

CLIENT	: LB of	Richr	nond	Upon Thames	PROJECT: Twicke								GRO	DUND	LEVEL	. m						HOLE No. BH01A
LOGGED				CHECKED BY: JD	EXCAVATION METHOD):	Hand Pit						Gric	l Refer	ence:							SHEET 1 OF 1
FIELDWO TEMPLAT			ВН ВЕТ	DATE: 10/11/2020			Uncased	1 to 1.0	m				DAT	ES 24/	08/20	020 -						PROJECT NO. 4955,SI
ate/Time		Depth	* Z	<u> </u>			Strata		(Graphical Representation	!			tu Testin	g .		La	borato	ory Te	esting		Additional Tests and Notes
and Depth	of Casing	of Wate	Piez.	Description of	of Strata	Leg	Reduced Level	Depth		SPT 'N' Value	Depth	ıs z	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	Mg/m ³	Cu kN/m²	
-	-		+	MADE GROUND: Paving slab u	nderlain by orange and			0.00		10 20 30 40		0 -							-	- Or	,	_
				brown gravelly sand MADE GROUND: Brown, speck	/		*	0.12			0.20- 0.80	D	1 1									
				black, silty very gravelly SAND; angular to subrounded brick, n	graval is find to coarse	\bowtie	3				0.00] '	•									
-	-			chert and occasional concrete. cobbles of brick and concrete	Occasional angular		¥	1.00	 			1 🚽										Hand dug starter pit terminated at 1.0m d
				$\backslash 0.12$ - 0.18 Many roots and roo	tlets	/			::::			1										ceramic pipe
				0.25 Orange plastic mesh layer Ceramic pipe encountered at b	ase of pit. Hand dug pit							-										
-	-			terminated and alternative dril attempted	ling location (BH1B)			- :	 		:	2 =										_
												1										
												-										
-	-							- :	 		:	3 =										-
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- *\^/^TC2	- T C1	a al i a - ·	<u> </u>	DISTORATED ATTO	CAMPUE S	<u> </u>	alianus de ent	<u> </u>	4		Dlaws C	10-	6	ab 75								<u> </u>
·WATER	▼ Star	iding wa ter strik	ater lev es		se zone AND B	Bulk	disturbed s	ample	C C	tandard penetration test	(3	35) Und	disturbe	d sample	blow co	ount		Q				vironmental Ltd well Barns wich, IP10 0BJ 603 298 076
				Lowers	KEY P	Pistor	turbed san sample		КР	ermeability test	N	*120 =	Total b	(blows at lows/pen				RE INVENT	Ur Br	nit 11	Brightv	well Barns wich, IP10 0BJ
					ES	Envir	rbed jar sar onmental s		e				g seatinį % passir	g ng 425 mi	cron sie	eve		0	Te	lepho	ne: 01	1603 298 076
				DEPTH All depths, level and				•					•	-								

CLIENT	: LB of	<u>Richmo</u>	nd L	Jpon Thames	PROJECT: Twicke								GROL	JND L	.EVEL	m						HOLE No. BH01B	
OGGED		.,		CHECKED BY: JD	EXCAVATION METHOD):	Hand Pi					L	Grid F	Refere	ence:							SHEET 1 OF 1	
	RK BY: DT E REF: GE	X L AGS BH E	ETA	DATE: 10/11/2020			Uncased	1 to 1.0	m				DATES	S 24/0	08/20	20 -						PROJECT NO. 4955,SI	
ate/Time							Strata		Graph	ical Representation	S	ampling	g/In-Situ				Lạ	borat	ory Te	esting		Additional Tests and Notes	
and Depth	of Casing	of Water	Piez.	Description o	f Strata	Leg	Reduced Level	Depth	11	SPT 'N' Value 20 30 40	Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	Mg/m	Cu kN/m²		
-	-			MADE GROUND: Paving slab ungravelly sand	nderlain by orange		3	0.00			0.20-	D	1									-	
-	-		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	MADE GROUND: Brown, speck black, locally pink, silty very grafine to coarse angular to subro masonry, flint, chert and occasioccasional angular cobbles of 2.55 Orange plastic mesh layer 0.30 - 0.45 occasional rootlets of 2.40 - 1.00 becoming very cobborick and concrete cobbles impenetrable blue-painted con encountered at base of pit. Ha and alternative drilling location	velly SAND; gravel is unded brick, mortar / onal concrete. orick and concrete with the concrete with the concrete obstruction and dug pit terminated			1.00			1 2 2 3 3 4 4 5 5 6 6 9 9	,	1									Hand dug starter pit terminated at 1.0 obstruction)m du
 ^k WATER	▼ Stan ▼ Wate	ding water er strikes	level	PIEZOMETER Upper s Respon Lower s	se zone AND B eal TEST U KEY P	Bulk Undi Pisto	l disturbed disturbed s sturbed sar n sample irbed jar sai	ample nple		rd penetration test	35) • R PTN N *N	5) Undis = SPT N 120 = T	sturbed s	ample l lows aft	blow co ter seat	unt ing)		GEOSPHERE ENVIRONM	l Ur Br	nit 11	Brightv	vironmental Ltd well Barns wich, IP10 0BJ	SHEET 1 OF 1
							onmental s		e		425 Sa			425 mic	ron sie	ve) Te	elepho	ne: 01	1603 298 076	

CLIENT	: LB of	Richm	ond I	Jpon Thames	PROJECT: Twicke	<u>enha</u>	m Rivers Window	ide	mnl	or						GRO	UND I	EVEL	. m						HOLE No. WS01		
OGGED E	BY: PC RK BY: GE	1		CHECKED BY: JD DATE: 13/11/2020	EXCAVATION METHOD		Uncased			ei						Grid F	Refere	ence:							SHEET 1 OF 1		
	KK BY: GE E REF: GE		BETA	DATE. 13/11/2020			Uncased	10 1.0	111							DATE	S 27/	08/20	020 -						PROJECT NO. 4955,S	I	
te/Time	Depth	Depth*	Piez.		<u> </u>		Strata		G	Graphic	cal Rep	resenta	ation	Sa		/In-Situ	Testing			Lá	aborat	ory Te	esting		Additional Tests and Notes		
and Depth	of Casing	of Water	Pié	Description	of Strata	Leg	Reduced Level	Depth			PT 'N' 20	Value 30 4		Depths	Туре	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	Mg/m ³	Cu kN/m²			
-	-			MADE GROUND (Dark brown a organic fine and medium SAN) granic bulbs. Gravel is fine and subrounded flint with brick fra (TOPSOIL)	medium angular to			0.00						0	-												
									 		ļ				-												
				MADE GROUND (Brown grave SAND. Gravel is fine to coarse flint and red brick)	lly fine and medium angular to subrounded			0.35							-												
															-												
									 						-												
				0.90 With a cobble of brick											-												
-	-					\bigotimes		1.00	<u> </u>		ļ			1 ·											Borehole terminated at 1.0r	n due to	refus
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NA/A-755	▼ 6:	alta a		L DISTONETED NIN						<u></u>		<u> </u>			-	£	L 75									 	
NATER	¥ Stan	aing wat er strikes	er leve	I PIEZOMETER Upper Respoi Lower	nse zone AND B seal TEST U KEY P	Bulk Undi Pisto Disto	ll disturbed so disturbed sa isturbed sam on sample urbed jar san	ample nple nple	C Co		netrat	ion test	: Si	(35) PTN N = N*1 incl	Undist SPT N v .20 = To uding s	turbed s value (b otal blov eating	sample lows af ws/pen	blow co ter sea etratio	ount ting) n		GEOSPHERE ENVIRONMENTAL	Ur Br	nit 11 ightwe	Brightv ell, Ipsv	vironmental Ltd well Barns wich, IP10 0BJ	HOLE NO	SHEET 1 OF 1
				DEPTH All depths, level and			ronmental so er Sample	oil sample	e				<	125 San	ıple % ı	passing	425 mid	cron sie	eve		<i>-</i>	• 16	eprio	ne. Ul	1603 298 076	'	

CLIENT	: LB of	Rich	mono	Upon Thames	PROJECT: Twicke	nhai	m Rivers	ide						GRO	UND I	LEVEL	. m					HOLE No. WS01A
OGGED I				CHECKED BY: JD	EXCAVATION METHOD	:	Window 		•	er				Grid	Refer	ence:						SHEET 1 OF 1
EMPLAT			S BH BET	DATE: 13/11/2020			Uncased	to 1.0	m					DAT	ES 27/	08/20	020 -					PROJECT NO. 4955,SI
te/Time		Dep			!		Strata		(raphical Rep	resentation	Sa	mpling		u Testing				orator	y Testin	ıg	Additional Tests and Notes
and Depth	of Casing	o Wa	fl∺	Description	of Strata	Leg	Reduced Level	Depth		SPT 'N'	Value	Depths	Туре	No.	Blows	SPT N	<425	wc %	PL 1	LL A	Cu m³ kN/m²	
-	-		-	MADE GROUND (Dark brown			Level	0.00	0	10 20	30 40	0	╬			IN	70	76	70	% IVIG/	III KIN/III	-
				organic fine and medium SAN Gravel is fine and medium any with brick fragments) (TOPSOIL)	D with active roots			0.00														
									ļ			0.20]	1								
						\bowtie	K]]]										
						\bowtie		0.25														
				MADE GROUND (Brown grave SAND. Gravel is fine to coarse				0.35		.	ļ	.										
				flint and red brick)			8															
						\bowtie	3		 	 	 	1	-									
						\bowtie	3			.	ļ	0.60	-	2								
														-								
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			L.			L_			<u> </u>	<u> </u>	<u> </u>											
NATER	▼ Star ▼ Wat	nding ter str	water le	vel PIEZOMETER Upper Respo	nse zone AND B seal TEST U KEY P	Bulk o Undis Pistor Distu	disturbed sa sturbed sam n sample rbed jar san	ample aple aple	C C	andard pene one penetrat ermeability to	ion test	(35) SPT N N = N*1 incl) Undis SPT N 120 = T uding	sturbed value (otal blo seating	d sample (blows af ows/pen	blow co ter sea etration	ount ting) n	GEOSPHERE ENVIRONMENTI	III	Unit 1 Bright	1 Bright twell. Ips	avironmental Ltd well Barns wich, IP10 0BJ 1603 298 076
				DEPTH All depths, level and			onmental so r Sample	oil sample	е			<425 San	nple %	passin	g 425 mi	cron sie	eve	ř	-	relep	HOHE. U	1003 290 070

CLIENT	: LB of	Richr	nond	Upon Thames	PROJECT: Twicke	enha	m Rivers Window	ide	mnl	or						GRO	UND	LEVE	. m						HOLE No. WS01B			_
OGGED E	BY: PC RK BY: GE	1		CHECKED BY: JD DATE: 13/11/2020	EXCAVATION METHOD				•	er					L	Grid	Refer	ence:							SHEET 1 OF 1			
FEMPLAT			BH BETA				Uncased	10 1.0	Ш							DATE	S 27/	08/20	020 -						PROJECT NO. 4955,S	I		
ite/Time	Depth	Depth	* Piez.		<u> </u>		Strata		G	raphic	al Rep	resenta	ation	Sa		/In-Situ	Testing	3			aborat	tory T	esting		Additional Tests and Notes			
and Depth	of Casing	of Wate	r ä	Description	of Strata	Leg	Reduced	Depth			PT 'N'			Depths	Туре	No.	Blows	SPT N	<425 %	wc %	PL %	LL %	ρ Mg/m ³	Cu kN/m²				
Depth	Casing	Wate	r	MADE GROUND (Dark brown organic fine and medium SAN Gravel is fine and medium an with brick fragments) (TOPSOIL) MADE GROUND (Brown grave SAND. Gravel is fine to coarse flint and red brick)	silty slightly gravelly ID with active roots. gular to subrounded flint	Leg	Level	0.00 0.35	d :			30 4	0	Depths 0 -	174	No.	Blows	N	%	%	%	%	Mg/m	kN/m²	Borehole terminated at 1.0r	n due to	refusa	3
*WATER	▼ Stan ▼ Wat	ding w er strik	ater lev	el PIEZOMETER Upper Respo	onse zone AND B r seal TEST U	Bulk Und	 Il disturbed si disturbed san	ample	C Co		netrat	ion test		(35) PTN N =	Undis SPT N	turbed value (b	sample olows af	blow c	ount ting)		OLOSPHERE ENVI	U	nit 11	Brightv	vironmental Ltd well Barns	HOLE No.	SHEE 1 OF	
				DEPTH All depths, level an	KEY _P J ES	Pisto Disto S Envi	on sample urbed jar sar ronmental s	nple			•			N*1	.20 = T uding s	otal blo seating	ws/pen	etràtio	n		III C	. Bi	rightwe	ell, Īpsv	wich, IP10 0BJ 1603 298 076	ΙΒ 1Β	<u>,</u> =	4555,51

CLIENT	T: LI	B of	Richm	ond	Upon Thames	PROJECT: Twicke									GRC	DUND	LEVEL	. m						HOLE No. WS02		
LOGGED FIELDWO					CHECKED BY: JD DATE: 13/11/2020	EXCAVATION METHOD		Window Uncased			er				Grid	Refer	ence:							SHEET 1 OF 1		
TEMPLAT				н вета				Unicased	1 10 1.0) III					DAT	ES 27/	08/20	020 -						PROJECT NO. 4955,SI		
Date/Time		epth	Depth'	Piez.				Strata	1		Graphical Rep		Sa		g/In-Sit	u Testing				aborate		esting		Additional Tests and Notes		
and Depth		of asing	of Water	<u>=</u>	Description of	f Strata	Leg	Reduced Level	Depth		SPT 'N'		Depths	Туре	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m ³	Cu kN/m²			
	Ca	asing	Water		Dark brown silty gravelly fine a SAND with active roots. Gravel subangular and subrounded fli (TOPSOIL) MADE GROUND (Brown gravel SAND. Gravel is fine to coarse subrounded flint with occasion roots) MADE GROUND (Greyish brown angular to subrounded concretoccasional brick)	y fine and medium ubangular and al brick and active		Level	0.00 0.30 0.65	0	10 20	30 40	0.20 0.50		1 2	BIOWS	N	%	%	%	%	Mg/m³	kN/m²	Borehole terminated at 1.0m	n due to	refusal
*WATER			ding wa er strike		PIEZOMETER Upper s Respon Lower s	se zone AND B eal TEST U KEY P J	Bulk d Undis Piston Distur Enviro	listurbed sa turbed san I sample bed jar sar onmental s	ample nple nple	C Co	tandard pene one penetrat ermeability to	ion test	(35) SPT N N = N*1	Undi SPT N 20 = 1 uding	sturbed I value Total bl seating	d sample (blows at ows/pen	blow co fter sea netration	ount ting) n		O EOSPHENE ENVIRONMENTAL	Un Bri	nit 11 l ightwe	Brightw ell, Ipsv	vironmental Ltd vell Barns vich, IP10 0BJ 603 298 076	HOLE No. WS02	SHEET 1 OF 1

CLIENT	T: LE	B of	Richn	nond	Upon Thames	PROJECT: Twicke										GRO	UND	LEVEL	m						HOLE No. WS02A			
LOGGED FIELDWO			ı		CHECKED BY: JD DATE: 13/11/2020	EXCAVATION METHOD	٠.	Window Uncased			er					Grid	Refer	ence:	:						SHEET 1 OF 1			
TEMPLAT				H BETA			'	Uncased	1 10 1.0) III						DATI	ES 27/	08/20	020 -						PROJECT NO. 4955,SI			
Date/Time		epth	Depth	Piez.				Strata			Graphical I	Represer	ntation	Sa	т,	g/In-Situ	u Testing	3		L	aborat	ory Te	esting		Additional Tests and Notes			
and Depth		of asing	of Water	. 	Description of	f Strata	Leg	Reduced	Depth			'N' Value		Depths	Туре	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	Mg/m ³	Cu kN/m²				
Deptn -	Cas	ising	Water		Dark brown silty gravelly fine a SAND with active roots. Gravel subangular and subrounded fli (TOPSOIL) MADE GROUND (Brown gravel SAND. Gravel is fine to coarse subrounded flint with occasion roots) MADE GROUND (Greyish brown angular to subrounded concret occasional brick)	y fine and medium ubangular and al brick and active		Level	0.00 0.30 0.65	0	10 20	30	40	0 -	£	NO.	Blows	N	%	%	%	%	Mg/m ³	kN/m²	Borehole terminated at 1.0m	n due to	refusal	
			ding wa er strike		el PIEZOMETER Upper s Respon Lower s	se zone AND B seal TEST U KEY P J	Bulk o Undis Pistor Distur Enviro	disturbed siturbed san turbed san a sample bed jar sar onmental s	ample nple mple	C Co	tandard po one penet ermeabilit	tration te	est S	(35) PTN N = N*1	Undis SPT N 120 = T uding	sturbed value (Fotal blo seating	l sample blows af ows/pen	blow co fter sea etratio	ount ting) n		GEOSPHERE ENVIRONMENTAL	Ur Br	nit 11 iahtwe	Brightw ell. Ipsv	vironmental Ltd vell Barns vich, IP10 0BJ 603 298 076	HOLE No. WSOŻA	SHEET 1 OF 1	7077 CI

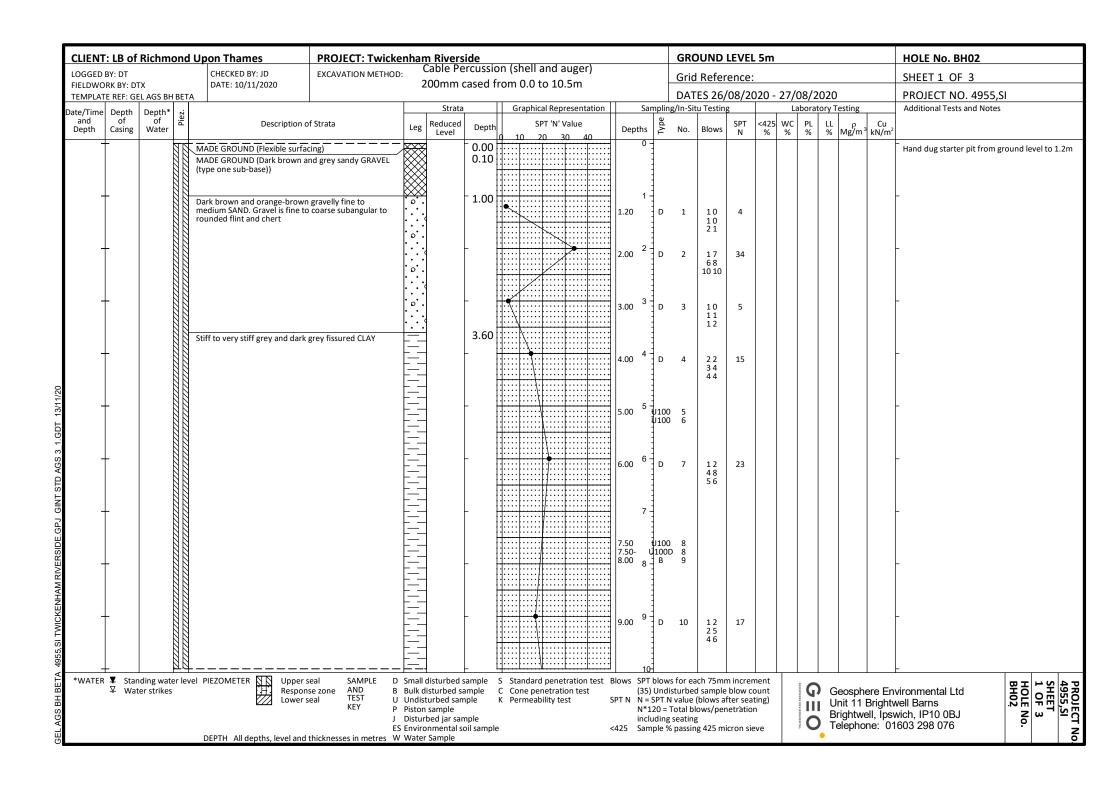
CLIENT	T: LE	B of I	Richm	ond	Upon Thames	PROJECT: Twicke										GRO	UND L	EVEL	. m						HOLE No. WS02B			
LOGGED					CHECKED BY: JD DATE: 13/11/2020	EXCAVATION METHOD		Window Uncased			ler					Grid I	Refere	ence:							SHEET 1 OF 1			
TEMPLAT				н вета			,	Uncased	1 10 1.0) III						DATE	S 27/0	08/20)20 -						PROJECT NO. 4955,SI			
Date/Time		pth	Depth*	Piez.				Strata			Graphical R		ition	Sar		/In-Situ	Testing				aborato	\neg	esting		Additional Tests and Notes			
and Depth		of sing	of Water	Ē	Description o	f Strata	Leg	Reduced Level	Depth			I' Value	,	Depths	Туре	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m ³	Cu kN/m²				
-		3115	Witch	-	Dark brown silty gravelly fine as SAND with active roots. Gravel subangular and subrounded flii (TOPSOIL) MADE GROUND (Brown gravell SAND. Gravel is fine to coarse s subrounded flint with occasion roots) MADE GROUND (Greyish brown angular to subrounded concret occasional brick)	y fine and medium ubangular and al brick and active		Level	0.00	0	10 20	30 40		1 -			BIOWS	N	%	%	%	%	Mg/m ^v	kN/m-	Borehole terminated at 1.0n	n due to	refusal	
*WATER			ling wat r strikes		PIEZOMETER Upper s Respon Lower s	se zone AND B eal TEST U KEY P J	Bulk d Undis Piston Distur Enviro	listurbed sa turbed san sample bed jar sar onmental s	ample nple mple	C Co	Standard per Cone penetr Permeability	ation test	SP	(35) TN N = 5 N*1	Undist SPT N v 20 = To Iding s	turbed s value (b otal blov eating	sample b lows aft ws/pene	olow co er seat	ount ting) n		G III O	Un Bri	nit 11 l iahtwe	Brightw ell. Ipsv	vironmental Ltd vell Barns vich, IP10 0BJ 603 298 076	HOLE No. WSOZB	SHEET 1 OF 1	7077 SI

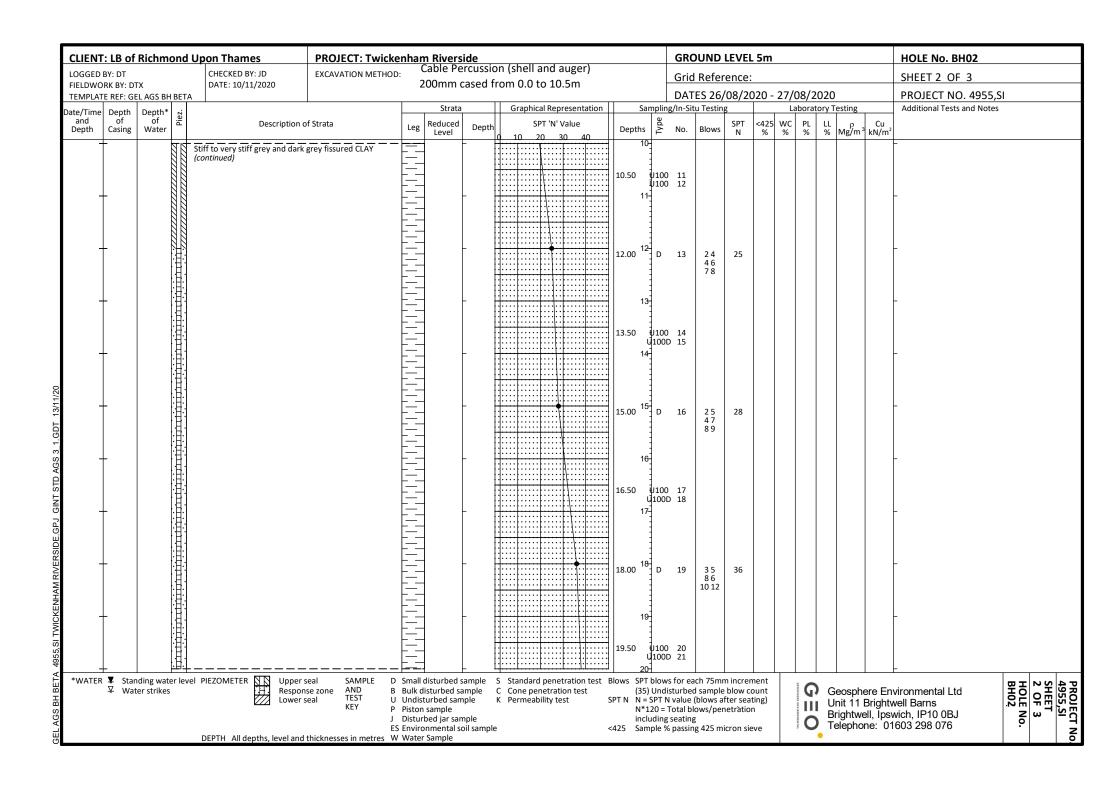
CLIENT	: LB of	Richmo	nd l	Jpon Thames	PROJECT: Twicke	<u>nha</u>	m Rivers	ide	ma := 1	٥٢						GRC	DUND	LEVE	L m						HOLE No. WS03		
OGGED I				CHECKED BY: JD	EXCAVATION METHOD	:	Window		•	er						Grid	Refe	rence	:						SHEET 1 OF 1		
	RK BY: GE E REF: GE	L L AGS BH E	BETA	DATE: 13/11/2020			Uncased	to 0.5	m							DAT	ES 27	/08/2	020						PROJECT NO. 4955,SI		
te/Time	Depth			•			Strata			Graphic	cal Re	eprese	ntation	Sa	$\overline{}$		u Testin				Labor	atory ⁻	esting		Additional Tests and Notes		
and Depth	of Casing	of Water	Piez.	Description o	f Strata	Leg	Reduced Level	Depth				I' Value		Depths	Туре	No.	Blows	SPT N	<42! %	5 WC	PL %	LL %	ρ Mg/m	3 Cu kN/m²			
-				MADE GROUND (Brown sitty gr SAND with active roots. Gravel and brick fragments.)	avelly fine and medium is fine and medium flint		Level	0.50		10 - 7	20	30	40	0.30		1		N	%	%	%	%	Mg/m	- KN/m	Borehole terminated at 0.5m	due to r	refusa
WATER	▼ Stan ▼ Wat	ding water er strikes	- + ·	I PIEZOMETER Upper s Respon Lower s	se zone AND B eal TEST U KEY P	Bulk Undi Pisto	Il disturbed so disturbed so isturbed so so sample urbed jar sam	ample nple	C C	tandard one pe ermeat	netra	ation te	est	(35 SPT N N = N) Undi : SPT N 120 = ⁻	sturbed I value	d sample (blows a ows/pe	e blow o	ount iting)		REENVIRON	II L	Init 11 rightw	Brightvell, Ipsv	wich, IP10 0BJ	HOLE No	SHEET 1 OF 1
							ronmental s		e					<425 Sar				icron si	eve		day.	JT	elepho	one: 01	1603 298 076	٦	

