

REPORT NUMBER

	NTRA				Central Developme	ent - Dra							DRILLI SHEET	HOLE N	0	RC08 Sheet	<b>3</b> 27 of 33
0-	ORD	INA					C	ORE DIA	LEVEL (m) METER (mm)			02	DATE	STARTE			2008
ENG	INE	ER			Central Developme onsulting Engineers	ents Ltd.		NCLINATION TO THE TOTAL TOTAL TO THE TOTAL TOTAL TO THE TOTAL TOTAL TOTAL TO THE TOTAL TOTAL TO THE TOTAL TO	ON			90 Polymer Ge	DRILLI LOGG			A. Mal	
Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing (mm)	Puegend	Non-intact zones (shaded)	De	scription		Deput (III)	Disc	continuities		Elevation	Standpipe Details	SPT (N Value)
26								moderat bedded black, ca SHALE. slightly a	tely strong to tely weak, thir to laminated, alcareous Fresh to and locally tely weathered	nly	.11	and plans smeared sub-10°.	nuities are s ar and clay . Dips are (continued) nuities are s y rough and Dips are sub	mooth			
2	26.30							Pyrite di Incipieni common Strong to strong, t	spersed. t fractures	26	.32	and plana	nuities are s ar and sligh . Dips are				
		100	30	0				black, fir ARGILL LIMEST slightly a moderat Pyrite di	ne grained ACEOUS ONE. Fresh and locally tely weathered spersed out. Local			sub-10° v	. Dips are with iron oxi sub-vertical	de			
	26.60																
REM	MARI	KS							INSTALLA	TION R	EMA	ARKS					
			pecti	on pit	to 1.2m.				Headworks								
									GROUNDW								
									Date	Hole Depti		Casing Depth	Depth to Water	Comm	ents		
14-	TALI Date 09-0	8	ON D	0	RZ Top RZ Base 6.00 13.00 26.50 32.50	50	Type mm S	SP									



REPORT NUMBER

СС	NTR	ACT	D	ublin	Central	Developme	ent - Draf	ft							LHOLE N	Ю	RC	
co	-ORI	DINA	TES(	_)						LEVEL (m) METER (mm	)		102	1.00.00.00.0	E STARTI E COMPL		13/0	et 28 of 33 9/2008 9/2008
	IENT					Developme	ents Ltd.	IN	CLINATION		,		-90	DRII	LED BY		Mille	nnium
	GINE	EK	A	GL C	onsulting	Engineers	T T	F	LUSH				Polymer G	el LOG	GED BY	1	A. M	ahony
Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Spa (m	cture acing am)	Legend	Non-intact zones (shaded)	De	escription		Depth (m)	Dis	continuitie	S	Elevation	Standpipe Details	SPT (N Value)
27		100	61	7					strong, the bedded, black, fin ARGILL LIMEST slightly a moderate through calcite value (continual moderate bedded black, calcite value). Sightly a moderate bedded black, calcite value and calc	cely strong to lely weak, this to laminated, alcareous Fresh to and locally lely weathere spersed. It fractures	m to d.	27.52	and plar smeared sub-10° stained s fracture.	nuities are and sli . Dips are with iron of the continue of th	ghtly clay e existed all ed)			
RE	MAR	KS								INSTALLA	TION	REMA	ARKS				r	
_			pection	on pit	to 1.2m.	9				Headworks								
										GROUNDY	VATER	R DET	AILS					
										Date	Ho De	ole	Casing Depth	Depth to Water	Comm	ents		1
INIC	TAL	ATI	ON D	ETA	16						20	W. I.	= Sept st 1					
	Date		Tip De	ETAI		RZ Base	т	уре										
14	-09-0	18	13.0	0	6.00 26.50	13.00 32.50	50m 50m	nm S										



REPORT NUMBER

col	NTRA	ACT	D	ublin (	Central Developm	ent - Dra						DRILLI SHEET	HOLE NO		RC08 Sheet	<b>3</b> 29 of 33
CO	-ORE	INA	TES(	_)				ROUND LEVEL (n ORE DIAMETER (I			102		STARTE		13/09/ 14/09/	
	ENT	ER			Central Developmensulting Engineers	ents Ltd.		LUSH			90 Polymer Ge	DRILLI LOGG			Milleni A. Mal	
Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing (mm)	Legend	Non-intact zones (shaded)	Description		Depth (m)	Disc	continuities		Elevation	Standpipe Details	SPT (N Value)
28	28.00	100	58	0				Moderately strong moderately weak bedded to laminar black, calcareous SHALE. Fresh to slightly and locally moderately weath Pyrite dispersed. Incipient fractures common. (continuation)	thinly ed, r ered.		and plana smeared	uities are s ar and clay . Dips are (continued)				
	28.40	100	83	69				Strong to very str thin to medium be grey to dark grey, grained SILICEO LIMESTONE. Fr slightly and locally moderately weath Pyrite dispersed throughout.	edded, fine JS esh to	28.42		nuities are s ar. Dips are				
	MARI nd du		pection	on pit	to 1.2m.			INSTA Headw		N REM	ARKS				l··· H·l	
										ED DET	TAILC					
								GROUN		Hole	Casing	Depth to Water	Comme	nts		
								Date		epth	Depth	vvater	23			
INS				ETAI												
	Date	17	Lin D	anth	RZ Top RZ Base		Гуре									



REPORT NUMBER

COI	NTRA	ACT	D	ublin	Central Developme	ent - Dra	_						DRILL SHEE	HOLE NO	0	RC0	8 30 of 33
CO-	-ORE	OINA	res(	_)					LEVEL (m) METER (mm	1)	1	02	100000000000000000000000000000000000000	STARTE COMPLE		13/09/ 14/09/	
	ENT	ER			Central Developme	ents Ltd.		NCLINATIO	ON			90 Polymer G		ED BY ED BY		Millen A. Ma	
Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing (mm)	Legend	Non-intact zones (shaded)	De	scription		Depth (m)		continuities		Elevation	Standpipe Details	SPT (N Value)
29									ely strong to		29.17	and plar sub-10°	nuities are s nar. Dips ar . (continued nuities are s nar and clay	e ()			
								bedded to black, ca SHALE. slightly a moderate Pyrite dis	to laminated, alcareous Fresh to and locally ely weathere spersed.		29.28	smeared sub-10° Disconti and plar	d. Dips are	mooth			
								Strong to thin to m grey to d grained t	o very strong ledium bedde lark grey, fine SILICEOUS ONE. Fresh	ed, e	29.46	sub-10°					
1	29.50				,			moderate Pyrite dis throughous Strong to strong, the	and locally ely weathere spersed out. o moderately hin to mediu dark grey to ne grained	m		to slight	nuities are s ly rough and d. Non-intad	clay			
								ARGILL LIMEST slightly a	ACEOUS ONE. Fresh and locally ely weathere spersed			and sligl	nuities are s htly undulos sub-10°.				
		100	27	27				thin to m grey to d grained : LIMEST slightly a		ed, e i to	29.79	and plar sub-10°	nuities are s nar. Dips an with undulo tical fracture	e se			
REN	MAR	KS							INSTALLA	TION	REM/	ARKS					
			oectio	on pit	to 1.2m.				Headworks								
									GROUNDV	Н	ole	Casing	Depth to Water	Comme	ents		
										De	epth	Depth	vvater				
	TALI Date			epth	RZ Top RZ Base 6.00 13.00		Type										



REPORT NUMBER

	NTRA	ACT	D	ublin (	Central Developme	ent - Dra	ıft				DRILL SHEET	HOLE NO		RC0 Sheet	8 : 31 of 33
co-	ORD	INAT	res(	_)			c	ROUND LEVEL (m) ORE DIAMETER (mm)		102		STARTED COMPLE		13/09 14/09	
CLIE	ENT	ER .			Central Developmensulting Engineers	ents Ltd.		ICLINATION LUSH		90 Polymer Gel	DRILL			Millen A. Ma	
Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing (mm)	Legend	Non-intact zones (shaded)	Description	Depth (m)	Discor	ntinuities		Elevation	Standpipe Details	SPT (N Value)
30	30.10							Strong to very strong, thin to medium bedde grey to dark grey, fine grained SILICEOUS LIMESTONE. Fresh slightly and locally moderately weathered Pyrite dispersed throughout. (continue)	to i.	Discontinui and planar sub-10° wi sub-vertica (continued)	Dips are th undulo I fracture	se se			
								Moderately strong to moderately weak, thin bedded to laminated, black, calcareous SHALE. Fresh to slightly and locally moderately weathered Pyrite dispersed. Incipient fractures common.	ily	Discontinui and planar gravel infill 30.47-30.4 sub-10°.	with loca (30.32-3	l clay 0.34m,			
		100	76	58	5			Strong to moderately strong, thin to medium bedded, dark grey to black, fine grained ARGILLACEOUS LIMESTONE. Fresh slightly and locally moderately weathered Pyrite dispersed throughout. Local calcite veining.	to	Discontinui and planar smeared. sub-10°.	, slightly o				
									30.95						
	/IARI							INSTALLA	TION REM	ARKS					
Han	d du	g ins	pection	on pit	to 1.2m.			Headworks.							
								GROUNDW	ATER DET	TAILS					
								Date	Hole Depth	Casing Depth	Depth to Water	Comme	nts		
									- CPAII						
	<b>TALI</b>			ETAI	RZ Top RZ Base		Туре								



REPORT NUMBER

CO	-ORE	)INA	TES(	_)				GROUND LEVE		1	02		T STARTE COMPL		13/09	2008 /2008
	ENT	ER			Central Developme	nts Ltd		NCLINATION LUSH			90 Polymer Ge	1000	ED BY		Millen A. Ma	
Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing (mm)	Legend	Non-intact zones (shaded)	Descripti		Depth (m)	Disc	continuities		Elevation	Standpipe Details	SPT (N Value)
	31.70	100	17	0				Strong to very thin to medium grey to dark gi grained SILICI LIMESTONE. slightly and loo moderately we Pyrite disperse throughout. Grained SILICI LIMESTONE. Slightly and loo moderately we Pyrite disperse throughout. Strong to very thin to medium grey to dark gi grained SILICI LIMESTONE. slightly and loo moderately we Pyrite disperse throughout. Strong to moderately we Pyrite disperse throughout. Localcite veining. Strong to very thin to medium grey to dark gi grained SILICI LIMESTONE. slightly and loo moderately we Pyrite disperse throughout. Localcite veining. Strong to very thin to medium grey to dark gi grained SILICI LIMESTONE. slightly and loo moderately we Pyrite disperse throughout. Localcite veining.	strong, a bedded, rey, fine EOUS Fresh to ally seathered. Sed sontinued) erately medium grey to ined sully seathered. Sed sontinued strong, a bedded, rey, fine EOUS Fresh to ally seathered. Sed sontinued sed strong, a bedded, rey, fine EOUS Fresh to ally seathered. Sed strong, a bedded, rey, fine EOUS Fresh to ally seathered. Sed social strong, a bedded, rey, fine EOUS Fresh to ally seathered. Sed social strong, a bedded, rey, fine EOUS Fresh to ally seathered. Sed social strong, a bedded, rey, fine EOUS Fresh to ally seathered. Sed social strong, a bedded, rey, fine EOUS Fresh to ally seathered. Sed social strong, a bedded, rey, fine EOUS Fresh to ally seathered. Sed social strong, a bedded, rey, fine EOUS Fresh to ally seathered. Sed social strong, a bedded, rey, fine EOUS	31.19	Discontinusub-10° sub-vertifracture.	uities are rough and Non-inta	smooth ee ose			
REN	//AR	(S						INS	TALLATION		RKS				··· : []	
lan	d du	g insp	pectio	on pit	to 1.2m.			Head	dworks.							
								GRO	UNDWATE	R DET	AILS					
								Da		lole epth	Casing Depth	Depth to Water	Comme	ents		
14-	TALL Date 09-0	В			RZ Top RZ Base 6.00 13.00		Γype nm S	;P								



REPORT NUMBER

0-0	ORD	INAT	ΓES(	_)				ROUND L	EVEL (m)		1	02		STARTE		13/09/ 14/09/	
CLIE	NT	ER			Central Developmensulting Engineers			ICLINATIO LUSH	N			90 Polymer Ge		ED BY ED BY		Millen A. Ma	
-	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing (mm)	Legend	Non-intact zones (shaded)	Des	cription		Depth (m)	Dis	continuities		Elevation	Standpipe Details	SPT (N Value)
32	2.50	100	50	50				strong, the bedded, oblack, find ARGILLA LIMESTC slightly are moderate Pyrite distrong to thin to me grey to da grained Strong to thin to me grey to da grained Strong the LIMESTC slightly are moderate Pyrite distrong, the bedded, oblack, find ARGILLA LIMESTC slightly are moderate Pyrite distrong the control of the contr	CEOUS ONE. Fresh do locally ly weathered persed ut. Local ining. d) very strong, dium bedde ark grey, fine silLICEOUS ONE. Fresh do locally ly weathered persed ut. Local ining. moderately in to medium tark grey to be grained CEOUS ONE. Fresh do locally ly weathered persed ut. Local ining. moderately in to medium tark grey to be grained CEOUS ONE. Fresh do locally ly weathered persed ut. Local	dd,	32.11	Disconting and plan sub-10°.  Disconting and plan sub-10° calcite v Pyrite le	nuities are s ar. Dips are (continued) nuities are s ar. Dips are with sub-ve ein fracture. nse 32.34m	mooth e rtical			
REM	-			14	to 1 2m				INSTALLA	TION	REMA	ARKS					
i iai i	u uu	g iris	pecili	on pit	to 1.2m.				Headworks								
									Date	Н	ole	Casing	Depth to Water	Comme	ente		
									Date	De	pth	Depth	Water	Comme	Unito		
				ETAI			Time										
	09-0		13.0		6.00 RZ Base 6.00 13.00		Type nm S	SP.									



REPORT NUMBER

ha	98	5															10	000
со	NTR	ACT	D	ublin	Central I	Developm	ent - Dra	aft						DRIL	LHOLE N	Ю	RC1	16 et 1 of 15
со	-ORI	DINA	TES(	_)						LEVEL (m) METER (mm	)		102	DATI	E STARTI E COMPL		18/1	1/2008
	ENT				Central I	Developm Ltd	ents Ltd		INCLINATI FLUSH	ON			90 Polymer G	110000000000000000000000000000000000000	LED BY GED BY			1/2008 nnium ahony
Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Spa		Legend	Non-intact zones (shaded)	De	escription		Depth (m)	Dis	continuitie	s	Elevation	Standpipe Details	SPT (N Value)
- 1									SYMME HOLE I Observe returns brick, bl		s tte, ay	1.20						
18/	MAR 11/08	3-63/4	hrs U	nloa	d sludge	tanks, loa	d & erec	t fe	ncing, dig	INSTALLA	TION	REMA	ARKS					
insp	ection.	on pit	(wide	ened	due to pip	oe) and m	ove equi	pm	ent onto	1740.00								
										GROUNDV				D/1-/	1			
										Date	Ho Der		Casing Depth	Depth to Water	Comm	ents		
INC	TAL	LAT	ON D	ETA	11.0			_										
	Date	LATI			RZ Top	RZ Base		Тур	e									
19-	-11-0	8	8.00	)	4.50	8.00	50r	nm	SP									
	-11-0 -11-0		8.00 25.0	0	4.50 20.00	8.00 25.00	50r 50r	nm nm	SP SP									



REPORT NUMBER

\	NTR/		D	ublin	Central D	evelopme	ent - Dra	ıft		1 - 1			DRILLI	HOLE NO	0	RC1	6
00-	ORE	OINA	TES(	_				+	GROUND L	EVEL (m)			DATE:	STARTE	D		2 of 15 /2008
CLI	ENT		D	ublin	Central D	evelopme	ents Ltd	-	CORE DIAM	METER (mm) ON		02 90	DATE	COMPLE ED BY	ETED		/2008 Inium
	SINE	ER			onsulting L				FLUSH		P	Polymer Ge	LOGG	ED BY		A. Ma	hony
Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fract Spac (mn	ing n)	Legend	Non-intact zones (shaded)	Des	scription	Depth (m)	Disc	continuities		Elevation	Standpipe Details	SPT (N Value)
2							666666		HOLE D	cobbles							
33									HOLE D Observe	TRIX OPEN PRILLING: d by driller as f gravelly clay							N = 4 (20, 5, 1, 1, 1, 1, 1)
8/	MAR 11/08 pection	8- 63/4 on pit	hrs L	Inloa	d sludge to	anks, loa e) and m	d & erec	ct fe	encing, dig	INSTALLA	TION REMA	ARKS					
JCE	auON.									GROUNDW	ATER DET	TAILS					
										Date	Hole Depth	Casing Depth	Depth to Water	Comm	ents		
N.S	ΤΔΙ	LATI	ON E	EΤΔ	ILS												
	Date	1	Tip D	epth	RZ Top			Тур									
	-11-( -11-(		8.0 25.0		4.50 20.00	8.00 25.00			SP SP								



