TIER 2

ENVIRONMENTAL RISK ASSESSMENT

APPENDIX C

ALCONTROL LABORATORIES CERTIFICATE OF ANALYSIS

ALcontrol Laboratories

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Tel : +353 (0)184 33033 (Opt 2)

Traynor Environmental Ltd
Belturbet Business Park
Creeny
Belturbet
Co. Cavan

Attention: Nevin Traynor

CERTIFICATE OF ANALYSIS

Date:	26 November 2013
Customer:	D_TENV_BTB
Sample Delivery Group (SDG):	131112-32
Your Reference:	Kingscourt Historic Landfill Site
Location:	Kingscourt Historic Landfill Site
Report No:	251290

This report has been revised and directly supersedes 251288 in its entirety.

We received 3 samples on Monday November 11, 2013 and 3 of these samples were scheduled for analysis which was completed on Tuesday November 26, 2013. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:

Sonia McWhan
Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	131112-32	**Location:**	Kingscourt Historic Landfill Site	**Order Number:**	
Job:	D_TENV_BTB-12	**Customer:**	Traynor Environmental Ltd	**Report Number:**	251290
Client Reference:	Kingscourt Historic Landfill Site	**Attention:**	Nevin Traynor	**Superseded Report:**	251288

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
8408904	SAMPLE-CONTROL			
8408906	SOIL SAMPLE NO.2			
8408907	SOIL SAMPLE NO.3			

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	131112-32	**Location:**	Kingscourt Historic Landfill Site	**Order Number:**	
Job:	D_TENV_BTB-12	**Customer:**	Traynor Environmental Ltd	**Report Number:**	251290
Client Reference:	Kingscourt Historic Landfill Site	**Attention:**	Nevin Traynor	**Superseded Report:**	251288

SOLID

Results Legend

X Test

N No Determination Possible

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
			8408904	SAMPLE-CONTROL			250g Amber Jar
			8408906	SOIL SAMPLE NO.2			250g Amber Jar
			8408907	SOIL SAMPLE NO.3			250g Amber Jar
Alkali Metals by iCap-OES (Soil)	All	NDPs: 0 Tests: 3	X	X	X		
Alkalinity as CaCO3	All	NDPs: 0 Tests: 3	X	X	X		
Ammonium Soil by Titration	All	NDPs: 0 Tests: 3	X	X	X		
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 3	X	X	X		
EPH by FID	All	NDPs: 0 Tests: 3	X	X	X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 3	X	X	X		
M [illegible]	All	NDPs: 0 Tests: 3	X	X	X		
PAH by GCMS	All	NDPs: 0 Tests: 3	X	X	X		
pH	All	NDPs: 0 Tests: 3	X	X	X		
Sample description	All	NDPs: 0 Tests: 3	X	X	X		
VOC MS (S)	All	NDPs: 0 Tests: 3	X	X	X		

CERTIFICATE OF ANALYSIS

SDG:	131112-32	**Location:**	Kingscourt Historic Landfill Site	**Order Number:**	
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Client Reference:	Kingscourt Historic Landfill Site	**Attention:**	Nevin Traynor	**Superseded Report:**	251288

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
8408904	SAMPLE-CONTROL		Light Brown	Sandy Silt Loam	0.1 - 2 mm	Stones	None
8408906	SOIL SAMPLE NO.2		Light Brown	Gravel	> 10 mm	None	None
8408907	SOIL SAMPLE NO.3		Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

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Client Reference:	Kingscourt Historic Landfill Site	**Attention:**	Nevin Traynor	**Superseded Report:**	251288