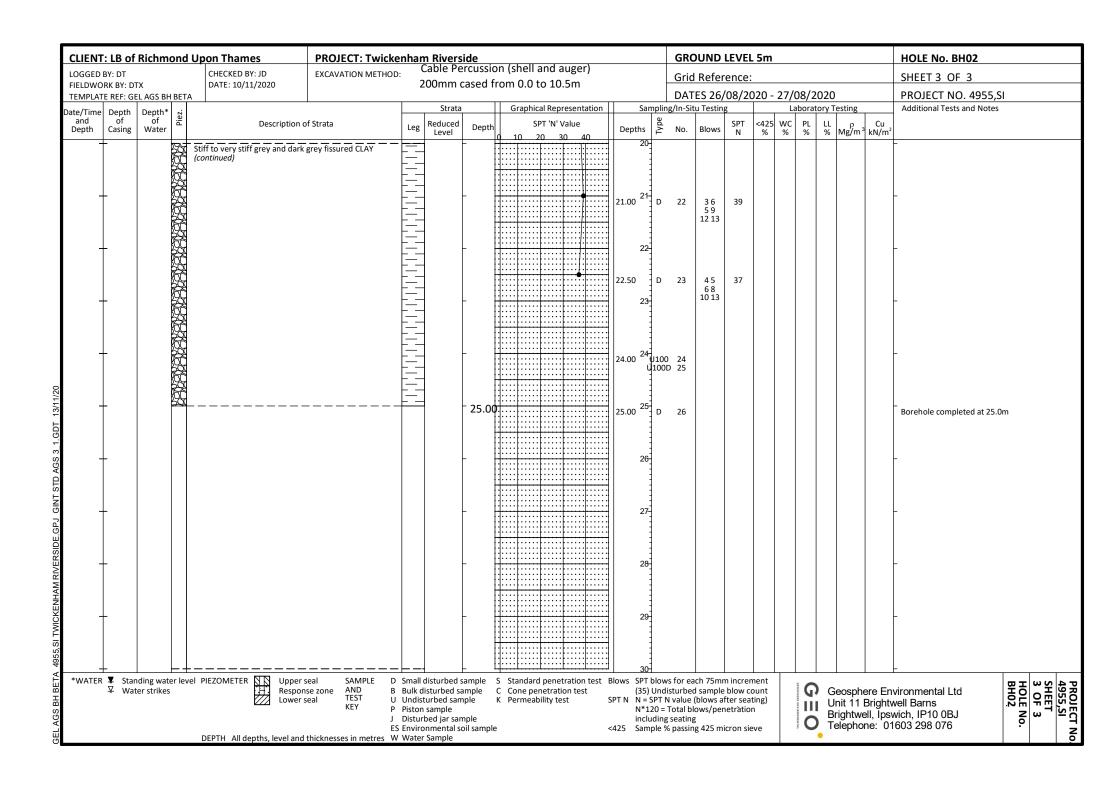
CLIENT	: LB of	Richmo	ond I	Upon Thames	PROJECT: Twicke		m Rivers Window	ide	mnl	or						GRO	UND I	EVEL	. m						HOLE No. WS03A		
OGGED	BY: PC RK BY: GI			CHECKED BY: JD DATE: 13/11/2020	EXCAVATION METHOD				•	er						Grid I	Refere	ence:							SHEET 1 OF 1		
	E REF: GE		BETA				Uncased	.0 0.5								DATE	S 27/	08/20	<u>)20</u> -						PROJECT NO. 4955,SI		
te/Time	Depth	Depth*	Piez.				Strata		G	Graphic	cal Re	oresent	ation	Sa	$\overline{}$	/In-Situ	Testing					T	esting		Additional Tests and Notes		
and Depth	of Casing	of Water	ä	Description of	of Strata	Leg	Reduced Level	Depth				Value 30 4	10	Depths	Туре	No.	Blows	SPT N	<425 %	wc %	PL %	LL %	ρ Mg/m	Cu kN/m²			
				MADE GROUND (Brown silty great SAND with active roots. Gravel and brick fragments.)	avelly fine and medium is fine and medium flint			0.50		10	20	30 4		1 -											Borehole terminated at 0.5m	n due to	refusa
*WATER	▼ Stan ▼ Wat	ding wate er strikes	— ∔ er leve	el PIEZOMETER Upper :	seal AND B seal TEST U KEY P	Bulk Undi Pisto Disto	ll disturbed sa disturbed sa isturbed sam on sample urbed jar san	ample iple iple	C Co		enetra	tion tes	t S	(35) PT N N = N*1 incl	Undis SPT N 20 = To uding s	turbed s value (b otal blow seating	sample slows af ws/pen	blow co ter sea etratio	ount ting) n		GEOSPHERE ENVIRONMEN	I U B	nit 11 riahtw	Brightvell. Ipsv	ivironmental Ltd well Barns wich, IP10 0BJ	HOLE No. WS03A	SHEET 1 OF 1
				DEPTH All depths, level and	ES	Envi	ronmental so		e				<	425 Sam			425 mid	cron sie	eve		C C) To	elepho	ne: 01	1603 298 076	٠.	

CLIENT	: LB of	Rich	none	l Upon Thames	PROJECT: Twicker	<u>nhar</u>	n Rivers	ide	no : 1	0.5				(GROU	JND L	EVEL	m						HOLE No. WS03B		
LOGGED FIELDWO		=1		CHECKED BY: JD DATE: 13/11/2020	EXCAVATION METHOD:		Window			ier				(Grid R	Refere	ence:							SHEET 1 OF 1		
TEMPLAT			BH BET	1 1			Jncased	. 10 0.5	111						DATES	S 27/0	08/20	20 -						PROJECT NO. 4955,SI		
ate/Time	Depth	Deptl of	»*				Strata	1		Graphical			Sa	mpling/l	n-Situ					borat				Additional Tests and Notes		
and Depth	of Casing	of Wate	er ä	Description of	f Strata	Leg	Reduced Level	Depth			'N' Valu		Depths	Туре	No. B	Blows	SPT N	<425 %	WC %	PL %	LL %	ρ Mg/m ³	Cu kN/m²			
				MADE GROUND (Brown silty grown	avelly fine and medium is fine and medium flint			0.50		10 20	30	40	1											Borehole terminated at 0.5m o	due to re	:fusa
WATER	▼ Star ∇ Wat	l Iding w er strik	ater le es	vel PIEZOMETER Upper: Respor	se zone AND B seal TEST U KEY P	Bulk d Undis Piston	disturbed : listurbed si turbed san sample bed jar sar	ample nple	C C	tandard p cone pene ermeabilit	tration t	est	(35 PTN N = N:) Undistu	irbed salue (bl tal blow	ample blows aft	olow co er seat	ount ing)		GEOSPHERE ENVIRONME	Ur Br	nit 11 l iahtwe	Brightv ell. Ipsv	vironmental Ltd vell Barns vich, IP10 0BJ	HOLE No.	SHEET
				DEPTH All depths, level and	ES	Enviro	nmental s		e			<	425 Sar			425 mic	ron sie	ve		O	Te	epho	ne: 01	603 298 076	٠	

CLIENT	: LB of	Richm	ond	Upon Thames	PROJECT: Twicke											GRO	UND	LEVEL	. m						HOLE No. WS04		
LOGGED				CHECKED BY: JD	EXCAVATION METHOD:	:	Window		•	ler						Grid	Refer	ence:							SHEET 1 OF 1		
FIELDWO TEMPLAT			H BETA	DATE: 13/11/2020			Uncased	to 1.5	m							DATE	ES 28/	08/20	020 -						PROJECT NO. 4955,	SI	
Date/Time		Depth*	Piez.				Strata		(resenta	ition	Sai		/In-Situ	u Testing				borat		esting		Additional Tests and Notes		
and Depth	of Casing	of Water	ا ق	Description of	Strata	Leg	Reduced Level	Depth			SPT 'N' 20	Value 30 40	,	Depths	Туре	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	Mg/m ³	Cu kN/m²			
-	-		ΓŤ	MADE GROUND: Grey slightly sa	andy fine gravel		3	0.00		Ť	Ť		•	0 -													
				(surfacing to Petanque pitch)																							
				MADE GROUND: Brown and gro ORGANIC CLAY (TOPSOIL, Impor	ey-brown fine sandy			0.10		1					1												
				(, ,	,	\bowtie	}		<u> </u>																		
						\bowtie	3																				
						\bowtie			ļ																		
							<u>}</u>																				
						\bowtie									-												
						\bowtie																					
							X		 		+	+			+												
										1		· ····	•••••		1												
							X																				
				MADE GROUND: Pale brown sp black silty gravelly SAND. Gravel subrounded to angular brick, co	eckled orange and is fine to coarse	\bowtie		0.70		1																	
2				flint/quartz.					 																		
 				0.70 - 0.71 Orange plastic mesh 0.71 - 0.85 Orange brick boulde	as layer between soils r or solid foundation in		X																				
2				northern side of pit. Pink sandy eastern side of pit.	gravel pocket in	\bowtie	3								-												
<u> </u>							3																				
-	=							-	 	. 		 		1 -	-										_		
GINI							3																				
ii D						\bowtie	3		 			· ····			1												
CRENTAIN RIVERSIDE.GPJ				1.20 - 1.45 Windowless sample Penetration to 1.45mbgl only: ir	parrel inserted.		3					· ····	•••••		1												
NA L				unidentified obstruction encour			X																				
Z U V																											
2							3																				
4805,50 0,000						\bowtie	<u> </u>	1.45																		- 1	
			$\perp \downarrow$			<u> </u>		1.43	Ц	<u>.l</u>	<u>.l</u>	<u> </u>													Borehole terminated at 1.4 obstruction	5m due to	
*WATER	▼ Stan ▼ Wat	iding wat er strikes	er leve	DEPTH All depths, level and to	e zone AND B eal TEST U KEY P J ES	Bulk d Undist Piston Distur Enviro	disturbed sidisturbed santa sample rbed jar sar bed jar sar brownental s	ample nple nple	C C	one p		ion test	S	(35) PTN N = N*1	Undist SPT N v 20 = To uding s	turbed value (I otal blo eating	l sample blows af ows/pen	blow co ter sea etratio	ount ting) n		GEOSPHERE ENVIRONMENTAL	Ur Br	nit 11 l ightwe	Brightv ell, Ipsv	vironmental Ltd vell Barns vich, IP10 0BJ 603 298 076	HOLE No. WS04	4955,SI SHEET 1 OF 1







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TRIAL PIT LOG

Project			Client			TRIAL PIT No	
Twickenham Riverside		LB of Richmond Upon Thames		HP01			
Job No	Date	Groun	d Level (m)	Grid Reference ()		прот	
4955,SI	25-08-20						
Fieldwork By		•	Logged By			Sheet	
GEL			PC			1 of 1	
					Т		

Depth	DESCRIPTION	Legend		No	Remarks/Tests	
0.00-0.25	MADE GROUND (Dark brown silty gravelly fine and medium SAND. Gravel is fine to coarse subangular to subrounded flint and brick)	-	0.00-0.25	1WAC		
0.25-1.20	MADE GROUND (Yellowish brown gravelly fine and medium SAND. Gravel is fine to coarse subangular to subrounded flint with occasional brick fragments)		0.25-1.20	2WAC		

All dimensions in metres | Method Hand Pit | Plant UsedHAND | Checked By JD

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TRIAL PIT LOG

Project				Client			TRIAL PIT No		
	ickenham R				LB of Richmond Upon Thames			HP02	
Job No		Date	Groun	d Level (m)	vel (m) Grid Reference ()			11102	
	55,SI	25-08-20							
Fieldwork	•			Logged By				Sheet	
GEI	_			PC		П 1		1 of 1	
Depth	MADE CROI		DESCRIPT	ION	-	Legend Depth	No	O Remarks/Tests	
0.00-0.20	-	JND (Flexible surfacing JND (Brown and yellow ND. Gravel is whole and brick)		vn very gravelly f red brick, concre	ine and te, yellow				
0.70-0.80	CONCRETE	(Assumed foundation)						Hand dug pit terminated at 0.8m due to concrete obstruction	
!•	0.5	→ 0.5 ↓			Sh Sta	oring/Support: ability: Stable	Non	e	
All dimens	ions in metre e 1:12.5	Method Hand Pit		Plant U	sedHAND			Checked By JD	
	C 1.12.J							10	

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			TRIAL PIT	LOG				
			Client					TRIAL PIT No
ckenham R	liverside		LB of Ri	LB of Richmond Upon Thames				
	Date	Groun	d Level (m)	Grid Reference	e ()			HP02A
55,SI	25-08-20							
Ву			Logged By					Sheet
-			PC					1 of 1
	[ESCRIPT	ION		Legend	Depth	No	Remarks/Tests
MADE GRO	UND (Flexible surfacing)						
Concrete ar	nd brick layer			-				
	ckenham R 55,SI By MADE GRO	ckenham Riverside Date 55,SI 25-08-20 By	Ckenham Riverside Date Groun 55,SI 25-08-20 By DESCRIPT MADE GROUND (Flexible surfacing)	TRIAL PIT Client Ckenham Riverside Date 55,SI By Logged By PC DESCRIPTION MADE GROUND (Flexible surfacing)	TRIAL PIT LOG Client LB of Richmond Upo Date S5,SI S5,SI S1 DESCRIPTION DESCRIPTION MADE GROUND (Flexible surfacing)	TRIAL PIT LOG Client LB of Richmond Upon Tham Date S5,SI By Logged By PC DESCRIPTION MADE GROUND (Flexible surfacing) Client LB of Richmond Upon Tham Grid Reference () Logged By PC Legend	TRIAL PIT LOG Client LB of Richmond Upon Thames 55,SI 25-08-20 By Logged By PC DESCRIPTION Legend Depth MADE GROUND (Flexible surfacing)	Client LB of Richmond Upon Thames Date S5,SI 25-08-20 By Logged By PC DESCRIPTION Legend Depth No MADE GROUND (Flexible surfacing)

0.40-0.80

Brown slightly gravelly sandy CLAY. Gravel is subangular fine and medium flint with active rootlets

Hand dug pit completed at 0.8m

The second of th

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TRIAL PIT LOG

Project				Client					TRIAL PIT No
	ickenham Riv	verside			Richmond Upo	on Than	nes		
Job No		Date	Groun	d Level (m)	Grid Referen				HP03
49	55,SI	28-08-20							
Fieldwork			·	Logged By	•				Sheet
GE	L			PC					1 of 1
Depth			DESCRIPT	ION	_	Legend	Depth	No	Remarks/Tests
0.00-0.10	MADE GROU	ND (Asphalt)							
0.10-0.12	CONCRETE W	vith rebar							Hand dug nit
-	-								Hand dug pit terminated due to void
-	_					1			
-	-					4			
-	-					1			
-	_								
-	-								
-	_					1			
_	_				-	1			
_	_								
_	_					1			
-	_								
_	_					1			
+	0.5	→ ↑ 0.5 <u>↓</u>			Sh Sta	oring/Suability: S	upport: Stable	None	
All dimens	ions in metres	Method Hand Pit		Plant	UsedHAND				Checked By
Scal	e 1:12.5	- Inclined I It							JD

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TRIAL PIT LOG

Project			Client		TRIAL PIT No
Twickenham F	Riverside		LB of Ric	chmond Upon Thames	TD101
Job No	Date	Groun	d Level (m)	Grid Reference ()	TP101
4955,SI	26-08-20		8.10		
Fieldwork By		•	Logged By		Sheet
GEL			PC		1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.10	MADE GROUND (Flexible surfacing)				
0.10-0.30	MADE GROUND (Red brick)				
0.30-1.10	MADE GROUND (Dark brown gravelly clayey fine and medium SAND.				
	Gravel is fine to coarse flint and red brick)				
	_				
	_				
	<u>-</u>	-			
	_	-			
-	_	-			
4 40 4 40					
1.10-1.40	Dark yellowish brown gravelly fine and medium SAND	∦°∵∵ ∤			
1.40-2.20	Vallouish brown grouply fine and modium CAND. Crouplis fine to score				
1.40-2.20	Yellowish brown gravelly fine and medium SAND. Gravel is fine to coarse subangular to rounded flint	$+\cdots$			
	-	-			
	_	$+$ $^{\circ}$ \cdot \cdot \cdot \cdot \cdot			
	_	1			
	_				
-	-	$+\cdots$			
		╫┷┷┤			Trial pit
	_	1			completed at
	<u></u>	1			2.2m. Infiltration testing
	_	1			undertaken
	<u></u>	1			
	<u>-</u>	1			
	<u>-</u>	1			
	<u></u>	1			

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TRIAL PIT LOG

Project			Client		TRIAL PIT No
Twickenham Riverside			LB of Ric	TP102	
Job No	Date	Groun	d Level (m)	Grid Reference ()	17102
4955,SI	26-08-20		7.20		
Fieldwork By			Logged By		Sheet
GEL			PC		1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests	
0.00-1.70	MADE GROUND (Dark brown and grey, speckled orange, gravelly clayey SAND (fine to medium). Gravel is fine to coarse angular to subangular flint and brick; rare concrete and brick cobbles)					
1.70-2.30	Dark yellow-ish and orange-brown gravelly fine to medium SAND. Gravel is fine to coarse subangular to rounded flint and chert	0			Trial pit completed at 2.3m. Infiltration testing undertaken	

GEL AGS TP BETA 4955,SI TWICKENHAM RIVERSIDE.GPJ GINT STD AGS 3_1.GDT 13/11/20 - 1.45 -Shoring/Support: None Stability: Stable Checked By JD All dimensions in metres Scale 1:25 Method Trial Pit/trench Plant UsedMECHANICAL

EXCAVATOR



Project Number: 4955,GI **Date:** 14/09/2020

Project Name: Diamond Jubilee Gardens/ Twickenham Riverside

Time	Depth to
	Water
[min]	[mbgl]
0	1.81
1	1.88
	1.89
2	1.90
4	1.92
5	1.93
10	1.95
15	1.98
20	2.02
30	2.07
45	2.16
60	2.20

Pit Size [m]					
Length	Width	Depth			
1.45	0.35	2.30			

Infiltrati	Infiltration Rate Calculations						
Parameter	Unit Result						
	height						
h ₇₅	[m]	2.178					
h ₂₅	[m]	1.933					
h ₇₅ -h ₂₅	[m]	0.245					
	time						
t ₇₅	[s]	3000.00					
t ₂₅	[s]	300.00					
t ₇₅ - t ₂₅	[s]	2700.00					
effective volu	me, with grave	el allowance					
V ₇₅₋₂₅	[m³]	0.124					
	effective area						
ap ₅₀	[m²]	1.390					
soi	soil infiltration rate						
f	[m/s]	3.31E-05					

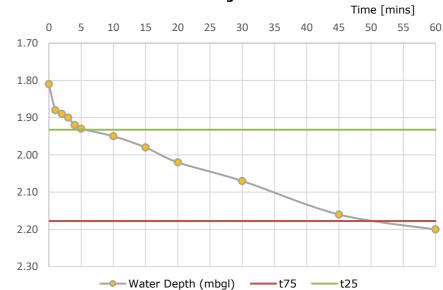
Pit TP/SK1	01
Pit TP/SK1	C

Test Date 27/08/2020

Groundwater Encountered: N/A

Remarks:

Soakage Rate



Calculated by JD

Checked by:

TPSK01 / 03-10-18 / V3

Depth [mbgl]



Project Number: 4955,GI **Date:** 14/09/2020

Project Name: Diamond Jubilee Gardens/ Twickenham Riverside

Time	Depth to
	Water
[min]	[mbgl]
0	1.77
1	1.78
2	1.78
3	1.79
4	1.80
5	1.81
10	1.85
15	1.88
20	1.91
30	1.94
45	2.00
60	2.04
75	2.10
90	2.16

Pit Size [m]				
Length	Width	Depth		
1.45	0.35	2.26		

Infiltration Rate Calculations					
Parameter Unit Resul					
	height				
h ₇₅	[m]	2.138			
h ₂₅	[m]	1.893			
h ₇₅ -h ₂₅	[m]	0.245			
	time				
t ₇₅	[s]	5040.00			
t ₂₅	[s]	1020.00			
t ₇₅ - t ₂₅	[s]	4020.00			
effective volume, with gravel allowance					
V ₇₅₋₂₅	[m³]	0.124			
effective area					
ap ₅₀	[m²]	1.390			
soil infiltration rate					
f	[m/s]	2.23E-05			

Remarks: pit collapsed / infilled slightly to 2.26mbgl

		Soakage Rate Time [mins]								
	0	10	20	30	40	50	60	70	80	90
1.50										
1.60										
1.70										
1.80	The state of the s									
1.90										
2.00					•	-				
2.10										
2.20										
		-	– Wateı	Depth ((mbgl)	—t	75 —	−t25		

Calculated by JD Checked by:

TPSK01 / 03-10-18 / V3 Page 2 of 3

Depth [mbgl]



Project Number: 4955,GI **Date:** 14/09/2020

Project Name: Diamond Jubilee Gardens/ Twickenham Riverside

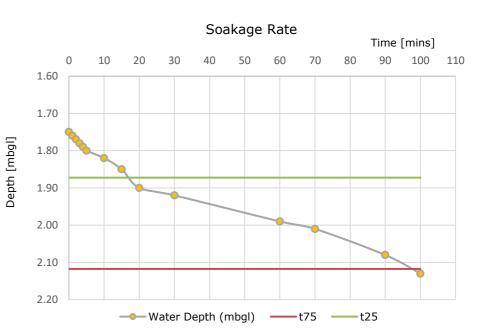
Time	Depth to
Time	Water
[min]	[mbgl]
0	1.75
1	1.76
2	1.77
3	1.78
4	1.79
5	1.80
10	1.82
15	1.85
20	1.90
30	1.92
60	1.99
70	2.01
90	2.08
100	2.13

Pit Size [m]				
Length	Width	Depth		
1.45	0.35	2.24		

Infiltration Rate Calculations				
Parameter	rameter Unit Resu			
	height			
h ₇₅	[m]	2.118		
h ₂₅	[m]	1.873		
h ₇₅ -h ₂₅	[m]	0.245		
	time			
t ₇₅	[s]	5880.00		
t ₂₅	[s]	1080.00		
t ₇₅ - t ₂₅	[s]	4800.00		
effective volume, with gravel allowance				
V ₇₅₋₂₅	[m³]	0.124		
	effective area			
ap ₅₀	[m ²]	1.390		
soi	soil infiltration rate			
f	[m/s]	1.86E-05		

Trial Pit	TP/SK101

Remarks: pit collapsed / infilled slightly to 2.24mbgl



Calculated by JD Checked by:

Page 3 of 3



Project Number: 4955,GI **Date:** 14/09/2020

Project Name: Diamond Jubilee Gardens/ Twickenham Riverside

Time	Depth to
Time	Water
[min]	[mbgl]
0	1.48
1	1.55
2	1.58
3	1.60
4	1.62
5	1.64
10	1.73
15	1.76

Pit Size [m]				
Length	Width	Depth		
1.00	0.40	2.15		

Infiltrati	on Rate Calcu	ılations
Parameter	Unit	Result
	height	
h ₇₅	[m]	1.983
h ₂₅	[m]	1.648
h ₇₅ -h ₂₅	[m]	0.335
	time	
t ₇₅	[s]	0.00
t ₂₅	[s]	300.00
t ₇₅ - t ₂₅	[s]	-300.00
effective volu	me, with grave	el allowance
V ₇₅₋₂₅	[m³]	0.134
	effective area	
ар ₅₀	[m²]	1.338
soi	l infiltration rat	te
f	[m/s]	no result

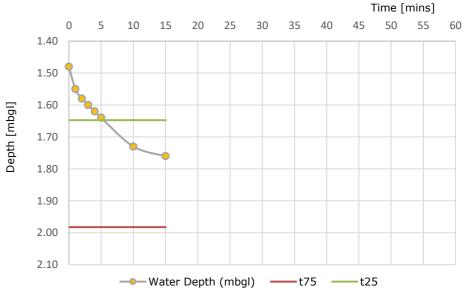
Trial Pit	TP/SK102
Trial Pit	TP/SK102

Test Date 27/08/2020

Groundwater Encountered: N/A

Remarks: pit collpaed up to 1.76: re-excavated for the next run/test

Soakage Rate



Calculated by JD

Checked by:

Page 1 of 3



Project Number: 4955,GI **Date:** 14/09/2020

Project Name: Diamond Jubilee Gardens/ Twickenham Riverside

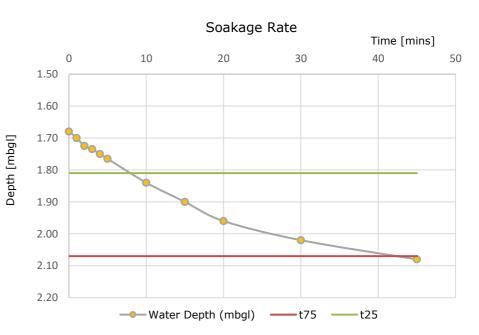
Depth to
Water
[mbgl]
1.68
1.70
1.73
1.74
1.75
1.77
1.84
1.90
1.96
2.02
2.08

	Pit Size [m]	
Length	Width	Depth
1.00	0.40	2.20

Infiltrati	on Rate Calcu	llations
Parameter	Unit	Result
	height	
h ₇₅	[m]	2.070
h ₂₅	[m]	1.810
h ₇₅ -h ₂₅	[m]	0.260
	time	
t ₇₅	[s]	2460.00
t ₂₅	[s]	480.00
t ₇₅ - t ₂₅	[s]	1980.00
effective volu	me, with grave	el allowance
V ₇₅₋₂₅	[m³]	0.104
	effective area	
ap ₅₀	[m²]	1.128
soi	l infiltration rat	e
f	[m/s]	4.66E-05

Trial Pit	TP/SK102

Remarks: pit collapsed / infilled to 1.93mbgl: re-excavated for the next test



Calculated by JD

Checked by:

Page 2 of 3



Project Number: 4955,GI **Date:** 14/09/2020

Project Name: Diamond Jubilee Gardens/ Twickenham Riverside

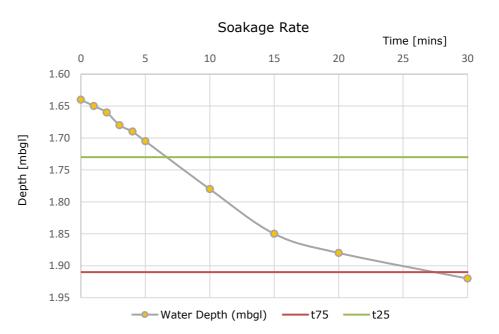
Time	Depth to
Time	_
	Water
[min]	[mbgl]
0	1.64
1	1.65
2	1.66
3	1.68
4	1.69
5	1.71
10	1.78
15	1.85
20	1.88
30	1.92

	Pit Size [m]	
Length	Width	Depth
1.00	0.40	2.00

Infiltrati	on Rate Calcu	llations
Parameter	Unit	Result
	height	
h ₇₅	[m]	1.910
h ₂₅	[m]	1.730
h ₇₅ -h ₂₅	[m]	0.180
	time	
t ₇₅	[s]	1620.00
t ₂₅	[s]	420.00
t ₇₅ - t ₂₅	[s]	1200.00
effective volu	me, with grave	el allowance
V ₇₅₋₂₅	[m ³]	0.072
	effective area	
ap ₅₀	[m²]	0.904
soi	l infiltration rat	ie e
f	[m/s]	6.64E-05

