior Technician 03/11/2017

Checked and Approved by: Project Number:

Project Name:

GEO / 26549



135 SHAFTSBURY AVENUE. LONDON WC2H 8AH J17183

QUICK UNDRAINED TRIAXIAL COMPRESSION TEST

BH/TP No Depth (m) Sample Type

BH1 16.50 U Description:

Very stiff fissured dark brown silty CLAY

Specimen Details

Specimen conditions		Undisturbed
Length	(mm)	202.9
Diameter	(mm)	103.2
Moisture Content	(%)	26.2
Bulk Density	(Mg/m³)	1.99
Dry Density	(Mg/m³)	1.58
Test Details		
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.4
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	330
Strain at failure	(%)	4.9
Maximum Deviator Stress	(kPa)	361
Shear Stress Cu	(kPa)	180



Orientation of the sample	Vertical
Distance from top of tube mm	60



S Burke - Senior Technician 03/11/2017

Checked and Approved by: Project Number:

Project Name:

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135 SHAFTSBURY AVENUE. LONDON WC2H 8AH J17183

QUICK UNDRAINED TRIAXIAL COMPRESSION TEST

BH/TP No Depth (m) Sample Type

BH1 19.50 U Description: Very stiff fissured dark brown silty CLAY with rare medium gravel

Specimen Details

••••••		
Specimen conditions		Undisturbed
Length	(mm)	203.4
Diameter	(mm)	103.3
Moisture Content	(%)	29.3
Bulk Density	(Mg/m³)	1.98
Dry Density	(Mg/m³)	1.53
Test Details		
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.5
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	390
Strain at failure	(%)	7.4
Maximum Deviator Stress	(kPa)	213
Shear Stress Cu	(kPa)	106

Mode of failure	

Orientation of the sample	Vertical
Distance from top of tube mm	20



S Burke - Senior Technician 03/11/2017

Checked and Approved by: Project Number:

Project Name:

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135 SHAFTSBURY AVENUE. LONDON WC2H 8AH J17183

 Test Report By GEOLABS Limited
 Bucknalls Lane, Garston, Watford, Hertfordshire, WD25 9XX

 Client : Geotechnical & Environmental Associates Limited, Widbury Barn, Widbury Hill, Ware, Hertfordshire, SG12 7QE

Page 1 of 1 (Ref 39442.50461)

QUICK UNDRAINED TRIAXIAL COMPRESSION TEST

BH/TP No Depth (m) Sample Type

BH1 22.50 U Description:

Very stiff fissured dark brown silty CLAY

Specimen Details

Specimen conditions		Undisturbed
Length	(mm)	203.0
Diameter	(mm)	103.5
Moisture Content	(%)	26.0
Bulk Density	(Mg/m³)	2.00
Dry Density	(Mg/m³)	1.59
Test Details		
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.5
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	450
Strain at failure	(%)	7.9
Maximum Deviator Stress	(kPa)	327
Shear Stress Cu	(kPa)	163



Orientation of the sample	Vertical
Distance from top of tube mm	80



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Checked and Approved by: Project Number:

Project Name:

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135 SHAFTSBURY AVENUE. LONDON WC2H 8AH J17183

QUICK UNDRAINED TRIAXIAL COMPRESSION TEST

BH/TP No Depth (m) Sample Type

BH1 25.50 U Description:

Very stiff fissured dark brown silty CLAY

Specimen Details

Specimen conditions		Undisturbed
Length	(mm)	203.7
Diameter	(mm)	103.6
Moisture Content	(%)	24.4
Bulk Density	(Mg/m³)	1.98
Dry Density	(Mg/m³)	1.59
Test Details		
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.6
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	510
Strain at failure	(%)	9.3
Maximum Deviator Stress	(kPa)	492
Shear Stress Cu	(kPa)	246



Orientation of the sample	Vertical
Distance from top of tube mm	70



S Burke - Senior Technician 03/11/2017

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Project Name:

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135 SHAFTSBURY AVENUE. LONDON WC2H 8AH J17183

QUICK UNDRAINED TRIAXIAL COMPRESSION TEST

BH/TP No Depth (m) Sample Type

BH1 28.50 U Description:

Very stiff fissured dark brown silty CLAY

Specimen Details

Specimen conditions		Undisturbed
Length	(mm)	203.4
Diameter	(mm)	103.2
Moisture Content	(%)	21.9
Bulk Density	(Mg/m³)	1.99
Dry Density	(Mg/m³)	1.63
Test Details		
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.9
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	570
Strain at failure	(%)	15.7
Maximum Deviator Stress	(kPa)	548
Shear Stress Cu	(kPa)	274