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	SAMPLE-CONTROL	SOIL SAMPLE NO. 2	SOIL SAMPLE NO. 3			
			Depth (m)	-	-	-			
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid			
			Date Sampled	-	-	-			
			Sample Time	-	-	-			
			Date Received	11/11/2013	11/11/2013	11/11/2013			
			SDG Ref	131112-32	131112-32	131112-32			
			Lab Sample No.(s)	8408904	8408906	8408907			
			AGS Reference						
Exchangeable Ammonia as NH4	<15 mg/kg	TM024		22.8 § M	<15 § #	28.6 § M			
Exchangeable Ammonia as N	<15 mg/kg	TM024		17.8 §	<15 §	22.3 §			
Mineral oil >C10-C40	<1 mg/kg	TM061		30.4 § #	377 § #	70.3 § #			
Surrogate Value	-	TM061		45.5 §	42.5 §	45.1 §			
EPH Surrogate % recovery**	%	TM061		102 § M	100 § #	96.9 § M			
Mineral Oil Surrogate % recovery**	%	TM061		91 §	84.9 §	90.2 §			
E. ange >C10 - C40	<35 mg/kg	TM061		365 § M	1520 § #	325 § M			
pH	1 pH Units	TM133		8.34 § M	9.06 § #	8.63 § M			
Copper	<1.4 mg/kg	TM181		27.5 § M	31.9 § #	39 § M			
Iron	<1000 mg/kg	TM181		43000 § #	35200 § #	46500 § #			
Lead	<0.7 mg/kg	TM181		25.8 § M	19.5 § #	34.6 § M			
Manganese	<0.13 mg/kg	TM181		804 § M	690 § #	661 § M			
Mercury	<0.14 mg/kg	TM181		<0.14 § M	<0.14 § #	<0.14 § M			
Nickel	<0.2 mg/kg	TM181		58.2 § M	50.4 § #	53.4 § M			
Phosphorus	<1 mg/kg	TM181		648 §	673 §	846 §			
Zinc	<1.9 mg/kg	TM181		140 § M	102 § #	138 § M			
Sodium	<7 mg/kg	TM224		111 §	174 §	138 §			
Magnesium	<8 mg/kg	TM224		12600 §	12800 §	11500 §			
Potassium	<16 mg/kg	TM224		1370 §	1550 §	1580 §			
Alkalinity, Total as CaCO3	<10 mg/kg	TM230		218 §	244 §	249 §			
Conductivity @ 20 deg.C	<0.014 mS/cm	TM234		2 §	2.31 §	2.14 §			

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Job:	D_TENV_BTB-12	**Customer:**	Traynor Environmental Ltd	**Report Number:**	251290
Client Reference:	Kingscourt Historic Landfill Site	**Attention:**	Nevin Traynor	**Superseded Report:**	251288

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	SAMPLE-CONTROL	SOIL SAMPLE NO. 2	SOIL SAMPLE NO. 3
			Depth (m)	-	-	-
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	-	-	-
			Sample Time	-	-	-
			Date Received	11/11/2013	11/11/2013	11/11/2013
			SDG Ref	131112-32	131112-32	131112-32
			Lab Sample No.(s)	8408904	8408906	8408907
			AGS Reference			
Naphthalene-d8 % recovery**	%	TM218		99.5 §	90.9 §	96.4 §
Acenaphthene-d10 % recovery**	%	TM218		98.3 §	89.9 §	94.6 §
Phenanthrene-d10 % recovery**	%	TM218		97.1 §	88.6 §	92.6 §
Chrysene-d12 % recovery**	%	TM218		96.7 §	90.3 §	92.3 §
Perylene-d12 % recovery**	%	TM218		99 §	99.2 §	99.6 §
Naphthalene	<9 µg/kg	TM218		16.3 § M	<9 § #	<9 § M
Acenaphthylene	<12 µg/kg	TM218		<12 § M	<12 § #	16.4 § M
Acenaphthene	<8 µg/kg	TM218		10.9 § M	<8 § #	<8 § M
Fluorene	<10 µg/kg	TM218		<10 § M	<10 § #	<10 § M
Phenanthrene	<15 µg/kg	TM218		107 § M	27.2 § #	125 § M
Anthracene	<16 µg/kg	TM218		34.1 § M	<16 § #	43.3 § M
Fluoranthene	<17 µg/kg	TM218		494 § M	42.5 § #	496 § M
Pyrene	<15 µg/kg	TM218		450 § M	48.8 § #	467 § M
Benz(a)anthracene	<14 µg/kg	TM218		286 § M	27 § #	306 § M
Chrysene	<10 µg/kg	TM218		281 § M	28.3 § #	285 § M
Benzo(b)fluoranthene	<15 µg/kg	TM218		367 § M	45.7 § #	402 § M
Benzo(k)fluoranthene	<14 µg/kg	TM218		183 § M	15.9 § #	175 § M
Benzo(a)pyrene	<15 µg/kg	TM218		349 § M	49.5 § #	421 § M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		228 § M	33.7 § #	240 § M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		54.9 § M	<23 § #	60.3 § M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		307 § M	76 § #	318 § M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		3170 §	385 §	3360 §

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Client Reference:	Kingscourt Historic Landfill Site	**Attention:**	Nevin Traynor	**Superseded Report:**	251288