REPORT NUMBER

130	36																
CONT	RAC	т [	Dublin	Central I	Developm	ent - Draf	t						DRI	LLHOLE	NO	RC1	1 <b>6</b> et 3 of 15
		ATES			2	111 25 23	(	ORE DIA	LEVEL (m) METER (mn	n)		102	DA <sup>*</sup>	E STAF	PLETED	18/1	1/2008 1/2008 nnium
CLIEN				Central I Consulting	Developm Ltd	ents Ltd		NCLINATI LUSH	ON			Polymer G	-	LLED B			nnium ahony
Downhole Depth (m)	TCR%	S.C.R.%	R.Q.D.%	Spa (m	cture acing am)	Legend	Non-intact zones (shaded)	De	escription		Depth (m)	Dis	continuiti	es	Elevation	Standpipe Details	SPT (N Value)
4								HOLE D	TRIX OPEN DRILLING: ad by driller a of gravelly cl ed)	as							N = 22 (1, 12, 8, 6 1, 7) N = 45 (1, 4, 7, 9, 12, 17)
REMA									INSTALLA	ATION	REMA	ARKS					
rspec	ction p	%hrs l it (wid	Unloa ened	d sludge due to pip	tanks, load pe) and me	a & erect ove equip	me	cing, dig nt onto									
ocatio	η.								GROUND	NATER	R DET	AILS					
									Date	Ho Der		Casing Depth	Depth t Water	Com	nments		
										50		- Spill					
		TION I			D7 D	_	um-										
<u>Da</u> 19-11	1-08	8.0	0	4.50	RZ Base 8.00	50m		SP									
19-11		25.0		20.00	25.00	50m											



CONTRACT  Dublin Central Development - Drain  GROUND LEVEL (m) CORE DIAMETER (mm) Polymer Sol  DATE STATED DATE COMPLETED  DAT	108	BL/																136	596
SPANDER   SPAN	CONT	RACT	D	ublin	Central D	Developme	ent - Dra	ft									0		
REMARKS	CO-OF	RDINA	TES(	_)							n)	1	102	D.	ATE	STARTI			
The state of the s							ents Ltd			ON									
7 REMARKS 18/11/08-674/rs Unload sludge tanks, load & erect fencing, dig inspection pit (widened due to pipe) and move equipment onto location.    N=41		T.C.R.%	S.C.R.%	R.Q.D.%	Spac (mi	cing m)	Legend	Non-intact zones (shaded)	Des	scription		Depth (m)	Dis	continu	uities		Elevation		SPT (N Value)
18/11/08- 6¾hrs Unload sludge tanks, load & erect fencing, dig inspection pit (widened due to pipe) and move equipment onto location.    GROUNDWATER DETAILS   Date   Hole Depth   Dep	7								HOLE D Observe returns o	RILLING: d by driller a f gravelly cl ed)	as aay								N = 41 (1, 2, 2, 4, 15, 20)
inspection pit (widened due to pipe) and move equipment onto location.    GROUNDWATER DETAILS		200	áhrs U	Inloa	d sludge t	anks, load	l & erec	t fen	ncing, dig	INSTALL	ATION	REM	ARKS						
Date Hole Depth Unit Depth to Water Comments  INSTALLATION DETAILS	nspect	ion pi	(wide	ened	due to pip	e) and mo	ove equi	pme	ent onto										
INSTALLATION DETAILS  Depth Depth Water Comments										GROUND	1				1				
										Date			Depth	Dept Wa	h to ter	Comm	nents		
	NSTA	LLAT	ION D	EΤΔ	ILS				1										
	100000000000000000000000000000000000000					RZ Base		Туре	Э										
19-11-08 8.00 4.50 8.00 50mm SP 19-11-08 25.00 20.00 25.00 50mm SP			8.00	0	4.50														



O	38	4			`	SLOTE	_01114	10,	AL OOI	VE LOG	1120	,011					136	596
COI	NTR/	ACT	D	ublin	Central E	Developmo	ent - Dra	ft						DRILL SHEE	HOLE N	0	RC1	<b>6</b> 5 of 15
co.	ORE	NA'	ΓES(	_)						LEVEL (m)				DATE	STARTE		18/11	/2008
								_		METER (mm	)		102		COMPL	ETED		/2008 inium
	ENT	FR			Central E		ents Ltd		NCLINATIO FLUSH	ON			90 Polymer Ge		ED BY ED BY		Millen A. Ma	
					Orioditing i				Loon				Olymor Go	, , , ,				
Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Frac Spac (m)	cing m)	Legend	Non-intact zones (shaded)	De	scription		Depth (m)	Disc	continuities		Elevation	Standpipe Details	SPT (N Value)
8									HOLE D Observe		s ay	0.00						N = 46 (2, 4, 8, 10, 12, 16)
	/AR		L 1	- اما	ا داداد	anks Is	40	6-	oing di-	INSTALLA	TION	REMA	ARKS					
nsp	ectio	n pit	nrs U (wide	inloa	d sludge t due to pip	anks, load be) and m	a & erec ove equi	ren pme	ent onto									
oca	tion.									GROUNDY	VATER	DET	AILS					-
										Date	Но	le	Casing	Depth to Water	Comm	ents		
										20.0	Dep	oth	Depth	vvater				
NS	TAL	LATI	ON D	ETA	ILS													
	Date				RZ Top	RZ Base		Гуре	000									
	11-0		8.00 25.0	00	4.50 20.00	8.00 25.00	50r 50r	nm :	SP									



REPORT NUMBER

<b>6 8</b>	5															000
ONTR	ACT	D	ublin	Central D	evelopme	ent - Dra	ft					DRILL	HOLE N	0	RC1	6 t 6 of 15
O-ORI	DINA	TES(	_)					GROUND L	LEVEL (m) METER (mm)		102	1000	STARTE		18/11	1/2008
LIENT				Central Donsulting L		ents Ltd		INCLINATION FLUSH	ON		90 Polymer G		ED BY ED BY			1/2008 nnium ahony
Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fract Spac (mr	n) 500	Legend	Non-intact zones (shaded)	Des	scription	Depth (m)	Dis	continuities		Elevation	Standpipe Details	SPT (N Value)
0 10.00	87	0	0					Dark bro	d and coarse).  own, firm, sand CLAY. Grave ed and mediur	10.20 dy						N = 50 (2, 3, 3, 11 17, 19)
11.90	100	0	0					gravelly (medium	own, firm to st sandy, gravelly Gravel is fine , sub-angular	11.10		NO 5121 26/10)	6/22 /2022			
S/11/0	8- 63/4	hrs U	Inloa	d sludge t	anks, loa	d & erec	t fe	encing, dig	INSTALLAT	ION REM	AKKS					
cation	pit	1.1100		to pip	. J, and m	J Oqui	P-11	.5 51110	GROUNDW	ATER DE	TAILS					
									Date	Hole Depth	Casing Depth	Depth to Water	Comm	ents		
										- Spell						
Date				RZ Top	RZ Base		Typ	oe .								
9-11-	80	8.0	0	4.50 20.00	8.00 25.00	50r	mn	n SP n SP								
v 11	-	20.0		20.00	20.00	001		. 21								



REPORT NUMBER

	38	5													136	30
10	NTR/	ACT	D	ublin	Central Developme	ent - Dra	ft					DRILL	HOLE N	0	RC16	<b>3</b> 7 of 15
)-	ORD	INA	TES(	_)					LEVEL (m)		00	100000000000000000000000000000000000000	STARTE		18/11/	2008
_							_		METER (mm)		02	DATE	COMPLI	ETED		2008
	ENT	- C			Central Developme	ents Ltd		NCLINATIO	JN		90 Polymor Go		ED BY		19/11/ Millenr	
Т	SINE	EK	A	GL C	onsulting Ltd			LUSH			Polymer Ge	LOGG	ED BY		A. Mah	iony
Downnoie Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing (mm)	Legend	Non-intact zones (shaded)	De	scription	Depth (m)	Disc	continuities		Elevation	Standpipe Details	SPT (N Value)
2	12.30	100	0	0				slightly s CLAY w cobbles to coars								
						, o		Very cla	yey	12.60						
								cobbles LIMEST moderat	olack) gravelly of argillaceous ONE (probable to highly ed bedrock).							
13		100	41	9				moderat	ely strong to	13.03	and plan	nuities are s ar. Clay sm	eared			
								black, ca SHALE. slightly v	to laminated, alcareous Fresh to weathered with fractures.		and sligh stained ( Dips are	tty iron oxid 13.51m-13 sub-10°.	ie .7m)			
							50									
										13.70						
1	13.90							to mediu to dark g grained LIMEST	o locally rely strong, thin rim bedded, grey grey, fine SILICEOUS ONE. Fresh to veathered.		to slightly planar. Ir 13.7m-13 clay sme	nuities are s / rough and on oxide st 3.9m. Headared 4.02m. Dip	l ained vily			
ΕN	//ARI	KS							INSTALLATIO	N REMA	ARKS				W//A	
					d sludge tanks, load due to pipe) and me											
	tion.								GROUNDWAT	ER DET	AILS					
									Date	Hole Depth	Casing Depth	Depth to Water	Comme	ents		
IS.	TALI	LATIC	ON D	ETA	ILS											
_	Date				RZ Top RZ Base	,	Гуре	)								
	11-0		8.0		4.50 8.00	50r	nm S	SD					1			



col	NTRA	ACT	D	ublin	Central Developme	ent - Dra	ft					DRILLI SHEET	HOLE NO	RC1 Shee	<b>6</b> t 8 of 15
00-	ORD	INA	ΓES(	_)				GROUND L	EVEL (m) METER (mm)	1	02	120000000000000000000000000000000000000	STARTED COMPLETE	D	/2008
	ENT	ER			Central Developmensulting Ltd	ents Ltd		NCLINATION TUSH	ON		90 olymer Ge	DRILLI LOGG		19/11 Miller A. Ma	/2008 Inium Inony
Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing (mm)	Legend	Non-intact zones (shaded)	De:	scription	Depth (m)	Disc	continuities	Elevetion	Standpipe Details	SPT (N Value)
14								moderate bedded black, ca SHALE. slightly wincipient Strong to thin to m grey to cograined LIMEST Moderate	ely strong to ely weak, thinly to laminated, alcareous Fresh to veathered with fractures. o very strong, dedium bedded, lark grey, fine SILICEOUS ONE. Fresh. ely strong to	14.28	and plan smeared with varia Discontir and plan sub-10°.	nuities are s ar and heav . Dips are s able fracture nuities are s ar. Dips are nuities are s ar. Clay sm	ily clay ub-10° as. mooth		
15		100	43	29				bedded black, ca SHALE.  Strong to strong, to bedded, grained	ely weak, thinly to laminated, alcareous Fresh o moderately hin to medium dark grey, fine ACEOUS	14.90	Discontir and plan 15.01m. sub-10°.	nuities are s ar. Clay sm Dips are	mooth leared		
	15.40							Strong, the bedded, grey, find SILICEC LIMEST slightly was a second control of the bedded of the bed	ed. thin to medium grey to dark e grained	15.28	to slightly planar. Discontin	rough and lips are sub nuities are s ar. Dips are	-10°.		
								Moderat moderat bedded black, ca	ely strong to ely weak, thinly to laminated, alcareous Fresh. Pyrite	15.84					
						Ħ						nuities are s ar. Dips are			
18/		- 6 <sup>3</sup> / <sub>4</sub>			d sludge tanks, loa				INSTALLATIO	N REMA	ARKS				
	ection.	n pit	(wide	ened (	due to pipe) and m	ove equ	ipme	ent onto	GROUNDWAT	FR DET	ΔII S				
									Date	Hole Depth	Casing Depth	Depth to Water	Comment	S	
2000	<b>TAL</b> I			DETA	ILS RZ Top   RZ Base		Type			e septil I	Copul				



CORE DIAMETER (mm) INCLINATION FLUSH  INCLINATION FLUSH  Fracture Spacing (mm) Public Strong to moderately strong, thin to medium bedded, grey to dark grey. Fresh to locally moderately strong, thin to medium bedded, grey to dark grey fine grained ARGILLACEOUS LIMESTONE. Fresh to locally moderately strong, thin to medium bedded, grey to dark grey strong, thin to medium bedded, grey to dark grey. Fresh to locally moderately strong, thin to medium bedded, grey to dark grey fine grained ARGILLACEOUS LIMESTONE. Fresh to locally moderately strong, thin to medium bedded, grey to dark grey, fine	DRILLHOLE NO SHEET Sheet 9 of 15  DATE STARTED DATE COMPLETED Polymer Gel  DRILLED BY LOGGED BY  Discontinuities  Discontinuities  Discontinuities are smooth and planar. Dips are sub-10°. (continued)
CORE DIAMETER (mm) INCLINATION FLUSH  CORE DIAMETER (mm) INCLINATION FLUSH  CORE DIAMETER (mm) INCLINATION FLUSH  Fracture Spacing (mm)  Strong to moderately strong, thin to medium bedded, dark grey, fine grained ARGILLACEOUS LIMESTONE. Fresh to locally slightly weathered. (continued)  Strong to locally moderately strong, thin to medium bedded, grey to dark grey strong, thin to medium bedded, grey to dark grey, fine grained ARGILLACEOUS LIMESTONE. Fresh to locally slightly weathered. (continued)	Discontinuities are smooth and planar. Dips are
Dublin Central Developments Ltd AGL Consulting Ltd  Fracture Spacing (mm)  Push  Fracture Spacing (mm)  Push  Strong to moderately strong, thin to medium bedded, dark grey, fine grained ARGILLACEOUS LIMESTONE. Fresh to locally slightly weathered. (continued)  Strong to locally moderately strong, thin to medium bedded, dark grey, fine grained ARGILLACEOUS LIMESTONE. Fresh to locally slightly weathered. (continued)	Polymer Gel  Discontinuities  Discontinuities  Discontinuities are smooth and planar. Dips are
Fracture Spacing (mm)  100  94  82  Fracture Spacing (mm)  100  100  100  100  100  100  100	Polymer Gel LOGGED BY  A. Mahony  Discontinuities  Discontinuities  Discontinuities are smooth and planar. Dips are
(E) Homographic formula (E) Ho	Discontinuities  Discontinuities  Discontinuities are smooth and planar. Dips are
Strong to moderately strong, thin to medium bedded, dark grey, fine grained ARGILLACEOUS LIMESTONE. Fresh to locally slightly weathered. (continued)  17.10  Strong to moderately strong, thin to medium bedded, dark grey, fine grained was a continued. Strong to locally moderately strong, thin to medium bedded, grey to dark grey, fine	Discontinuities are smooth and planar. Dips are
strong, thin to medium bedded, dark grey, fine grained ARGILLACEOUS LIMESTONE. Fresh to locally slightly weathered. (continued)  17.10  Strong to locally moderately strong, thin to medium bedded, grey to dark grey, fine	and planar. Dips are
moderately strong, thin to medium bedded, grey to dark grey, fine	
grained SILICEOUS LIMESTONE with argillaceous zones. Slightly weathered with sub-vertical calcite vein throughout.	Discontinuities are smooth to slightly rough and planar. Dips are sub-10° with sub-vertical calcite fracture throughout.
18/11/08- 63/4hrs Unload sludge tanks, load & erect fencing, dig	СЛЛАМ
inspection pit (widened due to pipe) and move equipment onto location.	
GROUNDWATER DE	
Date Hole Depth	Casing Depth to Depth Water Comments
S VP II	
INSTALLATION DETAILS	
Date         Tip Depth         RZ Top         RZ Base         Type           19-11-08         8.00         4.50         8.00         50mm SP	



REPORT NUMBER

CONTRACT Dublin Central Development - D  CO-ORDINATES(_)	Draft		T H			DRILL	HOLE NO	2	RC1	•
CO-ORDINATES(_)						SHEET				10 of 15
		GROUND I	LEVEL (m) METER (mm)	1	02	DATE	STARTE		18/11/	
CLIENT Dublin Central Developments Li ENGINEER AGL Consulting Ltd	td	FLUSH	ON		90 Polymer Gel	DRILL			19/11, Millen A. Ma	
Core Run Depth (m)  Core Run Depth (m)  T.C.R.% S.C.R.% R.Q.D.% R.Q.D.% Legend Legend	Non-intact zones (shaded)	De	escription	Depth (m)	Disco	ontinuities		Elevation	Standpipe Details	SPT (N Value)
18.20		to mediu to dark ( grained LIMEST argillace Slightly sub-vert	o locally tely strong, thin um bedded, grey grey, fine SILICEOUS ONE with rous zones. weathered with tical calcite vein out. (continued)	18.92	to slightly planar. Di with sub-v	uities are s rough and ps are sub vertical cale rroughout.	-10°			
19 19.00		strong, t bedded, grained ARGILL LIMEST siliceous	ed. Pyrite lense	18.92	and plana sub-10° w	uities are s ir. Dips are vith sub-ve 19.14m-19	e rtical			
19.80		moderat bedded black, ca SHALE. slightly v		19.68	and plana sub-10°. Discontin to slightly planar. Di	uities are s ar. Dips are uities are s rough and ps are sub	mooth	4:		
REMARKS 18/11/08- 63/4hrs Unload sludge tanks, load & er			INSTALLATION	REMA	ARKS					
respection pit (widened due to pipe) and move education.	quipm	nent onto								
			GROUNDWATE	lole	Casing	Depth to	Comm	onto		
				epth	Depth	Depth to Water	Comm	ents		
NSTALLATION DETAILS										
NSTALLATION DETAILS           Date         Tip Depth         RZ Top         RZ Base           19-11-08         8.00         4.50         8.00         5	Tyr 50mm									