Orientation of the sample	Vertical
Distance from top of tube mm	95



S Burke - Senior Technician 03/11/2017

Checked and Approved by: Project Number:

Project Name:

GEO / 26549



135 SHAFTSBURY AVENUE. LONDON WC2H 8AH J17183

 Test Report By GEOLABS Limited
 Bucknalls Lane, Garston, Watford, Hertfordshire, WD25 9XX

 Client : Geotechnical & Environmental Associates Limited, Widbury Barn, Widbury Hill, Ware, Hertfordshire, SG12 7QE

Page 1 of 1 (Ref 39442.50470)

QUICK UNDRAINED TRIAXIAL COMPRESSION TEST

BH/TP No Depth (m) Sample Type

BH1 31.50 U Description:

Very stiff fissured dark brown silty CLAY

Specimen Details

Specimen conditions		Undisturbed
Length	(mm)	203.1
Diameter	(mm)	103.4
Moisture Content	(%)	22.4
Bulk Density	(Mg/m³)	1.99
Dry Density	(Mg/m³)	1.63
Test Details		
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.9
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	630
Strain at failure	(%)	14.3
Maximum Deviator Stress	(kPa)	688
Shear Stress Cu	(kPa)	344

Mode of failure



Orientation of the sample	Vertical
Distance from top of tube mm	50



S Burke - Senior Technician 03/11/2017

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135 SHAFTSBURY AVENUE. LONDON WC2H 8AH J17183

 Test Report By GEOLABS Limited
 Bucknalls Lane, Garston, Watford, Hertfordshire, WD25 9XX

 Client : Geotechnical & Environmental Associates Limited, Widbury Barn, Widbury Hill, Ware, Hertfordshire, SG12 7QE

Project Name:

Page 1 of 1 (Ref 39442.50473)

QUICK UNDRAINED TRIAXIAL COMPRESSION TEST

BH/TP No Depth (m) Sample Type

BH1 34.50 U

Description:

Very stiff fissured mottled red and light grey silty CLAY

Specimen Details

Specimen conditions		Undisturbed
Length	(mm)	203.0
Diameter	(mm)	103.5
Moisture Content	(%)	19.2
Bulk Density	(Mg/m³)	2.06
Dry Density	(Mg/m³)	1.72
Test Details		
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.5
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	690
Strain at failure	(%)	7.9
Maximum Deviator Stress	(kPa)	637
Shear Stress Cu	(kPa)	319



Orientation of the sample	Vertical
Distance from top of tube mm	110



Checked and Approved by: Project Number:

Project Name:

GEO / 26549

135 SHAFTSBURY AVENUE. LONDON WC2H 8AH

J17183



S Burke - Senior Technician 03/11/2017 Test Report By GEOLABS Limited Bucknalls Lane, Garston, Watford, Hertfordshire, WD25 9XX Client : Geotechnical & Environmental Associates Limited, Widbury Barn, Widbury Hill, Ware, Hertfordshire, SG12 7QE

Page 1 of 1 (Ref 39442.50476)



Caroline Anderson Geotechnical & Environmental Associates Widbury Barn Widbury Hill Ware Hertfordshire SG127QE



i2 Analytical Ltd. 7 Woodshots Meadow, Croxley Green Business Park, Watford, Herts, WD18 8YS

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e: caroline@gea-ltd.co.uk

Analytical Report Number : 17-62823

Project / Site name:	Odeon Cinema, Shaftsbury Avenue, London	Samples received on:	04/10/2017
Your job number:	J17183	Samples instructed on:	05/10/2017
Your order number:	J17183	Analysis completed by:	12/10/2017
Report Issue Number:	1	Report issued on:	12/10/2017
Samples Analysed:	1 soil sample		

Signed:

Rexona Rahman Reporting Manager For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 17-62823

Project / Site name: Odeon Cinema, Shaftsbury Avenue, London Your Order No: J17183