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	SAMPLE-CONTROL	SOIL SAMPLE NO. 2	SOIL SAMPLE NO. 3
			Depth (m)	-	-	-
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	-	-	-
			Sample Time	-	-	-
			Date Received	11/11/2013	11/11/2013	11/11/2013
			SDG Ref	131112-32	131112-32	131112-32
			Lab Sample No.(s)	8408904	8408906	8408907
			AGS Reference			
Dibromofluoromethane**	%	TM116		102 2 §	112 2 §	104 2 §
Toluene-d8**	%	TM116		94.6 2 §	98.2 2 §	94.6 2 §
4-Bromofluorobenzene**	%	TM116		118 2 §	97.8 2 §	119 2 §
Dichlorodifluoromethane	<4 µg/kg	TM116		<4 2 § M	<80 2 § #	<4 2 § M
Chloromethane	<7 µg/kg	TM116		<7 2 §	<140 2 §	<7 2 §
Vinyl Chloride	<10 µg/kg	TM116		<10 2 §	<200 2 §	<10 2 §
B. nethane	<13 µg/kg	TM116		<13 2 § M	<260 2 § #	<13 2 § M
Chloroethane	<14 µg/kg	TM116		<14 2 § M	<280 2 § #	<14 2 § M
Trichlorofluoromethane	<6 µg/kg	TM116		<6 2 § M	<120 2 § #	<6 2 § M
1,1-Dichloroethene	<10 µg/kg	TM116		<10 2 § #	<200 2 § #	<10 2 § #
Carbon Disulphide	<7 µg/kg	TM116		<7 2 § M	<140 2 § #	<7 2 § M
Dichloromethane	<10 µg/kg	TM116		<10 2 § #	<200 2 § #	<10 2 § #
Methyl Tertiary Butyl Ether	<11 µg/kg	TM116		<11 2 § M	<220 2 § #	<11 2 § M
trans-1,2-Dichloroethene	<11 µg/kg	TM116		<11 2 § M	<220 2 § #	<11 2 § M
1,1-Dichloroethane	<8 µg/kg	TM116		<8 2 § M	<160 2 § #	<8 2 § M
cis-1,2-Dichloroethene	<5 µg/kg	TM116		<5 2 § M	<100 2 § #	<5 2 § M
2,2-Dichloropropane	<12 µg/kg	TM116		<12 2 § M	<240 2 § #	<12 2 § M
Bromochloromethane	<14 µg/kg	TM116		<14 2 § M	<280 2 § #	<14 2 § M
Chloroform	<8 µg/kg	TM116		<8 2 § M	<160 2 § #	<8 2 § M
1,1,1-Trichloroethane	<7 µg/kg	TM116		<7 2 § M	<140 2 § #	<7 2 § M
1,1-Dichloropropene	<11 µg/kg	TM116		<11 2 § M	<220 2 § #	<11 2 § M
Carbontetrachloride	<14 µg/kg	TM116		<14 2 § M	<280 2 § #	<14 2 § M
1,2-Dichloroethane	<5 µg/kg	TM116		<5 2 § M	<100 2 § #	<5 2 § M
Benzene	<9 µg/kg	TM116		<9 2 § M	<180 2 § #	<9 2 § M
Trichloroethene	<9 µg/kg	TM116		<9 2 § M	<180 2 § #	<9 2 § M
1,2-Dichloropropane	<12 µg/kg	TM116		<12 2 § M	<240 2 § #	<12 2 § M
Dibromomethane	<9 µg/kg	TM116		<9 2 § M	<180 2 § #	<9 2 § M
Bromodichloromethane	<7 µg/kg	TM116		<7 2 § M	<140 2 § #	<7 2 § M
cis-1,3-Dichloropropene	<14 µg/kg	TM116		<14 2 § M	<280 2 § #	<14 2 § M
Toluene	<5 µg/kg	TM116		<5 2 § M	<100 2 § #	<5 2 § M
trans-1,3-Dichloropropene	<100 µg/kg	TM116		<100 2 §	<2000 2 §	<100 2 §
1,1,2-Trichloroethane	<10 µg/kg	TM116		<10 2 § M	<200 2 § #	<10 2 § M

CERTIFICATE OF ANALYSIS

SDG:	131112-32	**Location:**	Kingscourt Historic Landfill Site	**Order Number:**	
Job:	D_TENV_BTB-12	**Customer:**	Traynor Environmental Ltd	**Report Number:**	251290
Client Reference:	Kingscourt Historic Landfill Site	**Attention:**	Nevin Traynor	**Superseded Report:**	251288