Trial Pit	TP/SK102

Remarks: pit collapsed to 1.88; extrapolated value to 75%



Calculated by JD

Checked by:

Page 3 of 3



Date: 17.09.20

Project Number: 4955,SI

Project Name: Twickenham Riverside, Diamond Jubilee Gardens, Twickenham

кріотис	ory Hole Loc	ation	BH01 (Sh	allow inst	all'n)								Date of Inst	allation	26,	/08/2020
leturn /isit #	Monitoring Date	Atmospheric Pressure (mb)		Content	Carbon Dioxide (% v/v)	Oxygen	Flow Rate (I/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level (mbgl)	Base of Well (mbgl)	Weather Cor	nditions		mments / Pressure se or Fall
st visit	17/09/2020	1028	<0.1	<2	1.1	19.1	<0.1	0	0	2	5.30	6.30	warm, cloudy	, dry, breezy	fal	ling
strume	ents Used:	GFM436 gas an	nalvser / PI	D MultiRAF	- lite				NOTE:	n/a	Not applic	ahle				
MARK		Groundwater sa	-								Not measu					
-1-17-17-17-17																
							¬ 1/F	-w.				Мо	onitoring Visit			VEV.
25.							KE	EY:	n	1	2	Mc	_		5	6 KEY:
25.	.0						M	lethane	0	.0	2	Мс	_		5	6 KEY:
	.0						M		0	-	2	Мс	_		5	6 KEY:
25. 20.	.0						M	lethane		-	2	Мс	_		5	6 KEY:
25. 20.	.0						M	lethane	1	.0	2	Мс	_		5	6 KEY: Groundwa Level (mb
25. 20.	.0						M	lethane % v/v)	1	.0	2	Mo	_		5	Groundwa
25. 20.	.0						, M	lethane % v/v) Garbon Dioxide	1	.0	2	Mc	_		5	Groundwa
20. 20. 15.	.0						, M	lethane % v/v)		.0	2	Mc	_		5	Groundwa
25. 20.	.0						, M	lethane % v/v) Garbon Dioxide	Depth (m)	.0	2	Mc	_		5	Groundwa
200 200 100 100 100 100 100 100 100 100	.0						— M	lethane % v/v) Garbon Pioxide % v/v)	Depth (m)	.0 .0 .0		undwater	3 recorded at 0	4 .0 m - no gr		Groundwa Level (mb
20. 20. 15. 15. 10. 10. 5.	.0						, M	lethane % v/v) Garbon Pioxide % v/v)	Depth (m)	.0 .0 .0		undwater	3	4 .0 m - no gr		Groundwa Level (mb



Date: 17.09.20

Project Number: 4955,SI

Project Name: Twickenham Riverside, Diamond Jubilee Gardens, Twickenham

אטוטומנ	ory Hole Loc	ation	BH01 (de	ep install'	n)								Date of Inst	allation	26/	08/2020
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)		Content	Carbon Dioxide	Oxygen	Flow Rate (I/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level (mbgl)	Base of Well (mbgl)	Weather Co	nditions		nments / Pressure e or Fall
1 ot vioit	17/09/2020	1028	(% v/v) <0.1	(% LEL)	(% v/v) 0.8	(% v/v) 19.1	<0.1	0	0	1	5.05	20.35	warm, cloudy	dry broomy	falli	in a
													, ,	, ,, ,		
nstrum EMARK		GFM436 gas ar Groundwater s	•						NOTE:		Not application					
25	0											Мо	nitoring Visit			
25	.0						KE	Y :		1	2	Мс			5	₆ KEY:
25 20							— <u> </u>		0	.0	2	Мо			5	6 KEY:
20	.0						— <u> </u>	ethane	1	.0	2	Мс			5	Groundwa
20 5	0						→ Me (%	ethane % v/v)	1	.0	2	Mo			5	Groundwa
20	0						→ Me (%	ethane % v/v) arbon ioxide	Depth (m)	.0 .0 .0			3	4		Groundwat Level (mbg
Concentration 10	0	2		4	5		— Me (%	ethane % v/v) arbon ioxide % v/v)	Depth (m)	.0 .0 .0 .0 .0 V		undwater		4 .0 m - no gr		Groundwa Level (mbe



Date: 17.09.20

Project Number: 4955,SI

Project Name: Twickenham Riverside, Diamond Jubilee Gardens, Twickenham

Exploratory Hole Location		BH02 (Shallow install'n)											ion	28/08/2020		
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content (% v/v) (% LEL)		Dioxide	Oxygen	Flow Rate (I/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level (mbgl)	Base of Well (mbgl)	Weather Conditions		Comments / Pressure Rise or Fall	
st visit	17/09/2020	1030	<0.1	<2	0.6	18.8	<0.1	0	0	0	2.47	4.21	warm, cloudy, dry,	, breezy	falling	
strume	ents Used:	GFM436 gas an	alyser / PI	D MultiRAE	lite				NOTE:	n/a	Not applic	able				
MARKS		Groundwater sa									Not measu					
												Мо	onitoring Visit			
25.	0						KI	EY:		1	2		3 4	5	₆ KEY:	
								1ethane	C	.0						
20.	0							% v/v)								
5							-		1	.0						
Concentration 10.	0								<u>-</u>							undwa el (mb
1 0.	0						—	Carbon Dioxide	Depth (m)	.0						
8 10.								% v/v)	Dep							
5.	0								7	.0						
)xvaen	_		Where gro		recorded at 0 0 m		ater	
								% v/v)				encoun	tered during monit	oring		
0.	1	2	3	4	5		6	. ,		.0						



Project Number: 4955,SI

Project Name: Twickenham Riverside, Diamond Jubilee Gardens, Twickenham

Date: 17.09.20

Exploratory Hole Location		BH02 (de	ep install'	n)		Date of Installation	28/08	28/08/2020								
Return Visit #	Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide	Oxygen	Flow Rate	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level	_	Weather Conditions		Comments / Pressure	
-4! -! 4			(% v/v) <0.1	(% LEL) <2			(1/111)				(mbgl)	(mbgl)		£_11:		
St VISIC	17/09/2020	1030	<0.1	<2	0.1	19.3	0.4	0	0	1	12.24	20.72	warm, cloudy, dry, breezy	falling		
nstrume	ents Used:	GFM436 gas an	alyser / PI	D MultiRAE	lite				NOTE:	n/a	Not applic	able				
EMARKS		Groundwater sa									Not measu					
25.	0 —						¬ VE	٧.				Мс	onitoring Visit		VEV.	
							KE	Υ:	0	1	2		3 4	5	₆ KEY:	
20							—— M∈	ethane	Ö						-	
20.	0							% v/v)								
Concentration 10.	0									.0					Groundwa Level (mb	
entr									Œ						Level (IIIb	
10.	0							oxide 6 v/v)	Depth (m)	0					-	
5.	0								2	.0					-	
3.									3		Where are	undwater	recorded at 0 0 m - no gro	undwater	-	
							O>	xygen % v/v)			9.0		tered during monitoring		-	
0.	Λ 📥															





Jim Dawson Geosphere Environmental Ltd Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 20-10290

Site Reference: Diamond Jubilee Gardens and Twickenham Riverside, Wharf Lane, TW1 4QS

Project / Job Ref: 4955, SI

Order No: 4955, GI (jd)

Sample Receipt Date: 02/09/2020

Sample Scheduled Date: 08/09/2020

Report Issue Number: 1

Reporting Date: 16/09/2020

Authorised by:

Dave Ashworth Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. 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 except in full, without the prior written approval of the laboratory.





Soil Analysis Certificate										
DETS Report No: 20-10290	Date Sampled	25/08/20	25/08/20	25/08/20						
Geosphere Environmental Ltd	Time Sampled	None Supplied	None Supplied	None Supplied						
Site Reference: Diamond Jubilee Gardens and	TP / BH No	HP01 WAC2	WS01A and WS2,	WS01A J2						
Twickenham Riverside, Wharf Lane, TW1 4QS			J1 Combined							
Project / Job Ref: 4955, SI	Additional Refs	None Supplied	None Supplied	None Supplied						
Order No: 4955, GI (jd)	Depth (m)	0.25 - 1.20	0.20	0.60						
Reporting Date: 16/09/2020	DETS Sample No	497061	497062	497063						

Determinand	Unit	RL	Accreditation				
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	
pH	pH Units	N/a	MCERTS	8.1	7.6	8.2	
Total Cyanide	mg/kg	< 2	NONE	< 2	2	< 2	
Complex Cyanide	mg/kg	< 2	NONE	< 2	2	< 2	
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	12	16	15	
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.01	0.02	0.01	
Organic Matter	%	< 0.1	MCERTS	0.9	6	1.8	
Arsenic (As)	mg/kg	< 2	MCERTS	16	11	16	
Barium (Ba)	mg/kg	< 2.5	MCERTS	35	58	63	
Beryllium (Be)	mg/kg	< 0.5	MCERTS	0.6	< 0.5	0.6	
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	
Chromium (Cr)	mg/kg	< 2	MCERTS	20	15	21	
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	
Copper (Cu)	mg/kg	< 4	MCERTS	15	20	19	
Lead (Pb)	mg/kg	< 3	MCERTS	51	70	72	
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	
Molybdenum (Mo)	mg/kg	< 1	MCERTS	< 1	1	< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS	14	9	15	
Selenium (Se)	mg/kg	< 2	MCERTS	< 3	< 3	< 3	
Vanadium (V)	mg/kg	< 1	MCERTS	42	30	44	
Zinc (Zn)	mg/kg	< 3	MCERTS	45	67	83	





DETS Report No: 20-10290	Date Sampled	25/08/20	25/08/20	25/08/20	
					
Geosphere Environmental Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	
Site Reference: Diamond Jubilee Gardens	TP / BH No	HP01 WAC2	WS01A and WS2,	WS01A J2	
and Twickenham Riverside, Wharf Lane, TW1			J1 Combined		
4QS					
Project / Job Ref: 4955, SI	Additional Refs	None Supplied	None Supplied	None Supplied	
Order No: 4955, GI (jd)	Depth (m)	0.25 - 1.20	0.20	0.60	
Reporting Date: 16/09/2020	DETS Sample No	497061	497062	497063	

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	0.27	0.11	
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.76	0.32	
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.69	0.28	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.48	0.18	
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	0.40	0.17	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.66	0.24	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.22	< 0.1	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.50	0.18	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.31	0.11	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	0.30	0.11	
Total EPA-16 PAHs			MCERTS	< 1.6	4.6	1.7	





Soil Analysis Certificate - TPH CWG Banded										
DETS Report No: 20-10290	Date Sampled	25/08/20	25/08/20	25/08/20						
Geosphere Environmental Ltd	Time Sampled	None Supplied	None Supplied	None Supplied						
Site Reference: Diamond Jubilee Gardens	TP / BH No	HP01 WAC2	WS01A and WS2,	WS01A J2						
and Twickenham Riverside, Wharf Lane, TW1			J1 Combined							
4QS										
Project / Job Ref: 4955, SI	Additional Refs	None Supplied	None Supplied	None Supplied						
Order No: 4955, GI (jd)	Depth (m)	0.25 - 1.20	0.20	0.60						
Reporting Date: 16/09/2020	DETS Sample No	497061	497062	497063						

Determinand	Unit	RL	Accreditation				
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	





Soil Analysis Certificate - BTEX / MTBE										
DETS Report No: 20-10290	Date Sampled	25/08/20	25/08/20	25/08/20						
Geosphere Environmental Ltd	Time Sampled	None Supplied	None Supplied	None Supplied						
Site Reference: Diamond Jubilee Gardens	TP / BH No	HP01 WAC2	WS01A and WS2,	WS01A J2						
and Twickenham Riverside, Wharf Lane, TW1			J1 Combined							
4QS										
Project / Job Ref: 4955, SI	Additional Refs	None Supplied	None Supplied	None Supplied						
Order No: 4955, GI (jd)	Depth (m)	0.25 - 1.20	0.20	0.60						
Reporting Date: 16/09/2020	DETS Sample No	497061	497062	497063						

Determinand	Unit	RL	Accreditation				
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	
o-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	



Tel: 01622 850410



Waste Acceptance Criteria Analytical Certificate - BS EN 12457/2 DETS Report No: 20-10290 Date Sampled 25/08/20 **Landfill Waste Acceptance Criteria Limits** None Geosphere Environmental Ltd Time Sampled Supplied one kererence: Diamonu Judnee Garuens and Twickenham Riverside, Wharf Lane, TP / BH No HP01 WAC2 Stable Non-TW1 409 reactive Hazardous **HAZARDOUS** Inert Waste Project / Job Ref: 4955, SI **Additional Refs** Supplied Waste Landfill waste in non Landfill hazardous Order No: 4955, GI (jd) Depth (m) 0.25 - 1.20Landfill Reporting Date: 16/09/2020 **DETS Sample No** 497061 MDL Unit Determinand % < 0.1 0.5 3% 5% 6% Loss on Ignition % < 0.0 1.80 10% BTEX^{MU} < 0.05 < 0.05 6 mg/kg Sum of PCBs < 0.1 < 0.1 mg/kg Mineral Oil^{MU} < 10 < 10 500 mg/kd Total PAH^{MU} mg/kg < 1.7 < 1.7 100 pH^{MU} N/a pH Units 8.1 >6 To be Acid Neutralisation Capacity mol/kg (+/-) < 1 1.1 Cumulative Limit values for compliance leaching test 10:1 **Eluate Analysis** using BS EN 12457-3 at L/S 10 I/kg 10:1 mg/l mg/kg (mg/kg) < 0.01 < 0.1 0.5 25 Arsenic^U < 0.02 < 0.2 20 100 300 Barium^U < 0.0005 < 0.005 0.04 1 5 Cadmium < 0.005 0.5 10 70 Chromium¹ < 0.05 < 0.01 50 100 Copper^U < 0.1 2 Mercury^U < 0.0005 < 0.005 0.01 0.2 0.005 10 30 Molybdenum^u 0.05 0.5 Nickel^U < 0.007 < 0.07 0.4 10 40 50 < 0.005 < 0.05 0.5 10 Lead^U < 0.005 0.7 5 Antimony < 0.05 0.06 0.1 7 Selenium^U < 0.005 < 0.05 0.5 < 0.005 50 200 Zinc^u < 0.05 4 2.1 800 15000 25000 Chloride^l 21 Fluoride^u < 0.5 < 5 10 150 500 1.7 17 1000 20000 50000 Sulphate^U 51 510 4000 60000 100000 TDS Phenol Index < 0.01 < 0.1 1 8.4 83.6 500 800 1000 Leach Test Information Sample Mass (kg) 0.09 Dry Matter (%) 96.4 Moisture (%) Stage 1 Volume Eluate L10 (litres) 0.90

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received portion

Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepencies with current legislation

M Denotes MCERTS accredited test

U Denotes ISO17025 accredited test





Tel: 01622 850410

DETS Report No: 20-10290		Date Sampled	25/08/20		Landfill Was	te Acceptance (Criteria Limit
Geosphere Environmental Ltd		Time Sampled	None Supplied WSUIA and				
and Twickenham Riverside, W		TP / BH No	WS2, J1			Stable Non- reactive	
Project / Job Ref: 4955, SI		Additional Refs	None Supplied		Inert Waste Landfill	HAZARDOUS waste in non-	Hazardous Waste
Order No: 4955, GI (jd)	I (jd) Dep		0.20			hazardous Landfill	Landfill
Reporting Date: 16/09/2020		DETS Sample No	497062				
<u>Determinand</u>	Unit						
OC ^{MU}	%		3.5		3%	5%	6%
oss on Ignition BTEX ^{MU}	% ma/ka		9.20				10%
Gum of PCBs	mg/kg	< 0.05 < 0.1	< 0.05 < 0.1		6 1		
Nineral Oil ^{MU}	mg/kg mg/kg		< 10		500		
Total PAH ^{MU}	mg/kg	< 1.7	4.6		100		
DH ^{MU}	pH Units		7.6			>6	
Acid Neutralisation Capacity	mol/kg (+/-)		< 1			To be evaluated	To be evalua
	-		10:1	Cumulativ		for compliance	_
Eluate Analysis				10:1	using BS	EN 12457-3 at l	./S 10 l/kg
			mg/l	mg/kg		(mg/kg)	
Arsenic ^U			< 0.01	< 0.1	0.5	2	25
Barium ^U			< 0.02	< 0.2	20	100	300
Cadmium ^U			< 0.0005	< 0.005	0.04	1	5
Chromium ^U			< 0.005	< 0.05	0.5	10	70
Copper ^U Mercury ^U			0.03 < 0.0005	0.3	0.01	50	100
<u>lercury</u> 10lybdenum ^U	-		0.005	< 0.005 0.05	0.01	0.2 10	30
lickel ^U	-		< 0.007	< 0.07	0.4	10	40
.ead ^U			< 0.005	< 0.05	0.5	10	50
Antimony ^U			< 0.005	< 0.05	0.06	0.7	5
Selenium ^U	7		< 0.005	< 0.05	0.1	0.5	7
Zinc ^U	7		0.007	0.07	4	50	200
Chloride ^U		İ	3.6	36	800	15000	25000
-luoride ^U	7	ļ	< 0.5	< 5	10	150	500
Sulphate ^U		ļ	2.6	26	1000	20000	50000
DS		j	88	880	4000	60000	100000
Phenol Index	_		< 0.01	< 0.1	1	-	-
OOC			18.7	187	500	800	1000
each Test Information					-		
							
					_		
Sample Mass (kg)			0.10		\exists		
Ory Matter (%)	<u> </u>		92.6				
loisture (%)			8				
Stage 1					_		
/olume Eluate L10 (litres)			0.89				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepencies with current legislation M Denotes MCERTS accredited test U Denotes ISO17025 accredited test portion





Tel: 01622 850410

DETS Report No: 20-10290		Date Sampled	25/08/20		Landfill Was	te Acceptance (Criteria Limit
Geosphere Environmental Ltd		Time Sampled	None Supplied				
and Twickenham Riverside, Wi		TP / BH No	WS01A J2			Stable Non-	
Project / Job Ref: 4955, SI Order No: 4955, GI (jd) Reporting Date: 16/09/2020		Additional Refs	None Supplied		Inert Waste Landfill	reactive HAZARDOUS waste in non-	Hazardous Waste
		Depth (m)	0.60		Landini	hazardous Landfill	Landfill
		DETS Sample No	497063				
Determinand	Unit						
FOC ^{MU}	%		1.1		3%	5%	6%
oss on Ignition	%		2.40				10%
STEX ^{MU}	mg/kg	< 0.05	< 0.05		6		
Sum of PCBs	mg/kg	< 0.1	< 0.1		1		
Mineral Oil ^{MU}	mg/kg	< 10	< 10		500		
Total PAH ^{MU}	mg/kg	< 1.7	< 1.7		100		
oH ^{MU} Acid Neutralisation Capacity	pH Units mol/kg (+/-)		8.2 1.2			>6 To be	To be evaluat
· ·		1	10:1	Cumulative		evaluated for compliance	leaching tes
Eluate Analysis				10:1	using BS I	EN 12457-3 at I	L/S 10 l/kg
	T		mg/l	mg/kg		(mg/kg)	
Arsenic ^U	4		< 0.01	< 0.1	0.5	2	25
Barium ^U	-1		< 0.02	< 0.2	20	100	300
Cadmium ^U	-1		< 0.0005	< 0.005	0.04	1	5
Chromium ^U			< 0.005	< 0.05	0.5	10	70
Copper ^U	-1		0.02	0.2	0.01	50	100 2
Mercury ^U Molybdenum ^U	1		< 0.0005 0.005	< 0.005		0.2 10	30
Molybdenum ^o Nickel ^U	1		< 0.005	0.05	0.5 0.4	10	40
vickei° _ead ^U	1		< 0.007	< 0.07 < 0.05	0.4	10	50
Lead ^o Antimony ^U	1		< 0.005		0.06	0.7	5
Antimony" Selenium ^u	1		< 0.005	< 0.05	0.06	0.7	7
Seienium* Zinc ^u	1		< 0.005	< 0.05 < 0.05	4	50	200
Zinc* Chloride ^U	1		2.9	< 0.05 29	800	15000	25000
Fluoride ^U	1		< 0.5	< 5	10	1500	500
Sulphate ^U	1		3.1	31	1000	20000	50000
TDS	1		60	600	4000	60000	100000
Phenol Index	1		< 0.01	< 0.1	1	-	-
DOC	1		12.8	128	500	800	1000
Leach Test Information	<u> </u>		12.8	128	500	800	1000
					1		
Sample Mass (kg)			0.09		-		
Ory Matter (%)			96.9				
Moisture (%)			3.2				
` '				1			
Stage 1			0.90				
Stage 1 Volume Eluate L10 (litres)			0.90		-		
Stage 1			0.90		_		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received portion

Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepencies with current legislation M Denotes MCERTS accredited test U Denotes ISO17025 accredited test





Soil Analysis Certificate - Sample Descriptions

DETS Report No: 20-10290

Geosphere Environmental Ltd

Site Reference: Diamond Jubilee Gardens and Twickenham Riverside, Wharf Lane, TW1 4QS

Project / Job Ref: 4955, SI

Order No: 4955, GI (jd)

Reporting Date: 16/09/2020

DETS Samp	ple No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
\$ 4	197061	HP01 WAC2	None Supplied	0.25 - 1.20	3.7	Light brown sandy clay with stones
\$ 4	197062	WS01A and WS2, J1 Combined	None Sunniled	0.20	7.4	Black loamy sand with stones and vegetation
\$ 4	197063	WS01A J2	None Supplied	0.60	3.1	Brown sandy clay with stones and concrete

Moisture content is part of procedure E003 & is not an accredited test Insufficient Sample $^{\rm I/S}$ Unsuitable Sample $^{\rm U/S}$

\$ samples exceeded recommended holding times





Soil Analysis Certificate - Methodology & Miscellaneous Information DETS Report No: 20-10290

Geosphere Environmental Ltd
Site Reference: Diamond Jubilee Gardens and Twickenham Riverside, Wharf Lane, TW1 4QS
Project / Job Ref: 4955, SI
Order No: 4955, GI (jd)
Reporting Date: 16/09/2020