					-		
Lab Sample Number				830605			
Sample Reference		TP1					
Sample Number				None Supplied			
Depth (m)				0.50			
Date Sampled				04/10/2017			
Time Taken				None Supplied			
	I		<u> </u>	None Supplied			
		8 -					
Analytical Parameter	S	imi	red				
(Soil Analysis)	its	ctio (t	itat				
		57	ig				
		0.1	_	0.4			
Stone Content	%	0.1	NONE	< 0.1			
Moisture Content	%	N/A	NONE	19			
Total mass of sample received	kg	0.001	NONE	1.5			1
	T				-	-	
Asbestos in Soil	Туре	N/A	ISO 17025	Not-detected			4
General Inorganics	1				1	r	
pH - Automated	pH Units	N/A	MCERTS	8.0	 		
Total Cyanide	mg/kg	1	MCERTS	< 1	 		
Notor Soluble SO4 16br outraction (2:1 Loophate	mg/kg	50	MCERTS	1300	 		l
Water Soluble SO4 16nr extraction (2:1 Leachate	~ //	0.00125	MCEDTO	0.22			1
Lyuivaiciit) Sulphido	g/I	0.00125	MCEDIC	0.22	1		1
Sulphilde Water Soluble Chloride (2:1)	mg/Kg	1	MCEDIC	1.2	}		1
Tatal Organia Carbon (TOC)	під/ку	0.1	MCERTS	39			
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.8	 I		<u> </u>
Total Phoneic							
Total Phenols		-	MOEDTO	. 1.0	1		
Total Phenois (mononyuric)	mg/kg	1	MCERTS	< 1.0			1
Speciated BAHs							
Specialeu PARS		0.05	MOEDTO	< 0.0F			
Acapanthalene	mg/kg	0.05	MCERTS	< 0.05			
Acenaphthylene	тту/ку	0.05	MCERTS	< 0.05			
Eluoropo	mg/kg	0.05	MCEDIC	< 0.05			
Fluorene	тту/ку	0.05	MCERTS	< 0.05			
Anthra conc	mg/kg	0.05	MCERTS	< 0.05			
Flueranthene	mg/kg	0.05	MCEDIC	< 0.05			
Fluoralititelle	тту/ку	0.05	MCERTS	< 0.05			
Pyrene Benne (a) anthronoun	mg/kg	0.05	MCERTS	< 0.05			
Christene	mg/kg	0.05	MCEDIC	< 0.05			
Chrysene Banna (h)fluaranthana	тту/ку	0.05	MCERTS	< 0.05			
Benzo(L)fluoranthene	mg/kg	0.05	MCERTS	< 0.05			
Benzo(k)nuorantnene	mg/kg	0.05	MCERTS	< 0.05			
	тту/ку	0.05	MCERTS	< 0.05			
Dibonz(a h)anthracana	mg/kg	0.05	MCEDIC	< 0.05			
	тту/ку	0.05	MCERTS	< 0.05			
Benzo(gni)perviene	mg/kg	0.05	MCERTS	< 0.05			<u>I</u>
Total DAL							
Creatisted Total EDA 16 DAHa		0.0	MCEDIC	< 0.90			1
Specialeu Tolai EPA-16 PARS	тід/кд	0.0	MUERIS	< 0.60			
Honur Motola / Motollaida							
Arconic (agua rogia extractable)			MCEDIC	10			1
Alsellic (aqua regia extractable)	mg/kg	0.2	MCEDIC	12			
Caumium (aqua regia extractable)	mg/Kg	1	MCEDIC	< U.Z 10	}		1
	mg/kg	1	MCEDIC	19	}		1
	mg/kg	1	MCERTS	/4	 <u> </u>		l
	mg/kg	1	MCERTS	100	 <u> </u>		l
Miercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.0	 <u> </u>		l
Nickei (aqua regia extractable)	mg/kg	1	MCERTS	20			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0			
zinc (aqua regia extractable)	mg/kg	1	MCERTS	58			1
Between the day and an							
Petroleum Hydrocarbons							

mg/kg	10	MCERTS	< 10				
			_	_	_	_	_
mg/kg	0.1	MCERTS	< 0.1				
mg/kg	2	MCERTS	< 2.0				
mg/kg	4	MCERTS	< 4.0				
mg/kg	1	MCERTS	< 1.0				
	mg/kg mg/kg mg/kg mg/kg mg/kg	mg/kg 10 mg/kg 0.1 mg/kg 2 mg/kg 4 mg/kg 1	mg/kg 10 MCERTS mg/kg 0.1 MCERTS mg/kg 2 MCERTS mg/kg 4 MCERTS mg/kg 1 MCERTS	mg/kg 10 MCERTS < 10 mg/kg 0.1 MCERTS < 0.1	mg/kg 10 MCERTS < 10 mg/kg 0.1 MCERTS < 0.1	mg/kg 10 MCERTS < 10 mg/kg 0.1 MCERTS < 0.1	mg/kg 10 MCERTS < 10 mg/kg 0.1 MCERTS < 0.1

Iss No 17-62823-1 Odeon Cinema, Shaftsbury Avenue, London J17183

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Analytical Report Number: 17-62823

Project / Site name: Odeon Cinema, Shaftsbury Avenue, London Your Order No: J17183

Lab Sample Number	830605					
Sample Reference	TP1					
Sample Number				None Supplied		
Depth (m)				0.50		
Date Sampled	04/10/2017					
Time Taken				None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			
TPH (C21 - C35)	mg/kg	1	MCERTS	< 1.0		





Analytical Report Number : 17-62823

Project / Site name: Odeon Cinema, Shaftsbury Avenue, London

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
830605	TP1	None Supplied	0.50	Grey clay and sand with gravel and brick.