Strong to very strong, thin to medium bedded, tark grey, fine grained collections are smooth to slightly volar and plears. Dips are sub-10° (confinuelles are smooth to slightly rough and plears. Dips are sub-10° (confinuelles are smooth to slightly rough and plears. Dips are sub-10° (confinuelles are smooth to slightly rough and plears. Dips are sub-10° (confinuelles are smooth to slightly rough and plears. Dips are sub-10° (confinuelles are smooth to slightly rough and plears. Dips are sub-10° (confinuelles are smooth to slightly rough and plears. Dips are sub-10° (confinuelles are smooth to slightly rough and plears. Dips are sub-10° (confinuelles are smooth to slightly rough and plears. Dips are sub-10° (confinuelles are smooth to slightly rough and plears. Dips are sub-10° (confinuelles are smooth to slightly rough and plears. Dips are sub-10° (confinuelles are smooth to slightly rough and plears. Dips are sub-10° (confinuelles are smooth to slightly rough and plears. Dips are sub-10° (confinuelles are smooth to slightly rough and plears. Dips are sub-10° (confinuelles are smooth to slightly rough and plears. Dips are sub-10° (confinuelles are smooth to slightly rough and plears. Dips are sub-10° (confinuelles are smooth to slightly rough and plears. Dips are sub-10° (confinuelles are smooth to slightly rough and plears. Dips are sub-10° (confinuelles are smooth to slightly rough and plears. Dips are sub-10° (confinuelles are smooth to slightly rough and plears. Dips are sub-10° (confinuelles are smooth to slightly rough and plears. Dips are sub-10° (confinuelles are smooth to slightly rough and plears. Dips are sub-10° (confinuelles are smooth to slightly rough and plears. Dips are sub-10° (confinuelles are smooth and plears. Dips are sub-10° (confinuelles are smooth and plears. Dips are sub-10° (confinuelles are smooth to slightly rough and plears. Dips are sub-10° (confinuelles are smooth and plears. Dips are sub-10° (confinuelles are smooth and plears. Dips are sub-10° (confinuelles are smooth and ple	108	36			,	SEOIL	CHIN	IICA	AL CO	KE LUG	KE	COR	D				13	696
Description   Strong to very strong, thin to medium bedded, granded SILL/EAUS   LiMESTONE; locally arrigitence zones. Fresh, (continuelly strong), thin to medium bedded, granded SILL/EAUS   LimeSTONE; locally arrigitence zones. Fresh to locally signify tough and bedded, dark granded sillored black.   Strong to very strong, thin to medium bedded, granded sillored black.   Strong to very strong, thin to medium bedded, granded sillored black.   Strong to very strong, thin to medium bedded, granded sillored black.   Strong to very strong, thin to medium bedded, granded sillored black.   Strong to very strong, thin to medium bedded, granded sillored black.   Strong to very strong, thin to medium bedded, granded sillored black.   Strong to wery strong, thin to medium bedded, granded sillored black.   Strong to wery strong, thin to medium bedded, granded sillored black.   Strong to wery strong, thin to medium bedded, granded sillored black.   Strong to wery strong, thin to medium bedded, granded sillored black.   Strong to wery strong, thin to medium bedded, granded sillored black.   Strong to wery strong, thin to medium bedded, granded sillored black.   Strong to wery strong, thin to medium bedded, granded sillored black.   Strong to wery strong, thin to medium bedded, granded sillored black.   Strong to wery strong, thin to medium bedded, granded sillored black.   Strong to wery strong, thin to medium bedded, granded sillored black.   Strong to wery strong, thin to medium bedded, granded sillored black.   Strong to wery strong, thin to medium bedded, granded sillored black.   Strong to wery strong, thin to medium bedded, granded sillored black.   Strong to wery strong, thin to medium bedded, granded sillored black.   Strong to wery strong, thin to medium bedded, dark gray, fine part of the sillored black.   Strong to wery strong, thin to medium bedded, granded sillored black.   Strong to wery strong, thin to medium bedded, granded sillored black.   Strong to wery strong, thin to medium bedded, granded sillored bla	CONTR	RACT		ublin	Central [	Developme	ent - Dra	ıft								0		
Strong to very strong, thin to medium bedded, dark grey, fine grained added, dark grey, fine grained added added grey, fine grained added grey, fine grained added grained added grey, fine grained added grey, fine grained added grained grained added grained grained added grained grained added grained grai	CO-OR	DINA	TES(	_)						. ,	1)	1	102	DATE	STARTI		18/11	/2008
Strong to very strong, this to medium bedded, gray file and palary strong the strong that to medium bedded, gray file and palary strong, this to medium bedded, gray file and palary strong, this to medium bedded, gray file and palary strong this to medium bedded, gray file and palary strong this to medium bedded, gray file and palary strong this to medium bedded, gray file and palary strong this to medium bedded, gray file and palary strong the palary strong this to medium bedded, gray to dark gray, file grained SILICEOUS LIMESTONE. Fresh to locally slightly weathered with incipant fractures 20.7m. 20.8m.  21.14m.  Moderately strong to moderately strong to moderately strong to moderately weathered.  21.14m.  Strong to moderately strong to moderately strong to moderately weathered with incipant fractures.  Strong to moderately strong to mo	CLIENT						ents Ltd	-		ON				a la communicación				
this to medium bedded, grey, fine grained SILICEOUS LIMESTONE. Fresh to locally slightly weathered with incipient Tractures.  Strong to moderately shrong, this to medium bedded, grey fine grained SILICEOUS LIMESTONE. Fresh to locally slightly weathered with incipient Tractures.  Strong to very strong, this to medium bedded, grey fine grained SILICEOUS LIMESTONE. Fresh to locally slightly weathered with incipient Tractures.  Strong to moderately strong to moderately sub-ror with sub-vertical fracture 20.7m-20.48m.  Discontinuities are smooth to slightly rough and planar. Dips are sub-10° with sub-vertical fractures 20.7m-20.48m.  Discontinuities are smooth to slightly rough and planar. Dips are sub-10° with sub-vertical fracture 20.88m-20.93 at 21.44  Discontinuities are smooth to slightly rough and planar. Dips are sub-10° with sub-vertical fracture 20.88m-20.97m.  21.40  Discontinuities are smooth to slightly rough and planar. Dips are sub-10° with sub-vertical fracture 20.88m-20.97m.  21.41  Moderately strong to moderately strong to moderately strong, thin to medium bedded, dark grey, fine grained ARGILLACEOUS LIMESTONE. Fresh to locally slightly weathered with incipient fractures 21.51-21.88m, grained 21.76m-21.92m and 22.45m-22.69m-clay smeared.  INSTALLATION REMARKS  INSTALLATION REMARKS  INSTALLATION PETAILS  Date Hole Casing Depth to Comments  STALLATION DETAILS  Date Tip Depth RZ Top RZ Base Type	Core Run Depth (m)	OC.	S.C.R.%	Q.D.	Space (mi	cing m)	Legend	Non-intact zones (shaded)	11000000			Depth (m)				Elevation	Standpipe Details	SPT (N Value)
Strong to moderately strong, thin to medium bedded, dark grey, fine grained ARGILLACEOUS LIMESTONE. Fresh to locally slightly weathered.  21.20  Strong to very strong, thin to medium bedded, grey to dark grey, fine grained SILICEOUS LIMESTONE. Fresh to locally slightly weathered.  20.88  Strong to very strong, thin to medium bedded, grey to dark grey, fine grained SILICEOUS LIMESTONE. Fresh to locally slightly weathered with incipient and planar. Dips are sub-10° with sub-vertical fracture 20.88m-20.97m.  21.142  Strong to moderately strong to moderately weak, thinly bedded, black, calcareaucs SHALE. Fresh to locally slightly weathered with incipient and planar. Dips are sub-10° with sub-vertical fractures 21.42. Fresh to locally slightly weathered with incipient and planar. Dips are sub-10° with sub-vertical fractures 21.76m-21.92m and 22.45m-22.69m-clay smeared.  INSTALLATION REMARKS  INSTALLATION REMARKS  INSTALLATION REMARKS  INSTALLATION REMARKS  STALLATION DETAILS  Date Hole Casing Depth to Water Comments  STALLATION DETAILS  Date Tip Depth RZ Top RZ Base Type	20					6	0 1		thin to n grey to o grained LIMEST argillace	nedium bedd dark grey, fin SILICEOUS ONE, locally ous zones.	ed, e	20.41	to slight planar.	ly rough an Dips are su	d			
Strong to very strong, thin to medium bedded, grey to dark grey, fine grained SILICEOUS LIMESTONE. Fresh. Pyrite lense 20.93 & 21.14  Moderately strong to moderately weak, thinly bedded, black, calcareous SHALE. Fresh to locally slightly weathered with incipient bedded, dark grey, fine grained ARGILLACEOUS LIMESTONE. Strong to moderately strong to moderately weathered with incipient parallel. Strong to moderately strong thin to medium bedded, dark grey, fine grained ARGILLACEOUS LIMESTONE. Fresh to locally slightly weathered.  INSTALLATION REMARKS  INSTALLATION REMARKS  INSTALLATION REMARKS  INSTALLATION REMARKS  INSTALLATION DETAILS  Date Tip Depth RZ Top RZ Base Type		100	59	57					strong, t bedded, grained ARGILL LIMEST locally s	thin to mediu dark grey, fi ACEOUS ONE. Fresh lightly	m ne	20.41	and plan sub-10°	nar. Dips a with sub-v	re ertical			
Moderately strong to moderately weak, thinly bedded, black, calcareous SHALE. Fresh to locally slightly weathered with incipient fractures.  Strong to moderately strong, thin to medium bedded, dark grey, fine grained ARGILLACEOUS LIMESTONE. Fresh to locally slightly weathered.  Discontinuities are smooth and planar. Dips are sub-10°.  Discontinuities are smooth and planar. Dips are sub-10° with sub-vertical fractures 21.42.  Discontinuities are smooth and planar. Dips are sub-10° with sub-vertical fractures 21.51-21.68m, 21.76m-21.92m and locally slightly weathered.  Discontinuities are smooth and planar. Dips are sub-10° with sub-vertical fractures 21.51-21.68m, 21.76m-21.92m and locally slightly weathered.  Discontinuities are smooth and planar. Dips are sub-10° with sub-vertical fractures 21.51-21.68m, 21.76m-21.92m and locally slightly weathered.  STALLATION REMARKS  INSTALLATION REMARKS  INSTALLATION DETAILS  Date Tip Depth RZ Top RZ Base Type	1				ľ				thin to m grey to d grained LIMEST Pyrite le	nedium bedd dark grey, fin SILICEOUS ONE. Fresh nse 20.93 &	l, ed, e		to slight planar. I with sub	ly rough an Dips are su o-vertical fra	d b-10°			
Strong to moderately strong, thin to medium bedded, dark grey, fine grained ARGILLACEOUS LIMESTONE. Fresh to locally slightly weathered.  INSTALLATION REMARKS    INSTALLATION REMARKS   INSTALLATION REMARKS	21.20								Moderat moderat bedded, calcared Fresh to weather	tely strong to tely weak, thi black, ous SHALE. locally slight ed with incipi	nly	21.42	and plar infilled 2 Dips are	nar. Black c 21.2m-21.2 e sub-10°.	lay 4m.			
INSTALLATION REMARKS  INSTALLATION REMARKS  INSTALLATION REMARKS  INSTALLATION REMARKS  INSTALLATION REMARKS  INSTALLATION REMARKS  GROUNDWATER DETAILS  Date Hole Depth Depth Water Comments  Date Tip Depth RZ Top RZ Base Type									Strong to strong, t bedded, grained ARGILL LIMEST locally si	o moderately hin to mediu dark grey, fil ACEOUS ONE. Fresh lightly	m ne		and plar sub-10° fractures 21.76m- 22.45m-	nar. Dips a with sub-ve s 21.51-21. -21.92m an -22.69m-cla	re ertical 68m, d			
/11/08- 6¾hrs Unload sludge tanks, load & erect fencing, dig pection pit (widened due to pipe) and move equipment onto ation.    GROUNDWATER DETAILS   Date   Hole   Depth   Depth   Depth   Water   Comments																		
GROUNDWATER DETAILS   Date	3/11/08 spection	8- 63/4 on pit	hrs U (wide	nload ned c	I sludge to	anks, load e) and mo	& erect	fenc	ing, dig	INSTALLA	TION	REMA	RKS					
Date Depth Depth Water Comments  STALLATION DETAILS  Date Tip Depth RZ Top RZ Base Type	cation.									GROUNDV	VATE	R DET	AILS					
Date   Tip Depth   RZ Top   RZ Base   Type										Date	1000			Depth to Water	Comme	ents		
	STAL	LATI	ON D	ETAI	LS													
3-11-08   25.00   20.00   25.00   50mm SP	9-11-0	08	8.00	)	4.50	8.00	50n	nm S										



REPORT NUMBER

102F	/														100	330
CONTRAC	ст	Di	ublin	Central D	evelopme	ent - Dra	ft					DRILLI SHEET	HOLE N	0	RC1	6 12 of 15
CO-ORDII	NAT	ES(	_)					GROUND I	EVEL (m) METER (mm)	1	102	DATE	STARTE		18/11	/2008
CLIENT	2			Central Donsulting I	evelopme _td	ents Ltd		NCLINATIO	ON		90 Polymer Gel	DRILLI			19/11 Millen A. Ma	/2008 Inium Ihony
	T.C.R.%	S.C.R.%	R.Q.D.%	Frac Spac (mi	m)	Legend	Non-infact zones (shaded)		scription	Depth (m)	Disco	ontinuities		Elevation	Standpipe Details	SPT (N Value)
1	00	55	47					strong, t bedded, grained ARGILL LIMEST	o moderately hin to medium dark grey, fine ACEOUS ONE. Fresh to lightly ed. (continued)		Discontinu and planat sub-10° w fractures 2 21.76m-2 22.45m-2 smeared.	r. Dips are ith sub-vei 21.51-21.6 1.92m and 2.69m-clay	e rtical 8m, I			
22.90								thin to m grey to d grained		22.70	Discontinu to slightly planar. Dip	rough and				
1	00	100	87													
23.50								strong, t bedded, grained ARGILL LIMEST locally s	ed. Pyrite lense	23.50	Discontinu and plana 23.5m-23. sub-10°.	r. Clay sm	eared			
REMARKS	S			100					INSTALLATIO						<u>  □ .  </u>	
8/11/08-	63/4h				anks, load											
cation.	hie (	· · · · · ·	, rou l	ado to hit	o) and m	oro oqui	Pillo	, it office	GPOLINDWAT	ED DET	TAIL S					
										Hole	Casing	Depth to Water	Comm	ents		
									Date	epth	Depth	Water	CONTINI	OTILO		
NSTALLA	ATIC	N D	ETA	ILS												
Date 19-11-08		8.00		RZ Top 4.50	RZ Base 8.00		Type									
19-11-08 19-11-08		25.0		20.00	25.00	501	nm	SP								



OG	38					GEUII	ECHN	ICAL	COr	KE LOG	KE	COR	D					136	96
0100	NTR	ACT	D	ublin	Central	Developm	ent - Dra	ft							RILL	HOLE N	0	RC10	6 13 of 15
0-	ORI	OINA	TES(	_)				52453-5		.EVEL (m) /IETER (mn	1)		102	D	ATE	STARTE COMPL		18/11/	2008
	INE				Central onsulting	Developme Ltd	ents Ltd	FLU	LINATIC ISH	ON			90 Polymer G			ED BY ED BY		19/11/ Milleni A. Mal	
Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Spa (m	cture acing nm)	Legend	Non-intact zones (shaded)	Des	scription		Depth (m)	Dis	scontinu	uities		Elevation	Standpipe Details	SPT (N Value)
24 25	4.90	100	91	73				n b b s b s b s b s b s b s b s b s	moderate pedded to plack, ca SHALE. Continue Strong to strong, the pedded, grained ARGILLA LIMESTO pocally strong to peddely strong to peddely strong to peddely strong the strong to peddel strong the strong to peddel strong the strong to peddel	ed) moderately nin to mediu dark grey, fi ACEOUS ONE. Fresh	inly / / m ne	24.21	Discont and pla sub-10°	nar. Dip °. (conti tinuities nar. Di	are s	mooth			
REM	AR		100	95				tt g	hin to me grey to d grained S	very strong edium bedd ark grey, fin SILICEOUS DNE. Fresh	l, ed, e	25.21 26.00	Discont to slight planar.	ly rough	n and				
18/1 nspe	1/08 ectio	- 63/4	hrs U (wide	nload	l sludge due to pip	tanks, load be) and mo	d & erect	fencing oment o	g, dig onto										
ocat	ion.									GROUNDY	VATE	R DET	AILS						
										Date		ole epth	Casing Depth	Dept Wa	h to ter	Comme	ents		
INST	Δ11	ΔΤΙ	ON D	FΤΔΙ	ıs														
	ate	7	ip De	epth	RZ Top	RZ Base		уре											
	11-0 11-0		8.00 25.0		4.50 20.00	8.00 25.00		nm SP nm SP											