Onl	Matrix	Analysed	Determinand	Brief Method Description	Method
Soil D	Matrix			·	No
Soil D Chorde - Water Soluble CI-D Determination of clatics in soil by actua-recept dispestion followed by ICP-OES 600 AR Chromium - Hexaveline Chromium - Hex	Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil AR					
Soil AR Cyromium - Hexavalent Control	Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil AR Cyanide - Compared of Compared Part of Compared P	Soil	D	Chloride - Water Soluble (2:1)		E009
Soil AR	Soil	AR	Chromium - Hexavalent		E016
Soil AR Cyanide-Free Determination of five cyanide by distillation followed by colormetry (5015 Soil D Cyclobezane Estractable Matter (EPM) Grawinerically determined through estraction with cyclobezane (5015 D Cyclobezane Estractable Matter (EPM) Grawinerically determined through estraction with cyclobezane (5016 D Cyclobezane Estractable Matter (EPM) Grawinerically determined through estraction with cyclobezane (5016 D Cyclobezane Estractable Matter (EPM) Grawinerically determined through estraction with cyclobezane (5016 D Cyclobezane Estractable Matter (EPM) Grawinerically determined through estraction with cyclobezane (5016 D Cyclobezane Estractable Matter (EPM) Grawinerically determined through estraction with cyclobezane (5016 D Cyclobezane) (5	Soil	AR	Cvanide - Complex		E015
Soil	Soil	AR			E015
Soil AR Diese Range Organis (SCI C.) Cell petermination of heading-factories by CE-FID Soil AR Diese Range Organis (SCI C.) Cell petermination of heading-factories by CE-FID Soil AR Electrical Conductivity Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement E023					
Soil AR Diesel Range Organics (C10 - C24) Determination of became/acctone extractable hydrocarbons by GC-FID Electrical Conductivity Determination of electrical conductivity by addition of saturated calcium sulphate followed by ED22	Soil				E011
Soil AR Electrical Conductivity Determination of electrical conductivity by addition of saturated calcium sulphate followed by E022					
Soil AR Beharical Conductivity Determination of electrical conductivity by addition of water followed by electrometric measurement E023 Soil AR EPH (CID - C40) Determination of elemental sulphur by solvent extraction followed by CG-MS E004 Soil AR EPH TEXAS (CG-C8, GS-C1), CID - C40) Determination of acetome/hexane extractable hydrocarbons by GG-FID F0 E004 AR EPH TEXAS (CG-C8, GS-C1), CID-C12, Determination of acetome/hexane extractable hydrocarbons by GG-FID for C8 to C40. C6 to C8 by C12-C16, C16-C21, C21-C40) Determination of acetome/hexane extractable hydrocarbons by GG-FID for C8 to C40. C6 to C8 by C12-C16, C16-C21, C21-C40) Determination of acetome/hexane extractable hydrocarbons by GG-FID for C8 to C40. C6 to C8 by E004 Soil D F0C (Fraction Organic Carbon) FOC (Fraction Organic Carbon) FOC (Fraction Organic Carbon) Determination of fraction of organic carbon by oxiding with potassium dinnermation and publisher. Determination of foso or input of fraction of organic carbon by oxiding with potassium dinnermation and multiple for fraction of metals by agua-regia digestion followed by ICP-OES E035 Soil D Meral Oil (CID - C40) Determination of metals by agua-regia digestion followed by ICP-OES E035 Soil AR Mesture Water Soluble (21) Determination of metals by agua-regia digestion followed by ICP-OES E035 Soil AR PAH - Speciate (PAH 5) Soil AR PAH - Speciate (PAH 5) Soil AR PAH - Speciate (PAH 5) Determination of metals by agua-regia digestion followed by ICP-OES E035 Soil AR PAH - Speciate (PAH 5) Determination of metals by agua-regia digestion followed by ICP-OES E035 Soil AR PAH - Speciate (PAH 5) Determination of metals by agua-regia digestion followed by ICP-OES E035 Soil AR PAH - Speciate (PAH 5) Determination of metals by agua-regia digestion followed by ICP-OES E035 Soil AR PAH - Speciate (PAH 5) Determination of metals by agua-regia digestion followed by ICP-OES E035 Soil AR PAH - Speciate (PAH 5) Determination of metals by agua-regia digestion followed by ICP-OES E035 Soil A			·	Determination of electrical conductivity by addition of saturated calcium sulphate followed by	
Soil AR EPH (CID - C40) Determination of acetone/hexane extractable hydrocarbons by GC-FID E004			,	Determination of electrical conductivity by addition of water followed by electrometric measurement	
Soil AR EPH TPOCAUE ID Determination of acetone/hexane extractable hydrocarbons by GC-FID E004					
Soil AR FLEXAS (CG-C8, C8-C10, C10-C12) Determination of acctone/heane extractable hydrocarbons by GC-FID for C8 to C40, C6 to C8 by C10-C16, C16-C2, C12-C16, C16-C2, C12-C3, C16-C4, C16-C2, C12-	Soil				E004
Soil D Fluoride - Water Soluble Determination of Fluoride by extraction with water & analysed by ion chromatography E009 Soil D FOC (Fraction Organic Carbon) FOC (Fraction Organic Carbon	Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
D	Soil	AR			E004
D	Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil D Magnesium - Water Soluble Determination of water soluble magnesium by extraction with water followed by ICP-OES E025 Soil D Metals Determination of metals by aqua-regia digestion followed by ICP-OES E025 Soil AR Mineral Oil (C10 - C40) Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge E004 Soil AR Moisture Content Moisture content; determined gravimetrically E004 Soil D Nitrate - Water Soluble (2:1) Determination of intrate by extraction with water & analysed by ion chromatography E009 Soil D Organic Matter Organic Matter Soil AR PAH - Speciated (EPA 16) Determination of organic matter by oxidising with potassium dichromate followed by titration with iron [E010 Ill sulphate Soil AR PEB - 7 Congeners Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards Soil AR PEB - 7 Congeners Determination of PCB by extraction with acetone and hexane followed by GC-MS E008 Soil AR Phenois - Total (monohydric) Determination of phe by addition of water followed by GC-MS E009 Soil AR Phenois - Total (monohydric) Determination of phenos by distillation followed by GO-MS E001 Soil AR Phenois - Total (monohydric) Determination of phenos by distillation followed by GO-MS E001 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of phenos by distillation followed by ICP-OES E013 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water & analysed by ion chromatography E009 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water followed by ICP-OES E013 Soil AR Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water 8 analysed by ion chromatography E009 Soil AR Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water 8 analysed by ion chromatography E009 Soil AR Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate	Soil	D		Determination of fraction of organic carbon by oxidising with potassium dichromate followed by	E010
Soil D Mineral Oil (CID - C40) Determination of metals by aqua-regia digestion followed by ICP-OES	Soil	D	Loss on Ignition @ 450oC	, , , , , , , , , , , , , , , , , , , ,	E019
Soil AR Mineral Oil (C10 - C40) Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge E004 Soil AR Moisture Content Moisture content; determined gravimetrically E003 Soil D Nitrate - Water Soluble (2:1) Determination of nitrate by extraction with water & analysed by ion chromatography E009 Soil AR PAH - Speciated (EPA 16) Soil AR PAH - Speciated (EPA 16) Soil AR PCB - 7 Congenes Determination of organic matter by oxidising with potassium dichromate followed by GC-MS with the use of surrogate and internal standards Soil D Petroleum Ether Extract (PEE) Gravimetrically determined through extraction with acetone and hexane followed by GC-MS E008 Soil AR Penois - Total (monohydric) Determination of PCB by extraction with acetone and hexane followed by GC-MS E008 Soil AR Penois - Total (monohydric) Determination of PCB by extraction with acetone and hexane followed by GC-MS E009 Soil AR Penois - Total (monohydric) Determination of PCB by extraction with devidence measurement E007 Soil AR Penois - Total (monohydric) Determination of pth by addition of water followed by electrometry E021 Soil D Sulphate (as SO4) - Vater Soluble (2:1) Determination of total sulphate by extraction with water & analysed by ion chromatography E009 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of water soluble sulphate by extraction with 10% HCI followed by ICP-OES E013 Soil AR Sulphate (as SO4) - Water Soluble (2:1) Determination of water soluble sulphate by extraction with water analysed by ion chromatography E009 Soil AR Thiocyanate (as SCN) Total Organic Carbon (TOC) Gravimetrically determined through extraction with touene Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by CICP-OES E014 are: C5-C7, C7-C8, C8-C10, C10-C12, C12-C34, are:	Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil AR Moisture Content Moisture content, determined gravimetrically Soil D Nitrate - Water Soluble (2:1) Determination of nitrate by extraction with water & analysed by ion chromatography Soil AR PAH - Speciated (EPA 16) Determination of organic matter by oxidising with potassium dichromate followed by titration with iron Soil AR PAH - Speciated (EPA 16) Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards Soil AR PEB - 7 Congeners Determination of PAH compounds by extraction with petroleum ether Extract (EPA 16) Determination of PBH between surrogate and internal standards Soil AR Phenols - Total (monohydric) Determination of PB by extraction with petroleum ether E011 Soil AR Phenols - Total (monohydric) Determination of phenos by distillation followed by colorimetry E021 Soil D Sulphate (as SO4) - Total Determination of phosphate by extraction with water & analysed by ion chromatography E009 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water & analysed by ion chromatography E009 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water & analysed by ion chromatography E009 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water followed by ICP-OES E014 Soil AR Sulphiar - Total Determination of sulphate by extraction with water followed by ICP-OES E014 Soil AR Sulphiar - Total Determination of sulphate by extraction with aqua-regia followed by ICP-OES E014 Soil AR Thiocyanate (as SCN) Determination of sulphate by extraction with aqua-regia followed by ICP-OES E014 Soil AR Thiocyanate (as SCN) Determination of sulphate by extraction with super sulphate by extraction in acetone and hexane followed by GC-MS E017 Soil AR Thiocyanate (as SCN) Determination of total sulphur by extraction with aqua-regia followed by acidification followed by GC-MS E018 E016-C12, C12-C16, C16-C21, C12-C14, C12-	Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil D Nitrate - Water Soluble (2:1) Determination of nitrate by extraction with water & analysed by ion chromatography E009	Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (III) sulphate	Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (III) sulphate	Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil AR PCB - 7 Congeners Determination of PCB by extraction with acetone and hexane followed by GC-MS E008 Soil D Petroleum Ether Extract (PEE) Gravimetrically determined through extraction with petroleum ether E011 Soil AR Phenols - Total (monohydric) Determination of PCB by extraction with petroleum ether E011 Soil D Phenols - Total (monohydric) Determination of phenols by distillation followed by electrometric measurement E007 Soil D Phosphate - Water Soluble (2:1) Determination of phosphate by extraction with water & analysed by ion chromatography E009 Soil D Sulphate (as SO4) - Vater Soluble (2:1) Determination of phosphate by extraction with water & analysed by ion chromatography E009 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water & analysed by ion chromatography E009 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water & analysed by ion chromatography E009 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of water soluble sulphate by extraction with water followed by ICP-OES E013 Soil AR Sulphide Sulphate by extraction with water & analysed by ion chromatography E009 Soil AR Sulphide (3:1) Determination of sulphide by distillation followed by colorimetry E018 Soil AR Sulphide (3:1) Determination of sulphide by distillation followed by colorimetry E018 Soil AR Thiocyanate (as SCN) Determination of sulphide by extraction with averagia followed by ICP-OES E024 Soil AR Thiocyanate (as SCN) Determination of sulphide by extraction in caustic soda followed by acidification followed by acidification followed by C05 Soil AR Thiocyanate (as SCN) Determination of organic matter by oxidising with potassium dichromate followed by tiration with iron addition of organic matter by oxidising with potassium dichromate followed by tiration with iron (1) sulphate TPH LOW (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C35, C35-C44, aro: C5	Soil	D		Determination of organic matter by oxidising with potassium dichromate followed by titration with iron	E010
Soil D Petroleum Ether Extract (PEE) Gravimetrically determined through extraction with petroleum ether E011	Soil		PAH - Speciated (EPA 16)		
Soil AR Phenols - Total (monohydro) Determination of ph by addition of water followed by electrometric measurement E007	Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil AR Phenols - Total (monohydric) Determination of phenols by distillation followed by colorimetry Soil D Phosphate - Water Soluble (2:1) Determination of phosphate by extraction with water & analysed by ion chromatography E009 Sulphate (as SO4) - Total Determination of total sulphate by extraction with 10% HCl followed by ICP-OES E013 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of total sulphate by extraction with water & analysed by ion chromatography E009 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water followed by ICP-OES E014 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water followed by ICP-OES E014 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water followed by ICP-OES E014 Soil AR Sulphide Determination of sulphide by distillation followed by Goldinatery E018 Soil AR Sulphide Determination of sulphide by distillation followed by ICP-OES E024 Soil AR Thiocyanate (as SCN) Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS Soil D Toluene Extractable Matter (TEM) Gravimetrically determined through extraction with toluene E011 Soil D Toluene Extractable Matter (TEM) Gravimetrically determined through extraction with boluene E011 Soil AR Thiocyanate (as SCN) Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C31, C35-C44, aro: C5-C7, C7-C8,	Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil AR Phenols - Total (monohydric) Determination of phenols by distillation followed by colorimetry E021	Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil D Phosphate - Water Soluble (2:1) Determination of phosphate by extraction with water & analysed by ion chromatography E009 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of total sulphate by extraction with 10% HCI followed by ICP-OES E013 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water & analysed by ion chromatography E009 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water & analysed by ion chromatography E009 Soil AR Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water followed by ICP-OES E014 Soil AR Sulphide Determination of sulphide by distillation followed by colorimetry E018 Soil AR Sulphur - Total Determination of total sulphur by extraction with aqua-regia followed by ICP-OES E024 Soil AR Sulphur - Total Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS Soil AR Thiocyanate (as SCN) Determination of thiocyanate by extraction in caustic soda followed by acidification followed by ac		AR			E021
Soil D Sulphate (as SO4) - Total Determination of total sulphate by extraction with 10% HCl followed by ICP-OES E013 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water & analysed by ion chromatography E009 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water & analysed by ion chromatography E009 Soil AR Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water & analysed by ion chromatography E009 Soil AR Sulphur - Total Determination of sulphide by distillation followed by colorimetry E018 Soil AR Sulphur - Total Determination of total sulphur by extraction with aqua-regia followed by ICP-OES E024 Soil AR Thiocyanate (as SCN) Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry Soil D Total Organic Carbon (TOC) Total Organic Carbon (TOC) AR Thiocyanate (as SCN) Determination of thiocyanate by extraction with toluene For addition of ferric nitrate followed by colorimetry For Total Organic Carbon (TOC) The CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C35, C35-C44, aro: C5-C7, C3-C8, C3-C4, C3-C4, C3-C4, C3-C4,		D			E009
Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water & analysed by ion chromatography E009 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of water soluble sulphate by extraction with water followed by ICP-OES E014 Soil AR Sulphide Determination of sulphide by distillation followed by colorimetry E018 Soil D Sulphur - Total Determination of sulphide by extraction with aqua-regia followed by ICP-OES E024 Soil AR Sulphur - Total Determination of total sulphur by extraction with aqua-regia followed by ICP-OES E024 Soil AR Thiocyanate (as SCN) Soil D Toluene Extractable Matter (TEM) Gravimetrically determined to ferric nitrate followed by colorimetry Soil D Total Organic Carbon (TOC) Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C15, C16-C21, C21-C35) TPH LQM (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44) Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS E004 Soil AR VOCs Determination of volatile organic compounds by headspace GC-MS E004					
Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of water soluble sulphate by extraction with water followed by ICP-OES E018 Soil AR Sulphide Determination of sulphide by distillation followed by colorimetry E018 Soil D Sulphur - Total Determination of total sulphur by extraction with aqua-regia followed by ICP-OES E024 Soil AR Sulphur - Total Determination of total sulphur by extraction with aqua-regia followed by ICP-OES E024 Soil AR Thiocyanate (as SCN) Soil D Toluene Extractable Matter (TEM) Determination of thiocyanate by extraction in acetone and hexane followed by addition of ferric nitrate followed by colorimetry E017 Soil D Toluene Extractable Matter (TEM) Gravimetrically determined through extraction with toluene E011 Soil D Total Organic Carbon (TOC) Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (III) sulphate TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C35) TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C35, C35-C44, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, C12-C16, C16-C21, C21-C35,					
Soil AR Sulphide Determination of sulphide by distillation followed by colorimetry E018 Soil D Sulphur - Total Determination of total sulphur by extraction with aqua-regia followed by ICP-OES E024 Soil AR SVOC Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS Soil AR Thiocyanate (as SCN) Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry Soil D Toluene Extractable Matter (TEM) Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry Soil D Toluene Extractable Matter (TEM) Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry Soil D Toluene Extractable Matter (TEM) Determination of volatile organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C34, C35-C34, C36-C36, C35-C34, C36-C36, C35-C34, C36-C36, C36-C36, C35-C34, C36-C36, C36					
Soil D Sulphur - Total Determination of total sulphur by extraction with aqua-regia followed by ICP-OES E024 Soil AR SVC Soil AR Thiocyanate (as SCN) Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by acidification followed by addition of ferric nitrate followed by colorimetry Soil D Toluene Extractable Matter (TEM) Gravimetrically determined through extraction with toluene Soil D Total Organic Carbon (TOC) For Interview (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C12-C16, C16-C21, C21-C35) FOR INTERVIEW (ali: C5-C6, C6-C8, C8-C10, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) FOR INTERVIEW (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) FOR INTERVIEW (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C216, C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C10-C12, C					
Soil AR Svoc Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS Soil AR Thiocyanate (as SCN) Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry Soil D Toluene Extractable Matter (TEM) Gravimetrically determined through extraction with toluene Soil D Total Organic Carbon (TOC) Foil C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C23, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C23, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C35, C35-C44, aro: C5-C7, C7-C8,					
Soil AR Thiocyanate (as SCN) Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry Soil D Toluene Extractable Matter (TEM) Gravimetrically determined through extraction with toluene Soil D Total Organic Carbon (TOC) Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, C10-C12, C10-C12, C16-C21, C21-C35, C35-C34, C10-C12, C16-C21, C21-C35, C35-C34, C1		_		Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by	
Soil D Toluene Extractable Matter (TEM) Gravimetrically determined through extraction with toluene	Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by	E017
Soil D Total Organic Carbon (TOC) Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C35) Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate E010 TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C35) Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C1	Soil	D	Toluene Extractable Matter (TEM)		E011
Soil AR TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C35) Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS		D		Determination of organic matter by oxidising with potassium dichromate followed by titration with iron	
Soil AR C10-C12, C12-C16, C16-C35, C35-C44, Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS Soil AR VOCs Determination of volatile organic compounds by headspace GC-MS E004	Soil	AR	C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12,	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
			C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil AR VPH (C6-C8 & C8-C10) Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID E001					
	Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried AR As Received

Parameter	Matrix Type	Suite Reference	Expanded Uncertainity Measurement	Unit
TOC	Soil	BS EN 12457	13.49	%
Loss on Ignition	Soil	BS EN 12457	17	%
BTEX	Soil	BS EN 12457	14	%
Sum of PCBs	Soil	BS EN 12457	23	%
Mineral Oil	Soil	BS EN 12457	9	%
Total PAH	Soil	BS EN 12457	20	%
pH	Soil	BS EN 12457	0.399	Units
Acid Neutralisation Capacity	Soil	BS EN 12457	18	%
Arsenic	Leachate	BS EN 12457	16.63	%
Barium	Leachate	BS EN 12457	14.29	%
Cadmium	Leachate	BS EN 12457	14.44	%
Chromium	Leachate	BS EN 12457	18.06	%
Copper	Leachate	BS EN 12457	21.27	%
Mercury	Leachate	BS EN 12457	24.13	%
Molybdenum	Leachate	BS EN 12457	12.55	%
Nickel	Leachate	BS EN 12457	20.08	%
Lead	Leachate	BS EN 12457	13.43	%
Antimony	Leachate	BS EN 12457	18.85	%
Selenium	Leachate	BS EN 12457	18.91	%
Zinc	Leachate	BS EN 12457	13.71	%
Chloride	Leachate	BS EN 12457	16	%
Fluoride	Leachate	BS EN 12457	19.4	%
Sulphate	Leachate	BS EN 12457	19.63	%
TDS	Leachate	BS EN 12457	12	%
Phenol Index	Leachate	BS EN 12457	14	%
DOC	Leachate	BS EN 12457	10	%
Clay Content	Soil	BS 3882: 2015	15	%
Silt Content	Soil	BS 3882: 2015	14	%
Sand Content	Soil	BS 3882: 2015	13	%
Loss on Ignition	Soil	BS 3882: 2015	17	%
pН	Soil	BS 3882: 2015	0.399	Units
Carbonate	Soil	BS 3882: 2015	16	%
Total Nitrogen	Soil	BS 3882: 2015	12	%
Phosphorus (Extractable)	Soil	BS 3882: 2015	24	%
Potassium (Extractable)	Soil	BS 3882: 2015	20	%
Magnesium (Extractable)	Soil	BS 3882: 2015	26	%
Zinc	Soil	BS 3882: 2015	14.9	%
Copper	Soil	BS 3882: 2015	16	%
Nickel	Soil	BS 3882: 2015	17.7	%
Available Sodium	Soil	BS 3882: 2015	23	%
Available Calcium	Soil	BS 3882: 2015	23	%
Electrical Conductivity	Soil	BS 3882: 2015	10	%





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DETS Ltd

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Kent
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t: 01622 850410

DETS Report No: 20-10989

Site Reference: Twickenham Riverside

Project / Job Ref: 4955,SI

Order No: 4955,SI (JD)

Sample Receipt Date: 22/09/2020

Sample Scheduled Date: 22/09/2020

Report Issue Number: 1

Reporting Date: 02/10/2020

Authorised by:

Kevin Old General Manager

Dates of laboratory activities for each tested analyte are available upon request.

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Soil Analysis Certificate						
DETS Report No: 20-10989	Date Sampled	25/08/20	25/08/20	25/08/20	25/08/20	27/08/20
Geosphere Environmental Ltd	Time Sampled	None Supplied				
Site Reference: Twickenham Riverside	TP / BH No	BH1	BH1	BH1	BH1	BH2
Project / Job Ref: 4955,SI	Additional Refs	Disturbed	Disturbed	Disturbed	Disturbed	Disturbed
Order No: 4955,SI (JD)	Depth (m)	4.00	10.50	18.00	24.00	2.00
Reporting Date: 02/10/2020	DETS Sample No	500425	500426	500427	500428	500429

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025					
pH	pH Units	N/a	MCERTS	8.4	8.1	8.8	8.2	8.6
Total Cyanide	mg/kg	< 2	NONE					
Complex Cyanide	mg/kg	< 2	NONE					
Free Cyanide		< 2	NONE					
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	< 10	604	218	440	321
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	< 0.01	0.60	0.22	0.44	0.32
Organic Matter	%	< 0.1	MCERTS					
Arsenic (As)	mg/kg	< 2	MCERTS					
Barium (Ba)	mg/kg	< 2.5	MCERTS					
Beryllium (Be)	mg/kg	< 0.5	MCERTS					
W/S Boron	mg/kg	< 1	NONE					
Cadmium (Cd)	mg/kg	< 0.2	MCERTS					
Chromium (Cr)	mg/kg	< 2	MCERTS					
Chromium (hexavalent)	mg/kg	< 2	NONE					
Copper (Cu)	mg/kg	< 4	MCERTS					
Lead (Pb)	mg/kg	< 3	MCERTS					
Mercury (Hg)	mg/kg	< 1	MCERTS					
Molybdenum (Mo)	mg/kg	< 1	MCERTS					
Nickel (Ni)	mg/kg	< 3	MCERTS					
Selenium (Se)	mg/kg	< 2	MCERTS					
Vanadium (V)	mg/kg	< 1	MCERTS					
Zinc (Zn)	mg/kg	< 3	MCERTS					
EPH (C10 - C40)	mg/kg	< 6	MCERTS	-	-			





Soil Analysis Certificate						
DETS Report No: 20-10989	Date Sampled	27/08/20	27/08/20	27/08/20	27/08/20	27/08/20
Geosphere Environmental Ltd	Time Sampled	None Supplied				
Site Reference: Twickenham Riverside	TP / BH No	BH2	BH2	BH2	BH1 + BH2	BH01A + BH01B
Project / Job Ref: 4955,SI	Additional Refs	Disturbed	Disturbed	Disturbed	Composite	Composite
Order No: 4955,SI (JD)	Depth (m)	7.50	13.50	19.50	2.0 - 24.0	0.20 - 0.80
Reporting Date: 02/10/2020	DETS Sample No	500430	500431	500432	500433	500434

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025				Not Detected	Not Detected
рН	pH Units	N/a	MCERTS	8.1	8.4	8.8	8.1	8.3
Total Cyanide	mg/kg	< 2	NONE				< 2	< 2
Complex Cyanide	mg/kg	< 2	NONE				< 2	< 2
Free Cyanide	mg/kg	< 2	NONE				< 2	< 2
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	485	319	460	365	79
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.48	0.32	0.46	0.36	0.08
Organic Matter	%	< 0.1	MCERTS				0.9	0.8
Arsenic (As)	mg/kg	< 2	MCERTS				9	15
Barium (Ba)	mg/kg	< 2.5	MCERTS				50	71
Beryllium (Be)	mg/kg	< 0.5	MCERTS				0.9	0.7
W/S Boron	mg/kg	< 1	NONE				2.3	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS				< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS				31	19
Chromium (hexavalent)	mg/kg	< 2	NONE				< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS				19	20
Lead (Pb)	mg/kg	< 3	MCERTS				10	207
Mercury (Hg)	mg/kg	< 1	MCERTS				< 1	< 1
Molybdenum (Mo)	mg/kg	< 1	MCERTS				< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS				29	16
Selenium (Se)	mg/kg	< 2	MCERTS				< 3	< 3
Vanadium (V)	mg/kg	< 1	MCERTS				54	38
Zinc (Zn)	mg/kg	< 3	MCERTS				78	68
EPH (C10 - C40)	mg/kg	< 6	MCERTS					< 6





Soil Analysis Certificate				
DETS Report No: 20-10989	Date Sampled	27/08/20		
Geosphere Environmental Ltd	Time Sampled	None Supplied		
Site Reference: Twickenham Riverside	TP / BH No	BH2		
Project / Job Ref: 4955,SI	Additional Refs	Disturbed		
Order No: 4955,SI (JD)	Depth (m)	1.20		
Reporting Date: 02/10/2020	DETS Sample No	500435		

Determinand	Unit	RL	Accreditation			
Asbestos Screen (S)	N/a	N/a		Not Detected		
Hq	pH Units	N/a		8.3		
Total Cyanide		< 2	NONE	< 2		
Complex Cyanide		< 2	NONE	< 2		
Free Cyanide	mg/kg	< 2	NONE	< 2		
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	44		
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.04		
Organic Matter	%	< 0.1	MCERTS	1		
Arsenic (As)	mg/kg	< 2	MCERTS	15		
Barium (Ba)	mg/kg	< 2.5	MCERTS	55		
Beryllium (Be)	mg/kg	< 0.5	MCERTS	0.6		
W/S Boron	mg/kg	< 1	NONE	< 1		
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2		
Chromium (Cr)	mg/kg	< 2	MCERTS	16		
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2		
Copper (Cu)	mg/kg	< 4	MCERTS	17		
Lead (Pb)	mg/kg	< 3	MCERTS	111		
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1		
Molybdenum (Mo)	mg/kg	< 1	MCERTS	< 1		
Nickel (Ni)	mg/kg	< 3	MCERTS	13		
Selenium (Se)	mg/kg	< 2	MCERTS	< 3		
Vanadium (V)	mg/kg	< 1	MCERTS	36		
Zinc (Zn)	mg/kg	< 3	MCERTS	38		
EPH (C10 - C40)	mg/kg	< 6	MCERTS	< 6		





Soil Analysis Certificate - Speciated PAHs					
DETS Report No: 20-10989	Date Sampled	27/08/20	27/08/20	27/08/20	
Geosphere Environmental Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	
Site Reference: Twickenham Riverside	TP / BH No	BH1 + BH2	BH01A + BH01B	BH2	
Project / Job Ref: 4955,SI	Additional Refs	Composite	Composite	Disturbed	
Order No: 4955,SI (JD)	Depth (m)	2.0 - 24.0	0.20 - 0.80	1.20	
Reporting Date: 02/10/2020	DETS Sample No	500433	500434	500435	

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.17	< 0.1		
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.12	< 0.1		
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.30	< 0.1		
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.52	< 0.1		
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.13	< 0.1		
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.28	< 0.1		
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.38	< 0.1		
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	0.21	< 0.1		
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	2.1	< 1.6	·	





Soil Analysis Certificate - TPH CWG Bande	Soil Analysis Certificate - TPH CWG Banded										
DETS Report No: 20-10989	Date Sampled	27/08/20									
Geosphere Environmental Ltd	Time Sampled	None Supplied									
Site Reference: Twickenham Riverside	TP / BH No	BH1 + BH2									
Project / Job Ref: 4955,SI	Additional Refs	Composite									
Order No: 4955,SI (JD)	Depth (m)	2.0 - 24.0									
Reporting Date: 02/10/2020	DETS Sample No	500433									

Determinand	Unit	RL	Accreditation				
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01			
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05			
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	7			
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	14			
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	15			
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3			
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10			
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	36			
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01			
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05			
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2			
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2			
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2			
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3			
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	•		
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21			
Total >C5 - C35	mg/kg	< 42	NONE	< 42	•		





Soil Analysis Certificate - BTEX / MTBE				
DETS Report No: 20-10989	Date Sampled	27/08/20		
Geosphere Environmental Ltd	Time Sampled	None Supplied		
Site Reference: Twickenham Riverside	TP / BH No	BH1 + BH2		
Project / Job Ref: 4955,SI	Additional Refs	Composite		
Order No: 4955,SI (JD)	Depth (m)	2.0 - 24.0		
Reporting Date: 02/10/2020	DETS Sample No	500433		

Determinand	Unit	RL	Accreditation	
Benzene	ug/kg	< 2	MCERTS	< 2
Toluene	ug/kg	< 5	MCERTS	< 5
Ethylbenzene	ug/kg	< 2	MCERTS	< 2
p & m-xylene	ug/kg	< 2	MCERTS	4
o-xylene	ug/kg	< 2	MCERTS	3
MTBE	ug/kg	< 5	MCERTS	< 5





Waste Acceptance Criteria Analytical Certificate - BS EN 12457/2 DETS Report No: 20-10989 **Date Sampled** 27/08/20 **Landfill Waste Acceptance Criteria Limits** Geosphere Environmental Ltd Time Sampled Supplied Site Reference: Twickenham Riverside TP / BH No BH1 + BH2 Stable Nonreactive Hazardous **Inert Waste** HAZARDOUS Project / Job Ref: 4955,SI Additional Refs Composite Waste Landfill waste in non Landfill Order No: 4955,SI (JD) Depth (m) 2.0 - 24.0 hazardous Landfill Reporting Date: 02/10/2020 **DETS Sample No** 500433 Determinand Unit MDL 0/ < 0.1 3% 5% 6% Loss on Ignition 0/, < 0.01 0.60 10% BTEX^{MU} mg/kg < 0.05 < 0.05 6 Sum of PCBs < 0.1 < 0.1 mg/kg Mineral Oil^{MU} mg/kg < 10 31 500 Total PAH^{MU} < 1.7 mg/kg < 1.7100 pH Units N/a 8.1 >6 To be To be Acid Neutralisation Capacity mol/kg (+/-) < 1 < 1 Limit values for compliance leaching test Cumulative 10:1 **Eluate Analysis** using BS EN 12457-3 at L/S 10 l/kg 10:1 mg/l mg/kg (mg/kg) Arsenic^l < 0.01 < 0.1 0.5 25 Barium^U < 0.02 < 0.2 20 100 300 < 0.0005 < 0.005 0.04 5 Cadmium^l Chromium^u < 0.005 < 0.05 0.5 10 70 50 0.01 0.1 100 Copper^l 0.01 < 0.0005 Mercury^l < 0.005 0.2 0.002 0.5 10 30 <u>Molybdenum^u</u> 0.02 Nickel^U < 0.007 < 0.07 0.4 10 40 Lead^U < 0.005 < 0.050.5 10 50 < 0.005 < 0.05 0.06 0.7 5 Antimony 0.023 0.23 0.1 0.5 Selenium^l Zinc^U < 0.005 4 50 200 < 0.05 4.0 800 25000 15000 Chloride 40 < 0.5 10 500 Fluoride^L < 5 150 Sulphate^L 47.7 477 1000 20000 50000 TDS 123 1230 4000 60000 100000 Phenol Index < 0.01 < 0.1 4.4 43.7 500 800 1000 Leach Test Information Sample Mass (kg) 0.10 87.5 Dry Matter (%) Moisture (%) Stage 1 Volume Eluate L10 (litres) 0.89