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&4§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	SAMPLE-CONTROL	SOIL SAMPLE NO. 2	SOIL SAMPLE NO. 3			
			Depth (m)	-	-	-			
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid			
			Date Sampled	-	-	-			
			Sample Time	-	-	-			
			Date Received	11/11/2013	11/11/2013	11/11/2013			
			SDG Ref	131112-32	131112-32	131112-32			
			Lab Sample No.(s)	8408904	8408906	8408907			
			AGS Reference						
1,3-Dichloropropane	<7 µg/kg	TM116		<7 2 § #	<140 2 § #	<7 2 § #			
Tetrachloroethene	<5 µg/kg	TM116		<5 2 § M	<100 2 § #	<5 2 § M			
Dibromochloromethane	<13 µg/kg	TM116		<13 2 § M	<260 2 § #	<13 2 § M			
1,2-Dibromoethane	<12 µg/kg	TM116		<12 2 § M	<240 2 § #	<12 2 § M			
Chlorobenzene	<5 µg/kg	TM116		<5 2 § M	<100 2 § #	<5 2 § M			
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<10 2 § M	<200 2 § #	<10 2 § M			
Ethylbenzene	<4 µg/kg	TM116		<4 2 § M	<80 2 § #	<4 2 § M			
p/m-Xylene	<14 µg/kg	TM116		<14 2 § #	<280 2 § #	<14 2 § #			
o-Xylene	<10 µg/kg	TM116		<10 2 § M	<200 2 § #	<10 2 § M			
Styrene	<10 µg/kg	TM116		<10 2 § M	<200 2 § #	<10 2 § M			
Bromoform	<10 µg/kg	TM116		<10 2 § M	<200 2 § #	<10 2 § M			
Isopropylbenzene	<5 µg/kg	TM116		<5 2 § M	<100 2 § #	<5 2 § M			
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<10 2 § #	<200 2 § #	<10 2 § #			
1,2,3-Trichloropropane	<17 µg/kg	TM116		<17 2 § M	<340 2 § #	<17 2 § M			
Bromobenzene	<10 µg/kg	TM116		<10 2 § M	<200 2 § #	<10 2 § M			
Propylbenzene	<11 µg/kg	TM116		<11 2 § M	<220 2 § #	<11 2 § M			
2-Chlorotoluene	<9 µg/kg	TM116		<9 2 § M	<180 2 § #	<9 2 § M			
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<8 2 § #	<160 2 § #	<8 2 § #			
4-Chlorotoluene	<12 µg/kg	TM116		<12 2 § M	<240 2 § #	<12 2 § M			
tert-Butylbenzene	<12 µg/kg	TM116		<12 2 § #	<240 2 § #	<12 2 § #			
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<9 2 § #	<180 2 § #	<9 2 § #			
sec-Butylbenzene	<10 µg/kg	TM116		<10 2 § M	<200 2 § #	<10 2 § M			
4-Isopropyltoluene	<11 µg/kg	TM116		<11 2 § M	<220 2 § #	<11 2 § M			
1,3-Dichlorobenzene	<6 µg/kg	TM116		<6 2 § M	<120 2 § #	<6 2 § M			
1,4-Dichlorobenzene	<5 µg/kg	TM116		<5 2 § M	<100 2 § #	<5 2 § M			
n-Butylbenzene	<10 µg/kg	TM116		<10 2 § M	<200 2 § #	<10 2 § M			
1,2-Dichlorobenzene	<12 µg/kg	TM116		<12 2 § M	<240 2 § #	<12 2 § M			
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<14 2 § M	<280 2 § #	<14 2 § M			
Tert-amyl methyl ether	<15 µg/kg	TM116		<15 2 §	<300 2 §	<15 2 §			
1,2,4-Trichlorobenzene	<6 µg/kg	TM116		<6 2 § #	<120 2 § #	<6 2 § #			
Hexachlorobutadiene	<12 µg/kg	TM116		<12 2 §	<240 2 §	<12 2 §			
Naphthalene	<13 µg/kg	TM116		<13 2 § M	<260 2 § #	<13 2 § M			

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	131112-32	**Location:**	Kingscourt Historic Landfill Site	**Order Number:**	
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Client Reference:	Kingscourt Historic Landfill Site	**Attention:**	Nevin Traynor	**Superseded Report:**	251288

VOC MS (S)