REPORT NUMBER

OI	NTR/	ACT	D	ublin (	Central Developme	ent - Dra	ft					DRILLI	HOLE NO	1	RC16	3
			1,5-5	202.27) = 0.00								SHEET	•	,	Sheet	14 of 15
00-	ORD	INA	ΓES(	_)				ROUND L			0.2	200000000000000000000000000000000000000	STARTED		18/11/2	2008
_				7, 2, 2		20 12 330		ORE DIAN	METER (mm)		02 90		COMPLET		19/11/2 Millenn	2008
	ENT SINEI	FR			Central Developme ensulting Ltd	ents Ltd		LUSH	/14		olymer Ge	DRILLI LOGG			Millenn A. Mah	
			,,		3					Ti	,					
Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%		Fracture Spacing (mm)	Legend	Non-intact zones (shaded)	Des	scription	Depth (m)	Disc	continuities		Elevation	Standpipe Details	SPT (N Value)
26								strong, the bedded, grained ARGILLA LIMESTO Strong to thin to m grey to digrained Strong stro	o moderately nin to medium dark grey, fine ACEOUS ONE. Fresh. o very strong, edium beddee ark grey, fine SILICEOUS ONE. Fresh.	26.22	and plan sub-10°.  Disconting to slightly	nuities are s ar. Dips are nuities are s y rough and Dips are sub	mooth			
	26.50							moderate bedded,	ely strong to ely weak, thinly black, us SHALE.	26.50 y 26.56	and plan sub-10°. Discontii	nuities are s ar. Dips are nuities are s ar. Dips are	mooth			
- 27								Strong to strong, the bedded, grained ARGILL LIMEST interbedd limeston	o moderately hin to medium dark grey, fine ACEOUS ONE with ded siliceous e. Fresh. nse 27.0m.		sub-10°.					
		100	97	87				moderati bedded,	ely strong to ely weak, thinl black, us SHALE.		and plan sub-10°.	nuities are s par. Dips are				
					TV-ST			strong, to bedded, grained ARGILL	o moderately hin to medium dark grey, fine ACEOUS ONE. Fresh.		and plar sub-10°		•	X///X///XX///X		
								thin to m grey to d grained	o very strong, ledium bedded lark grey, fine SILICEOUS ONE. Fresh.	1,	to slightl	nuities are s y rough and Dips are sub		XVIIXVIIX		
_	MAR		har '	lale -	l aludaa taalaa 1	40	4 6	olog di-	INSTALLAT	ION REMA	ARKS					
insp	ectic	on pit			d sludge tanks, load due to pipe) and m											
loca	ation.								GROUNDW	ATER DET	AILS					
									Date	Hole	Casing	Depth to Water	Commer	nts		
									Date	Depth	Depth	Water	OGITITIO			
INS	TAL	LATI	ON E	DETAI	LS											
	Date		_		RZ Top RZ Base		Type									
40	-11-0	10	8.0	00	4.50 8.00 20.00 25.00		mm a						1			



0	68					OLO II			00	ILL EGG							136	596
CC	NTR	ACT	D	ublin	Central	Developme	ent - Dra	ft						DRIL	LHOLE N	0	RC1	<b>6</b> t 15 of 15
CC	-ORI	OINA	TES(	_)						LEVEL (m) METER (mm	1)		102	DATE	STARTI		18/11	/2008
	IENT GINE				Central I	Developme Ltd	ents Ltd	-	ICLINATI LUSH	ON			-90 Polymer G		LED BY		19/11 Miller A. Ma	/2008 Inium ahony
Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Spa (m	cture acing im)	Pregend	Non-intact zones (shaded)	D€	escription		Depth (m)	Dis	scontinuities	\$	Elevation	Standpipe Details	SPT (N Value)
	28.10								strong, bedded grained ARGILL	o moderately thin to mediu , dark grey, fir ACEOUS ONE. Fresh	m ne	28.10		inuities are nar, Dips a				
									modera bedded, calcared Fresh	ous SHALE.		28.48	and plai sub-10°		е			
29		100	86	74					thin to n grey to o grained	o very strong nedium bedde dark grey, find SILICEOUS ONE. Fresh	ed, e		to slight	nuities are ly rough and Dips are su	d			
									strong, t bedded, grained ARGILL		m ne	29.25		nuities are : nar. Dips ar				
	29.80								End of (m)	Corehole at 29	9.8	29.80						
	MARI		n ma 1 1	nla -	ا حاساما	lanka las	10 0	force	inn di-	INSTALLA	TION	I REMA	ARKS					
nsp						tanks, load be) and mo												
										GROUNDW		R DET	AILS Casing	Depth to	T			
										Date		epth	Depth	Depth to Water	Comme	ents		
NS	TALL																	
	Date -11-0		ip De		RZ Top 4.50	RZ Base 8.00		ype m Sl	P									
	-11-0		25.0		20.00	25.00		m SI										



Soil Sampling Protocol

DCC PLAN NO 5126/22 RECEIVED: 26/10/2022



#### STANDARD OPERATING PROCEDURE

#### SOIL SAMPLING

The soil sampling technique described below will be followed to ensure that soil samples are representative of the environment which they are intended to characterise.

#### 1.0 SAMPLING

- (A) Locate the soil sampling station in accordance with the workplan which will specify the number and type of samples to be taken. Place a wooden stake into the ground one metre from the sample location and record sample location on the stake.
- (B) Record the location in the field logbook and, if possible, photograph the location.
- (C) Collect soil samples from the depth specified in the workplan and record the depth in the field notebook. Describe the colour and texture of each sample and record in notebook.
- (D) Wear appropriate level of protection when taking samples (gloves, safety glasses, hard hat etc.) as specified in the workplan. Collect soil samples as specified in the workplan using decontaminated stainless steel trowel, soil corer, or similar device. Collect discrete soil samples from each station.
- (E) If required by the workplan, composite discreet soil samples by placing equal volumes of soil into the container and mixing thoroughly to a homogenous mixture. Samples may be hand picked, if necessary, to remove larger materials, such as leaves, sticks, gravel, rocks etc., if specified in the workplan. Record in notebook the nature of any materials removed from soil samples.
- (F) Deposit each soil sampled into a (clean, pre-washed) container. At the time of collection, the sample bottle will be filled to the top with soil sample.
- (G) Fill out labels with waterproof ink and attach to the sample container. The following information will be recorded on each sample label: -
  - Client/Site Name
  - Date Collected
  - Time Collected
  - Analysis
  - Preservative
  - Sample Identification Number

C:\SOP\Soil.Doc 1

- (H) Decontaminate sampling equipment as described below unless otherwise specified in the site workplan. When using stainless steel sampling equipment: -
  - wash with non-phosphate detergent in potable water,
  - rinse sequentially in potable water, methanol, acetone, methanol and D1 water and;
  - allow to air dry in a containment free area.
- (I) Wrap the decontaminated sampling equipment in aluminium foil which has been decontaminated in accordance with Section H.

#### 2.0 FIELD DOCUMENTATION

Record sample information in the field notebook. Provide a complete description of the sample location, and a photograph, if necessary. Describe the soil appearance, especially if the presence of oil or an odour is noted. Document the sample bottle lot numbers in the field notebook. Record weather conditions at the time of sampling. The Field Team Leader will initial the logbook entries for correctness.

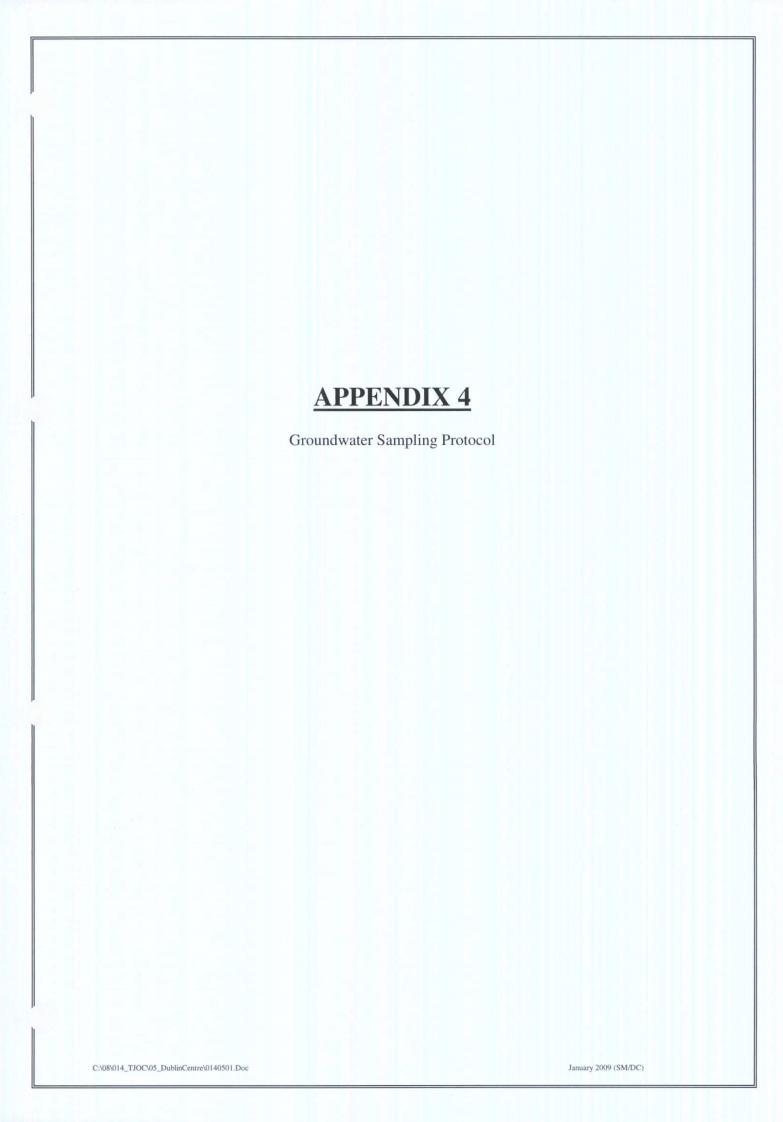
#### 3.0 FIELD QA/QC SAMPLES

See the separate SOP on Field QA/QC samples for appropriateness and preparation of D1 Water Field Blanks, Cross-contamination Field Blanks, Trip Blanks and Field Duplicate Samples.

#### 4.0 PACKAGING AND TRANSPORT

Check to be sure that all necessary information is on the sample container label. Complete the chain-of custody form. Package, label and transport the samples to the testing laboratory in accordance with requirements for packing, shipping and labelling environmental samples.

END.





#### STANDARD OPERATING PROCEDURE

#### GROUNDWATER SAMPLING

The primary objective of groundwater sampling is to evaluate whether the potential contaminant sources at a site have impacted the quality of the groundwater in the underlying aquifer. The additional objective is to measure hydraulic gradient, or slope, of the water table in the shallow aquifer in an effort to evaluate the direction of groundwater flow.

The purpose of this procedure is to ensure that representative samples of groundwater are collected and documented using consistent methods to ensure sample integrity.

#### 1.0 SAMPLING PROCEDURES

# DCC PLAN NO 5126/22 RECEIVED: 26/10/2022

#### 1.1 Well Operating and Purging Procedures

All groundwater sampling will be conducted after the installed and developed wells have been allowed to equilibrate for at least 2 to 3 days. A Field Data Sheet for Well Sampling will be completed for each well.

Groundwater sampling teams will use to following procedure for approaching, opening, purging and sampling all wells unless directed otherwise by the workplan.

- Prior to placing any equipment into the well, decontaminate the sampling equipment according to standard decontamination protocol.
- 2) Approach the well with a working FID/PID, a well key, and a depth-to-water meter.
- 3) Unlock and open the well cap just enough to insert the probe of the PID/FID. Take and record a reading. A decision to upgrade PPE may be necessary based on the FID/PID readings in the breathing zone.
- 4) Where practical, the surface water column will be visually examined for the presence of hydrocarbons, if present or suspected, the thickness of the hydrocarbon layer will be measured using an oil/water interface probe prior to taking the depth-to-water measurement.
- 5) Insert the water level probe into the well and measure and record the static water level to the nearest 0.01 m with respect to the established survey point on top of the well casing.

C:\SOP\Gwater.Doc

- 6) Decontaminate the water level probe with DDI water (Do not rinse with any solvents unless product was encountered).
- 7) Calculate and record the minimum volume of water to be purged according to the following conversion factors: -

1 well volume	=	water column in metres x litres/linear metre
2 inch casing	=	2.0 LPM
4 inch casing	=	8.1 LPM
6 inch casing	=	18.2 LPM
8 inch casing	=	32.4 LPM

- Purge the well of at least 3 casing volumes by pumping using a peristaltic pump with flow controller or bailing with a decontaminated submersible pump or PVC bailer equipped with a bottom filling check valve (if the purge volume is low, generally less than 100 litres, the sampling team might find it more efficient to purge with a bailer than a pump). Use a graduated bucket to track the amount of water removed from the well. The determination of purging and sampling will depend on parameters being analysed. Where VOCs or SVOCs are required it is recommended that slow purging using peristaltic pumping be undertaken. Periodically determine the pH, temperature and specific conductance of the purged water. Continue purging until the well has been completely evacuated or until the pH and specific conductance measurements have stabilised for at least one well volume. Wells that become dewatered prior to producing three casing volumes will be sampled as soon as practical once they recover sufficiently.
- 9) Dispose of purge water collected in the graduated bucket by dumping onto the ground at a distance of 50 to 60 metres from the vicinity of the well. If the water is known or suspected to be significantly contaminated, it may be necessary to store the purge water in a secure container, such as a drum, pending proper disposal.
- 10) Be aware and record any unusual occurrence during purging such as cascading (a shallow water entry zone that trickles into the borehole).

#### 1.2 Field Parameter Measurement

Measurements of field parameters of pH, temperature and electrical conductivity are collected and organic vapour screening is conducted while the well is purged. To facilitate the collection of basic field parameters, the field team needs to: -

- Purge three well volumes of water from the well and measure field parameters for each well volume removed.
- Collection of water samples should take place after stabilisation of the following parameters: -
  - Temperature +/- 1°C
  - pH (meter or paper) +/- 0.2 units
  - Specific conductivity +/- 5%

- If the aforementioned parameters do not stabilise within three purge volumes, the well will be purged up to a maximum of six borehole volumes unless two consecutive sets of stabilised parameters are obtained.
- Note any observations in the field logbook.

#### 1.3 Collection of Water Samples

All samples or chemical analysis will be placed in laboratory prepared bottles. The types of sample containers and preservative required for each type of analysis are described in the workplan. Where product layers are present a procedure and rational for the collection of such layers should be outlined in the site specific work plan. If required, preservatives will be placed in the sample containers prior to collecting the samples.

The following procedure will be used to sample a well: -

- After the well has been purged and allowed to recover, sample the well using a properly decontaminated or dedicated disposable bailer. Gently lower the bailer into the water column. Allow the bailer to sink and fill with a minimum of surface disturbance.
- 2) Slowly raise the bailer out of the well. Do not allow the bailer line to contact the ground, either by coiling it on a clean plastic sheet or by looping it from arm to arm as the line is extracted from the well.
- Samples will be collected for VOCs analysis immediately after purging is complete and before other samples are collected. Pour the samples slowly into the laboratory prepared 40 ml glass vial. Overfill each vial slightly to eliminate air bubbles, a convex meniscus should be present at the top of the vial. Ensure that the Teflon liner of the septum cap is facing inward and that no bubbles are entrapped. After capping securely, turn bottle upside-down, tap it against your other hand, and observe sample water for bubbles. If bubbles are observed, remove the cap, overfill the vial and reseal. Repeat this step for each vial until the samples with no bubbles are obtained.
- 4) Place a label on the container and enter the following information: -

Client/Site Name
Date Collected
Time Collected
Analysis
Preservative
Sample Identification Number

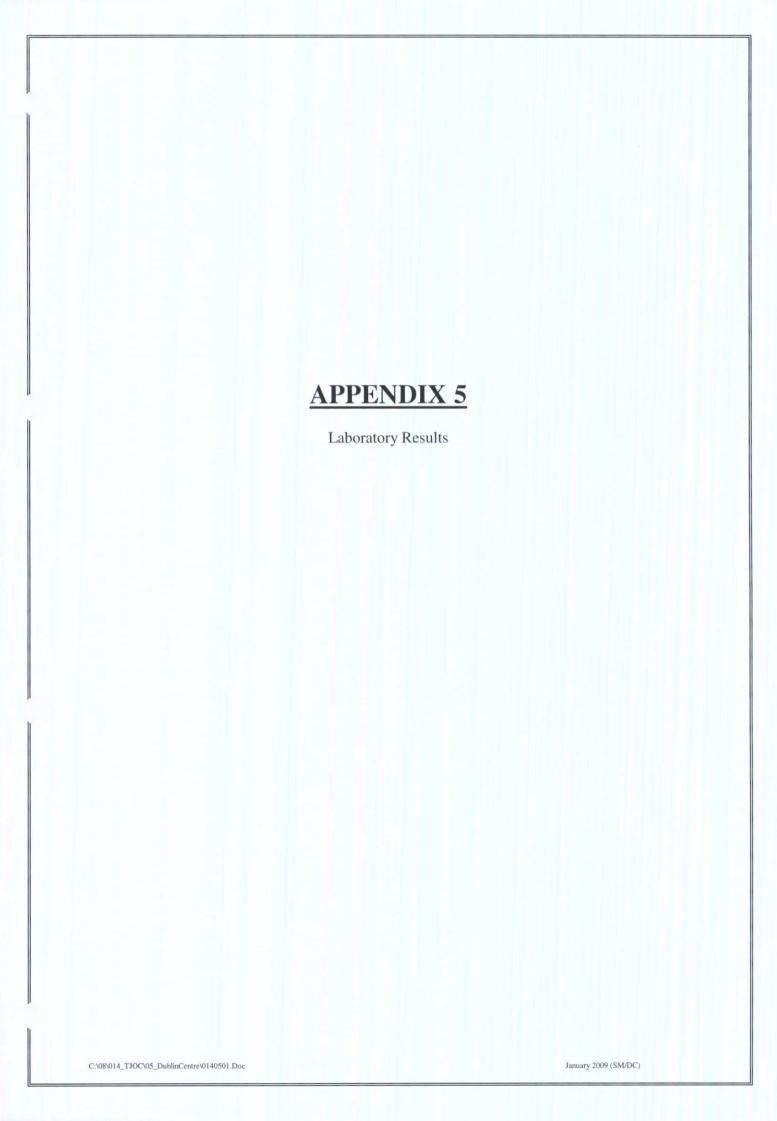
- 5) Record pertinent information in the field logbook and on the Field Data Sheet for Well Sampling. Complete chain-of-custody form.
- 6) Place custody seals on the container caps. As soon as possible, place sample containers in a cooler with bagged ice and maintain at 4°C until extraction. Surround the bottles with vermiculite.