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received portion

Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepencies with current legislation

M Denotes MCERTS accredited test

U Denotes ISO17025 accredited test



DETS Ltd Lenham Heath Maidstone Kent ME17 2JN



Tel: 01622 850410

DETS Report No: 20-10989		Date Sampled	27/08/20		Landfill Was	te Acceptance (Criteria Lim
Geosphere Environmental Ltd		Time Sampled	None Supplied				
Site Reference: Twickenham	Riverside	TP / BH No	BH01A + BH01B			Stable Non-	
Project / Job Ref: 4955,SI		Additional Refs	Composite		Inert Waste	reactive HAZARDOUS	Hazardoi Waste
Order No: 4955,SI (JD)		Depth (m)	0.20 - 0.80		Landfill	waste in non- hazardous Landfill	Landfil
Reporting Date: 02/10/2020		DETS Sample No	500434			Lunami	
Determinand	Unit	MDL					
FOC ^{MU}	%	< 0.1	0.5		3%	5%	6%
oss on Ignition	%	< 0.01	1.90				10%
BTEX ^{MU}	mg/kg	< 0.05	< 0.05		6		
Sum of PCBs	mg/kg	< 0.1	< 0.1		1		
Mineral Oil ^{MU}	mg/kg	< 10	< 10		500		
Total PAH ^{MU}	mg/kg	< 1.7	2.1		100		
oH ^{MU}	pH Units	N/a	8.3			>6	To bo
Acid Neutralisation Capacity	mol/kg (+/-)	< 1	< 1			To be evaluated	To be evaluate
			40.4	Cumulative	Limit values	for compliance	
Eluate Analysis			10:1	10:1		N 12457-3 at I	
-			mg/l	mg/kg		(mg/kg)	
Arsenic ^U			< 0.01	< 0.1	0.5	2	25
Barium ^U			< 0.02	< 0.2	20	100	300
Cadmium ^U			< 0.0005	< 0.005	0.04	1	5
Chromium ^U			< 0.005	< 0.05	0.5	10	70
Copper ^U			0.01	0.1	2	50	100
Mercury ^U	╛		< 0.0005	< 0.005	0.01	0.2	2
Molybdenum ^U	_		0.003	0.03	0.5	10	30
Nickel ^U	_		< 0.007	< 0.07	0.4	10	40
_ead ^U	_		< 0.005	< 0.05	0.5	10	50
Antimony ^U	_		< 0.005	< 0.05	0.06	0.7	5
Selenium ^U	_		< 0.005	< 0.05	0.1	0.5	7
Zinc ^U	⊣		< 0.005	< 0.05	4	50	200
Chloride ^U	⊣		5.4	54	800	15000	25000
Fluoride ^U	_		< 0.5	< 5	10	150	500
Sulphate ^U	4		13.4	134	1000	20000	50000
TDS	4		104	1040	4000	60000	100000
Phenol Index	4		< 0.01	< 0.1	1		-
DOC			6	59.5	500	800	1000
Leach Test Information					4		
	_				4		
					4		
					-		
Sample Mass (kg)			0.10		-		
Sample Mass (kg)			0.10		-		
Ory Matter (%)			94.4		-		
Moisture (%)			6		-		
Ctaga 1			i		_		
Stage 1			በ በበ				
Stage 1 Volume Eluate L10 (litres)			0.90		4		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received Proprior Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepencies with current legislation M Denotes MCERTS accredited test U Denotes ISO17025 accredited test





Soil Analysis Certificate - Sample Descriptions

DETS Report No: 20-10989

Geosphere Environmental Ltd

Site Reference: Twickenham Riverside

Project / Job Ref: 4955,SI

Order No: 4955,SI (JD)

Reporting Date: 02/10/2020

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
\$ 500425	BH1	Disturbed	4.00	10.4	Light brown sand with stones
\$ 500426	BH1	Disturbed	10.50	16.3	Brown clay
\$ 500427	BH1	Disturbed	18.00	15.3	Brown clay
\$ 500428	BH1	Disturbed	24.00	9.5	Brown clay
\$ 500429	BH2	Disturbed	2.00	10.9	Brown sandy clay
\$ 500430	BH2	Disturbed	7.50	13.7	Brown sandy clay
\$ 500431	BH2	Disturbed	13.50	11.3	Brown clay
\$ 500432	BH2	Disturbed	19.50	14.8	Brown sandy clay
\$ 500433	BH1 + BH2	Composite	2.0 - 24.0	12.5	Brown sandy clay
\$ 500434	BH01A + BH01B	Composite	0.20 - 0.80	5.6	Brown sandy gravel with stones
\$ 500435	BH2	Disturbed	1.20	12.8	Brown sandy clay with stones and concrete

Moisture content is part of procedure E003 & is not an accredited test Insufficient Sample $^{\mbox{\tiny I/S}}$

& samples received in inappropriate containers for hydrocarbon analysis

\$ samples exceeded recommended holding times





Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 20-10989

Geosphere Environmental Ltd

Site Reference: Twickenham Riverside

Project / Job Ref: 4955,SI

Order No: 4955,SI (JD)

Reporting Date: 02/10/2020

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR		Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D		Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR		Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cvanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR		Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR		Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	C12-C16, C16-C21, C21-C40)		E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE	E002
Soil	AR	Mineral Oil (C10 - C40)	cartridge	E004
Soil	AR D		Moisture content; determined gravimetrically	E003
Soil Soil	D	Organic Matter	Determination of nitrate by extraction with water & analysed by ion chromatography Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E009 E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D		Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D		Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D		Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR		Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR		Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)		E004
Soil	AR		Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried AR As Received

Parameter	Matrix Type	Suite Reference	Expanded Uncertainity Measurement	Unit
TOC	Soil	BS EN 12457	13.49	%
Loss on Ignition	Soil	BS EN 12457	17	%
BTEX	Soil	BS EN 12457	14	%
Sum of PCBs	Soil	BS EN 12457	23	%
Mineral Oil	Soil	BS EN 12457	9	%
Total PAH	Soil	BS EN 12457	20	%
pН	Soil	BS EN 12457	0.399	Units
Acid Neutralisation Capacity	Soil	BS EN 12457	18	%
Arsenic	Leachate	BS EN 12457	16.63	%
Barium	Leachate	BS EN 12457	14.29	%
Cadmium	Leachate	BS EN 12457	14.44	%
Chromium	Leachate	BS EN 12457	18.06	%
Copper	Leachate	BS EN 12457	21.27	%
Mercury	Leachate	BS EN 12457	24.13	%
Molybdenum	Leachate	BS EN 12457	12.55	%
Nickel	Leachate	BS EN 12457	20.08	%
Lead	Leachate	BS EN 12457	13.43	%
Antimony	Leachate	BS EN 12457	18.85	%
Selenium	Leachate	BS EN 12457	18.91	%
Zinc	Leachate	BS EN 12457	13.71	%
Chloride	Leachate	BS EN 12457	16	%
Fluoride	Leachate	BS EN 12457	19.4	%
Sulphate	Leachate	BS EN 12457	19.63	%
TDS	Leachate	BS EN 12457	12	%
Phenol Index	Leachate	BS EN 12457	14	%
DOC	Leachate	BS EN 12457	10	%
Clay Content	Soil	BS 3882: 2015	15	%
Silt Content	Soil	BS 3882: 2015	14	%
Sand Content	Soil	BS 3882: 2015	13	%
Loss on Ignition	Soil	BS 3882: 2015	17	%
рН	Soil	BS 3882: 2015	0.399	Units
Carbonate	Soil	BS 3882: 2015	16	%
Total Nitrogen	Soil	BS 3882: 2015	12	%
Phosphorus (Extractable)	Soil	BS 3882: 2015	24	%
Potassium (Extractable)	Soil	BS 3882: 2015	20	%
Magnesium (Extractable)	Soil	BS 3882: 2015	26	%
Zinc	Soil	BS 3882: 2015	14.9	%
Copper	Soil	BS 3882: 2015	16	%
Nickel	Soil	BS 3882: 2015	17.7	%
Available Sodium	Soil	BS 3882: 2015	23	%
Available Calcium	Soil	BS 3882: 2015	23	%
Electrical Conductivity	Soil	BS 3882: 2015	10	%





Geosphere Environmental Ltd Unit 11 Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ





i2 Analytical Ltd.
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Herts,
WD18 8YS

t: 01923 225404 **f:** 01923 237404

e: reception@i2analytical.com

Analytical Report Number: 20-30535

Project / Site name: Twickenham Riverside - Diamond

Jubilee Gardens, Twickenham

Your job number: 4955,SI

Your order number: 5218.CO V1-JD

Report Issue Number: 1

Samples Analysed: 4 water samples

Samples received on: 17/09/2020

Samples instructed on/

Analysis started on:

18/09/2020

Analysis completed by:

24/09/2020

Report issued on:

24/09/2020

Signed: Keroline Harel

Karolina Marek

PL Head of Reporting Team

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

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies.

An estimate of measurement uncertainty can be provided on request.





Analytical Report Number: 20-30535

Project / Site name: Twickenham Riverside - Diamond Jubilee Gardens, Twickenham

Your Order No: 5218.CO V1-JD							
Lab Sample Number				1622471	1622472	1622473	1622474
Sample Reference				BH01 (shallow)	BH01 (deep)	BH02 (shallow)	BH02 (deep)
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				5.50	6.00	2.50	12.50
Date Sampled				17/09/2020	17/09/2020	17/09/2020	17/09/2020
Time Taken				1225	1225	1225	1225
			>				
		Limit of detection	Accreditation Status				
Analytical Parameter	_	9	dit				
(Water Analysis)	Units	de	ă:				
, , ,	-	ect	n St				
		9	atus				
		l .	VI				
General Inorganics							
pH	pH Units	N/A	ISO 17025	7.4	_	7.2	7.9
Temperature on Receipt	oC	0.1	NONE	9.1	9.1	9.1	9.1
Total Cyanide (Low Level 1 µg/l)	μg/l	1	ISO 17025	< 1.0	-	< 1.0	< 1.0
Free Cyanide (Low Level 1 µg/l)	μg/l	1	ISO 17025	< 1	-	< 1	< 1
Chloride	mg/l	0.15	ISO 17025	39	36	50	300
	<u> </u>						
Dissolved Oxygen	mg/l	1	NONE	2.7	4.1	1.8	2.4
		B					
Total Phenois							
Total Phenols (monohydric)	μg/l	10	ISO 17025	< 10	-	< 10	< 10
				<u>.</u>			
Speciated PAHs							
Naphthalene	μg/l	0.01	ISO 17025	< 0.01	_	< 0.01	< 0.01
Acenaphthylene	μg/l	0.01	ISO 17025	< 0.01	-	< 0.01	< 0.01
Acenaphthene	μg/l	0.01	ISO 17025	< 0.01	-	< 0.01	< 0.01
Fluorene	μg/l	0.01	ISO 17025	< 0.01	-	< 0.01	< 0.01
Phenanthrene	μg/l	0.01	ISO 17025	< 0.01	-	< 0.01	< 0.01
Anthracene	μg/l	0.01	ISO 17025	< 0.01	-	< 0.01	< 0.01
Fluoranthene	μg/l	0.01	ISO 17025	< 0.01	-	< 0.01	< 0.01
Pyrene	μg/l	0.01	ISO 17025	< 0.01	-	< 0.01	< 0.01
Benzo(a)anthracene	μg/l	0.01	ISO 17025	< 0.01	-	< 0.01	< 0.01
Chrysene	μg/l	0.01	ISO 17025	< 0.01	-	< 0.01	< 0.01
Benzo(b)fluoranthene	μg/l	0.01	ISO 17025	< 0.01	-	< 0.01	< 0.01
Benzo(k)fluoranthene	μg/l	0.01	ISO 17025	< 0.01	-	< 0.01	< 0.01
Benzo(a)pyrene	μg/l	0.01	ISO 17025	< 0.01	-	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	μg/l	0.01	ISO 17025	< 0.01	-	< 0.01	< 0.01
Dibenz(a,h)anthracene	μg/l	0.01	ISO 17025	< 0.01	-	< 0.01	< 0.01
Benzo(ghi)perylene	μg/l	0.01	ISO 17025	< 0.01	-	< 0.01	< 0.01
Total PAH							
Total EPA-16 PAHs	μg/l	0.16	ISO 17025	< 0.16	-	< 0.16	< 0.16
Heavy Metals / Metalloids						ı	
Boron (dissolved)	μg/l	10	ISO 17025	240	-	140	1100
Chromium (hexavalent)	μg/l	5	ISO 17025	< 5.0	-	< 5.0	< 5.0
		-					1
Arsenic (dissolved)	μg/l	0.15	ISO 17025	< 0.15	-	0.37	2.82
Barium (dissolved)	μg/l	0.06	ISO 17025	44	-	72	72
Beryllium (dissolved)	μg/l 	0.1	ISO 17025	< 0.1	-	< 0.1	< 0.1
Cadmium (dissolved)	μg/l 	0.02	ISO 17025	0.03	-	0.03	0.03
Chromium (dissolved)	μg/l "	0.2	ISO 17025	5.3	-	9.9	3
Copper (dissolved)	μg/l 	0.5	ISO 17025	0.6	-	3.5	2.2
Lead (dissolved)	μg/l 	0.2	ISO 17025	< 0.2	-	0.3	< 0.2
Mercury (dissolved)	μg/l	0.05	ISO 17025	< 0.05	-	< 0.05	< 0.05
Molybdenum (dissolved)	μg/l	0.05	ISO 17025	2.4	-	3.9	7.5
Nickel (dissolved)	μg/l	0.5	ISO 17025	7.8	-	6	4.2
Selenium (dissolved)	μg/l	0.6	ISO 17025	4.5	-	8.4	22
Vanadium (dissolved)	μg/l	0.2	ISO 17025	< 0.2	-	< 0.2	3.8
Zinc (dissolved)	μg/l	0.5	ISO 17025	6.2	-	6.8	8





Analytical Report Number: 20-30535

Project / Site name: Twickenham Riverside - Diamond Jubilee Gardens, Twickenham

Your Order No: 5218.CO V1-JD

Lab Sample Number	1622471	1622472	1622473	1622474			
Sample Reference	BH01 (shallow)	BH01 (deep)	BH02 (shallow)	BH02 (deep)			
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied			
Depth (m)				5.50	6.00	2.50	12.50
Date Sampled				17/09/2020	17/09/2020	17/09/2020	17/09/2020
Time Taken		•		1225	1225	1225	1225
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				
Petroleum Hydrocarbons							
TPH1 (C10 - C40)	μg/l	10	NONE	< 10	-	< 10	< 10

 $\label{eq:U/S} \text{U/S} = \text{Unsuitable Sample} \qquad \text{I/S} = \ \text{Insufficient Sample}$





Analytical Report Number: 20-30535

Project / Site name: Twickenham Riverside - Diamond Jubilee Gardens, Twickenham

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
Complex cyanide (Low level) in water	Determination of complex cyanide by calculation. Accredited matrices SW, PW, GW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	w	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
TPH1 (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS.	In-house method	L070-PL	W	NONE
Low level total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025
Free cyanide (low level) in water	Determination of free cyanide by distillation followed by colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Temperature on Receipt (water)	Temperature of water upon receipt.	In-house method	L019-UK	W	NONE
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025

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.



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UKAS
TESTING

DATE ISSUED: 29/09/2020

Contract	Twickenham Riversi	le		
Serial No.	37489_1			
Client: Geospho	ere Environmental Ltd	Se	oil Property	Testing Ltd
Head Off Brightwe Ipswich F Brightwe Suffolk IP10 OBJ	ll Barns Road	Sti Ca En	16, 18 Halcyon Court, keley Meadows, Hunt mbridgeshire, PE29 6D Tel: 01480 455579 Tel: enquiries@soilproperityte	ingdon, G ertytesting.com
Samples Submitte	ed By:	Appro	ed Signatories:	
Geospho	ere Environmental Ltd			B.Eng (Hons) FGS Director & Quality Manager
Samples Labelled			Chairman	
Twicken	ham Riverside		□ D. Sabnis	one ab Manager s Manager
Date Received:	14/09/2020	Samples Teste	Between: 14/09/20	020 and 29/09/2020
	attention of Jim Dawso ference No: 4955,SI	n		
Notes:	All	Al- f Al- :		forther 24 days from haden
1	all remaining samples or unless we are notified to		contract will be disposed o	i aiter 21 days from today,
2	(a) UKAS - United King(b) Opinions and inter		Service. d herein are outside the sco	ope of UKAS accreditation.
3	Tests marked "NOT UKA: Schedule for this testing		is test report are not includ	ed in the UKAS Accreditation
4	This test report may not issuing laboratory.	e reproduced oth	r than in full except with th	e prior written approval of the



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0998

Contra	act		Twicke	nha	m l	Rive	ersi	de															
Serial	No.		37489_	1														T	arg	et C	ate		28/09/2020
Sched	uled I	Ву	Geosph	eosphere Environmental Ltd																•			
								SCI	HEI	DU	LE (OF	LAE	3OI	RA1	ΓΟΙ	RY T	ΓES	TS				
Sched	ule Re	emarks																					
Bore Hole No.	Туре	Sample Ref.	Top Depth	/9	aride 2	itiatial to	Jation (est)	ontent addid to	311 1851 1851 10	a) jurits													Sample Remarks
BH1	В	6	5.00	1																			
BH1	U	8	7.50		1																		
BH1	D	9	7.55			1	1																
BH1	U	14	13.50		1																		
BH1	D	15	13.55			1	1																
BH1	U	17	16.50		1																		
BH1	D	21	19.55			1	1																
BH1	U	25	24.00		1																		
BH2	D	4	4.00			1	1																
BH2	U	5	5.00		1																		
BH2	U	12	10.50		1																		
BH2	D	13	10.55			1	1																
BH2	U	18	16.50		1																		
BH2	D	19	16.55			1	1																
BH2	U	21	19.50		1																		
BH2	U	25	24.00		1																		
		Totals		1	9	6	6																End of Schedule



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0998

Contract	Twickenham Riverside
Serial No.	37489_1

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

l l				Water	Liquid	Plastic	Plasti-	Liquid-	S	ample Pr	eparation			
Borehole	Depth	Туре	Ref.	Content	Limit	Limit	city	ity	Method	Ret'd	Corr'd	Curing	Description	Class
/Pit No.	()			(0/)			Index	Index		0.425mm	W/C	Time	·	
	(m)			(%)	(%)	(%)	(%)			(%)	<0.425mm	(hrs)		
BH1	7.55	D	9	28.5	76	26	50	0.05	From Natural	0 (A)		67	Very stiff fissured dark greyish brown CLAY.	CV
BH1	13.55	D	15	25.2	72	24	48	0.03	From Natural	0 (A)		68	Very stiff fissured dark greyish brown CLAY.	CV
BH1	19.55	D	21	26.6	75	26	49	0.01	From Natural	0 (A)		68	Very stiff fissured dark greyish brown CLAY.	CV
BH2	4.00	D	4	31.5	79	27	52	0.09	From Natural	0 (A)		68	Stiff dark greyish brown CLAY.	CV
BH2	10.55	D	13	27.2	70	25	45	0.05	From Natural	0 (A)		67	Very stiff fissured dark greyish brown CLAY.	CH/CV
BH2	16.55	D	19	27.4	74	25	49	0.05	From Natural	0 (A)		68	Very stiff fissured dark greyish brown CLAY.	CV

Method Of Preparation:

BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2

Method of Test:

BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:3.2, 4.4, 5.3, 5.4

Type of Sample Key:

U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Table Notation: Ret'd 0.425mm: (A) = Assumed, (M) = Measured



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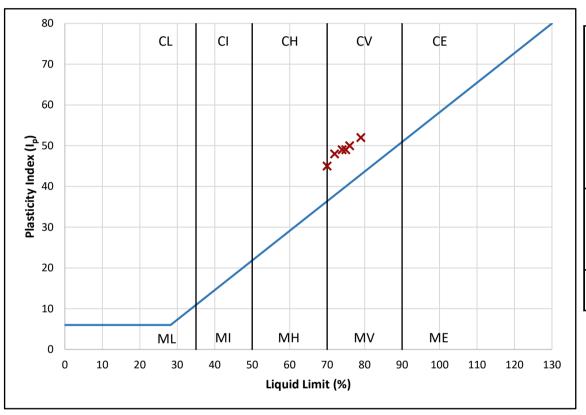


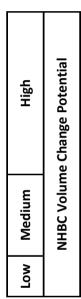
Contract	Twickenham	Riverside
----------	------------	-----------

Serial No. 37489 1

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING **CASAGRANDE CLASSIFICATION CHART**

		Plasticit	у	
Low	Medium	High	Very High	Extremely High





Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS 1377: Part 2: 1990: 4.2

Method of Test: BS1377: Part 2: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index



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Contract		Twick	enham Ri	verside																	
Serial No.		37489	_1																		
		DET		TION OF W			-						MIT	T AND)						
Borehole / Pit No.	Depth m		Sample Reference	Water Content		Description										Remarks					
BH1	7.55	D	9	28.5	Very stiff fi	issured da	ırk greyi:	sh br	own CLAY.												
			1	PREPARATI	ON					Liqu	uid Lim	it	<u> </u>				76 9				
Method of p	prepa	aration	l					Fr	om natura	l Plas	stic Lim	nit					26 9				
Sample reta	ained	0.425	mm sieve	(Assur	ned)				0 %	Plas	sticity I	ndex	(50 9				
Corrected w	vater	conte	nt for mat	erial passing	g 0.425m	ım			_	Liqu	uidity I	ndex					0.05				
Sample reta	ained	2mm	sieve	(Assur	ned)				0 %	NHI	ВС Мо	dified	d (I'p	o)			n/a				
Curing time	!		67	7 hrs	Clay	Conten	t No	ot ar	nalysed	Der	ived A	ctivit	у			Not ar	nalysed				
C=CLAY	eday.	70 60 50		CL	CI		СН		cv		CE					High	Change Potential				
Plasticity In % (Ip)	iaex	30														Medium	NHBC Volume Cha				
ľ		20														Low	N N H				
M=SILT		0 0	10	ML 20 30	MI 40		MH 60	70	MV 80	90	ME 100	110	0	120	Li	quid I	Limit %				
	L							_		city Cha	rt BS5930				J						

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:



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Contract		Twick	enham	n Riv	erside													0998		
Serial No.		37489		I IXIV	er side															
		DET	ERMIN		ON OF W			-						MIT	AND)				
Borehole / Pit No.	Depth m		Sample Refere		Water Content (W) %	OFFLA	Description									Remarks				
BH1 1	13.55		15		25.2	Very stiff fi	ssured d	ark grey	yish br	own CLAY.										
•				PF	REPARATION	ON					Lic	uid Lim	it	<u> </u>				72 %		
Method of p	prepa	aration	1						Fr	om natur	al Pla	stic Lim	nit					24 %		
Sample reta	ained	0.425	mm sie	ve	(Assun	ned)				0 %	Pla	sticity I	ndex					48 %		
Corrected w	vater	conte	nt for n	nater	ial passing	g 0.425m	m				Lic	uidity I	ndex					0.03		
Sample reta	ained	2mm	sieve		(Assun	ned)				0 %	NH	IBC Mo	dified	(l'p)			n/a		
Curing time				68	hrs	Clay (Conter	nt !	Not ar	nalysed	De	rived A	ctivity	,			Not ar	nalysed		
		70				ļ										1				
C=CLAY		70			CL	CI		СН		CV		CE	/							
		60						-									ج ا	tial		
		50															High	Change Potential		
Plasticity In	·day									× /								ange [
%	luex	40															_	a)		
(Ip)		30															Medium	NHBC Volum		
		20																뒬		
		10															Low			
M=SILT					ML	MI		МН		MV		ME								
		0 -	10	20			50	60	70		90	100	110	:	 120	Li	quid L	imit %		
	L									Plas	ticity Ch	art BS593	0: 2015:	Figur	re 8	J				

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:



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Contract		Twick	enham Riv	erside												
Serial No.		37489														
			_													
		DET				-				ND PLASTIC LIMI	T AND)				
Borehole / Pit No. Depth Sample				Water Content	OF PLAS	OF PLASTICITY INDEX AND LIQUIDITY INDEX Description										
	m	Туре	Reference	(W) %												
BH1 1	19.55	5 D	21	26.6	Very stiff fiss	sured dark g	reyish t	orown CLAY.								
		•	P	REPARATIO	ON					Liquid Limit			75 %			
Method of p	prep	aration	1				F	rom natu	ural	Plastic Limit			26 %			
Sample reta	ined	0.425	mm sieve	(Assun	ned)			0 %	ć	Plasticity Index			49 %			
Corrected w	vater	conte	nt for mate	rial passing	g 0.425mr	n				Liquidity Index			0.01			
Sample reta	ined	l 2mm	sieve	(Assun	ned)			0 %	Ś	ا'۱) NHBC Modified	p)		n/a			
Curing time			68	hrs	Clay C	ontent	Not a	analysed		Derived Activity		Not	analysed			
	ſ	_							•							
C=CLAY		70		CL	CI	СН		CV		CE						
		60		CL	Ci			C V					 			
												High	Change Potential			
		50						×					ge Po			
Plasticity In	dex	40											Chan			
%												E	a)			
(lp)		30										Medium	NHBC Volum			
		20										_	H RHB			
												× o				
ı		10										<u> </u>				
M=SILT		0		ML	MI	MH	l	MV		ME						
		0	10	20 30	40 5	60	7	0 80	9	90 100 110	120	Liqui	d Limit %			

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

Plasticity Chart BS5930: 2015: Figure 8



ISSUED BY SOIL PROPERTY TESTING LTD DATE ISSUED: 29/09/2020



Contract		Twick	enham Riv	erside									
Serial No.		37489	_1										
	<u>'</u>	DET						ND PLASTIC LIMIT AI	ND				
Borehole / Pit No.	Depth		Sample	Water Content	Water Content Description								
BH2 4.00 D 4				(W) % 31.5	Stiff dark gre								
			PI	REPARATIO	ON			Liquid Limit			79 %		
Method of p	prepa	aration					From natural	Plastic Limit			27 %		
Sample reta	ained	0.425	mm sieve	(Assun	ned)		0 %	Plasticity Index			52 %		
Corrected w	vater	conte	nt for mate	rial passing	g 0.425mm	า		Liquidity Index			0.09		
Sample reta	ained	2mm	sieve	(Assun	ned)		0 %	NHBC Modified (I'p)			n/a		
Curing time			68	hrs	Clay Co	ontent Not	analysed	Derived Activity		Not ar	nalysed		
C=CLAY		70 60 50		CL	CI	СН	CV ×	CE		High	Change Potential		
Plasticity In %	idex	40								 un			
(lp)		20								Medium	NHBC Volume		
		10								Low			
M=SILT		0 0	10 2	ML 0 30	MI 40 5	MH 0 60	MV 70 80	ME 90 100 110 120	Li	quid l	imit %		