Analytical Report Number : 17-62823

Project / Site name: Odeon Cinema, Shaftsbury Avenue, London

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	alytical Method Description Analytical Method Reference					
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025		
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests. 2:1 extraction.	L082-PL	D	MCERTS		
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS		
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE		
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	w	MCERTS		
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS		
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS		
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE		
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP- OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP- OES.	L038-PL	D	MCERTS		
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS		
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS		
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS		
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS		
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding.	L076-PL	W	MCERTS		
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	MCERTS		

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland. Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



Caroline Anderson Geotechnical & Environmental Associates Widbury Barn Widbury Hill Ware Hertfordshire SG127QE



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Analytical Report Number : 17-66625

Project / Site name:	Odeon Cinema, Shaftsbury Avenue, London	Samples received on:	02/11/2017
Your job number:	J17183	Samples instructed on:	02/11/2017
Your order number:	J17183	Analysis completed by:	09/11/2017
Report Issue Number:	1	Report issued on:	09/11/2017
Samples Analysed:	1 soil sample		

Signed:

Rexona Rahman Customer Services Manager For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 17-66625

Project / Site name: Odeon Cinema, Shaftsbury Avenue, London Your Order No: J17183

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Sample Reference Try Image: Sample Reference None Supple A Image: Sample Reference None Supple A Depth (m) 0.40	Lab Sample Number	852011					
Sample Humber Non-Segled Non-Segled Non-Segled Non-Segled Date Sampled 0.00 0.00 0.00 0.00 0.00 The Taken 100 0.00 0.00 0.00 0.00 Sole Sampled 0.00 0.00 0.00 0.00 0.00 Sole Sole Sampled 9.00 0.00 0.00 0.00 0.00 Sole Sole Sampled 9.00 0.00 0.00 0.00 0.00 0.00 Sole Sole Sampled 9.00 NORE 2.0 0.00	Sample Reference	TD1					
Display Display <t< th=""><th>Sample Number</th><th>None Supplied</th><th> </th><th></th></t<>	Sample Number	None Supplied	 				
Date Sampled Unit/2017 Unit/2017 Unit/2017 Ther Taken 300 1 1400 1 Store Cartierd 6, 0.1 Note: 2.0 1 Store Cartierd 6, 0.1 Note: 2.0 1 1 Store Cartierd 6, 0.1 Note: 2.0 1 1 Store Cartierd 6, 0.11 Note: 2.0 1 1 Address of the cartierd 6, 0.011 Note: 2.0 1 1 Address of the cartierd 10, Note: 2.0 1 1 1 Address of the cartierd 10, Note: 10.0 1 <td>Denth (m)</td> <td></td> <td>0.40</td> <td> </td> <td></td>	Denth (m)		0.40	 			
Time Taken 0 1400 0 1400 Analytical Parameter (Soll Analysis) g g g g g g g g g g g g g g g g g g g g	Date Sampled	01/11/2017					
International and the second	Time Taken				1400	 	
Analytical Parameter (Soil Analysis) gr					1100		
Store Content % 0.1 NOME Col Toal mass of sample received 1/a 0.001 NOME 2.0	Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			
Instance Content % N/A NORE 2.0 Ashestros in Soil Type N/A ISO 1702 Not detected Image: Content Co	Stone Content	%	0.1	NONE	< 0.1		
Total mass of sample received isg 0.001 None 2.0 Image: Construction of the construle one construction of the construction of the construc	Moisture Content	%	N/A	NONE	29		