Results Legend		Customer Sample Ref.	SAMPLE-CONTROL	SOIL SAMPLE NO. 2	SOIL SAMPLE NO. 3			
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	-	-	-			
diss.filt	Dissolved / filtered sample.	Sample Type	Soil/Solid	Soil/Solid	Soil/Solid			
tot.unfilt	Total / unfiltered sample.	Date Sampled	-	-	-			
*	Subcontracted test.	Sample Time	-	-	-			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Date Received	11/11/2013	11/11/2013	11/11/2013			
		SDG Ref	131112-32	131112-32	131112-32			
(F)	Trigger breach confirmed	Lab Sample No.(s)	8408904	8408906	8408907			
1-4&§@	Sample deviation (see appendix)	AGS Reference						
Component	**LOD/Units**	**Method**						
1,2,3-Trichlorobenzene	<6 µg/kg	TM116	<6 2 § M	<120 2 § #	<6 2 § M			

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Extractable Petroleum Hydrocarbons (EPH) By GC-FID

EPH (DRO) (C10-C40)

Sample No	Customer Sample Ref.	Depth	Matrix (mg/kg)	EPH	Interpretation
8431596	SOIL SAMPLE NO.2		SOLID	1520	heavy oil
8431688	SOIL SAMPLE NO.3		SOLID	325	bitumen/tar.
8438259	SAMPLE-CONTROL		SOLID	365	bitumen/tar/unknown pattern

Extractable Petroleum Hydrocarbons (formally Diesel Range Organics) :- Any compound extractable in n-hexane within the carbon range C10-C40, includes Aliphatic (Min Oil), Aromatic (PAHs) and naturally occurring compounds.

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Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids		
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM224	US EPA Method 6010B	Determination of Alkaline Metals by iCap 6500 Duo ICP-OES		
TM230	Methods 2320B and 4500-CO2 D, AWWA/APHA 19th Edition, 1995.	Determination of Alkalinity in Aqueous Sludge and Soil extracts		
TM234	The measurement of Electrical Conductivity and the Laboratory Determination of the pH value of Natural, Treated and Waste Waters. HMSO, 1978. ISBN 011 751428 4.	Determination of Electrical Conductivity of Soils Extracted with Calcium Sulphate		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

CERTIFICATE OF ANALYSIS

SDG:	131112-32	**Location:**	Kingscourt Historic Landfill Site	**Order Number:**	
Job:	D_TENV_BTB-12	**Customer:**	Traynor Environmental Ltd	**Report Number:**	251290
Client Reference:	Kingscourt Historic Landfill Site	**Attention:**	Nevin Traynor	**Superseded Report:**	251288

Test Completion Dates

Lab Sample No(s)	8408904	8408906	8408907
Customer Sample Ref.	SAMPLE-CONTROL	SOIL SAMPLE NO. 2	SOIL SAMPLE NO. 3
AGS Ref.			
Depth			
Type	SOLID	SOLID	SOLID
Alkali Metals by iCap-OES (Soil)	19-Nov-2013	19-Nov-2013	19-Nov-2013
Alkalinity as CaCO3	15-Nov-2013	15-Nov-2013	15-Nov-2013
Ammonium Soil by Titration	15-Nov-2013	15-Nov-2013	18-Nov-2013
Conductivity (at 20 deg.C)	18-Nov-2013	18-Nov-2013	18-Nov-2013
EPH by FID	19-Nov-2013	19-Nov-2013	19-Nov-2013
Metals in solid samples by OES	19-Nov-2013	19-Nov-2013	19-Nov-2013
Mineral Oil	19-Nov-2013	19-Nov-2013	19-Nov-2013
PAH by GCMS	17-Nov-2013	17-Nov-2013	17-Nov-2013
pH	15-Nov-2013	15-Nov-2013	15-Nov-2013
Sample description	14-Nov-2013	14-Nov-2013	14-Nov-2013
VOC MS (S)	15-Nov-2013	15-Nov-2013	15-Nov-2013

SDG:	131112-32	**Location:**	Kingscourt Historic Landfill Site	**Order Number:**	
Job:	D_TENV_BTB-12	**Customer:**	Traynor Environmental Ltd	**Report Number:**	251290
Client Reference:	Kingscourt Historic Landfill Site	**Attention:**	Nevin Traynor	**Superseded Report:**	251288

Appendix
General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an as[illegible] We endeavour to use UKAS/MCERTS Accredited Laboratories, who either com[illegible]e a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. [illegible]lts relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5 -C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

Sample Deviations

1	Container with headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
§	Sampled on date not provided
^	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: -

Trace -Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.