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

Plasticity Chart BS5930: 2015: Figure 8



ISSUED BY SOIL PROPERTY TESTING LTD DATE ISSUED: 29/09/2020



Contract		Twick	enhan	n Rive	erside															
Serial No.		37489																		
		DET	TERMIN					-				ND PLAST		/IIT	AND)				
Borehole / Pit No. Depth Sample					Water Content (W) %	Description										Remarks				
BH2 1	m 10.55		13		27.2	Very stiff fi	ssured	dark gre	yish bı	own CLAY.										
				PR	EPARATIO	ON						Liquid Lim	nit					70 %		
Method of p	prepa	aration	1						Fr	om natı	ural	Plastic Lin	nit					25 %		
Sample reta	ained	0.425	mm sie	ve	(Assun	ned)				0 %	,	Plasticity	Index					45 %		
Corrected w	vater	conte	nt for n	nater	ial passing	g 0.425m	ım					Liquidity I	ndex					0.05		
Sample reta	ained	2mm	sieve		(Assun	ned)				0 %	, 5	NHBC Мо	dified	(l'p)				n/a		
Curing time				67	hrs	Clay	Conte	ent	Not ar	nalysed		Derived A	ctivity				Not ar	nalysed		
C=CLAY		70 60 50			CL	CI		СН		CV		CE			-		High	Change Potential		
Plasticity In %	idex	40							*								ш	a)		
(Ip)		30															Medium	NHBC Volum		
		10															Low	Z		
M=SILT		0 0	10	20	ML) 30	MI 40	50	MH 60	70	MV 80		ME 90 100	110	1	20	Lic	quid L	imit %		
	L									Pla	asticit	y Chart BS593	0: 2015:	Figure	e 8					

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:



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Contract	-	Twick	enham P	Riverside												
Serial No.	3	37489	_1													
		DET		TION OF W		-						T AND)			
/ Pit No.	epth m		Sample Reference	Water Content	OTTERS	OF PLASTICITY INDEX AND LIQUIDITY INDEX Description							Remarks			
	6.55		19	27.4	Very stiff fissured dark greyish brown CLAY.											
				PREPARATI	ON				Liquid	Limit	1				74 9	
Method of preparation From natural Plastic															25 %	
Sample retai	ined	0.425	mm sieve	(Assur	ned)			0 %	Plastici	ty Inc	lex	49 %				
Corrected wa	ater	conte	nt for ma	terial passing	g 0.425mr	n		_	Liquidi	ty Ind	ex		0.05			
Sample retai	ined	2mm	sieve	(Assur	ned)			0 %	NHBC	Modif	ied (I	p)			n/a	
Curing time			6	58 hrs	Clay C	ontent	Not a	analysed	Derive	d Acti	vity			Not ar	nalysed	
C=CLAY		70 60 50		CL	CI	СН		cv ×	С	EE /				High	Change Potential	
Plasticity Inc % (Ip)	dex	30												Medium	NHBC Volume Cha	
l		20												Low	NHBC	
M=SILT		10		ML	MI	МН		MV		1E				ا امانا		
		0	10	20 30	40 5	50 60	7		90 1		110	120	֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	quia i	Limit %	

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:





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DATE ISSUED: 29/09/2020

Contract	Twick	kenhan	n Riverside										
Serial No.	3748	9_1											
			DETI	ERMINA	TION OF I	PARTICLE	SIZE DI	STRIBU	TION				
Borehole / Pit No.	Depth (m)	Туре	Sample Reference			Descrip	otion				Remarks		
BH1	5.00 - 5.40	В	6		Yellowish brown slightly silty SAND and black, brown and white angular to subrounded chert with occasional yellowish brown and white quartzite GRAVEL								
Method o	f Test:		Wet Sieve	е	Method	of Pretrea	itment:			Not requ	uired		
100 90 80 70 60 50 50 40 40 40 40 10													
C	0.00	2 0.	006 0.02	0.06	0.2 Pa	0.6 rticle Size (2 (mm)	6	20	60	200	600	

	CLAV	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS	
	CLAY		SILT			SAND			GRAVEL		COBBLES	BOOLDERS	
_		1	6:1: 1								- 1	1	Π

Н	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
y d			
r			
0			
m			Clay by
e			Dry Mass
t			(%)
е			
r			

	Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
	2.00	47	
l	1.18	43	
	0.600	32	
	0.425	20	46
	0.300	11	40
	0.212	6	
l	0.150	3	
	0.063	1	

Fines By Dry Mas	ss (%)
<0.063mm	1

Sieve Size (mm)	Passing (%)	2mm+ By Dry Mass (%)
300		
125		
90		
63	96	
50	96	
37.5	90	53
28	81	33
20	74	
14	62	
10	58	
6.3	54	
5	52	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5

Method of test: BS1377: Part 2: 1990: 9.2

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:



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1998

	Contract	Twickenham Riverside
ı	Serial No.	37489 1

37469_1												
	DETERM	IINAT	ION OF D	ENSITY	, WAT	ER CON	NTENT A	ND UN	DRAINE	D SHE	AR STR	ENGTH IN TRIAXIAL
							T MEAS					
Borehole	Depth			Water Content	Bulk Density	Dry Density	Lateral Pressure	Deviator Stress	Shear Stress		Circle lysis	
/Pit No.	(m)	Type	Reference	(%)	(Mg/m³)	(Mg/m³)	(kPa)	(kPa)	(kPa)	Cu (kPa)	Ø degrees	Description
BH1	7.59	U	8	31.0	1.95	1.49	147	196	98			Stiff (high strength) fissured dark greyish brown CLAY with rare silt pockets
BH1	13.61	U	14	25.4	2.02	1.61	261	276	138			Stiff (high strength) fissured dark greyish brown CLAY with rare shell/fossil fragments
BH1	16.58	U	17	27.0	2.02	1.59	320	300	150			Very stiff (very high strength) fissured dark greyish brown CLAY with rare silt pockets and iron pyrite fragments
BH1	24.12	U	25	26.5	2.00	1.58	473	517	259			Very stiff (very high strength) fissured dark greyish brown CLAY with rare silt pockets
BH2	5.11	U	5	29.1	2.00	1.55	106	184	92			Stiff (high strength) fissured dark greyish brown CLAY
BH2	10.58	U	12	25.8	2.02	1.61	200	417	209			Very stiff (very high strength) fissured dark greyish CLAY
BH2	16.59	U	18	28.5	1.96	1.53	316	160	80			Very stiff (high strength) fissured dark greyish brown CLAY with rare silt pockets

Method of Preparation:

BS 1377: Part 1: 1990: 7.4.2 & 8, Part 2: 1990: 7.2, Part 7: 1990: 8.3

Method of Test:

BS 1377: Part 2: 1990:3 Determination of Moisture Content, Part2: 1990:7 Determination of Density, Part 7: 1990: 8 Undrained Shear

Strenth, 9 Multistage Loading

Type of Sample Key:

U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: Remarks to Include:

Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven

drying temperature if not 105-110°C



ISSUED BY SOIL PROPERTY TESTING LTD DATE ISSUED: 29/09/2020



Contract **Twickenham Riverside**

37489_1 Serial No.

DETERMINATION OF DENSITY, WATER CONTENT AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL

	COMPRESSION WITHOUT MEASURMENT OF PORE PRESSURE												
Borehole	Depth			Water	Bulk	Dry	Lateral	Deviator	Shear		Circle		
/Pit No.		Type	Reference	Content		Density	Pressure	Stress	Stress	Ana		Description	
,	(m)			(%)	(Mg/m³)	(Mg/m³)	(kPa)	(kPa)	(kPa)	Cu (kPa)	Ø degrees		
BH2	19.61	U	21	27.7	1.97	1.54	370	269	135			Stiff (high strength) fissured dark greyish brown CLAY	
BH2	24.08	U	25	26.9	1.99	1.57	466	603	302			Hard (extremely high strength) fissured dark greyish brown CLAY	
			BS 1377: Par										

Method of Preparation: BS 1377: Part 1: 1990: 7.4.2 & 8, Part 2: 1990: 7.2, Part 7: 1990: 8.3

Method of Test: BS 1377: Part 2: 1990:3 Determination of Moisture Content, Part2: 1990:7 Determination of Density, Part 7: 1990: 8 Undrained Shear

Strenth, 9 Multistage Loading

Type of Sample Key:

Comments:

U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven Remarks to Include:

drying temperature if not 105-110°C

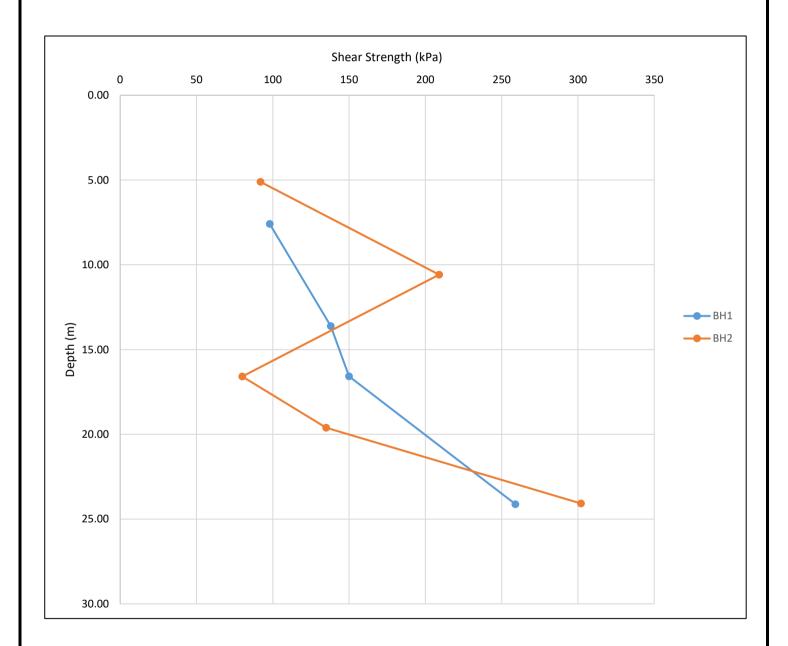


ISSUED BY SOIL PROPERTY TESTING LTD DATE ISSUED: 29/09/2020



Contract Twickenham Riverside
Serial No. 37489_1

SHEAR STRENGTH VS DEPTH BELOW GROUND LEVEL



Method of Preparation: BS 1377: Part 1: 1990

Method of Test: BS 1377: Part7: 1990:8 Definitive Method, 1990:9 Multi-stage loading

Type of Sample Key: U - Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Remarks to Include: Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original

sample, oven drying temperature if not 105-110°C



TEST INFORMATION

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD **DATE ISSUED: 29/09/2020**



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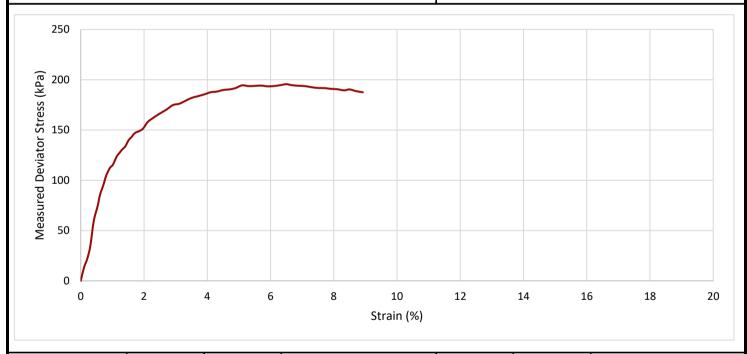
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Contract Twickenham Riverside 37489_1 Serial No.

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT **OF PORE PRESSURE Borehole** Depth (m) Type Reference Description Remarks /Pit No. Stiff (high strength) fissured dark greyish brown CLAY with rare silt BH1 7.50 U 8 **Initial Specimen** Height Diameter Weight Water Content **Bulk Density Dry Density** Depth of (mm) (%) (Mg/m³)(Mg/m³)(mm) (g) Top of Specimen 199.2 102.5 3204 31.0 1.95 1.49 (m) 7.59

% per Min

Rubber Membrane Thickness



Specimen at failure	Measured Cell		Stress Corre	ections (kPa)	Corrected Max.	Shear Stress Cu,	Mohrs Circle Analysis		
Specimen at familie	Pressure, σ3 (kPa)	Strain at Failure (%)	Rubber Membrane	Piston Friction	Deviator Stress, (σ1-σ3)f (kPa)	½(σ1-σ3)f (kPa)	Cu (kPa)	PHI (degrees)	
	147	6.5	0.5	_	196	98			

Method of Preparation: BS 1377: Part 1: 1990

BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading Method of Test:

Rate of Strain

1.0

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: **Tested in Vertical Condition**

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying



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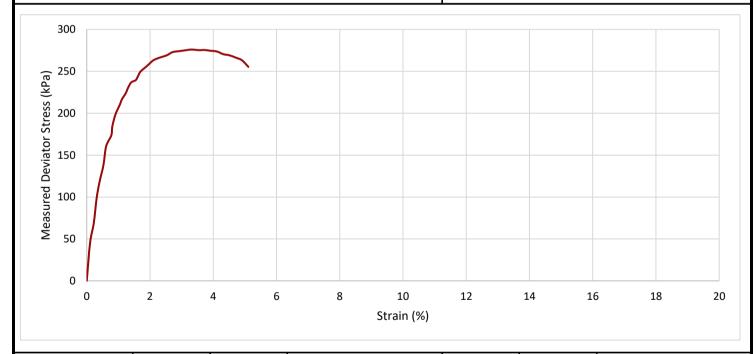
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Contract	Twickenham Riverside
Serial No.	37489_1

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

	OF PORE PRESSURE											
Borehole /Pit No.	Depth (m)	Type	Referer	nce	R	Remarks						
BH1	13.50	U	14	, , ,	Stiff (high strength) fissured dark greyish brown CLAY with rare shell/fossil fragments Premature failure at 3.3% stra							
Initial S	pecimen	He	ight	Diameter	Weight	Water Content	Bulk Density	Dry Density				
	Depth of	Depth of (m		(mm)	(g)	(%)	(Mg/m³)	(Mg/m³)				
	Top of Specimen (m) 13.61	19	9.4	103.0	3354	25.4	2.02	1.61				
TECT INIE			5		0/ 84:	D 11 A4 1	- 1 · 1	0.0				

TEST INFORMATION Rate of Strain 1.0 % per Min Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell	Strain at Failure (%)	Stress Corre	ections (kPa)	Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis		
Specimen at failure	Pressure, σ3 (kPa)		Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)	
	261	3.3	0.3	\	276	138			

Method of Preparation: BS 1377: Part 1: 1990

Method of Test: BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: Tested in Vertical Condition

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying



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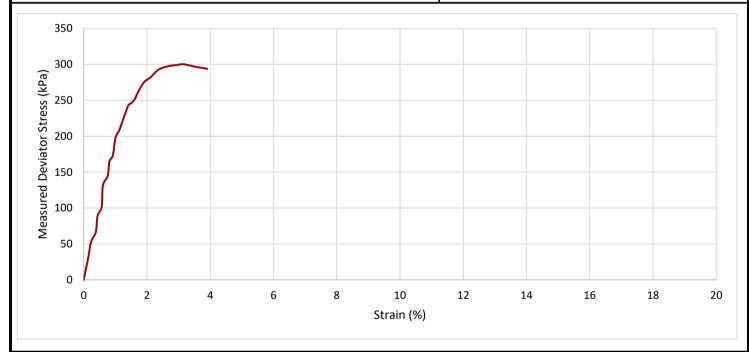
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Contract	Twickenham Riverside
Serial No.	37489_1

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

	OF FORE PRESSORE											
Borehole /Pit No.	Depth (m)	Type	Referer	ice	Descriptio	R	Remarks					
BH1	16.50	U	17		ery stiff (very high strength) fissured dark greyish brown CLAY with are silt pockets and iron pyrite fragments Premature failure at 3.1% strain.							
Initial S	pecimen	He	ight	Diameter	Weight	Water Content	Bulk Density	Dry Density				
	Depth of	(m	nm)	(mm)	(g)	(%)	(Mg/m³)	(Mg/m³)				
	Top of Specimen (m)	169.6		102.7	2832	27.0	2.02	1.59				
					0/ 11		-1					

TEST INFORMATION Rate of Strain 0.9 % per Min Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell		Stress Corre	ections (kPa)	Deviator Stress,	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis		
Specimen at failure	Pressure, σ3 (kPa)	Strain at Failure (%)	Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)	
	320	3.1	0.3	\	300	150			

Method of Preparation: BS 1377: Part 1: 1990

Method of Test: BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: Tested in Vertical Condition

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying



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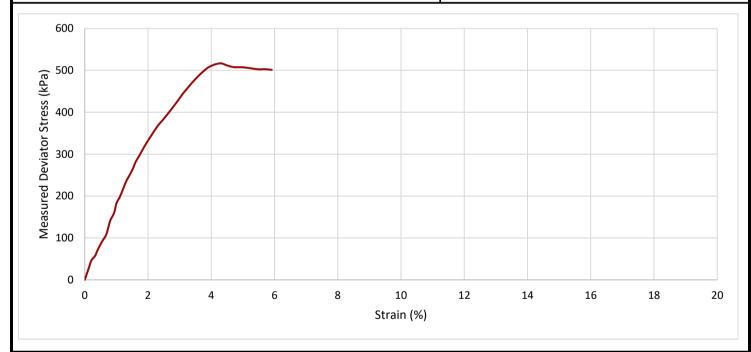
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Contract	Twickenham Riverside
Serial No.	37489_1

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

	OF PORE PRESSURE											
Borehole /Pit No.	Depth (m)	Type	Referer	ice	Descriptio	R	Remarks					
BH1	24.00	U	25	Very stiff (very hi								
Initial S	pecimen	He	ight	Diameter	Weight	Water Content	Bulk Density	Dry Density				
	Depth of	Depth of (mm		(mm)	(g)	(%)	(Mg/m³)	(Mg/m³)				
	Top of Specimen (m) 1		9.8	102.7	2815	26.5	2.00	1.58				
TEGT INIE	DDA 4 A TION		D. I ((0/	D. Island Marris	- 1 · 1	0.2				

TEST INFORMATION Rate of Strain 0.9 % per Min Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell	6	Stress Corre	ections (kPa)	Deviator Stress,	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis		
Specimen at failure	Pressure, σ3 (kPa)	Strain at Failure (%)	Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)	
J	473	4.3	0.3	\	517	259			

Method of Preparation: BS 1377: Part 1: 1990

Method of Test: BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: Tested in Vertical Condition

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying



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TISTING

Contract		Twicken	ham River	side									
Serial No) .	37489_1	L										
DETER	MINATIO	N OF UN	IDRAINED	SHEA		H IN TRIAX	IAL COMPR	ESSION	WITH	OUT ME	ASU	REME	N'
Borehole /Pit No.	Depth (m)	Туре	Reference	е		Descript				Re	emarks	;	
BH2	5.00	U	5	Stiff (itiff (high strength) fissured dark greyish brown CLAY								
Initial Specimen Depth of Top of Specimen (m) 5.11		Hei (m	_		neter	Weight (g)	Water Con	tent	Bulk D (Mg,	-		y Dens	
		150	·		2.0	2459	29.1		2.0			1.55	
EST INFO	ORMATION	N	Rate of Sti	rain	1.0 % p	er Min	Rubber Me	mbrane	Thickr	ness	0.3	mı	m
Measured Deviator Stress (KPa) 100 101 109 109 109 109 109 109 109 109													
	0	2	4	6	8	10 Strain (%)	12	14	16	i	18	2	20
Specimer	n at failure	Measured Pressure, (kPa)	σ3 Strain a	nt Failure %)	Stress Corr Rubber Membrane	ections (kPa) Piston Friction	Corrected Max Deviator Stress (σ1-σ3)f (kPa)	, ½(σ1	ress Cu, l-σ3)f Pa)	Moh Cu (kPa)	rs Circle	Analysi PH (degre	II
	-	100		_		,	104						

Method of Preparation: BS 1377: Part 1: 1990

Method of Test: BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading

8.3

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

0.6

Comments: Tested in Vertical Condition

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying

184

92

temperature if not 105-110°C

106



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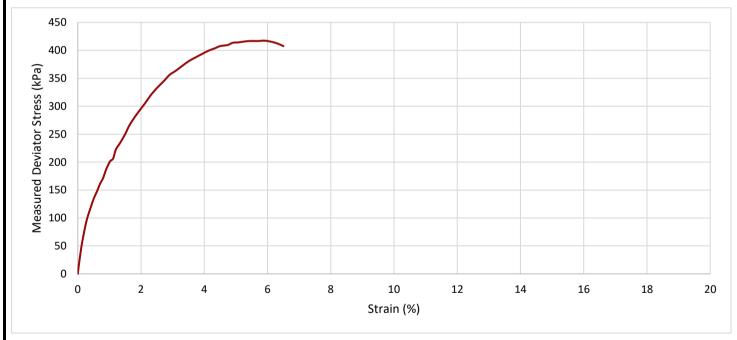


Contract '	Twickenham Riverside
Serial No.	37489_1

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORF PRESSURE

	OF FORE PRESSORE											
Borehole /Pit No.	Depth (m)	Type	Referer	ice	Descriptio	R	Remarks					
BH2	10.50	U	12	Very stiff (very hi	ery stiff (very high strength) fissured dark greyish brown CLAY							
Initial S	pecimen	He	ight	Diameter	Weight	Water Content	Bulk Density	Dry Density				
	Depth of	Top of Specimen (m) 199.7		(mm)	(g)	(%)	(Mg/m³)	(Mg/m³)				
	Specimen			102.4	3313	25.8	2.02	1.61				
					0/ 11		-1.1					

TEST INFORMATION Rate of Strain 1.0 % per Min Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell	Strain at Failure (%)	Stress Corre	ctions (kPa)	Corrected Max.	Corrected Max. Shear Stress Cu,		Mohrs Circle Analysis		
Specimen actanure	Pressure, σ3 (kPa)		Rubber Membrane	Piston Friction	Deviator Stress, (σ1-σ3)f (kPa)	½(σ1-σ3)f (kPa)	Cu (kPa)	PHI (degrees)		
	200	5.9	0.5	\	417	209				

Method of Preparation: BS 1377: Part 1: 1990

BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading Method of Test:

U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter Type of Sample Key:

Comments: **Tested in Vertical Condition**

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying



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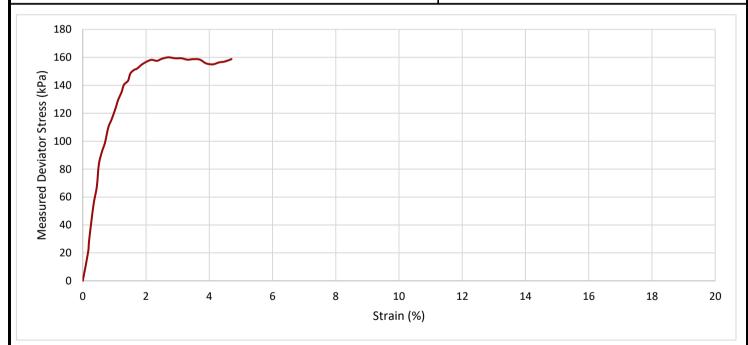


Contract Twickenham Riverside
Serial No. 37489_1

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

	OF FORE FRESSORE											
Borehole /Pit No.	Depth (m)	Туре	Referer	ice	Description Rema							
BH2	16.50	C	18	Very stiff (high st silt pockets								
Initial S	pecimen	Hei	ight	Diameter	Weight	Water Content	Bulk Density	Dry Density				
	Depth of	(mm)		(mm)	(g)	(g) (%)		(Mg/m³)				
	Top of Specimen (m) 16.59	19	9.4	102.7	3243	28.5	1.96	1.53				
TEST INIE		ı	Pata of 9	Strain 10	% nor Min	Pubbor Mombrar	no Thicknoss	0.2 mm				

TEST INFORMATION Rate of Strain 1.0 % per Min Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell	Strain at Failure (%)	Stress Corre	ections (kPa)	Corrected Max.	Shear Stress Cu,	Mohrs Circle Analysis		
Specimen at failure	Pressure, σ3 (kPa)		Rubber Membrane	Piston Friction	Deviator Stress, (σ1-σ3)f (kPa)	½(σ1-σ3)f (kPa)	Cu (kPa)	PHI (degrees)	
	316	2.7	0.2	\	160	80			

Method of Preparation: BS 1377: Part 1: 1990

Method of Test: BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: Tested in Vertical Condition

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying

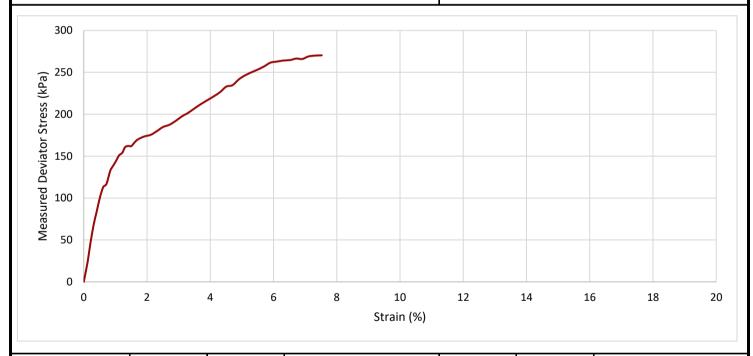


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Contract Twickenham Riverside 37489_1 Serial No.