Advectors Type N/A ISO 17025 Not-detected General Longanics pti-Advocated mg/sq. 1 MCRTS 10.8 Total Synde mg/sq. 1 MCRTS 10.8	Total mass of sample received	ka	0.001	NONE	2.0		
Addestiss in Soll Type N/A BS 12025 Ned-detected General Inorganics mg/la 1 MCRTS 10.8	···· ··· · · · · · · ·	J					
General Inorganics PH Units N/A MCRTS 10.8 Image 1 MCRTS 20.0 MCRTS 20.05 MCRTS 20.05 MCRTS	Asbestos in Soil	Type	N/A	ISO 17025	Not-detected		
General Inorganics Orial Automated ms/ka N/A MCRTS 1.0.8 Image: Solution of the solution of th							
pit - Automated pit - Automated pit - Automated pit - Automated Total Sponide mayla 1 MCRTS <	General Inorganics						
Total Cynnie marka 1 MCRTS <1 Image Image <th< td=""><td>pH - Automated</td><td>pH Units</td><td>N/A</td><td>MCERTS</td><td>10.8</td><td></td><td></td></th<>	pH - Automated	pH Units	N/A	MCERTS	10.8		
Total Subplate as SO_ mg/kg 50 MCRRTS 1800 mail Equivalent) gl 0.00125 MCRRTS 0.17 mail	Total Cyanide	mg/kg	1	MCERTS	< 1		
Water Soluble SQN 15hr extraction (2:1) Leachate g/l 0.00125 MCERTS 0.17 Image Im	Total Sulphate as SO ₄	mg/kg	50	MCERTS	1800		
Equivalent) g/d 0.00125 MCRNS 0.17 Water Soluble Chorde (2:1) mg/kq 1 MCRNS 260	Water Soluble SO4 16hr extraction (2:1 Leachate						
Sulphide mg/kg 1 MCRETS 34 1 Weber Soluble Chorde (2:1) mg/kg 1 MCRETS 260 1 1 Total Organic Carbon (TOC) % 0.1 MCRETS 0.6 1 1 Total Phenols 1 MCRETS 0.6 1 1 Speciated PAHs 1 MCRETS < 0.05	Equivalent)	g/l	0.00125	MCERTS	0.17	 	
Water Soluble Choride (2:1) mg/kg 1 MCERTS 2.60 Total Anganic Carbon (TOC) % 0.1 MCERTS 0.6 Total Phenols mg/kg 1 MCERTS 0.6 Total Phenols (monohydric) mg/kg 1 MCERTS < 1.0 Speciated PAHS MCERTS < 0.05 MCERTS < 0.05 Acomaphthylene mg/kg 0.05 MCERTS < 0.05 MCERTS < 0.05 Chorene mg/kg 0.05 MCERTS < 0.05 MCERTS < 0.05 Acomaphthylene mg/kg 0.05 MCERTS < 0.05 MCERTS < 0.05 Aconaphthylene mg/kg 0.05 MCERTS < 0.05 MCERTS < 0.05 Aconaphthylene mg/kg 0.05 MCERTS < 0.05 MCERTS < 0.05 Aconaphthylene mg/kg 0.05 MCERTS < 0.05 MCERTS < 0.05 Houranthree mg/kg 0.05 MCERTS < 0.05 MCERTS	Sulphide	mg/kg	1	MCERTS	34		
Total Organic Carbon (TOC) % 0.1 MCERTS 0.6 Image: Carbon (TOC) Total Phenols Image: Carbon (TOC) mg/kg 1 MCERTS < 0.0	Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	260		
Total Phenols mg/kg 1 MCERTS < 1.0 Image: Constraint of the constr	Total Organic Carbon (TOC)	%	0.1	MCERTS	0.6		
Total Phenols Total Phenols Speciated PAHs Naphthalene mg/kg 0.05 MCERTS < 0.05							
Total Phenols (monohydric) mg/kg 1 MCRETS < 1.0 Speciated PAHs Speciated PAHs Acenaphthylene mg/kg 0.05 MCRETS < 0.05	Total Phenols						
Speciated PAHS Naphthalene mg/kg 0.05 MCERTS < 0.05	Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0		
Speciated PAHs Acenaphthylene mg/kg 0.05 MCERTS < 0.05							
Naphthalene mg/kg 0.05 MCERTS < 0.05 Acenaphtlylene mg/kg 0.05 MCERTS < 0.05	Speciated PAHs		-				
Acenapithylene mg/kg 0.05 MCERTS < 0.05 Ruorene mg/kg 0.05 MCERTS < 0.05	Naphthalene	mg/kg	0.05	MCERTS	< 0.05		
Acenapitteine mg/kg 0.05 MCERTS < 0.05 Phonentmene mg/kg 0.05 MCERTS < 0.05	Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05		
Hubrene mg/kg 0.05 MCERTS < 0.05 Anthracene mg/kg 0.05 MCERTS < 0.05	Acenaphthene	mg/kg	0.05	MCERTS	< 0.05		
Prehamturene mg/kg 0.05 MCRTS < 0.05 Fluoranthene mg/kg 0.05 MCRTS < 0.05	Fluorene	mg/kg	0.05	MCERTS	< 0.05		
Anthracene mg/kg 0.05 MCRTS < 0.05 Image: Second	Phenanthrene	mg/kg	0.05	MCERTS	< 0.05		
rildoranthene mg/kg 0.05 MCERTS < 0.05	Anthracene	mg/kg	0.05	MCERTS	< 0.05	 	
Pyrene mg/kg 0.05 MCERTS < 0.05 Benzo(a)anthracene mg/kg 0.05 MCERTS < 0.05	Fluoranthene	mg/kg	0.05	MCERTS	< 0.05		
benzo(a)anthracene mg/kg 0.05 MCERTS < 0.05 Benzo(b)fluoranthene mg/kg 0.05 MCERTS < 0.05	Pyrene	mg/kg	0.05	MCERTS	< 0.05		
Chrysene mg/kg 0.05 MCERTS < 0.05 Image: Constraint of the second sec	Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	 	