C:\SOP\Gwater.Doc 3

- Obtain the semi-volatile compound/pesticides/PCBs sample(s) by transferring the water to a laboratory prepared 1000 ml amber glass bottle with Teflon-lined cap. Fill the bottle to the bottom of the neck and follow steps 4, 5 and 6 above.
- 8) Dissolved metals (if necessary) requires the team to filter the sample water through a .45 micron filter. The water is collected in a 1 litre, unpreserved, plastic or glass bottle with HNO<sub>3</sub> preservative. Filtering must be done within 15 minutes of sample collection.
- 9) Obtain the total metals sample by directly transferring the water from the bailer into a laboratory prepared 1000 ml plastic or glass bottle with HNO<sub>3</sub> preservative.
- 10) Be sure the pH of the metals sampled is less than 2 by pouring off an aliquot in a clean jar and testing for pH using litmus paper. Dispose of this water and rinse the jar.
- 11) Collect and prepare Field QA/QC samples in accordance with separate SOP.
- 12) Be sure to record all data required on the Field Data Sheet or Well Sampling and appropriate entries into the field logbook.
- 13) Secure the well cap and replace the locking cover.
- 14) Decontaminate all sampling equipment according to procedure.
- 15) Decontaminate submersible pumps as follows: -

Scrub pump and cord in a tub of Liquinox/or similar and potable water Pump at least 80 litres of soapy water through pump Rinse with potable water Pump at least 80 litres of rinse water through the pump Rinse with D1 water before lowering pump into the next well.

END.





Mr Crean O Callaghan Moran & Assoc. Granary House Rutland Street Cork

14 August 2008

Test Report: MID/538002/2008

Dear Mr Crean

Analysis of your sample(s) submitted on 11 August 2008 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7658 4800 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using STL and we look forward to receiving your next samples.

Yours Sincerely,

Signed: X. Elles

Name: L. Ellis

Title: Team Leader

STL Midlands

Rayner House, 80 Lockhurst Lane, Coventry, CV6 5PZ

Tel: +44 (0)24 7658 4800 Fax: +44 (0)24 7658 4848 www.stl-ltd.com









# Report Summary





Mr Donal Crean O Callaghan Moran & Assoc. **Granary House** Rutland Street Cork

Date of Issue:

14 August 2008

Report Number: MID/538002/2008

Issue 1

Job Description:

**Donal Crean** 

Number of Samples

included in this report 3

Job Received:

11 August 2008

Number of Test Results included in this report 117

Analysis Commenced: 11 August 2008

Signed: X. Ellas

Name: L. Ellis

Date: 14 August 2008

Title:

Team Leader

STL was not responsible for sampling unless otherwise stated. Sampling is not covered by our UKAS accreditation.

Information on the methods of analysis and performance characteristics are available on request. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Tests marked 'Not UKAS Accredited' In this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

# Certificate of Analysis





Report Number: MID/538002/2008

Issue 1

Laboratory Number: 10715372

Sample 1 of 3

Sample Source: O Callaghan Moran & Assoc.
Sample Point Description: O Callaghan Moran & Assoc.

Sample Description: BH7 0.50m-1.00m

Sample Date: Sample Received 11 August 2008 Analysis Complete: 14 August 2008

Test Description	Result	Units	Accreditation	Method
Antimony as Sb, dry weight	1.6	mg/kg	Y Mid	30C
Arsenic as As, dry weight	16	mg/kg	Y Mid	30/30C
'um as Ba, dry weight	150	mg/kg	Y Mid	30
amium as Cd, dry weight	0.65	mg/kg	Y Mid	30
Chromium as Cr, dry weight	11	mg/kg	Y Mid	30
Copper as Cu, dry weight	19	mg/kg	Y Mid	30
Iron as Fe, dry weight	8900	mg/kg	Y Mid	30
Lead as Pb, dry weight	42	mg/kg	Y Mid	30
Manganese as Mn, dry weight	830	mg/kg	Y Mid	30
Mercury as Hg, dry weight	<0.25	mg/kg	Y Mid	30C
Nickel as Ni, dry weight	24	mg/kg	Y Mid	30
Tin as Sn,dry weight	<2.0	mg/kg	Y Mid	30
Zinc as Zn, dry weight	68	mg/kg	Y Mid	30
TPH >C6 - C10	<50	mg/kg	Y Mid	317
TPH >C10 - C20	<50	mg/kg	Y Mid	317
TPH >C20 - C40	180	mg/kg	Y Mid	317
TPH >C6 - C40, Total	180	mg/kg	Y Mid	317
naphthalene	0.80	mg/kg	Y Mid	307
naphthylene	<0.10	mg/kg	Y Mid	307
naphthene	0.48	mg/kg	Y Mid	307
fluorene	0.32	mg/kg	Y Mid	307
phenanthrene	4.0	mg/kg	Y Mid	307
anthracene	0.92	mg/kg	Y Mid	307
fluoranthene	4.0	mg/kg	Y Mid	307
pyrene	3.7	mg/kg	Y Mid	307
benzo(a)anthracene	1.7	mg/kg	Y Mid	307
chrysene	1.6	mg/kg	Y Mid	307
benzo(b)fluoranthene	1.4	mg/kg	Y Mid	307
benzo(k)fluoranthene	0.70	mg/kg	Y Mid	307
benzo(a)pyrene	1.6	mg/kg	Y Mid	307
Dibenz(a,h)anthracene	0.17	mg/kg	Y Mid	307
Benzo(g,h,i)perylene	1.1	mg/kg	Y Mid	307
Indeno(1,2,3-c,d)pyrene	0.83	mg/kg	Y Mid	307
PAH, Total of 16 EPA	23	mg/kg	Y Mid	307
nzene	<0.10	mg/kg	Y Mid	327

# Certificate of Analysis





Report Number:

MID/538002/2008

Laboratory Number: 10715372

Issue

Sample 1

of 3

Sample Source:

O Callaghan Moran & Assoc.

Sample Point Description: O Callaghan Moran & Assoc.

Sample Description:

BH7 0.50m-1.00m

Sample Date:

Sample Received

11 August 2008

Analysis Complete:

14 August 2008

Test Description	Result	Units	Accreditation	Method
toluene	<0.10	mg/kg	Y Mid	327
ethylbenzene	<0.10	mg/kg	Y Mid	327
m&p-Xylene	<0.20	mg/kg	Y Mid	327
o-xylene	<0.10	mg/kg	Y Mid	327

Analyst Comments for 10715372:

No Analyst Comment

Accreditation Codest Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted,
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn,
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered, I/S=Insufficient sample

# Certificate of Analysis





Report Number: MID/538002/2008 Issue

Laboratory Number: 10715373

Sample 2 of 3

Sample Source: O Callaghan Moran & Assoc. Sample Point Description: O Callaghan Moran & Assoc.

Sample Description: BH9 0.50m-1.00m

14 August 2008 Sample Received 11 August 2008 Analysis Complete: Sample Date:

Test Description	Result	Units	Accreditation	Method
Antimony as Sb, dry weight	1.6	mg/kg	Y Mid	30C
Arsenic as As, dry weight	12	mg/kg	Y Mid	30/30C
ium as Ba, dry weight	72	mg/kg	Y Mid	30
mium as Cd, dry weight	1.2	mg/kg	Y Mid	30
Chromium as Cr, dry weight	14	mg/kg	Y Mid	30
Copper as Cu, dry weight	28	mg/kg	Y Mid	30
ron as Fe, dry weight	20000	mg/kg	Y Mid	30
Lead as Pb, dry weight	79	mg/kg	Y Mid	30
Manganese as Mn, dry weight	1100	mg/kg	Y Mid	30
Mercury as Hg, dry weight	0.34	mg/kg	Y Mid	30C
Nickel as Ni, dry weight	31	mg/kg	Y Mid	30
rin as Sn,dry weight	3.5	mg/kg	Y Mid	30
Zinc as Zn, dry weight	86	mg/kg	Y Mid	30
TPH >C6 - C10	<50	mg/kg	Y Mid	317
TPH >C10 - C20	<50	mg/kg	Y Mid	317
TPH >C20 - C40	150	mg/kg	Y Mid	317
TPH >C6 - C40, Total	150	mg/kg	Y Mid	317
naphthalene	0.24	mg/kg	Y Mid	307
renaphthylene	<0.10	mg/kg	Y Mid	307
naphthene	<0.10	mg/kg	Y Mid	307
luorene	<0.10	mg/kg	Y Mid	307
phenanthrene	0.62	mg/kg	Y Mid	307
anthracene	0.13	mg/kg	Y Mid	307
luoranthene	0.63	mg/kg	Y Mid	307
pyrene	0.51	mg/kg	Y Mid	307
penzo(a)anthracene	0.27	mg/kg	Y Mid	307
chrysene	0.26	mg/kg	Y Mid	307
penzo(b)fluoranthene	0.25	mg/kg	Y Mid	307
benzo(k)fluoranthene	0.13	mg/kg	Y Mid	307
penzo(a)pyrene	0.25	mg/kg	Y Mid	307
Dibenz(a,h)anthracene	<0.10	mg/kg	Y Mid	307
Benzo(g,h,i)perylene	0.25	mg/kg	Y Mid	307
ndeno(1,2,3-c,d)pyrene	0.22	mg/kg	Y Mid	307
PAH, Total of 16 EPA	3.7	mg/kg	Y Mid	307
benzene	<0.10	mg/kg	Y Mid	327





0897 1229 1510

Report Number:

MID/538002/2008

Laboratory Number: 10715373

Issue 1

Sample 2 of 3

Sample Source:

O Callaghan Moran & Assoc.

Sample Point Description: O Callaghan Moran & Assoc.

Sample Description:

BH9 0.50m-1.00m

Sample Date:

Sample Received

11 August 2008

Analysis Complete:

14 August 2008

Test Description toluene	Result <0.10	Units	Accreditation	Method 327
		mg/kg	Y Mid	
ethylbenzene	<0.10	mg/kg	Y Mid	327
m&p-Xylene	<0.20	mg/kg	Y Mid	327
o-xylene	<0.10	mg/kg	Y Mid	327

Analyst Comments for 10715373:

No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted,
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. I/S=Insufficient sample





Report Number: MID/538002/2008 Issue

Laboratory Number: 10715374

Sample 3 of 3

Sample Source: O Callaghan Moran & Assoc. Sample Point Description: O Callaghan Moran & Assoc.

Sample Description: BH10 1.70m-2.50m

Sample Date: Sample Received 11 August 2008 Analysis Complete: 14 August 2008

Test Description	Result	Units	Accreditation	Method
Antimony as Sb, dry weight	1.7	mg/kg	Y Mid	30C
Arsenic as As, dry weight	13	mg/kg	Y Mid	30/30C
ium as Ba, dry weight	79	mg/kg	Y Mid	30
mium as Cd, dry weight	1.6	mg/kg	Y Mid	30
Chromium as Cr, dry weight	14	mg/kg	Y Mid	30
Copper as Cu, dry weight	30	mg/kg	Y Mid	30
ron as Fe, dry weight	25000	mg/kg	Y Mid	30
ead as Pb, dry weight	59	mg/kg	Y Mid	30
Manganese as Mn, dry weight	1500	mg/kg	Y Mid	30
Mercury as Hg, dry weight	<0.25	mg/kg	Y Mid	30C
Nickel as Ni, dry weight	37	mg/kg	Y Mid	30
Tin as Sn,dry weight	3.7	mg/kg	Y Mid	30
Zinc as Zn, dry weight	94	mg/kg	Y Mid	30
TPH >C6 - C10	<50	mg/kg	Y Mid	317
TPH >C10 - C20	<50	mg/kg	Y Mid	317
TPH >C20 - C40	<50	mg/kg	Y Mid	317
TPH >C6 - C40, Total	<50	mg/kg	Y Mid	317
naphthalene	<0.10	mg/kg	Y Mid	307
anaphthylene	<0.10	mg/kg	Y Mid	307
aphthene	<0.10	mg/kg	Y Mid	307
luorene	<0.10	mg/kg	Y Mid	307
phenanthrene	0.20	mg/kg	Y Mid	307
anthracene	<0.10	mg/kg	Y Mid	307
luoranthene	0.13	mg/kg	Y Mid	307
pyrene	<0.10	mg/kg	Y Mid	307
penzo(a)anthracene	<0.10	mg/kg	Y Mid	307
chrysene	<0.10	mg/kg	Y Mid	307
penzo(b)fluoranthene	<0.10	mg/kg	Y Mid	307
penzo(k)fluoranthene	<0.10	mg/kg	Y Mid	307
penzo(a)pyrene	<0.10	mg/kg	Y Mid	307
Dibenz(a,h)anthracene	<0.10	mg/kg	Y Mid	307
Benzo(g,h,i)perylene	<0.10	mg/kg	Y Mid	307
ndeno(1,2,3-c,d)pyrene	<0.10	mg/kg	Y Mid	307
PAH, Total of 16 EPA	<1.0	mg/kg	Y Mid	307
penzene	<0.10	mg/kg	Y Mid	327





Report Number:

MID/538002/2008

Laboratory Number: 10715374

Issue

Sample 3 of 3

Sample Source:

O Callaghan Moran & Assoc.

Sample Point Description: O Callaghan Moran & Assoc.

Sample Description:

BH10 1.70m-2.50m

Sample Date:

Sample Received

11 August 2008

Analysis Complete:

14 August 2008

Test Description toluene	Result <0.10	Units mg/kg	Accreditation	Method
			Y Mid	327
ethylbenzene	<0.10	mg/kg	Y Mid	327
m&p-Xylene	<0.20	mg/kg	Y Mid	327
o-xylene	<0.10	mg/kg	Y Mid	327

Analyst Comments for 10715374:

No Analyst Comment

Accreditation Codes; Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.

Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midfands, Rea = STL Reading, Run = STL Runcorn.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. I/S=Insufficient sample

Signed: X. Ellis

Name: L. Ellis

Date: 14 August 2008

Title:

Team Leader



Mr Crean O Callaghan Moran & Assoc. Granary House Rutland Street Cork

19 November 2008

Test Report: COV/558587/2008

Dear Mr Crean

Analysis of your sample(s) submitted on 31 October 2008 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out is included with this report.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using STL and we look forward to receiving your next samples.

Yours Sincerely,

Signed: X. Elles

Name: L. Ellis

Title: Team Leader

STL Coventry

Tel: +44 (0)24 7642 1213

STL Business Centre, Torrington Avenue, Coventry, CV4 9GU

Fax: +44 (0)24 7685 6575

www.stl-ltd.com









# Report Summary





Mr Donal Crean O Callaghan Moran & Assoc. **Granary House Rutland Street** Cork

Date of Issue:

19 November 2008

Report Number: COV/558587/2008 Issue 1

Job Description:

**Donal Crean** 

Job Location:

08-014-05

Number of Samples

included in this report 16

Job Received:

31 October 2008

Number of Test Results

included in this report 400

Analysis Commenced: 31 October 2008

Signed: X. Ellas

Name: L. Ellis

Date: 19 November 2008

Title:

Team Leader

STL was not responsible for sampling unless otherwise stated. Sampling is not covered by our UKAS accreditation.

Information on the methods of analysis and performance characteristics are available on request. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.





Report Number: COV/558587/2008 Issue

Laboratory Number: 10888346

Sample 1 of 16

Sample Source:

O Callaghan Moran & Assoc. Sample Point Description: O Callaghan Moran & Assoc.