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT **OF PORE PRESSURE Borehole** Remarks Depth (m) Type Reference Description /Pit No. BH2 19.50 U 21 Stiff (high strength) fissured dark greyish brown CLAY **Initial Specimen** Height Diameter Weight Water Content **Bulk Density Dry Density** Depth of (Mg/m³)(Mg/m³)(mm) (mm) (g) (%) Top of Specimen 199.4 102.9 3265 27.7 1.97 1.54 (m) 19.61 TEST INFORMATION Rate of Strain 1.0 % per Min **Rubber Membrane Thickness** 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corre	ections (kPa)	Corrected Max.	Shear Stress Cu,	Mohrs Circle Analysis		
Specifier at failure			Rubber Membrane	Piston Friction	Deviator Stress, (σ1-σ3)f (kPa)	½(σ1-σ3)f (kPa)	Cu (kPa)	PHI (degrees)	
	370	7.5	0.5	\	269	135			

Method of Preparation: BS 1377: Part 1: 1990

BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading Method of Test:

U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter Type of Sample Key:

Comments: **Tested in Vertical Condition**

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying



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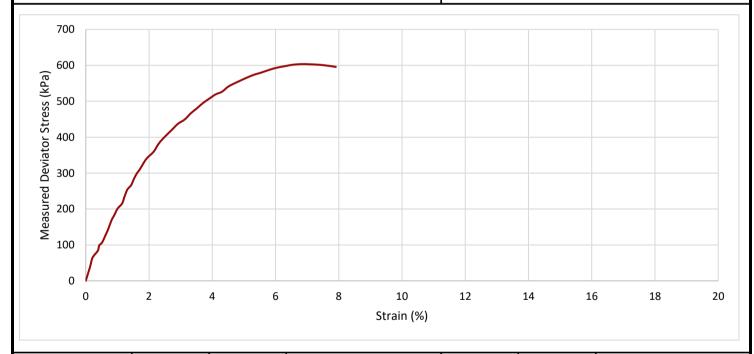
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Contract	Twickenham Riverside
Serial No.	37489_1

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

	OF PORE PRESSURE											
Borehole /Pit No.	Depth (m)	Type	Referer	ice	Descriptio	R	Remarks					
BH2	24.00	U	25	Hard (extremely	Hard (extremely high strength) fissured dark greyish brown CLAY							
Initial S	pecimen	He	ight	Diameter	Weight	Water Content	Bulk Density	Dry Density				
	Depth of	(mm)		(mm)	(g)	(%)	(Mg/m³)	(Mg/m³)				
	Top of Specimen (m)	17	0.0	101.9	2751	26.9	1.99	1.57				
TECT INIE	DDA 4 A TION		D . I ((0/	D. Island Marris	- 1 · 1	0.2				

TEST INFORMATION Rate of Strain 0.9 % per Min Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max.	Shear Stress Cu,	Mohrs Circle Analysis		
Specimen at failure			Rubber Membrane	Piston Friction	Deviator Stress, (σ1-σ3)f (kPa)	½(σ1-σ3)f (kPa)	Cu (kPa)	PHI (degrees)	
	466	6.9	0.5	_	603	302			

Method of Preparation: BS 1377: Part 1: 1990

Method of Test: BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: Tested in Vertical Condition

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying

Photograph 1



Photograph 2



GEOSPHERE ENVIRONMENTAL

DESCRIPTION

Photograph 1

BH1B service-inspection pit with bluepainted concrete at 1mbgl

GEO

Photograph 2

Foundation inspection pit HDP03

Photograph 3

Foundation inspection pit HDP02

Photograph 4

WS02a drilling

PROJECT

Diamond Jubilee Gardens/ Wharf Lane / The Embankment, Twickenham Riverside

PROJECT NUMBER

4955,SI

TITLE

Selected Photographs of Ground Investigation

DATE

16/09/2020

PAGE NO. 1 of 2

Photograph 3



Photograph 4



Photograph 5



Photograph 6



GEO

GEOSPHERE ENVIRONMENTAL

DESCRIPTION

Photograph 5

WS 3 to 3B drilling area

Photograph 6

WS4 drilling and service inspection pit arisings

Photograph 7

WS4 excavation and probe to base (obstruction at 1.4mbgl)

Photograph 8

BH2 drilling

PROJECT

Diamond Jubilee Gardens/ Wharf Lane / The Embankment, Twickenham Riverside

PROJECT NUMBER

4955,SI

TITLE

Selected Photographs of Ground Investigation

DATE

16/09/2020

PAGE NO. 2 of 2

Photograph 7



Photograph 8





Express Preliminary UXO Risk Assessment

Client Geosphere Environmental

Project Twickenham Riverside

Site Address 4955 Twickenham Riverside, Twickenham

Report Reference EP11494-00

Date 01/07/20

Originator WH

1st Line Defence Limited

Unit 3, Maple Park, Essex Road, Hoddesdon,

Herts, EN11 0EX

Tel: +44 (0)1992 245 020 E-mail: <u>info@1stlinedefence.co.uk</u>

Company No: 7717863 VAT No: 128 8833 79

www.1stlinedefence.co.uk

Assessment Objective

This preliminary risk assessment is a qualitative screening exercise to assess the likely potential of encountering unexploded ordnance (UXO) at the Twickenham Riverside site. The assessment involves the consideration of the basic factors that affect the potential for UXO to be present at a site as outlined in Stage One of the UXO risk management process.

Background

This assessment uses the sources of information available in-house to 1st Line Defence Ltd to enable the placement of a development site in context with events that may have led to the presence of German air-delivered or Allied military UXO. The report will identify any immediate necessity for risk mitigation or additional research in the form of a Detailed UXO Risk Assessment. It makes use of 1st Line Defence's extensive historical archives, library and unique geo-databases, as well as internet resources, and is researched and compiled by UXO specialists and graduate researchers.

The assessment directly follows CIRIA C681 guidelines "Unexploded Ordnance, a Guide for the Construction Industry". The document will therefore assess the following factors:

- Basic Site Data
- Previous Military Use
- Indicators of potential aerial delivered UXO threat
- Consideration of any Mitigating Factors
- Extent of Proposed Intrusive Works
- Any requirement for Further Work

It should be noted that the vast majority of construction sites in the UK will have a low or negligible risk of encountering UXO and should be able to be screened out at this preliminary stage. The report is meant as a common sense 'first step' in the UXO risk management process. The content of the report and conclusions drawn are based on basic, preliminary research using the information available to 1st Line Defence at the time this report was produced. It should be noted that the only way to entirely negate risk from UXO to a project would be to support the works proposed with appropriate UXO risk mitigation measures. It is rarely possible to state that there is absolutely 'no' risk from UXO to a project.

























Risk Assessment Considerations

Site location and description/current use

The site is located in Twickenham, within south-west London.

The site partially comprises two roadways, with a collection of structures in the north. The south of the site comprises hardstanding ground, interspersed with vegetation and a play area. A small section of the River Thames is encompassed by the site in the south-east. It is bound by King Street to the north, structures on Water Lane to the east, the River Thames to the south and structures on Wharf Lane to the west.



The site is approximately centred on the OS grid reference: **TQ 16272 73165**.

Are there any indicators of current/historical military activity on/close to the site?

In-house records do not indicate that the site footprint had any former military use. No features such as WWII defensive positions, encampments or firing ranges are recorded to have been located at or in the immediate vicinity of the site. In addition, no information of ordnance being stored, produced, or disposed of within the proposed site boundary could be found.

The closest recorded Heavy Anti-Aircraft (HAA) battery was situated approximately 4.2km to the east of the site. The conditions in which unexploded anti-aircraft ordnance may have fallen unrecorded within the proposed site are analogous to that of aerially delivered Luftwaffe bombs.

What was the pre- and post-WWII history of the site? Pre-WWII OS mapping, dated 1934, indicates that the site comprised a series of structures in the north, with a *Public House* in the north-east. The south comprised areas of hardstanding with a *Swimming Bath*. Various smaller structures, likely associated with the *Swimming Bath*, are located within the centre and south of the site.

Post-WWII OS mapping, dated 1959, shows minor structural alterations on site, with an area of open ground now present in the south-east, while a structure to the east of the site is no longer present. An area to the north of the aforementioned *Swimming Bath* is now recorded as *Swimming Pool*, while a *Paddling Pool* and *Lavatory* are recorded to the east. The *Public House* remains in the north-east of the site.

Was the area subject to bombing during WWII?

During WWII, the site was situated within the Municipal Borough of Twickenham which was subject to an overall moderate density of bombing, according to official Home Office statistics, with an average of 82.8 items of ordnance per 1,000 acres. This consisted of 505 HE (high explosive) bombs, two parachute mines, 25 oil bombs, 21 phosphorus bombs, 27 V-1 pilotless aircraft, and one V-2 long-range rockets, resulting in a total of 581 items of ordnance over 7,013 acres.

Consolidated bomb census mapping records a bomb approximately 20m north of the site, with a further bomb located approximately 40m east of the site. Weekly bomb census mapping records one incendiary shower over the site, with a high explosive bomb recorded approximately 130m west of the site. London V-1 pilotless aircraft mapping records a V-1 pilotless aircraft in the south-eastern section of the site.

























Is there any evidence of bomb damage on/close to the site?	Post-WWII OS mapping records an area of open ground in the south-east of the site which was previously occupied by a structure. MCC War Damage mapping does record several structures adjacent to the east of the site as having sustained damage ranging from "Border line areas, uncertain whether repairs possible, might have to be demolished" to "Total damage, building to be demolished".
To what degree would the site have been subject to access?	Due to the fact that the site was bound by one roadway and comprised two others, in conjunction with the fact that it housed a Public House and Swimming Baths in an urban area, it is anticipated that at the outbreak of war, access would have been very high. Following the recorded V-1 strike in the south-east of the site, access is considered to have been significantly reduced for a period while repairs and or evacuation took place. This increases the chances that items of UXO could have gone unnoticed and unreported.
To what degree has the site been developed post-WWII?	Sections in the east of the site now appear to be occupied by hardstanding, while the central section which housed the Swimming Pools is now occupied by hardstanding and vegetation.
What is the nature and extent of the intrusive works proposed?	The nature and extent of works proposed was not available at the time of writing.

Summary and Conclusions

The site was situated within the Municipal Borough of Twickenham during WWII, which sustained a moderate density of bombing at 82.8 items per 1,000 acres. London bomb census mapping indicates that a V-1 bomb fell within the south-eastern section of the site during the war. Several bombs also fell within the general vicinity of the site.

No damage was recorded on site on MCC War Damage mapping, despite the fact that a V-1 flying bomb was recorded as falling within the south-eastern section of the site. Given the recorded bombing on site, it is anticipated that access on site would have been impeded until it was deemed safe to return, increasing the likelihood that items of UXO would have gone unnoticed and unreported.

Recommendations

Following the findings of this preliminary report, it is recommended that **further action** is taken in the form of a **Detailed UXO Risk Assessment**.

Further research would include visits to local and national archives, and the acquisition of local bombing records and other archival material. Following this, a more precise assessment on the risk presented from items of UXO can be made. In addition, high-resolution aerial photography of the site would be obtained in order to understand if the site appeared damaged following the recorded incident in the south-eastern section of the site.

Prior to or in lieu of a Detailed Assessment, it is recommended that appropriate UXO Risk Mitigation Measures are provided for intrusive works proposed.

If the client has any anecdotal or empirical evidence of UXO risk on site, please contact 1st Line Defence.

























Waste Classification Report



Job name

4955,SI Twickenham Riverside

Description/Comments

Localised ground investigation data from GI report 4955

Project

4955,SI, Twickenham Riverside

Site

4955,SI: Diamond Jubilee Gardens, Wharf Lane, The Embankment (Twickenham Riverside project)

Related Documents

#	Name	Description
1	20-10290.1.hwol	.hwol file used to create the Job
2	20-10989.1.hwol	.hwol file for the job
3	20-10989.1.pdf	soil analysis dataset 1/2
4	20-10290.1.pdf	soil analysis dataset 2/2

Waste Stream Template

GEL HWOL 05 2020

Classified by

Name: Jim Dawson Date: 19 Nov 2020 13:50 GMT Telephone:

Company:
Geosphere Environmental Ltd
Brightwell Barns, Ipswich Road
Ipswich Road
Brightwell
IP10 0BJ

HazWasteOnline™ Training Record:

Course
Hazardous Waste Classification
Advanced Hazardous Waste Classification

Date 10 Mar 2020 11 Mar 2020

Report

01603 298076

Created by: Jim Dawson

Created date: 19 Nov 2020 13:50 GMT

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	BH1 + BH2	2.0 - 24.0	Non Hazardous		3
2	BH01A + BH01B	0.20 - 0.80	Non Hazardous		6
3	BH2	1.2	Non Hazardous		9
4	HP01 WAC2	0.25 - 1.20	Non Hazardous		12
5	WS01A and WS2, J1 Combined	0.2	Non Hazardous		15
6	WS01A J2	0.6	Non Hazardous		18





Appendices	Page
Appendix A: Classifier defined and non CLP determinands	21
Appendix B: Rationale for selection of metal species	22
Appendix C: Version	23

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Classification of sample: BH1 + BH2

Non Hazardous Waste Classified as 17 05 04 in the List of Waste

Sample details

Sample Name: LoW Code:
BH1 + BH2 Chapter:
Sample Depth:

2.0 - 24.0 m Entry: Moisture content:

12.5% (no correction)

17: Construction and Demolition Wastes (including excavated soil from contaminated sites)

17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12.5% No Moisture Correction applied (MC)

#		Determinand CLP index number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	4	arsenic { arsenic trioxide }		9 mg/kg	1.32	11.883 mg/kg	0.00119 %	_	
2	æ	barium {	-	50 mg/kg	1.233	61.675 mg/kg	0.00617 %		
3	4	beryllium { beryllium oxide } 004-003-00-8		0.9 mg/kg	2.775	2.498 mg/kg	0.00025 %		
4	4	boron { diboron trioxide; boric oxide } 005-008-00-8		2.3 mg/kg	3.22	7.406 mg/kg	0.000741 %		
5	4	cadmium { cadmium oxide } 048-002-00-0 215-146-2 1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<lod< th=""></lod<>
6	æ	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		31 mg/kg	1.462	45.308 mg/kg	0.00453 %		
7	æ	chromium in chromium(VI) compounds { chromium(VI) oxide }	-	<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<lod< th=""></lod<>
8	4			19 mg/kg	1.126	21.392 mg/kg	0.00214 %		
9	4	lead { lead chromate } 082-004-00-2 231-846-0 7758-97-6	1	10 mg/kg	1.56	15.598 mg/kg	0.001 %		
10	4	mercury { mercury dichloride } 080-010-00-X		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<lod< th=""></lod<>
11	4	nickel { nickel chromate } 028-035-00-7 238-766-5 14721-18-7		29 mg/kg	2.976	86.312 mg/kg	0.00863 %		
12	4	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }		<3 mg/kg	1.405	<4.215 mg/kg	<0.000422 %		<lod< th=""></lod<>
13	4			54 mg/kg	1.785	96.4 mg/kg	0.00964 %		
14	4	zinc { zinc chromate } 024-007-00-3 236-878-9 13530-65-9		78 mg/kg	2.774	216.383 mg/kg	0.0216 %		



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Total: 0.0634 %

G	EO:	SPHERE ENVIRONM	MENTAL										
#		CLP index number	Determinand EC Number	CAS Number	CLP Note	User entered	l data	Conv. Factor	Compound o	conc.	Classification value	MC Applied	Conc. Not Used
15	0	TPH (C6 to C40) p		ТРН	Ö.	<42	mg/kg		<42	mg/kg	<0.0042 %	Σ	<lod< td=""></lod<>
16		tert-butyl methyl et 2-methoxy-2-methy	ylpropane			<5	mg/kg		<5	mg/kg	<0.0005 %		<lod< td=""></lod<>
17		benzene 601-020-00-8	216-653-1	71-43-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<lod< td=""></lod<>
18		toluene 601-021-00-3	203-625-9	108-88-3		<5	mg/kg		<5	mg/kg	<0.0005 %		<lod< td=""></lod<>
19	0	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<2	mg/kg		<2	mg/kg	<0.0002 %		<lod< td=""></lod<>
20		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<4	mg/kg		<4	mg/kg	<0.0004 %		<lod< td=""></lod<>
21	≪4	exception of compl	of hydrogen cyanid lex cyanides such a nercuric oxycyanide e in this Annex }	s ferrocyanides,		<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<lod< td=""></lod<>
22	0	pH		PH		8.1	рН		8.1	рН	8.1 pH		
23		naphthalene 601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
24	0	acenaphthylene	205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
25	0	acenaphthene	201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
26	0	fluorene	201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
27	0	phenanthrene	201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
28	0	anthracene	204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
29	0	fluoranthene	205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
30	Θ	pyrene	204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
31		benzo[a]anthracen 601-033-00-9	e 200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
32		chrysene 601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
33		benzo[b]fluoranthe 601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
34		benzo[k]fluoranthe 601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
35		benzo[a]pyrene; be	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
36	0	indeno[123-cd]pyre	205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
37		dibenz[a,h]anthrac 601-041-00-2	ene 200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
38	•	benzo[ghi]perylene	205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>





Key
User supplied data

Determinand values ignored for classification, see column 'Conc. Not Used' for reason

Determinand defined or amended by HazWasteOnline (see Appendix A)

Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound

concentration

<LOD Below limit of detection

ND Not detected

CLP: Note 1 Only the metal concentration has been used for classification



Classification of sample: BH01A + BH01B

Non Hazardous Waste Classified as 17 05 04 in the List of Waste

Sample details

Sample Name:

BH01A + BH01B
Chapter:

Sample Depth:

0.20 - 0.80 m
Entry:

Moisture content:

5.6%

17: Construction and Demolition Wastes (including excavated soil from contaminated sites)

17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

(no correction)

Determinands

Moisture content: 5.6% No Moisture Correction applied (MC)

#		Determinand CLP index number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	æ	arsenic { arsenic trioxide }		15 mg/kg	1.32	19.805 mg/kg	0.00198 %	_	
2	æ.	barium { barium sulphide } 016-002-00-X 244-214-4 21109-95-5		71 mg/kg	1.233	87.578 mg/kg	0.00876 %		
3	4	beryllium { beryllium oxide } 004-003-00-8 215-133-1 1304-56-9		0.7 mg/kg	2.775	1.943 mg/kg	0.000194 %		
4	æ	boron (diboron trioxide; boric oxide) 005-008-00-8 215-125-8 1303-86-2	-	<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<lod< th=""></lod<>
5	4	cadmium { cadmium oxide } 048-002-00-0 215-146-2 1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<lod< th=""></lod<>
6	4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		19 mg/kg	1.462	27.77 mg/kg	0.00278 %		
7	4	chromium in chromium(VI) compounds { chromium(VI) oxide }		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<lod< th=""></lod<>
8	4	024-001-00-0	+	20 mg/kg	1.126	22.518 mg/kg	0.00225 %		
9	4	lead { lead chromate } 082-004-00-2 231-846-0 7758-97-6	1	207 mg/kg	1.56	322.882 mg/kg	0.0207 %		
10		mercury { mercury dichloride } 080-010-00-X 231-299-8 7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<lod< th=""></lod<>
11		nickel { nickel chromate } 028-035-00-7 238-766-5 14721-18-7		16 mg/kg	2.976	47.62 mg/kg	0.00476 %		
12		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }		<3 mg/kg	1.405	<4.215 mg/kg	<0.000422 %		<lod< th=""></lod<>
13	4	034-002-00-8 vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8 215-239-8 1314-62-1		38 mg/kg	1.785	67.837 mg/kg	0.00678 %		
14	-	zinc { zinc chromate } 024-007-00-3 236-878-9 13530-65-9		68 mg/kg	2.774	188.642 mg/kg	0.0189 %		



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GEOSPHERE ENVIRONMENTAL

CLP Index number	_	_											_	
15 Thi (Cs to C40) pertoleum group Se mykg Se my	#					o Note	User entered	data		Compound of	conc.		Applied	Conc. Not Used
Tender T			CLP index number	EC Number	CAS Number	<u>5</u>							MC	
18	15	0	TPH (C6 to C40) pe		Три		<6	mg/kg		<6	mg/kg	<0.0006 %		<lod< td=""></lod<>
18			tert-hutyl methyl eth		[11.11	+								
17	16						<5	mg/kg		<5	mg/kg	<0.0005 %		<lod< td=""></lod<>
1				216-653-1	1634-04-4	1_								
18	17			200 752 7	74 42 2	_	<2	mg/kg		<2	mg/kg	<0.0002 %		<lod< td=""></lod<>
18				200-753-7	/ 1-43-2									
9 ethylbenzene	18			203-625-9	108-88-3	-	<5	mg/kg		<5	mg/kg	<0.0005 %		<lod< td=""></lod<>
Self-oras-on-4 202-8494 100-41-4	10	0					-2	ma/ka		-2	ma/ka	~0.0002 %		-L OD
20	19		601-023-00-4	202-849-4	100-41-4		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	ilig/kg			ilig/kg	<0.0002 /6		\LOD
2003-996-5 2 106-42-2 2 44 mg/kg 40,0004 % 40,0001 %														
21	20			203-396-5 [2] 203-576-3 [3]	106-42-3 [2] 108-38-3 [3]		<4	mg/kg		<4	mg/kg	<0.0004 %		<lod< td=""></lod<>
PH	21	4	exception of completerricyanides and management of specified elsewhere	ex cyanides such as nercuric oxycyanide	s ferrocyanides,		<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<lod< td=""></lod<>
PH	22	0	pН		l.		0.2	nH		0.2	л Ц	9 2 nH		
Solido S					PH	1	0.5	рп		0.5	рп	0.5 pr i		
24	23		•				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
200 200			1	202-049-5	91-20-3	-				<u> </u>				
25	24	0	. ,	205-917-1	208-96-8	_	<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
Fluorene	25	0	acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
27 Polenanthrene 201-695-5 86-73-7	26	0			(00000000000000000000000000000000000000		.0.1			-0.1		-0.00004.0/		-1.00
201-581-5 85-01-8 35-01-8 35-01-8 35-01-8 35-01-8 35-01-8 35-01-8 35-01-8 35-01-8 35-01-8 35-01-8 35-01-8 35-01-8 35-01-8 35-01-8 35-01-8 35-01-8 35-01-38-38 35-01-38-8 35	20			201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lud< td=""></lud<>
204-371-1 120-12-7 20.1 mg/kg 20.00001 20.000001 20.000001 20.00001 20.00001 20.00001 20.00001 20.00001 20.00001 20.00001 20.00001 20.00001 20.00001 20.00001 20	27	•	<u>'</u>	201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
Part	28	•	anthracene				<0.1	ma/ka		<0.1	ma/ka	<0.00001 %		<lod< td=""></lod<>
29				204-371-1	120-12-7	4					J. J			
Denzo[a]anthracene Column 29	Θ		205 012 4	boe 44.0	_	0.17	mg/kg		0.17	mg/kg	0.000017 %			
Denzo[a]anthracene Denzo[a	30	0		205-912-4	200-44-0		0.12	ma/ka		0.12	ma/ka	0.000012 %		
Solution		1		129-00-0	1							\perp		
Chrysene 31				EC EE 2	_	0.3	mg/kg		0.3	mg/kg	0.00003 %			
Section Sect				ZUU-ZÖU-Ö	pu-33-3	+								
Denzo[b]fluoranthene Denzo[k]fluoranthene Denzo[k]fluoranthene	32			205-923-4	218-01-9	-	<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
601-034-00-4 205-911-9 205-99-2	33						0.52	ma/ka		0.52	ma/ka	0.000052 %		
34 0.13 mg/kg					205-99-2		0.52	mg/kg		0.02	my/Ny	0.00002 /6		
Denzo[a]pyrene; benzo[def]chrysene	34				007.00	_	0.13	mg/kg		0.13	mg/kg	0.000013 %		
36 indeno[123-cd]pyrene 36 dibenz[a,h]anthracene 501-041-00-2 200-181-8 53-70-3 38 benzo[ghi]perylene 39 200-028-5 50-32-8 30 0.28 mg/kg 0.000028 % 30 0.20 0.20 mg/kg 0.000028 % 31 0.20 mg/kg 0.000021 % 32 0.21 mg/kg 0.000021 %					K01-08-8	-								
36 indeno[123-cd]pyrene	35				50-32-8	-	0.28	mg/kg		0.28	mg/kg	0.000028 %		
205-893-2 193-39-5	20	8			<u> </u>	\top	0.30	ma/ka		0.20	ma/l.c	0.000038.0/		
37	36	L			193-39-5		0.38	тід/кд		0.38	mg/kg	0.000038 %		
601-041-00-2 200-181-8 53-70-3	37						<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
205-883-8 191-24-2 0.21 mg/kg 0.000021 %					53-70-3	+								
	38	0			191-24-2		0.21	mg/kg		0.21	mg/kg	0.000021 %		
											Total:	0.0714 %	П	





Key

User supplied data

Determinand values ignored for classification, see column 'Conc. Not Used' for reason

Determinand defined or amended by HazWasteOnline (see Appendix A)

Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound

concentration

<LOD Below limit of detection

ND Not detected

CLP: Note 1 Only the metal concentration has been used for classification

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Classification of sample: BH2

Non Hazardous Waste Classified as 17 05 04 in the List of Waste

Sample details

Sample Name: LoW Code: BH2 Chapter: Sample Depth: Entry:

17: Construction and Demolition Wastes (including excavated soil from contaminated sites)

17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Moisture content: 12.8%

(no correction)

Hazard properties

None identified

Determinands

Moisture content: 12.8% No Moisture Correction applied (MC)

#		Determinand CLP index number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	4	arsenic { arsenic trioxide } 033-003-00-0		15 mg/kg	1.32	19.805 mg/kg	0.00198 %		
2	4			55 mg/kg	1.233	67.842 mg/kg	0.00678 %		
3	4	beryllium { beryllium oxide } 004-003-00-8 215-133-1 1304-56-9		0.6 mg/kg	2.775	1.665 mg/kg	0.000167 %		
4	æ	boron { diboron trioxide; boric oxide } 005-008-00-8		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<lod< th=""></lod<>
5	4	cadmium { cadmium oxide } 048-002-00-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<lod< th=""></lod<>
6	4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		16 mg/kg	1.462	23.385 mg/kg	0.00234 %		
7	4	chromium in chromium(VI) compounds { chromium(VI) oxide }		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<lod< th=""></lod<>
8	4	024-001-00-0 215-607-8 [1333-82-0 copper { dicopper oxide; copper (I) oxide } 029-002-00-X 215-270-7 [1317-39-1		17 mg/kg	1.126	19.14 mg/kg	0.00191 %		
9	4	lead { lead chromate } 082-004-00-2	1	111 mg/kg	1.56	173.139 mg/kg	0.0111 %		
10	æ	mercury { mercury dichloride } 080-010-00-X 231-299-8 7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<lod< th=""></lod<>
11	4	nickel { nickel chromate } 028-035-00-7 238-766-5 14721-18-7		13 mg/kg	2.976	38.691 mg/kg	0.00387 %		
12	4	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }		<3 mg/kg	1.405	<4.215 mg/kg	<0.000422 %		<lod< th=""></lod<>
13	4	034-002-00-8 vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8 215-239-8 1314-62-1		36 mg/kg	1.785	64.267 mg/kg	0.00643 %		
14	4			38 mg/kg	2.774	105.418 mg/kg	0.0105 %		



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•		/ _					Report cr	reated
GE	EOS	PHERE ENVIR	ONMENTAL					
П	П							