Definition Img/kg O.05 MCERTS < 0.05 Image: Construction of the second secon	Chrysene	mg/kg	0.05	MCERTS	< 0.05	 	
Delta (A) Individual delte m(A/g 0.05 PICENS < 0.05 Image: Constraint of the constrent of the constraint of the constraint of the constrai	Benzo(b)Huoranthene	mg/kg	0.05	MCERTS	< 0.05	 	
Definition (a) (a) (b) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c	Benzo(k)nuorantnene	mg/kg	0.05	MCERTS	< 0.05		
Interfort L2_2-Cut pyretrie Img/kg U.U.S MCERTS < 0.05 Immediate L2 Dibenz(a,h)anthracene mg/kg 0.05 MCERTS < 0.05	Indena(1,2,2, cd)nyrana	mg/Kg	0.05	MCEDIC	< 0.05	 	
Diberty (a,tr) antitingene mg/kg 0.05 MCERTS < 0.05 MCERTS < 0.05 Total PAH Speciated Total EPA-16 PAHs mg/kg 0.8 MCERTS < 0.80	Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05		
Dehzdugini peryene mg/kg 0.03 MCERTS < 0.04	Diberiz(d,n)anthracene	mg/kg	0.05	MCERTS	< 0.05	 	
Total PAH Speciated Total EPA-16 PAHs mg/kg 0.8 MCERTS < 0.80	Benzo(gni)perylene	тіў/ку	0.05	MCER15	< 0.05		
Total PAR Speciated Total EPA-16 PAHs mg/kg 0.8 MCERTS < 0.80	Total DAM						
Special CPAPIO PARIS Inig/kg 0.3 MCERTS < 0.80 Imit (0.000) Heavy Metals / Metalloids Arsenic (aqua regia extractable) mg/kg 1 MCERTS 11 Imit (0.000) Cadmium (aqua regia extractable) mg/kg 0.2 MCERTS < 0.2	Speciated Total EDA 16 DAHs	malka	0.0	MCEDTC	< 0.90		
Heavy Metals / Metalloids Arsenic (aqua regia extractable) mg/kg 1 MCERTS 11 Image: Colspan="4">Image: Colspan="4"	Specialed Total LFA-10 FAIls	тту/ку	0.0	MCER13	< 0.80		
Arsenic (aqua regia extractable) mg/kg 1 MCERTS 11 Image: stractable Cadmium (aqua regia extractable) mg/kg 0.2 MCERTS < 0.2	Heavy Metals / Metalloids						
Arden (edual regia extractable) Ing/kg 1 MCERTS 11 Cadmium (aqua regia extractable) mg/kg 0.2 MCERTS < 0.2	Arsonic (agua regia extractable)	ma/ka	1	MCEDTC	11		
Chromium (aqua regia extractable) mg/kg 1 MCERTS 53 Copper (aqua regia extractable) mg/kg 1 MCERTS 42 Lead (aqua regia extractable) mg/kg 1 MCERTS 19 Mercury (aqua regia extractable) mg/kg 0.3 MCERTS 42 Mercury (aqua regia extractable) mg/kg 1 MCERTS 19 Nickel (aqua regia extractable) mg/kg 1 MCERTS 41 Selenium (aqua regia extractable) mg/kg 1 MCERTS 41 Selenium (aqua regia extractable) mg/kg 1 MCERTS 41 Zinc (aqua regia extractable) mg/kg 1 MCERTS 89	Cadmium (aqua regia extractable)	mg/kg	0.2	MCEDTC	<u> </u>	 	
Constraint (equa regia extractable) mg/kg 1 MCERTS 42 Lead (aqua regia extractable) mg/kg 1 MCERTS 42 Mercury (aqua regia extractable) mg/kg 0.3 MCERTS 5 Nickel (aqua regia extractable) mg/kg 1 MCERTS 41 Selenium (aqua regia extractable) mg/kg 1 MCERTS 41 Selenium (aqua regia extractable) mg/kg 1 MCERTS Yetroleum Hydrocarbons mg/kg 1 MCERTS 89	Chromium (aqua regia extractable)	mg/kg	1	MCEDTC	52		
Copper (aqua regia extractable) mg/kg 1 MCERTS 19 1 Lead (aqua regia extractable) mg/kg 0.3 MCERTS 19 1 Mercury (aqua regia extractable) mg/kg 0.3 MCERTS <0.3	Conner (aqua regia extractable)	mg/kg	1	MCEDTO	47		
Load (uqua regia extractable) mg/kg 1 mcEntrs 13 Mercury (aqua regia extractable) mg/kg 0.3 MCERTS < 0.3	Lead (aqua regia extractable)	mg/kg	1	MCEDTC	10	 	
Nickel (aqua regia extractable) mg/kg 1 MCERTS 41 Selenium (aqua regia extractable) mg/kg 1 MCERTS <1.0	Mercury (aqua regia extractable)	mg/kg	03	MCEDTC	< 0.3 12		
Mickel (aqua regia extractable) mg/kg 1 MCERTS <1.0 Selenium (aqua regia extractable) mg/kg 1 MCERTS <1.0	Nickel (aqua regia extractable)	mg/kg	1	MCEDTO	< 0.5∠1		
Description (aqua regia extractable) Ing/kg I PicLRTS N.0 Zinc (aqua regia extractable) mg/kg 1 MCERTS 89	Selenium (aqua regia extractable)	mg/kg	1	MCEDTC	ا ۲	 	
Petroleum Hydrocarbons	Zinc (aqua regia extractable)	mg/kg	1	MCEDTC	< 1.U 80		
Petroleum Hydrocarbons	בוות נוקטם וכעום כאנומנומטוכן	тту/ку	1	PICER13	07		
Petroleum Hydrocarbons							
	Petroleum Hydrocarbons						