Sample Description:

BH7 13.0-14.00m

Sample Date:

Sample Received

31 October 2008

Analysis Complete: 13 November 2008

Test Description EN 12457-3 Leachate	Result	Units	Accreditation	Method EN12457-3
	Y		N Mid	
Moisture Content Ratio at 105C	1.19	% ratio	N Mid	33
sture at 105c	1.2	%	N Mid	33
⇒ by Ignition in O2	0.52	%	N Mid	27
PCB, Total of 7 Congeners	<0.010	mg/kg	N Mid	312
Mineral Oils, >C10 - C40	<50	mg/kg	Y Mid	317
Naphthalene	<0.10	mg/kg	N Mid	307
Acenaphthylene	<0.10	mg/kg	N Mid	307
Acenaphthene	<0.10	mg/kg	N Mid	307
Fluorene	<0.10	mg/kg	N Mid	307
Phenanthrene	<0.10	mg/kg	N Mid	307
Anthracene	<0.10	mg/kg	N Mid	307
Fluoranthene	<0.10	mg/kg	N Mid	307
Pyrene	<0.10	mg/kg	N Mid	307
Benzo(a)anthracene	<0.10	mg/kg	N Mid	307
Chrysene	<0.10	mg/kg	N Mid	307
Benzo(b)fluoranthene	<0.10	mg/kg	N Mid	307
Benzo(k)fluoranthene	<0.10	mg/kg	N Mid	307
¬zo(a)pyrene	<0.10	mg/kg	N Mid	307
nz(a,h)anthracene	<0.10	mg/kg	N Mid	307
Benzo(g,h,i)perylene	<0.10	mg/kg	N Mid	307
Indeno(1,2,3-c,d)pyrene	<0.10	mg/kg	N Mid	307
Coronene	<0.10	mg/kg	N Mid	307
PAH, Total of 17 WAC	<1.0	mg/kg	N Mid	307
benzene	<0.10	mg/kg	Y Mid	327
toluene	<0.10	mg/kg	Y Mid	327
ethylbenzene	<0.10	mg/kg	Y Mid	327
m&p-Xylene	<0.20	mg/kg	Y Mid	327
o-xylene	<0.10	mg/kg	Y Mid	327
Dry Ratio (BSEN 12457)	98.83	%	N Mid	Calculated

Analyst Comments for 10888346:

No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted,
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered, I/S=insufficient sample





Report Number:

COV/558587/2008

Issue

Laboratory Number: 10888347

Sample 2 of 16

Sample Source:

O Callaghan Moran & Assoc.

Sample Point Description: O Callaghan Moran & Assoc.

Sample Description:

BH15 0.5-1.00m

Sample Date:

Sample Received

31 October 2008

Analysis Complete: 13 November 2008

Test Description	Result	Units	Accreditation	Method	
EN 12457-3 Leachate	Y		N Mid	EN12457-3	
Moisture Content Ratio at 105C	2.13	% ratio	N Mid	33	
Moisture at 105c	2.1	%	N Mid	33	
TOC by Ignition in O2	3.6	%	N Mid	27	
PCB, Total of 7 Congeners	<0.010	mg/kg	N Mid	312	
Mineral Oils, >C10 - C40	120	mg/kg	Y Mid	317	
Naphthalene	0.20	mg/kg	N Mid	307	
Acenaphthylene	<0.10	mg/kg	N Mid	307	
Acenaphthene	<0.10	mg/kg	N Mid	307	
Fluorene	<0.10	mg/kg	N Mid	307	
Phenanthrene	0.44	mg/kg	N Mid	307	
Anthracene	0.10	mg/kg	N Mid	307	
Fluoranthene	0.50	mg/kg	N Mid	307	
Pyrene	0.43	mg/kg	N Mid	307	
Benzo(a)anthracene	0.34	mg/kg	N Mid	307	
Chrysene	0.63	mg/kg	N Mid	307	
Benzo(b)fluoranthene	0.41	mg/kg	N Mid	307	
Benzo(k)fluoranthene	0.21	mg/kg	N Mid	307	
Benzo(a)pyrene	0.39	mg/kg	N Mid	307	
Dibenz(a,h)anthracene	<0.10	mg/kg	N Mid	307	
Benzo(g,h,i)perylene	0.35	mg/kg	N Mid	307	
ndeno(1,2,3-c,d)pyrene	0.18	mg/kg	N Mid	307	
Coronene	<0.10	mg/kg	N Mid	307	
PAH, Total of 17 WAC	4.2	mg/kg	N Mid	307	
penzene	<0.10	mg/kg	Y Mid	327	
coluene	<0.10	mg/kg	Y Mid	327	
ethylbenzene	<0.10	mg/kg	Y Mid	327	
m&p-Xylene	<0.20	mg/kg	Y Mid	327	
o-xylene	<0.10	mg/kg	Y Mid	327	
Dry Ratio (BSEN 12457)	97.91	%	N Mid	Calculated	

Analyst Comments for 10888347:

No Analyst Comment

Accreditation Codes; Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.

Analysed at: Bri = STL, Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. I/S=Insufficient sample





Report Number: COV/558587/2008

Issue 1

Laboratory Number: 10888348

Sample 3 of 16

Sample Source: O Callaghan Moran & Assoc.
Sample Point Description: O Callaghan Moran & Assoc.

Sample Description: BH1

BH15 1.0-2.00m

Sample Date: Sample Received 31 October 2008 Analysis Complete: 13 November 2008

Test Description	Result	Units	Accreditation	Method
EN 12457-3 Leachate	Y		N Mid	EN12457-3
Moisture Content Ratio at 105C	1.51	% ratio	N Mid	33
*sture at 105c	1.5	%	N Mid	33
⇒ by Ignition in O2	5.2	%	N Mid	27
PCB, Total of 7 Congeners	<0.010	mg/kg	N Mid	312
Mineral Oils, >C10 - C40	86	mg/kg	Y Mid	317
Naphthalene	0.16	mg/kg	N Mid	307
Acenaphthylene	<0.10	mg/kg	N Mid	307
Acenaphthene	<0.10	mg/kg	N Mid	307
Fluorene	<0.10	mg/kg	N Mid	307
Phenanthrene	0.42	mg/kg	N Mid	307
Anthracene	<0.10	mg/kg	N Mid	307
Fluoranthene	0.14	mg/kg	N Mid	307
Pyrene	0.12	mg/kg	N Mid	307
Benzo(a)anthracene	0.12	mg/kg	N Mid	307
Chrysene	0.32	mg/kg	N Mid	307
Benzo(b)fluoranthene	0.13	mg/kg	N Mid	307
Benzo(k)fluoranthene	<0.10	mg/kg	N Mid	307
¬zo(a)pyrene	<0.10	mg/kg	N Mid	307
nz(a,h)anthracene	<0.10	mg/kg	N Mid	307
Benzo(g,h,i)perylene	<0.10	mg/kg	N Mid	307
Indeno(1,2,3-c,d)pyrene	<0.10	mg/kg	N Mid	307
Coronene	<0.10	mg/kg	N Mid	307
PAH, Total of 17 WAC	1.4	mg/kg	N Mid	307
benzene	<0.10	mg/kg	Y Mid	327
toluene	<0.10	mg/kg	Y Mid	327
ethylbenzene	<0.10	mg/kg	Y Mid	327
m&p-Xylene	<0.20	mg/kg	Y Mid	327
o-xylene	<0.10	mg/kg	Y Mid	327
Dry Ratio (BSEN 12457)	98.51	%	N Mid	Calculated

Analyst Comments for 10888348:

No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S \* Sub-contracted.

Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. I/S=Insufficient sample





1229 1510

Report Number:

COV/558587/2008

Issue

Laboratory Number: 10888349

of 16 Sample 4

Sample Source:

O Callaghan Moran & Assoc.

Sample Point Description: O Callaghan Moran & Assoc.

Sample Description:

BH15 12.0-13.00m

Sample Date:

Sample Received 31 October 2008 Analysis Complete: 13 November 2008

Test Description	Result	Units	Accreditation	Method	
EN 12457-3 Leachate	Y		N Mid	EN12457-3	
Moisture Content Ratio at 105C	0.79	% ratio	N Mid	33	
Moisture at 105c	0.79	%	N Mid	33	
TOC by Ignition in O2	0.34	%	N Mid	27	
PCB, Total of 7 Congeners	<0.010	mg/kg	N Mid	312	
Mineral Oils, >C10 - C40	<50	mg/kg	Y Mid	317	
Naphthalene	<0.10	mg/kg	N Mid	307	
Acenaphthylene	<0.10	mg/kg	N Mid	307	
Acenaphthene	<0.10	mg/kg	N Mid	307	
Fluorene	<0.10	mg/kg	N Mid	307	
Phenanthrene	<0.10	mg/kg	N Mid	307	
Anthracene	<0.10	mg/kg	N Mid	307	
Fluoranthene	<0.10	mg/kg	N Mid	307	
Pyrene	<0.10	mg/kg	N Mid	307	
Benzo(a)anthracene	<0.10	mg/kg	N Mid	307	
Chrysene	<0.10	mg/kg	N Mid	307	
Benzo(b)fluoranthene	<0.10	mg/kg	N Mid	307	
Benzo(k)fluoranthene	<0.10	mg/kg	N Mid	307	
Benzo(a)pyrene	<0.10	mg/kg	N Mid	307	
Dibenz(a,h)anthracene	<0.10	mg/kg	N Mid	307	
Benzo(g,h,i)perylene	<0.10	mg/kg	N Mid	307	
ndeno(1,2,3-c,d)pyrene	<0.10	mg/kg	N Mid	307	
Coronene	<0.10	mg/kg	N Mid	307	
PAH, Total of 17 WAC	<1.0	mg/kg	N Mid	307	
penzene	<0.10	mg/kg	Y Mid	327	
oluene	<0.10	mg/kg	Y Mid	327	
ethylbenzene	<0.10	mg/kg	Y Mid	327	
m&p-Xylene	<0.20	mg/kg	Y Mid	327	
p-xylene	<0.10	mg/kg	Y Mid	327	
Dry Ratio (BSEN 12457)	99.21	%	N Mid	Calculated	

Analyst Comments for 10888349:

No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted,
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn,
For Microbiological determinands 0 or ND=Not Detected, For Legionelia ND=Not Detected in volume of sample filtered, I/S=Insufficient sample





Report Number: COV/558587/2008 Issue

Laboratory Number: 10888350

Sample 5 of 16

Sample Source: O Callaghan Moran & Assoc. Sample Point Description: O Callaghan Moran & Assoc.

W2 0.50-1.00m Sample Description:

Sample Date: Sample Received 31 October 2008 Analysis Complete: 13 November 2008

Test Description	Result	Units	Accreditation	Method
EN 12457-3 Leachate	Y		N Mid	EN12457-3
Moisture Content Ratio at 105C	0.99	% ratio	N Mid	33
isture at 105c	0.98	%	N Mid	33
C by Ignition in O2	5.6	%	N Mid	27
PCB, Total of 7 Congeners	<0.010	mg/kg	N Mid	312
Mineral Oils, >C10 - C40	150	mg/kg	Y Mid	317
Naphthalene	5.5	mg/kg	N Mid	307
Acenaphthylene	0.11	mg/kg	N Mid	307
Acenaphthene	7.1	mg/kg	N Mid	307
Fluorene	4.4	mg/kg	N Mid	307
Phenanthrene	40	mg/kg	N Mid	307
Anthracene	13	mg/kg	N Mid	307
Fluoranthene	38	mg/kg	N Mid	307
Pyrene	34	mg/kg	N Mid	307
Benzo(a)anthracene	18	mg/kg	N Mid	307
Chrysene	17	mg/kg	N Mid	307
Benzo(b)fluoranthene	14	mg/kg	N Mid	307
Benzo(k)fluoranthene	7.7	mg/kg	N Mid	307
Panzo(a)pyrene	19	mg/kg	N Mid	307
enz(a,h)anthracene	1.1	mg/kg	N Mid	307
Benzo(g,h,i)perylene	6.9	mg/kg	N Mid	307
Indeno(1,2,3-c,d)pyrene	6.9	mg/kg	N Mid	307
Coronene	1.5	mg/kg	N Mid	307
PAH, Total of 17 WAC	230	mg/kg	N Mid	307
benzene	<0.10	mg/kg	Y Mid	327
toluene	<0.10	mg/kg	Y. Mid	327
ethylbenzene	<0.10	mg/kg	Y Mid	327
m&p-Xylene	<0.20	mg/kg	Y Mid	327
o-xylene	<0.10	mg/kg	Y Mid	327
Dry Ratio (BSEN 12457)	99.02	%	N Mid	Calculated

Analyst Comments for 10888350:

No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.

Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. I/S=Insufficient sample





Report Number:

COV/558587/2008

Issue

Laboratory Number: 10888351

Sample 6

Sample Source:

O Callaghan Moran & Assoc.

Sample Point Description: O Callaghan Moran & Assoc.

Sample Description:

W2 1.00-2.00m

Sample Date:

Sample Received

of 16

31 October 2008 Analysis Complete: 13 November 2008

Gampie Date.	10001100 01 0010001 20	· interior	zomprotor	
Test Description	Result	Units	Accreditation	Method
EN 12457-3 Leachate	Y		N Mid	EN12457-3
Moisture Content Ratio at 105C	2.00	% ratio	N Mid	33
Moisture at 105c	2.0	%	N Mid	33
TOC by Ignition in O2	5.4	%	N Mid	27
PCB, Total of 7 Congeners	<0.010	mg/kg	N Mid	312
Mineral Oils, >C10 - C40	5000	mg/kg	Y Mid	317
Naphthalene	16	mg/kg	N Mid	307
Acenaphthylene	0.29	mg/kg	N Mid	307
Acenaphthene	16	mg/kg	N Mid	307
Fluorene	8.1	mg/kg	N Mid	307
Phenanthrene	97	mg/kg	N Mid	307
Anthracene	25	mg/kg	N Mid	307
Fluoranthene	87	mg/kg	N Mid	307
Pyrene	88	mg/kg	N Mid	307
Benzo(a)anthracene	44	mg/kg	N Mid	307
Chrysene	42	mg/kg	N Mid	307
Benzo(b)fluoranthene	35	mg/kg	N Mid	307
Benzo(k)fluoranthene	19	mg/kg	N Mid	307
Benzo(a)pyrene	47	mg/kg	N Mid	307
Dibenz(a,h)anthracene	3.0	mg/kg	N Mid	307
Benzo(g,h,i)perylene	20	mg/kg	N Mid	307
ndeno(1,2,3-c,d)pyrene	18	mg/kg	N Mid	307
Coronene	4.0	mg/kg	N Mid	307
PAH, Total of 17 WAC	570	mg/kg	N Mid	307
benzene	<0.10	mg/kg	Y Mid	327
oluene	<0.10	mg/kg	Y Mid	327
ethylbenzene	<0.10	mg/kg	Y Mid	327
m&p-Xylene	<0.20	mg/kg	Y Mid	327
p-xylene	<0.10	mg/kg	Y Mid	327
Dry Ratio (BSEN 12457)	98.04	%	N Mid	Calculated

Analyst Comments for 10888351:

{/\*}TPH soils: detection limits raised due to original sample being over-range.{\*/}

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.

Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. I/S=Insufficient sample





Report Number: COV/558587/2008 Issue

Laboratory Number: 10888352

Sample 7 of 16

Sample Source: O Callaghan Moran & Assoc. Sample Point Description: O Callaghan Moran & Assoc.

BH8 0.50-1.00m Sample Description:

Analysis Complete: 13 November 2008 Sample Date: Sample Received 31 October 2008

Test Description	Result	Units	Accreditation	Method
EN 12457-3 Leachate	Y		N Mid	EN12457-3
Moisture Content Ratio at 105C	2.38	% ratio	N Mid	33
sture at 105c	2.3	%	N Mid	33
3 by Ignition in O2	3.1	%	N Mid	27
PCB, Total of 7 Congeners	0.028	mg/kg	N Mid	312
Mineral Oils, >C10 - C40	510	mg/kg	Y Mid	317
Naphthalene	1.3	mg/kg	N Mid	307
Acenaphthylene	<0.10	mg/kg	N Mid	307
Acenaphthene	0.56	mg/kg	N Mid	307
Fluorene	1.3	mg/kg	N Mid	307
Phenanthrene	5.3	mg/kg	N Mid	307
Anthracene	1.7	mg/kg	N Mid	307
Fluoranthene	8.4	mg/kg	N Mid	307
Pyrene	6.4	mg/kg	N Mid	307
Benzo(a)anthracene	3.8	mg/kg	N Mid	307
Chrysene	3.4	mg/kg	N Mid	307
Benzo(b)fluoranthene	2.9	mg/kg	N Mid	307
Benzo(k)fluoranthene	1.6	mg/kg	N Mid	307
Panzo(a)pyrene	3.8	mg/kg	N Mid	307
enz(a,h)anthracene	0.23	mg/kg	N Mid	307
Benzo(g,h,i)perylene	1.4	mg/kg	N Mid	307
Indeno(1,2,3-c,d)pyrene	1.3	mg/kg	N Mid	307
Coronene	0.52	mg/kg	N Mid	307
PAH, Total of 17 WAC	44	mg/kg	N Mid	307
benzene	<0.10	mg/kg	Y Mid	327
oluene	<0.10	mg/kg	Y Mid	327
ethylbenzene	<0.10	mg/kg	Y Mid	327
m&p-Xylene	<0.20	mg/kg	Y Mid	327
o-xylene	<0.10	mg/kg	Y Mid	327
Dry Ratio (BSEN 12457)	97.67	%	N Mid	Calculated

Analyst Comments for 10888352:

No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted,
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. I/S=Insufficient sample





Report Number:

COV/558587/2008

Issue

Laboratory Number: 10888353

Sample 8 of 16

Sample Source:

O Callaghan Moran & Assoc.

Sample Point Description: O Callaghan Moran & Assoc.