#			Determinand		CLP Note	User entere	d data	Conv.	Compound o	conc.	Classification value	Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number	<u>ال</u>							MC /	
15	9	TPH (C6 to C40) p	etroleum group	ТРН		<6	mg/kg		<6	mg/kg	<0.0006 %		<lod< td=""></lod<>
16		tert-butyl methyl et 2-methoxy-2-methy	ylpropane	1		<5	mg/kg		<5	mg/kg	<0.0005 %		<lod< td=""></lod<>
		603-181-00-X benzene	216-653-1	1634-04-4	+				<u> </u>				
17		601-020-00-8	200-753-7	71-43-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<lod< td=""></lod<>
18		toluene 601-021-00-3	203-625-9	108-88-3		<5	mg/kg		<5	mg/kg	<0.0005 %		<lod< td=""></lod<>
19	0	ethylbenzene				<2	mg/kg		<2	mg/kg	<0.0002 %		<lod< td=""></lod<>
			202-849-4	100-41-4	-								
20		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<4	mg/kg		<4	mg/kg	<0.0004 %		<lod< td=""></lod<>
21	₫	exception of compl	of hydrogen cyanid lex cyanides such a nercuric oxycyanide e in this Annex	s ferrocyanides,		<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<lod< td=""></lod<>
22	9	pH				8.3	pН		8.3	pН	8.3 pH	Н	
				PH	1	0.0				P	0.0 p	Ш	
23		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
		601-052-00-2	202-049-5	91-20-3						3 3		Ш	
24	0	acenaphthylene	205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
25	0	acenaphthene	201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
26	0	fluorene	201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
	0	phenanthrene	201 000 0	po 10 1	+								
27		prioriaminono	201-581-5	85-01-8	+	<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
	8	anthracene	1								2 22224 2/		
28			204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
29	0	fluoranthene	205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
30	0	pyrene	204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
31		benzo[a]anthracen	е			<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
		601-033-00-9	200-280-6	56-55-3	+								
32		chrysene 601-048-00-0	205-923-4	218-01-9	-	<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
33		benzo[b]fluoranthe	ne		+	<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
		601-034-00-4 benzo[k]fluoranthe	205-911-9 ne	205-99-2							<0.00001 %	H	<lod< td=""></lod<>
34		601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lud< td=""></lud<>
35		benzo[a]pyrene; be 601-032-00-3	enzo[def]chrysene 200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
36	9	indeno[123-cd]pyre		193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
37		dibenz[a,h]anthrac	ene			<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
38	0	601-041-00-2 benzo[ghi]perylene	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg			<lod< td=""></lod<>
			205-883-8	191-24-2		ζυ.1			QU.1			Ш	\LUD
										Total:	0.0493 %		





Key

User supplied data

Determinand values ignored for classification, see column 'Conc. Not Used' for reason

Determinand defined or amended by HazWasteOnline (see Appendix A)

Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound

concentration

<LOD Below limit of detection

ND Not detected

CLP: Note 1 Only the metal concentration has been used for classification



Classification of sample: HP01 WAC2

Non Hazardous Waste
Classified as 17 05 04
in the List of Waste

Sample details

Sample Name: LoW Code:
HP01 WAC2 Chapter:
Sample Depth:
0.25 - 1.20 m Entry:
Moisture content:
3.7%

17: Construction and Demolition Wastes (including excavated soil from contaminated sites)

17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

(no correction)

Determinands

Moisture content: 3.7% No Moisture Correction applied (MC)

#		Determinand CLP index number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	æ	arsenic { arsenic trioxide } 033-003-00-0 215-481-4 1327-53-3	Ĭ	16 mg/kg	1.32	21.125 mg/kg	0.00211 %	_	
2	æ.	barium { barium sulphide } 016-002-00-X 244-214-4 21109-95-5		35 mg/kg	1.233	43.172 mg/kg	0.00432 %		
3	4	beryllium { beryllium oxide } 004-003-00-8 215-133-1 1304-56-9		0.6 mg/kg	2.775	1.665 mg/kg	0.000167 %		
4	æ	boron (diboron trioxide; boric oxide) 005-008-00-8 215-125-8 1303-86-2	-	<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<lod< th=""></lod<>
5	4	cadmium { cadmium oxide } 048-002-00-0 215-146-2 1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<lod< th=""></lod<>
6	4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		20 mg/kg	1.462	29.231 mg/kg	0.00292 %		
7	4	chromium in chromium(VI) compounds { chromium(VI) oxide }		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<lod< th=""></lod<>
8	4	024-001-00-0		15 mg/kg	1.126	16.888 mg/kg	0.00169 %		
9	4	lead { lead chromate } 082-004-00-2 231-846-0 7758-97-6	1	51 mg/kg	1.56	79.551 mg/kg	0.0051 %		
10		mercury { mercury dichloride } 080-010-00-X 231-299-8 7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<lod< th=""></lod<>
11		nickel { nickel chromate } 028-035-00-7 238-766-5 14721-18-7		14 mg/kg	2.976	41.668 mg/kg	0.00417 %		
12		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }		<3 mg/kg	1.405	<4.215 mg/kg	<0.000422 %		<lod< th=""></lod<>
13	4	034-002-00-8 vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8 215-239-8 1314-62-1	-	42 mg/kg	1.785	74.978 mg/kg	0.0075 %		
14	-	zinc { zinc chromate } 024-007-00-3 236-878-9 13530-65-9		45 mg/kg	2.774	124.837 mg/kg	0.0125 %		



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15 TP 16 ter 2-r 603 17 ber 601 18 tolu 601 19 eth	PH (C6 to C40) petroleum (rt-butyl methyl ether; MTBI methoxy-2-methylpropane 3-181-00-X [216-653- enzene 1-020-00-8 [200-753-] luene 1-021-00-3 [203-625-6	group TPH =;	04-4	CLP Note	<42	mg/kg	Factor	<42	mg/kg	value <0.0042 %	MC Applied	Used
16 ter 2-r 603 17 ber 601 18 tolu 601 19 eth	rt-butyl methyl ether; MTBI methoxy-2-methylpropane 3-181-00-X 216-653- enzene 1-020-00-8 200-753- luene 1-021-00-3 203-625-6	TPH =; 1634-	04-4	0		mg/kg		<42	mg/kg	·	2	
16 2-r 603 17 ber 601 18 tolu 601 19 eth	methoxy-2-methylpropane 3-181-00-X 216-653- enzene 1-020-00-8 200-753- luene 1-021-00-3 203-625-6	≣; 1 1634-			<5					₹0.00 1 2 /0	H	<lod< td=""></lod<>
17 ber 601 18 tolu 601 19 eth	enzene 1-020-00-8 200-753-1 luene 1-021-00-3 203-625-9	,				mg/kg		<5	mg/kg	<0.0005 %		<lod< td=""></lod<>
18 tolu 601	luene 1-021-00-3 203-625-	7 71-43	_		<2	mg/kg		<2	ma/ka	<0.0002 %	Н	<lod< td=""></lod<>
18 601	1-021-00-3 203-625-9		-2			9/1.9			mg/ng		Н	
19		108-8	8-3		<5	mg/kg		<5	mg/kg	<0.0005 %		<lod< td=""></lod<>
	hylbenzene 1-023-00-4 202-849-4	1 100-4	1-4		<2	mg/kg		<2	mg/kg	<0.0002 %		<lod< td=""></lod<>
xyl	rlene 1-022-00-9 203-396-4 203-576-5 215-535-7	2 [1] 95-47 5 [2] 106-4 3 [3] 108-3			<4	mg/kg		<4	mg/kg	<0.0004 %		<lod< th=""></lod<>
21 exc ferr spe	ranides { salts of hydrog ception of complex cyanider rricyanides and mercuric of pecified elsewhere in this A 6-007-00-5	es such as ferro xycyanide and th	cyanides,		<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<lod< th=""></lod<>
22 a pH					8.1	рН		8.1	рН	8.1 pH		
		PH							'	· '	Н	
1231	aphthalene 1-052-00-2 202-049-{	5 91-20	-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
	cenaphthylene	\			<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< th=""></lod<>
25 ace	cenaphthene	,			<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
26 a fluo	201-469-6 Jorene	83-32	-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
	201-695-	86-73	-7		VO.1	- Ing/kg			mg/kg	V0.00001 70	Ц	
27 ph	nenanthrene 201-581-	5 85-01	-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
28 ant	nthracene	0001	Ü		<0.1	ma/ka		<0.1	ma/ka	<0.00001 %	Н	<lod< td=""></lod<>
	204-371-	1 120-1	2-7		<0.1 	mg/kg		<0.1 	mg/kg	<0.00001 %		<lod< td=""></lod<>
29	ioranthene 205-912-	1 206-4	4-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
30 pyr	rene 204-927-3	3 129-0	0-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
131	enzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
601	1-033-00-9 200-280-0 nrysene	56-55	-3									
1321	1-048-00-0 205-923-4	1 218-0	1-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
1331	enzo[b]fluoranthene 1-034-00-4 205-911-9	9 205-9	9-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
34 bei	enzo[k]fluoranthene	\\			<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
	1-036-00-5 205-916-6 enzo[a]pyrene; benzo[def]c		8-9		<0.1	ma/ka		<0.1	ma/ka	<0.00001 %		<lod< td=""></lod<>
601	1-032-00-3 200-028-5	5 50-32	-8		CU. 1	mg/kg		CU. 1	mg/kg	V0.00001 76	Ц	\LUD
36 ind	deno[123-cd]pyrene 205-893-2	2 193-3	9-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
13/	benz[a,h]anthracene 1-041-00-2 200-181-8	3 53-70	-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
	enzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %	Н	<lod< td=""></lod<>
	205-883-8	3 191-2	4-2	Ш					Total:	0.0483 %	Н	





Key			

User supplied data

Determinand values ignored for classification, see column 'Conc. Not Used' for reason

Determinand defined or amended by HazWasteOnline (see Appendix A)
 Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound

concentration

<LOD Below limit of detection

ND Not detected

CLP: Note 1 Only the metal concentration has been used for classification

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Classification of sample: WS01A and WS2, J1 Combined

Non Hazardous Waste Classified as 17 05 04 in the List of Waste

......

Sample details

Sample Name: LoW Code: WS01A and WS2, J1 Combined Chapter: Sample Depth:

0.2 m Entry: Moisture content:

7.4%

(no correction)

17: Construction and Demolition Wastes (including excavated soil from contaminated sites)

17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.4% No Moisture Correction applied (MC)

#		Determinand CLP index number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	4	arsenic { arsenic trioxide } 033-003-00-0	1327-53-3)	11 mg/kg	1.32	14.524 mg/kg	0.00145 %	Ī	
2		barium { • barium sulphide }	21109-95-5		58 mg/kg	1.233	71.543 mg/kg	0.00715 %		
3	4	beryllium { beryllium oxide } 004-003-00-8	1304-56-9		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<lod< th=""></lod<>
4	₽	boron { diboron trioxide; boric oxide } 005-008-00-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<lod< th=""></lod<>
5	₽	cadmium {	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<lod< th=""></lod<>
6	4	chromium in chromium(III) compounds oxide (worst case) }			15 mg/kg	1.462	21.923 mg/kg	0.00219 %		
7	4	chromium in chromium(VI) compounds oxide }	, ,		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<lod< th=""></lod<>
8	4	copper { dicopper oxide; copper (I) oxid	333-82-0 e } 317-39-1		20 mg/kg	1.126	22.518 mg/kg	0.00225 %		
9		lead { lead chromate }	7758-97-6	1	70 mg/kg	1.56	109.187 mg/kg	0.007 %		
10	_	mercury { mercury dichloride } 080-010-00-X	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<lod< th=""></lod<>
11	*	nickel { nickel chromate } 028-035-00-7	14721-18-7		9 mg/kg	2.976	26.786 mg/kg	0.00268 %		
12	*	selenium { selenium compounds with th cadmium sulphoselenide and those spein this Annex }			<3 mg/kg	1.405	<4.215 mg/kg	<0.000422 %		<lod< th=""></lod<>
13		vanadium { divanadium pentaoxide; van	ladium pentoxide }		30 mg/kg	1.785	53.556 mg/kg	0.00536 %		
14	4	zinc { zinc chromate }	13530-65-9		67 mg/kg	2.774	185.868 mg/kg	0.0186 %		



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GEOSPHERE	ENVIRONMENTAL	

#			Determinand		CLP Note	User entere	d data	Conv.	Compound o	conc.	Classification value	Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number	<u>-</u>			actor			value	MC A	Oseu
15	Θ	TPH (C6 to C40) p	etroleum group		O	<42	mg/kg		<42	mg/kg	<0.0042 %	≥	<lod< td=""></lod<>
\square				TPH									
16		tert-butyl methyl etl 2-methoxy-2-methy				<5	mg/kg		<5	mg/kg	<0.0005 %		<lod< td=""></lod<>
		603-181-00-X	216-653-1	1634-04-4									
17		benzene 601-020-00-8	200-753-7	71-43-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<lod< td=""></lod<>
18		toluene				<5	mg/kg		<5	mg/kg	<0.0005 %		<lod< td=""></lod<>
19	0	601-021-00-3 ethylbenzene	203-625-9	108-88-3		<2	mg/kg		<2	ma/ka	<0.0002 %		<lod< td=""></lod<>
		601-023-00-4	202-849-4	100-41-4		~2	mg/kg		\Z	mg/kg	<0.0002 70		/ 6
20		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<4	mg/kg		<4	mg/kg	<0.0004 %		<lod< th=""></lod<>
21	4	exception of compl	of hydrogen cyanid ex cyanides such a nercuric oxycyanide e in this Annex }	s ferrocyanides,		<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<lod< td=""></lod<>
	-	pН	I.	1		7.0			7.0		70.11		
22				PH	1	7.6	рН		7.6	рН	7.6 pH		
		naphthalene		1		0.4	,,		0.4	4	0.00004.0/		1.00
23		601-052-00-2	202-049-5	91-20-3	1	<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
24	0	acenaphthylene	205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
25	0	acenaphthene	201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
26	0	fluorene	J.			<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
H			201-695-5	86-73-7									
27	Θ	phenanthrene	004 504 5	05.04.0		0.27	mg/kg		0.27	mg/kg	0.000027 %		
			201-581-5	85-01-8									
28	Θ	anthracene	204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
29	0	fluoranthene	205-912-4	206-44-0		0.76	mg/kg		0.76	mg/kg	0.000076 %		
30	0	pyrene	204-927-3	129-00-0		0.69	mg/kg		0.69	mg/kg	0.000069 %		
	-	benzo[a]anthracen		1.20 00 0	+								
31			200-280-6	56-55-3	$\left \cdot \right $	0.48	mg/kg		0.48	mg/kg	0.000048 %		
32		chrysene 601-048-00-0	l.			0.4	mg/kg		0.4	mg/kg	0.00004 %		
\vdash	_		205-923-4	218-01-9	+								
33			205-911-9	205-99-2		0.66	mg/kg		0.66	mg/kg	0.000066 %		
34		benzo[k]fluoranthe	ne 205-916-6	207-08-9		0.22	mg/kg		0.22	mg/kg	0.000022 %		
35		benzo[a]pyrene; be	enzo[def]chrysene	1		0.5	mg/kg		0.5	mg/kg	0.00005 %		
\vdash	_		200-028-5	50-32-8									
36	0	indeno[123-cd]pyre	ene 205-893-2	193-39-5		0.31	mg/kg		0.31	mg/kg	0.000031 %		
37		dibenz[a,h]anthrac	ene 200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
_	-	benzo[ghi]perylene		po 100	H						0.00000.00		
38	0	10 1. ,	205-883-8	191-24-2	-	0.3	mg/kg		0.3	mg/kg	0.00003 %		





Key

User supplied data

Determinand values ignored for classification, see column 'Conc. Not Used' for reason

Determinand defined or amended by HazWasteOnline (see Appendix A)

Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound

concentration

<LOD Below limit of detection

ND Not detected

CLP: Note 1 Only the metal concentration has been used for classification



Classification of sample: WS01A J2

Non Hazardous Waste
Classified as 17 05 04
in the List of Waste

Sample details

Sample Name:

WS01A J2
Chapter:

Sample Depth:

0.6 m
Entry:

Moisture content:

3.1%

17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
17 05 04 (Soil and stones other than those mentioned in 17 05

7 05 04 (Soil and stones other than those mentioned in 17 (3)

Hazard properties

None identified

(no correction)

Determinands

Moisture content: 3.1% No Moisture Correction applied (MC)

#		Determinand CLP index number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	4	arsenic { arsenic trioxide }		16 mg/kg	1.32	21.125 mg/kg	0.00211 %	_	
2	4			63 mg/kg	1.233	77.71 mg/kg	0.00777 %		
3	4	beryllium { beryllium oxide } 004-003-00-8 215-133-1 1304-56-9		0.6 mg/kg	2.775	1.665 mg/kg	0.000167 %		
4	-	boron { <mark>diboron trioxide; boric oxide</mark> } 005-008-00-8 215-125-8 1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<lod< th=""></lod<>
5	4	cadmium { cadmium oxide } 048-002-00-0 215-146-2 1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<lod< th=""></lod<>
6	4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		21 mg/kg	1.462	30.693 mg/kg	0.00307 %		
7	4	chromium in chromium(VI) compounds { chromium(VI) oxide }		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<lod< th=""></lod<>
8	4	copper { dicopper oxide; copper (I) oxide } 029-002-00-X 215-270-7 1317-39-1		19 mg/kg	1.126	21.392 mg/kg	0.00214 %		
9	-	lead { lead chromate } 082-004-00-2 231-846-0 7758-97-6	1	72 mg/kg	1.56	112.307 mg/kg	0.0072 %		
10	-	mercury { mercury dichloride } 080-010-00-X		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<lod< td=""></lod<>
11	4	nickel { nickel chromate } 028-035-00-7 238-766-5 14721-18-7		15 mg/kg	2.976	44.644 mg/kg	0.00446 %		
12	4	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }		<3 mg/kg	1.405	<4.215 mg/kg	<0.000422 %		<lod< th=""></lod<>
13	æ.	034-002-00-8 vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8 215-239-8 1314-62-1		44 mg/kg	1.785	78.548 mg/kg	0.00785 %		
14	~	zinc { zinc chromate } 024-007-00-3 236-878-9 13530-65-9		83 mg/kg	2.774	230.254 mg/kg	0.023 %		



HazWasteOnline[™]
Report created by Jim Dawson on 19 Nov 2020

GEOSPHERE ENVIRONMENTAL

#		Determinand			CLP Note			Conv. Factor	Compound conc.		Classification value	Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number	بو			l dotoi			valuo	MC A	0000
15	0	TPH (C6 to C40) p	etroleum group	TDU	_	<42	mg/kg	g <mark>/kg</mark> <42 mg/kg		mg/kg	<0.0042 %	2	<lod< td=""></lod<>
16		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane			<5	mg/kg		<5	mg/kg	<0.0005 %		<lod< td=""></lod<>	
		603-181-00-X 216-653-1 [1634-04-4											
17		benzene 601-020-00-8	200-753-7	71-43-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<lod< td=""></lod<>
18		toluene 601-021-00-3	203-625-9	108-88-3		<5	mg/kg		<5	mg/kg	<0.0005 %		<lod< td=""></lod<>
19	0	ethylbenzene				<2	mg/kg		<2 mg/kg		<0.0002 %		<lod< td=""></lod<>
		601-023-00-4 202-849-4 100-41-4			+							Н	
20			202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<4	mg/kg		<4	mg/kg	<0.0004 %		<lod< th=""></lod<>
21	₫,	exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }			<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<lod< td=""></lod<>	
		006-007-00-5			+							H	
22	0	рН	I	PH	_	8.2	рН		8.2	рН	8.2 pH		
		naphthalene		F11								Н	
23		•	202-049-5	91-20-3	_	<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
24	9	acenaphthylene	205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
25	0	acenaphthene	201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
26	0	fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
		phenanthrene	201-695-5	86-73-7								Н	
27	0	•	201-581-5	85-01-8	_	0.11	mg/kg		0.11	mg/kg	0.000011 %		
	0	anthracene											
28			204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
29	0	fluoranthene	205-912-4	206-44-0	-	0.32	mg/kg		0.32	mg/kg	0.000032 %		
30	9	pyrene	204-927-3	129-00-0		0.28	mg/kg		0.28 mg/kg		0.000028 %		
\vdash		benzo[a]anthracene		+							\vdash		
31		601-033-00-9 200-280-6 56-55-3			-	0.18 mg/	mg/kg		0.18	mg/kg	0.000018 %		
32		chrysene	1		T	0.17	ma/ka		0.17	ma/ka	0.000017 %	П	
	L	601-048-00-0	205-923-4	218-01-9		0.17	mg/kg		0.17	mg/kg	0.000017 76		
	benzo[b]fluoranthene			0.24	mg/kg		0.24	mg/kg	0.000024 %				
		601-034-00-4 205-911-9 205-99-2		1					5. 9				
34		benzo[k]fluoranthene 601-036-00-5 205-916-6 207-08-9			<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>	
35		benzo[a]pyrene; be 601-032-00-3	enzo[def]chrysene 200-028-5	50-32-8		0.18	mg/kg		0.18	mg/kg	0.000018 %		
36	0	indeno[123-cd]pyre	ene 205-893-2	193-39-5		0.11 mg/kg			0.11	mg/kg	0.000011 %		
37		dibenz[a,h]anthrace	1	53-70-3		<0.1 mg/kg			<0.1	mg/kg	<0.00001 %		<lod< td=""></lod<>
38	9	benzo[ghi]perylene)			0.11	mg/kg		0.11	mg/kg	0.000011 %		
\vdash			205-883-8	191-24-2						Total	0.0657.9/	H	
	Total: 0.0657 %												





Kev			
rev			

User supplied data

Determinand values ignored for classification, see column 'Conc. Not Used' for reason

Determinand defined or amended by HazWasteOnline (see Appendix A)
 Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound

concentration

<LOD Below limit of detection

ND Not detected

CLP: Note 1 Only the metal concentration has been used for classification

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Appendix A: Classifier defined and non CLP determinands

• barium sulphide (EC Number: 244-214-4, CAS Number: 21109-95-5)

CLP index number: 016-002-00-X

Description/Comments:

Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)

Additional Hazard Statement(s): EUH031 >= 0.8 % Reason for additional Hazards Statement(s):

14 Dec 2015 - EUH031 >= 0.8 % hazard statement sourced from: WM3, Table C12.2

chromium(III) oxide (worst case) (EC Number: 215-160-9, CAS Number: 1308-38-9)

Conversion factor: 1.462

Description/Comments: Data from C&L Inventory Database

Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4 H332, Acute Tox. 4 H302, Eye Irrit. 2 H319, STOT SE 3 H335, Skin Irrit. 2 H315, Resp. Sens. 1

H334, Skin Sens. 1 H317, Repr. 1B H360FD, Aquatic Acute 1 H400, Aquatic Chronic 1 H410

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015: Risk phrases: WM2 3rd Edition 2013

Data source: WM3 1st Edition 2015 Data source date: 25 May 2015

Hazard Statements: Flam. Liq. 3 H226, Asp. Tox. 1 H304, STOT RE 2 H373, Muta. 1B H340, Carc. 1B H350, Repr. 2 H361d,

Aquatic Chronic 2 H411

ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

CLP index number: 601-023-00-4

Description/Comments:

Data source: Commission Regulation (EU) No 605/2014 - 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008.

(ATP6)

Additional Hazard Statement(s): Carc. 2 H351 Reason for additional Hazards Statement(s):

03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex

CLP index number: 006-007-00-5

Description/Comments: Conversion factor based on a worst case compound: sodium cyanide

Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008.

(ATP1)

Additional Hazard Statement(s): EUH032 >= 0.2 % Reason for additional Hazards Statement(s):

14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

pH (CAS Number: PH)

Description/Comments: Appendix C4 Data source: WM3 1st Edition 2015 Data source date: 25 May 2015 Hazard Statements: None.

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database

Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4 H302 , Acute Tox. 1 H330 , Acute Tox. 1 H310 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database

Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410 , Aquatic Chronic 2 H411





• fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database

Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database

Data source date: 06 Aug 2015

Hazard Statements: Aquatic Acute 1 H400, Aquatic Chronic 1 H410

phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database

Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database

Data source date: 06 Aug 2015

Hazard Statements: Acute Tox. 4 H302, Eye Irrit. 2 H319, STOT SE 3 H335, Carc. 2 H351, Skin Sens. 1 H317, Aquatic Acute 1 H400

, Aquatic Chronic 1 H410 , Skin Irrit. 2 H315

anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database

Data source: http://echa.europa.eu/web/quest/information-on-chemicals/cl-inventory-database

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2 H319, STOT SE 3 H335, Skin Irrit. 2 H315, Skin Sens. 1 H317, Aquatic Acute 1 H400, Aquatic

Chronic 1 H410

• fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database

Data source: http://echa.europa.eu/web/quest/information-on-chemicals/cl-inventory-database

Data source date: 21 Aug 2015

Hazard Statements: Acute Tox. 4 H302, Aquatic Acute 1 H400, Aquatic Chronic 1 H410

pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014

Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database

Data source date: 21 Aug 2015

Hazard Statements: Skin Irrit. 2 H315, Eye Irrit. 2 H319, STOT SE 3 H335, Aquatic Acute 1 H400, Aquatic Chronic 1 H410

• indeno[123-cd]pyrene (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database

Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database

Data source date: 06 Aug 2015 Hazard Statements: Carc. 2 H351

• benzo[ghi]perylene (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015 Data source: http://echa.europa.eu/web/quest/information-on-chemicals/cl-inventory-database

Data source date: 23 Jul 2015

Hazard Statements: Aquatic Acute 1 H400, Aquatic Chronic 1 H410

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds (edit as required);

barium {barium sulphide}

In the absence of significant chromium concentrations in samples, chromate species not possible; barium sulphide utilised as applicable

beryllium (beryllium oxide)

Reasonable case CLP species based on hazard statements/molecular weight. Industrial sources include: most common (non alloy) form, used in ceramics (edit as required);

boron {diboron trioxide; boric oxide}

Reasonable case CLP species based on hazard statements/ molecular weight, physical form and low solubility. Industrial sources include: fluxing agent for glass/enamels; additive for fibre optics, borosilicate glass (edit as required);

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. (edit as required) Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history (edit as required);

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chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass (edit as required);

chromium in chromium(VI) compounds {chromium(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments (edit as required);

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. (edit as required) Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected. (edit as required);

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required);

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight (edit as required);

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required);

selenium (selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex)

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil. (edit as required);

vanadium {divanadium pentaoxide; vanadium pentoxide}

Applicable for this waaste stream

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required);

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide] (edit as required);

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018

HazWasteOnline Classification Engine Version: 2020.315.4525.8798 (10 Nov 2020)

HazWasteOnline Database: 2020.315.4525.8798 (10 Nov 2020)

This classification utilises the following guidance and legislation:

WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018

CLP Regulation - Regulation 1272/2008/EC of 16 December 2008

1st ATP - Regulation 790/2009/EC of 10 August 2009

2nd ATP - Regulation 286/2011/EC of 10 March 2011

3rd ATP - Regulation 618/2012/EU of 10 July 2012

4th ATP - Regulation 487/2013/EU of 8 May 2013

Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013

5th ATP - Regulation 944/2013/EU of 2 October 2013

6th ATP - Regulation 605/2014/EU of 5 June 2014

WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014

Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014

7th ATP - Regulation 2015/1221/EU of 24 July 2015

8th ATP - Regulation (EU) 2016/918 of 19 May 2016

9th ATP - Regulation (EU) 2016/1179 of 19 July 2016

10th ATP - Regulation (EU) 2017/776 of 4 May 2017

HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017

13th ATP - Regulation (EU) 2018/1480 of 4 October 2018

14th ATP - Regulation (EU) 2020/217 of 4 October 2019

15th ATP - Regulation (EU) 2020/1182 of 19 May 2020

POPs Regulation 2019 - Regulation (EU) 2019/1021 of 20 June 2019



- Ec Ecology.
- Fr Flood Risk.
- Ge Geotechnical.
- Environmental.
- Kw Knotweed.