TPH C10 - C40 10 MCERTS mg/kg < 10 TPH (C8 - C10) 0.1 MCERTS < 0.1 mg/kg TPH (C10 - C12) mg/kg 2 MCERTS < 2.0 TPH (C12 - C16) mg/kg 4 MCERTS < 4.0 TPH (C16 - C21) 1 MCERTS < 1.0 mg/kg

Iss No 17-66625-1 Odeon Cinema, Shaftsbury Avenue, London J17183

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Analytical Report Number: 17-66625

Project / Site name: Odeon Cinema, Shaftsbury Avenue, London Your Order No: J17183

Lab Sample Number				852011		
Sample Reference	TP1					
Sample Number				None Supplied		
Depth (m)				0.40		
Date Sampled				01/11/2017		
Time Taken				1400		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			
TPH (C21 - C35)	mg/kg	1	MCERTS	< 1.0		

Iss No 17-66625-1 Odeon Cinema, Shaftsbury Avenue, London J17183





Analytical Report Number : 17-66625

Project / Site name: Odeon Cinema, Shaftsbury Avenue, London

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
852011	TP1	None Supplied	0.40	Brown clay.

Iss No 17-66625-1 Odeon Cinema, Shaftsbury Avenue, London J17183





Analytical Report Number : 17-66625

Project / Site name: Odeon Cinema, Shaftsbury Avenue, London

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status	
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025	
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests. 2:1 extraction.	L082-PL	D	MCERTS	
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS	
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE	
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	w	MCERTS	
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS	
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS	
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE	
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP- OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP- OES.	L038-PL	D	MCERTS	
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS	
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS	
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS	
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS	
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding.	L076-PL	W	MCERTS	
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	MCERTS	

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland. Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