Sample Description:

BH8 1.00-2.00m

Sample Date:

Sample Received 31 October 2008 Analysis Complete: 13 November 2008

Sample Date:	ample Received	31 October 20	Analysis (	complete.	12 1404	ember 2008
Test Description		Result	Units	Accre	ditation	Method
EN 12457-3 Leachate		Y		N	Mid	EN12457-3
Moisture Content Ratio at 105C		1.50	% ratio	N	Mid	33
Moisture at 105c		1.5	%	N	Mid	33
TOC by Ignition in O2		3.0	%	N	Mid	27
PCB, Total of 7 Congeners		<0.010	mg/kg	N	Mid	312
Mîneral Oils, >C10 - C40		1800	mg/kg	Y	Mid	317
Naphthalene		11	mg/kg	N	Mid	307
Acenaphthylene		<0.10	mg/kg	N	Mid	307
Acenaphthene		3.3	mg/kg	N	Mid	307
Fluorene		4.6	mg/kg	N	Mid	307
Phenanthrene		33	mg/kg	N	Mid	307
Anthracene		13	mg/kg	N	Mid	307
Fluoranthene		52	mg/kg	N	Mid	307
Pyrene		43	mg/kg	N	Mid	307
Benzo(a)anthracene		23	mg/kg	N	Mid	307
Chrysene		21	mg/kg	N	Mid	307
Benzo(b)fluoranthene		16	mg/kg	N	Mid	307
Benzo(k)fluoranthene	-	9.5	mg/kg	N	Mid	307
Benzo(a)pyrene		24	mg/kg	N	Mid	307
Dibenz(a,h)anthracene		1.1	mg/kg	N	Mid	307
Benzo(g,h,i)perylene		8.7	mg/kg	N	Mid	307
ndeno(1,2,3-c,d)pyrene		9.2	mg/kg	N	Mid	307
Coronene		1.8	mg/kg	N	Mid	307
PAH, Total of 17 WAC		280	mg/kg	N	Mid	307
benzene		<0.10	mg/kg	Y	Mid	327
oluene		<0.10	mg/kg	Y	Mid	327
ethylbenzene		< 0.10	mg/kg	Y	Mid	327
n&p-Xylene		<0.20	mg/kg	Y	Mid	327
p-xylene		<0.10	mg/kg	Y	Mid	327
Dry Ratio (BSEN 12457)		98.53	%	N	Mid	Calculated

Analyst Comments for 10888353:

No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.

Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered, I/S=Insufficient sample





Report Number: COV/558587/2008 Issue

Laboratory Number: 10888354

of 16 Sample 9

Sample Source: O Callaghan Moran & Assoc. Sample Point Description: O Callaghan Moran & Assoc.

Sample Description:

Sample Date:

BH7 13.0-14.00m 10:1

Sample Received

31 October 2008

Analysis Complete: 13 November 2008

Mid

Mid

Mid

Mid

N

60

18

20

41

**Test Description** Result Units Accreditation Method Mid EN12457-3 10:1 Leachate BSEN 10:1 extract 25C < 0.030 mg/l N Mid Antimony, Soluble senic, Soluble <50 ug/l N Mid 25C 0.014 Mid 54F ium, Soluble mg/l Cadmium, Soluble < 0.10 Mid 56 ug/l Calcium, Soluble 12 Mid 53F mg/l Chromium, Soluble Mid 53F ug/l Copper, Soluble <10 ug/l Υ Mid 53F Mid 53F Lead, Soluble <10 ug/l Υ Mid 56 Mercury, Soluble 0.38 ug/l 0.0085 Mid 68 Molybdenum, Soluble mg/l Nickel, Soluble <10 ug/l Mid 53F Mid 25C Selenium, Soluble <6.0 ug/l 53F Zinc, Soluble <10 ug/l Mid Phenol Index < 0.050 N Mid 32A mg/l Sulphate as SO4 <11 Mid 60 mg/l

7.1

<200

0.42

3.9

mg/l

mg/l

mg/l

mg/l

Analyst Comments for 10888354:

Chloride as CI

Fluoride as F-

Dissolved Solids

C (Filtered)

No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.

Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. I/S=Insufficient sample





Report Number:

COV/558587/2008

Issue

Laboratory Number: 10888355

Sample 10 of 16

Sample Source:

O Callaghan Moran & Assoc.

Sample Point Description: O Callaghan Moran & Assoc.

Sample Description:

BH15 0.5-1.00m 10:1

Sample Date:

Sample Received

31 October 2008 Analysis Complete: 13 November 2008

Test Description	Result	Units	Accredita	ation	Method
Leachate BSEN 10:1 extract	Y		N	/lid	EN12457-3 10:1
Antimony, Soluble	<0.030	mg/I	NN	/lid	25C
Arsenic, Soluble	<50	ug/l	N N	/lid	25C
Barium, Soluble	0.0060	mg/I	Y	/lid	54F
Cadmium, Soluble	<0.10	ug/l	Y	/lid	56
Calcium, Soluble	54	mg/l	Y	/lid	53F
Chromium, Soluble	18	ug/l	Y	/lid	53F
Copper, Soluble	36	ug/l	Y	/lid	53F
Lead, Soluble	42	ug/l	Y	/lid	53F
Mercury, Soluble	0.35	ug/l	Y	/lid	56
Molybdenum, Soluble	0.016	mg/l	N N	/lid	68
Nickel, Soluble	15	ug/l	Y	/lid	53F
Selenium, Soluble	<6.0	ug/l	N N	/lid	25C
Zinc, Soluble	<10	ug/l	Y	/lid	53F
Phenol Index	<0.050	mg/l	N N	/lid	32A
Sulphate as SO4	50	mg/l	Y M	/lid	60
Chloride as Cl	<2.5	mg/l	Y	/lid	60
Dissolved Solids	420	mg/l	N N	/lid	18
Fluoride as F-	0.23	mg/l	Y N	/lid	20
TOC (Filtered)	6.2	mg/l	YN	/lid	41

Analyst Comments for 10888355:

No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted,
Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn,
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered, I/S=Insufficient sample





COV/558587/2008 Report Number:

Issue

Laboratory Number: 10888356

Sample 11 of 16

O Callaghan Moran & Assoc. Sample Source: Sample Point Description: O Callaghan Moran & Assoc.

Sample Description:

BH15 1.0-2.00m 10:1

Sample Date:

Sample Received

31 October 2008

Analysis Complete: 13 November 2008

Test Description	Result	Units	Accred	ditation	Method
Leachate BSEN 10:1 extract	Y	0.	N	Mid	EN12457-3 10:1
Antimony, Soluble	<0.030	mg/l	N	Mid	25C
enic, Soluble	<50	ug/l	N	Mid	25C
rum, Soluble	0.0055	mg/l	Y	Mid	54F
Cadmium, Soluble	<0.10	ug/l	Y	Mid	56
Calcium, Soluble	26	mg/l	Y	Mid	53F
Chromium, Soluble	<10	ug/l	Y	Mid	53F
Copper, Soluble	28	ug/l	Y	Mid	53F
Lead, Soluble	43	ug/l	Y	Mid	53F
Mercury, Soluble	0.49	ug/l	Y	Mid	56
Molybdenum, Soluble	0.013	mg/l	N	Mid	68
Nickel, Soluble	14	ug/l	Y	Mid	53F
Selenium, Soluble	<6.0	ug/l	N	Mid	25C
Zinc, Soluble	13	ug/l	Y	Mid	53F
Phenol Index	<0.050	mg/l	N	Mid	32A
Sulphate as SO4	19	mg/l	Y	Mid	60
Chloride as Cl	<2.5	mg/l	Y	Mid	60
Dissolved Solids	<200	mg/l	N	Mid	18
oride as F-	<0.20	mg/l	Y	Mid	20
; (Filtered)	3.6	mg/l	Y	Mid	41

Analyst Comments for 10888356:

No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.

Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. I/S=Insufficient sample





Report Number:

COV/558587/2008

Issue

Laboratory Number: 10888357

Sample 12 of 16

Sample Source:

O Callaghan Moran & Assoc. Sample Point Description: O Callaghan Moran & Assoc.

Sample Description:

BH15 12.0-13.00m 10:1

Sample Date:

Sample Received

31 October 2008 Analysis Complete: 13 November 2008

Test Description	Result	Units	Accreditation	n Method
Leachate BSEN 10:1 extract	Y		N Mid	EN12457-3 10:
Antimony, Soluble	<0.030	mg/l	N Mid	25C
Arsenic, Soluble	<50	ug/l	N Mid	25C
Barium, Soluble	0.017	mg/l	Y Mid	54F
Cadmium, Soluble	<0.10	ug/f	Y Mid	56
Calcium, Soluble	17	mg/l	Y Mid	53F
Chromium, Soluble	<10	ug/l	Y Mid	53F
Copper, Soluble	15	ug/l	Y Mid	53F
Lead, Soluble	41	ug/l	Y Mid	53F
Mercury, Soluble	<0.30	ug/l	Y Mid	56
Molybdenum, Soluble	0.0046	mg/l	N Mid	68
Nickel, Soluble	14	ug/l	Y Mid	53F
Selenium, Soluble	<6.0	ug/l	N Mid	25C
Zinc, Soluble	<10	ug/l	Y Mid	53F
Phenol Index	<0.050	mg/l	N Mid	32A
Sulphate as SO4	13	mg/l	Y Mid	60
Chloride as Cl	10	mg/l	Y Mid	60
Dissolved Solids	<200	mg/l	N Mid	18
Fluoride as F-	0.47	mg/l	Y Mid	20
TOC (Filtered)	3.7	mg/l	Y Mid	41

Analyst Comments for 10888357:

No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.

Analysed at: Bril = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. I/S=Insufficient sample





Report Number: COV/558587/2008

Issue 1

Laboratory Number: 10888358

Sample 13 of 16

Sample Source: O Callaghan Moran & Assoc.
Sample Point Description: O Callaghan Moran & Assoc.

Sample Description: W2 0.50-1.00m 10:1

Sample Date: Sample Received 31 October 2008 Analysis Complete: 13 November 2008

Test Description	Result	Units	Accreditation	on Method
Leachate BSEN 10:1 extract	Y		N Mid	EN12457-3 10:1
Antimony, Soluble	0.036	mg/l	N Mid	25C
renic, Soluble	<50	ug/l	N Mid	25C
ium, Soluble	0.024	mg/l	Y Mid	54F
Cadmium, Soluble	<0.10	ug/l	Y Mid	56
Calcium, Soluble	43	mg/l	Y Mid	53F
Chromium, Soluble	21	ug/l	Y Mid	53F
Copper, Soluble	34	ug/l	Y Mid	53F
Lead, Soluble	43	ug/l	Y Mid	53F
Mercury, Soluble	<0.30	ug/l	Y Mid	56
Molybdenum, Soluble	0.0066	mg/l	N Mid	68
Nickel, Soluble	13	ug/l	Y Mid	53F
Selenium, Soluble	<6.0	ug/l	N Mid	25C
Zinc, Soluble	11	ug/l	Y Mid	53F
Phenol Index	<0.050	mg/l	N Mid	32A
Sulphate as SO4	44	mg/l	Y Mid	60
Chloride as Cl	2.7	mg/l	Y Mid	60
Dissolved Solids	210	mg/l	N Mid	18
Cuoride as F-	0.41	mg/l	Y Mid	20
C (Filtered)	4.5	mg/l	Y Mid	41

Analyst Comments for 10888358:

No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.

Analysed at: Bril = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. I/S=Insufficient sample





Report Number:

COV/558587/2008

Issue

Laboratory Number: 10888359

Sample 14 of 16

Sample Source:

O Callaghan Moran & Assoc.

Sample Point Description: O Callaghan Moran & Assoc.

Sample Description:

W2 1.00-2.00m 10:1

Sample Date:

Sample Received

31 October 2008 Analysis Complete: 13 November 2008

Test Description	Result	Units	Accreditation	n Method
Leachate BSEN 10:1 extract	Y		N Mid	EN12457-3 10:
Antimony, Soluble	< 0.030	mg/l	N Mid	25C
Arsenic, Soluble	<50	ug/l	N Mid	25C
Barium, Soluble	0.018	mg/l	Y Mid	54F
Cadmium, Soluble	<0.10	ug/l	Y Mid	56
Calcium, Soluble	110	mg/l	Y Mid	53F
Chromium, Soluble	<100	ug/l	Y Mid	53F
Copper, Soluble	<100	ug/l	Y Mid	53F
Lead, Soluble	<100	ug/l	Y Mid	53F
Mercury, Soluble	<0.30	ug/l	Y Mid	56
Molybdenum, Soluble	0.0081	mg/l	N Mid	68
Nickel, Soluble	<100	ug/l	Y Mid	53F
Selenium, Soluble	<6.0	ug/l	N Mid	25C
Zinc, Soluble	<100	ug/l	Y Mid	53F
Phenol Index	<0.050	mg/l	N Mid	32A
Sulphate as SO4	160	mg/l	Y Mid	60
Chloride as Cl	14	mg/l	Y Mid	60
Dissolved Solids	420	mg/l	N Mid	18
Fluoride as F-	<0.20	mg/l	Y Mid	20
TOC (Filtered)	6.0	mg/l	Y Mid	41

Analyst Comments for 10888359:

No Analyst Comment

Accreditation Codes; Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.

Analysed at: Bril = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered, VS=Insufficient sample





Report Number: COV/558587/2008 Issue

Laboratory Number: 10888360

Sample 15 of 16

Sample Source: O Callaghan Moran & Assoc. Sample Point Description: O Callaghan Moran & Assoc.

Sample Description:

BH8 0.50-1.00m 10:1

Sample Date:

Sample Received

31 October 2008

Analysis Complete: 13 November 2008

Test Description	Result	Units	Accreditation		Method
Leachate BSEN 10:1 extract	Y		N	Mid	EN12457-3 10:
Antimony, Soluble	<0.030	mg/l	N	Mid	25C
enic, Soluble	<50	ug/l	N	Mid	25C
um, Soluble	0.021	mg/l	Y	Mid	54F
Cadmium, Soluble	<0.10	ug/l	Y	Mid	56
Calcium, Soluble	690	mg/l	Y	Mid	53F
Chromium, Soluble	<100	ug/l	Y	Mid	53F
Copper, Soluble	<100	ug/l	Y	Mid	53F
Lead, Soluble	<100	ug/l	Y	Mid	53F
Mercury, Soluble	<0.30	ug/l	Y	Mid	56
Molybdenum, Soluble	0.010	mg/l	N	Mid	68
Nickel, Soluble	<100	ug/l	Y	Mid	53F
Selenium, Soluble	<6.0	ug/l	N	Mid	25C
Zinc, Soluble	<100	ug/l	Y	Mid	53F
Phenol Index	<0.050	mg/l	N	Mid	32A
Sulphate as SO4	1500	mg/l	Y	Mid	60
Chloride as Cl	4.3	mg/l	Y	Mid	60
Dissolved Solids	2400	mg/l	N	Mid	18
" oride as F-	<0.20	mg/l	Y	Mid	20
, (Filtered)	5.2	mg/l	Y	Mid	41

Analyst Comments for 10888360:

No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.

Analysed al: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. I/S=Insufficient sample





Report Number:

COV/558587/2008

Issue

Laboratory Number: 10888361

Sample 16 of 16

Sample Source:

O Callaghan Moran & Assoc.

Sample Point Description: O Callaghan Moran & Assoc.

Sample Description:

BH8 1.00-2.00m 10:1

Sample Date:

Sample Received

31 October 2008 Analysis Complete: 13 November 2008

Test Description	Result	Units	Accred	ditation	Method
Leachate BSEN 10:1 extract	Y	/	N	Mid	EN12457-3 10:1
Antimony, Soluble	< 0.030	mg/l	N	Mid	25C
Arsenic, Soluble	<50	ug/l	N	Mid	25C
Barium, Soluble	0.025	mg/l	Y	Mid	54F
Cadmium, Soluble	<0.10	ug/l	Y	Mid	56
Calcium, Soluble	650	mg/l	Y	Mid	53F
Chromium, Soluble	<100	ug/l	Y	Mid	53F
Copper, Soluble	<100	ug/l	Y	Mid	53F
Lead, Soluble	<100	ug/l	Y	Mid	53F
Mercury, Soluble	<0.30	ug/l	Y	Mid	56
Molybdenum, Soluble	0.0095	mg/l	N	Mid	68
Nickel, Soluble	<100	ug/l	Y	Mid	53F
Selenium, Soluble	<6.0	ug/l	N	Mid	25C
Zinc, Soluble	<100	ug/l	Y	Mid	53F
Phenol Index	<0.050	mg/l	N	Mid	32A
Sulphate as SO4	1400	mg/l	Y	Mid	60
Chloride as CI	5.8	mg/l	Y	Mid	60
Dissolved Solids	2400	mg/l	N	Mid	18
Fluoride as F-	<0.20	mg/l	Y	Mid	20
TOC (Filtered)	7.3	mg/l	Y	Mid	41

Analyst Comments for 10888361:

No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.

Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. I/S=Insufficient sample

Signed: X. Ellas

Name: L. Ellis

Date: 19 November 2008

Title:



Mr Crean O Callaghan Moran & Assoc. **Granary House** Rutland Street Cork

24 December 2008

Test Report: COV/569308/2008

Dear Mr Crean

Analysis of your sample(s) submitted on 12 December 2008 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using STL and we look forward to receiving your next samples.

Yours Sincerely,

Signed:

Name: G. Smith

Title: Inorg and License Chem Manager

STL Coventry

Tel: +44 (0)24 7642 1213 Fax: +44 (0)24 7685 6575

STL Business Centre, Torrington Avenue,

www.stl-ltd.com

Coventry, CV4 9GU







# Report Summary





Mr Donal Crean O Callaghan Moran & Assoc. **Granary House** Rutland Street Cork

Date of Issue:

24 December 2008

Report Number: COV/569308/2008

Issue 1

Job Description:

**Donal Crean** 

Job Location:

O Callaghan Moran & Associates

Number of Samples

included in this report

Job Received:

12 December 2008

Number of Test Results included in this report 550

Analysis Commenced: 12 December 2008

Signed:

Name: G. Smith

Date: 24 December 2008

Title:

Inorg and License Chem Manager

STL was not responsible for sampling unless otherwise stated. Sampling is not covered by our UKAS accreditation,

Information on the methods of analysis and performance characteristics are available on request. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

(c) Severn Trent Laboratories Limited 2008. All rights reserved. We, Severn Trent Laboratories Limited, are the owner of all copyright in this report. You must not copy, reproduce, amend or adapt this report, its contents or any format in which it is delivered without our prior written agreement. If you copy, reproduce, amend, or adapt this report in any way without our agreement you will be liable for any damage or loss to us. In the event of a dispute the copy of the report held by us shall be the reference copy.





COV/569308/2008 Report Number:

Issue

Laboratory Number: 10956741

of 22 Sample 1

O Callaghan Moran & Assoc. Sample Source: Sample Point Description: O Callaghan Moran & Assoc.

Sample Description: BH7 4.00m-5.00m

Sample Received 12 December 2008 Analysis Complete: 24 December 2008 Sample Date:

Test Description	Result	Units	Accreditation	Method
EN 12457-3 Leachate	Y		N Mid	EN12457-3
Moisture Content Ratio at 105C	0.10	% ratio	N Mid	33
risture at 105c	0.10	%	N Mid	33
C by Ignition in O2	3.1	%	N Mid	27
PCB, Total of 7 Congeners	<0.010	mg/kg	N Mid	312
Mineral Oils, >C10 - C40	<50	mg/kg	Y Mid	317
Naphthalene	<0.10	mg/kg	N Mid	307
Acenaphthylene	<0.10	mg/kg	N Mid	307
Acenaphthene	<0.10	mg/kg	N Mid	307
Fluorene	<0.10	mg/kg	N Mid	307
Phenanthrene	<0.10	mg/kg	N Mid	307
Anthracene	<0.10	mg/kg	N Mid	307
Fluoranthene	<0.10	mg/kg	N Mid	307
Pyrene	<0.10	mg/kg	N Mid	307
Benzo(a)anthracene	<0.10	mg/kg	N Mid	307
Chrysene	<0.10	mg/kg	N Mid	307
Benzo(b)fluoranthene	<0.10	mg/kg	N Mid	307
Benzo(k)fluoranthene	<0.10	mg/kg	N Mid	307
Penzo(a)pyrene	<0.10	mg/kg	N Mid	307
enz(a,h)anthracene	<0.10	mg/kg	N Mid	307
Benzo(g,h,i)perylene	<0.10	mg/kg	N Mid	307
ndeno(1,2,3-c,d)pyrene	<0.10	mg/kg	N Mid	307
Coronene	<0.10	mg/kg	N Mid	307
PAH, Total of 17 WAC	<1.0	mg/kg	N Mid	307
benzene	<0.10	mg/kg	Y Mid	327
toluene	<0.10	mg/kg	Y Mid	327
ethylbenzene	<0.10	mg/kg	Y Mid	327
m&p-Xylene	<0.20	mg/kg	Y Mid	327
o-xylene	<0.10	mg/kg	Y Mid	327
Dry Ratio (BSEN 12457)	99.90	%	N Mid	Calculated

Analyst Comments for 10956741:

No Analyst Comment

Accreditation Codes; Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.

Analysed at; Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml. I/S=Insufficient sample





Report Number:

COV/569308/2008

Issue

Laboratory Number: 10956742

Sample 2 of 22

Sample Source:

O Callaghan Moran & Assoc.

Sample Point Description: O Callaghan Moran & Assoc.

Sample Description:

BH12 0.50m-1.00m

Sample Date:

Sample Received 12 December 2008 Analysis Complete: 24 December 2008

Test Description	Result	Units	Accreditation	Method
EN 12457-3 Leachate	Y		N Mid	EN12457-3
Moisture Content Ratio at 105C	0.39	% ratio	N Mid	33
Moisture at 105c	0.39	%	N Mid	33
TOC by Ignition in O2	5.3	%	N Mid	27
PCB, Total of 7 Congeners	<0.010	mg/kg	N Mid	312
Mineral Oils, >C10 - C40	640	mg/kg	Y Mid	317
Naphthalene	0.47	mg/kg	N Mid	307
Acenaphthylene	<0.10	mg/kg	N Mid	307
Acenaphthene	0.18	mg/kg	N Mid	307
Fluorene	0.11	mg/kg	N Mid	307
Phenanthrene	1.3	mg/kg	N Mid	307
Anthracene	0.19	mg/kg	N Mid	307
Fluoranthene	0.87	mg/kg	N Mid	307
Pyrene	1.1	mg/kg	N Mid	307
Benzo(a)anthracene	0.43	mg/kg	N Mid	307
Chrysene	0.36	mg/kg	N Mid	307
Benzo(b)fluoranthene	0.26	mg/kg	N Mid	307
Benzo(k)fluoranthene	0.15	mg/kg	N Mid	307
Benzo(a)pyrene	0.34	mg/kg	N Mid	307
Dibenz(a,h)anthracene	<0.10	mg/kg	N Mid	307
Benzo(g,h,i)perylene	0.45	mg/kg	N Mid	307
ndeno(1,2,3-c,d)pyrene	0.37	mg/kg	N Mid	307
Coronene	<0.10	mg/kg	N Mid	307
PAH, Total of 17 WAC	6.6	mg/kg	N Mid	307
benzene	<0.10	mg/kg	Y Mid	327
oluene	<0.10	mg/kg	Y Mid	327
ethylbenzene	<0.10	mg/kg	Y Mid	327
n&p-Xylene	<0.20	mg/kg	Y Mid	327
o-xylene	<0.10	mg/kg	Y Mid	327
Dry Ratio (BSEN 12457)	99.61	%	N Mid	Calculated

Analyst Comments for 10956742:

No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.

Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml. I/S=Insufficient sample





Report Number: COV/569308/2008

Issue '

Laboratory Number: 10956743

Sample 3 of 22

Sample Source: O Callaghan Moran & Assoc.
Sample Point Description: O Callaghan Moran & Assoc.

Sample Description: BH12 3.00m-4.00m

Sample Date: Sample Received 12 December 2008 Analysis Complete: 24 December 2008

Test Description	Result	Units	Accreditation	Method
EN 12457-3 Leachate	Y		N Mid	EN12457-3
Moisture Content Ratio at 105C	0.29	% ratio	N Mid	33
sture at 105c	0.29	%	N Mid	33
by Ignition in O2	3.0	%	N Mid	27
PCB, Total of 7 Congeners	<0.010	mg/kg	N Mid	312
Mineral Oils, >C10 - C40	170	mg/kg	Y Mid	317
Naphthalene	<0.10	mg/kg	N Mid	307
Acenaphthylene	<0.10	mg/kg	N Mid	307
Acenaphthene	<0.10	mg/kg	N Mid	307
Fluorene	<0.10	mg/kg	N Mid	307
Phenanthrene	0.11	mg/kg	N Mid	307
Anthracene	<0.10	mg/kg	N Mid	307
Fluoranthene	<0.10	mg/kg	N Mid	307
Pyrene	<0.10	mg/kg	N Mid	307
Benzo(a)anthracene	<0.10	mg/kg	N Mid	307
Chrysene	<0.10	mg/kg	N Mid	307
Benzo(b)fluoranthene	<0.10	mg/kg	N Mid	307
Benzo(k)fluoranthene	<0.10	mg/kg	N Mid	307
nzo(a)pyrene	<0.10	mg/kg	N Mid	307
nz(a,h)anthracene	<0.10	mg/kg	N Mid	307
Benzo(g,h,i)perylene	<0.10	mg/kg	N Mid	307
Indeno(1,2,3-c,d)pyrene	<0.10	mg/kg	N Mid	307
Coronene	<0.10	mg/kg	N Mid	307
PAH, Total of 17 WAC	<1.0	mg/kg	N Mid	307
benzene	<0.10	mg/kg	Y Mid	327
toluene	<0.10	mg/kg	Y Mid	327
ethylbenzene	<0.10	mg/kg	Y Mid	327
m&p-Xylene	<0.20	mg/kg	Y Mid	327
o-xylene	<0.10	mg/kg	Y Mid	327
Dry Ratio (BSEN 12457)	99.71	%	N Mid	Calculated

Analyst Comments for 10956743:

No Analyst Comment

Accreditation Codes; Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.

Analysed at: Bri = STL, Bridgend, Cov = STL Coventry, Mid = STL, Midlands, Rea = STL Reading, Run = STL Runcorn.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.

I/S=Insufficient sample





Report Number: COV/569308/2008 Issue

Laboratory Number: 10956744

of 22 Sample 4

Sample Source: O Callaghan Moran & Assoc. Sample Point Description: O Callaghan Moran & Assoc.

BH12 4.00m-5.00m Sample Description:

Sample Date:

Sample Received 12 December 2008 Analysis Complete: 24 December 2008

Test Description	Result	Units	Accreditation	Method
EN 12457-3 Leachate	Y		N Mid	EN12457-3
Moisture Content Ratio at 105C	0.28	% ratio	N Mid	33
Moisture at 105c	0.28	%	N Mid	33
TOC by Ignition in O2	2.4	%	N Mid	27
PCB, Total of 7 Congeners	<0.010	mg/kg	N Mid	312
Mineral Oils, >C10 - C40	57	mg/kg	Y Mid	317
Naphthalene	0.15	mg/kg	N Mid	307
Acenaphthylene	<0.10	mg/kg	N Mid	307
Acenaphthene	<0.10	mg/kg	N Mid	307
Fluorene	<0.10	mg/kg	N Mid	307
Phenanthrene	<0.10	mg/kg	N Mid	307
Anthracene	<0.10	mg/kg	N Mid	307
Fluoranthene	<0.10	mg/kg	N Mid	307
Pyrene	<0.10	mg/kg	N Mid	307
Benzo(a)anthracene	<0.10	mg/kg	N Mid	307
Chrysene	<0.10	mg/kg	N Mid	307
Benzo(b)fluoranthene	<0.10	mg/kg	N Mid	307
Benzo(k)fluoranthene	<0.10	mg/kg	N Mid	307
Benzo(a)pyrene	<0.10	mg/kg	N Mid	307
Dibenz(a,h)anthracene	<0.10	mg/kg	N Mid	307
Benzo(g,h,i)perylene	<0.10	mg/kg	N Mid	307
Indeno(1,2,3-c,d)pyrene	<0.10	mg/kg	N Mid	307
Coronene	<0.10	mg/kg	N Mid	307
PAH, Total of 17 WAC	<1.0	mg/kg	N Mid	307
benzene	<0.10	mg/kg	Y Mid	327
toluene	<0.10	mg/kg	Y Mid	327
ethylbenzene	<0.10	mg/kg	Y Mid	327
m&p-Xylene	<0.20	mg/kg	Y Mid	327
p-xylene	<0.10	mg/kg	Y Mid	327
Dry Ratio (BSEN 12457)	99.72	%	N Mid	Calculated

Analyst Comments for 10956744:

No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.

Analysed att Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered, Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.

I/S=Insufficient sample





Report Number:

COV/569308/2008

Issue

Laboratory Number: 10956745

Sample 5 of 22

Sample Source:

O Callaghan Moran & Assoc.

Sample Point Description: O Callaghan Moran & Assoc.

Sample Description:

BH12 8.00m-10.00m

Sample Date:

Sample Received 12 December 2008 Analysis Complete: 24 December 2008

Test Description	Result	Units	Accreditation		Method
EN 12457-3 Leachate	Y		N	Mid	EN12457-3
Moisture Content Ratio at 105C	0.37	% ratio	N	Mid	33
sture at 105c	0.37	%	N	Mid	33
€ by Ignition in O2	1.4	%	N	Mid	27
PCB, Total of 7 Congeners	<0.010	mg/kg	N	Mid	312
Mineral Oils, >C10 - C40	<50	mg/kg	Y	Mid	317
Naphthalene	0.18	mg/kg	N	Mid	307
Acenaphthylene	<0.10	mg/kg	N	Mid	307
Acenaphthene	<0.10	mg/kg	N	Mid	307
Fluorene	<0.10	mg/kg	N	Mid	307
Phenanthrene	<0.10	mg/kg	N	Mid	307
Anthracene	<0.10	mg/kg	N	Mid	307
Fluoranthene	<0.10	mg/kg	N	Mid	307
Pyrene	<0.10	mg/kg	N	Mid	307
Benzo(a)anthracene	<0.10	mg/kg	N	Mid	307
Chrysene	<0.10	mg/kg	N	Mid	307
Benzo(b)fluoranthene	<0.10	mg/kg	N	Mid	307
Benzo(k)fluoranthene	<0.10	mg/kg	N	Mid	307
nzo(a)pyrene	<0.10	mg/kg	N	Mid	307
∌nz(a,h)anthracene	<0.10	mg/kg	N	Mid	307
Benzo(g,h,i)perylene	<0.10	mg/kg	N	Mid	307
Indeno(1,2,3-c,d)pyrene	<0.10	mg/kg	N	Mid	307
Coronene	<0.10	mg/kg	N	Mid	307
PAH, Total of 17 WAC	<1.0	mg/kg	N	Mid	307
benzene	<0.10	mg/kg	Y	Mid	327
toluene	<0.10	mg/kg	Y	Mid	327
ethylbenzene	<0.10	mg/kg	Y	Mid	327
m&p-Xylene	<0.20	mg/kg	Y	Mid	327
o-xylene	<0.10	mg/kg	Y	Mid	327
Dry Ratio (BSEN 12457)	99.63	%	N	Mid	Calculated

Analyst Comments for 10956745:

No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.

Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml.

I/S=Insufficient sample





1510

Report Number:

COV/569308/2008

Issue

Laboratory Number: 10956746

Sample 6 of 22

Sample Source:

O Callaghan Moran & Assoc.

Sample Point Description: O Callaghan Moran & Assoc.

Sample Description:

BH14 0.50m-1.00m

Sample Date:

Sample Received 12 December 2008 Analysis Complete: 24 December 2008

Test Description	Result	Units	Accreditation	Method EN12457-3
EN 12457-3 Leachate	Y		N Mid	
Moisture Content Ratio at 105C	1.60	% ratio	N Mid	33
Moisture at 105c	1.6	%	N Mid	33
TOC by Ignition in O2	4.4	%	N Mid	27
PCB, Total of 7 Congeners	<0.010	mg/kg	N Mid	312
Mineral Oils, >C10 - C40	99	mg/kg	Y Mid	317
Naphthalene	0.59	mg/kg	N Mid	307
Acenaphthylene	<0.10	mg/kg	N Mid	307
Acenaphthene	0.25	mg/kg	N Mid	307
Fluorene	0.11	mg/kg	N Mid	307
Phenanthrene	1.6	mg/kg	N Mid	307
Anthracene	0.26	mg/kg	N Mid	307
Fluoranthene	1.1	mg/kg	N Mid	307
Pyrene	1.2	mg/kg	N Mid	307
Benzo(a)anthracene	0.60	mg/kg	N Mid	307
Chrysene	0.57	mg/kg	N Mid	307
Benzo(b)fluoranthene	0.45	mg/kg	N Mid	307
Benzo(k)fluoranthene	0.18	mg/kg	N Mid	307
Benzo(a)pyrene	0.56	mg/kg	N Mid	307
Dibenz(a,h)anthracene	<0.10	mg/kg	N Mid	307
Benzo(g,h,i)perylene	0.37	mg/kg	N Mid	307
ndeno(1,2,3-c,d)pyrene	0.26	mg/kg	N Mid	307
Coronene	<0.10	mg/kg	N Mid	307
PAH, Total of 17 WAC	8.1	mg/kg	N Mid	307
penzene	<0.10	mg/kg	Y Mid	327
oluene	<0.10	mg/kg	Y Mid	327
ethylbenzene	<0.10	mg/kg	Y Mid	327
m&p-Xylene	<0.20	mg/kg	Y Mid	327
o-xylene	<0.10	mg/kg	Y Mid	327
Dry Ratio (BSEN 12457)	98.43	%	N Mid	Calculated

Analyst Comments for 10956746:

No Analyst Comment

Accreditation Codes: Y = UKAS Accredited, N = Not UKAS Accredited, M = MCERTS, S = Sub-contracted.

Analysed at: Bri = STL Bridgend, Cov = STL Coventry, Mid = STL Midlands, Rea = STL Reading, Run = STL Runcorn.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered. Relating to Legionella volume analysed 1g is approximately equivalent to 1ml. 

I/S=Insufficient sample