Generic Risk-Based Soil Screening Values

Job Number

J17183

Sheet 1 / 1

Site

135 Shaftsbury Avenue, London WC2H 8AH

Client Engineer

Price & Myers

Proposed End Use Commercial

Capital Start Limited

Soil pH 8

Soil Organic Matter content % 1.0

Contaminant	Screening Value mg/kg	Data Source	Contaminant	Screening Value mg/kg	Data Source		
	Metals		Anions				
Arsenic	640	C4SL	Soluble Sulphate	500 mg/l	Structures		
Cadmium	410	C4SL	Sulphide	50	Structures		
Chromium (III)	30400	LQM/CIEH	Chloride	400	Structures		
Chromium (VI)	49	C4SL	C	Others			
Copper	71,700	LQM/CIEH	Organic Carbon (%)	10	Methanogenic potential		
Lead	2330	C4SL	Total Cyanide	12000	WRAS		
Elemental Mercury	170	SGV	Total Mono Phenols	3200	SGV		
Inorganic Mercury	3600	SGV		PAH			
Nickel	1350	LQM/CIEH	Naphthalene	200.00	C4SL exp & LQM/CIEH		
Selenium	13000	SGV	Acenaphthylene	84,000	LQM/CIEH		
Zinc	665,000	LQM/CIEH	Acenaphthene	85,000	LQM/CIEH		
Нус	drocarbons		Fluorene	64,000	LQM/CIEH		
Benzene	27	C4SL	Phenanthrene	22,000	LQM/CIEH		
Toluene	870	SGV	Anthracene	530,000	LQM/CIEH		
Ethyl Benzene	48000	SGV	Fluoranthene	23,000	LQM/CIEH		
Xylene	475	SGV	Pyrene	54,000	LQM/CIEH		
Aliphatic C5-C6	3400	LQM/CIEH	Benzo(a) Anthracene	90.0	C4SL exp & LQM/CIEH		
Aliphatic C6-C8	8300	LQM/CIEH	Chrysene	140	C4SL exp & LQM/CIEH		
Aliphatic C8-C10	2100	LQM/CIEH	Benzo(b) Fluoranthene	100.0	C4SL exp & LQM/CIEH		
Aliphatic C10-C12	10000	LQM/CIEH	Benzo(k) Fluoranthene	140.0	C4SL exp & LQM/CIEH		
Aliphatic C12-C16	61000	LQM/CIEH	Benzo(a) pyrene	42.00	C4SL		
Aliphatic C16-C35	1,600,000	LQM/CIEH	Indeno(1 2 3 cd) Pyrene	60.0	C4SL exp & LQM/CIEH		
Aromatic C6-C7	See Benzene	LQM/CIEH	Dibenzo(a h) Anthracene	13.00	C4SL exp & LQM/CIEH		
Aromatic C7-C8	See Toluene	LQM/CIEH	Benzo (g h i) Perylene	650	C4SL exp & LQM/CIEH		
Aromatic C8-C10	3700	LQM/CIEH	Screening value for PAH	600.0	B(a)P / 0.15		
Aromatic C10-C12	17000	LQM/CIEH	Chlorinated Solvents				
Aromatic C12-C16	36000	LQM/CIEH	1,1,1 trichloroethane (TCA)	552	LQM/CIEH		
Aromatic C16-C21	28000	LQM/CIEH	tetrachloroethane (PCA)	150	LQM/CIEH		
Aromatic C21-C35	28000	LQM/CIEH	tetrachloroethene (PCE)	63.1	LQM/CIEH		
PRO (C ₅ –C ₁₀)	18397	Calc	trichloroethene (TCE)	6.42	LQM/CIEH		
DRO (C ₁₂ –C ₂₈)	1,725,000	Calc	1,2-dichloroethane (DCA)	0.71	LQM/CIEH		
Lube Oil (C ₂₈ –C ₄₄)	1,628,000	Calc	vinyl chloride (Chloroethene)	0.0587	LQM/CIEH		
ТРН	1000	Trigger for speciated	tetrachloromethane (Carbon tetra	3	LQM/CIEH		
		testing	trichloromethane (Chloroform)	79.4	LQM/CIEH		

Notes

Concentrations measured below the above values may be considered to represent 'uncontaminated conditions' which pose 'LOW' risk to human

health. Concentrations measured in excess of these values indicate a potential risk which require further, site specific risk assessment.

SGV - Soil Guideline Value, derived from the CLEA model and published by Environment Agency 2009

LQM/CIEH - Generic Assessment Criteria for Human Health Risk Assessment 2nd edition (2009) derived using CLEA 1.04 model 2009

C4SL - Defra Category 4 Screening value based on Low Level of Toxicological Risk

C4SL exp & LQM/CIEH calculated using C4SL revisions to exposure assessment but LQM/CIEH health criteria values

Calc - sum of nearest available carbon range specified including BTEX for PRO fraction

B(a)P / 0.15 - GEA experience indicates that Benzo(a) pyrene (one of the most common and most carcinogenic of the PAHs) rarely exceeds 15% of the total PAH concentration, hence this Total PAH threshold is regarded as being conservative

