

TIER 2

ENVIRONMENTAL RISK ASSESSMENT

APPENDIX C

ALCONTROLLABORATORIES CERTIFICATE OF ANALYSIS

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TIER 2

ENVIRONMENTAL RISK ASSESSMENT

SOIL ANALYSIS RESULTS

ALCONTROL LABORATORIES CERTIFICATE OF ANALYSIS

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Traynor Environmental Ltd
Belturbet Business Park
Creeny
Belturbet
Co. Cavan

Attention: Nevin Traynor

CERTIFICATE OF ANALYSIS

Date: 10 November 2014
Customer: D_TENV_BT
Sample Delivery Group (SDG): 141025-26
Your Reference:
Location: Cootehill Historic Landfill Site
Report No: 291260

We received 5 samples on Friday October 24, 2014 and 5 of these samples were scheduled for analysis which was completed on Monday November 10, 2014. 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.

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Approved By:

Sonia McWhan
Operations Manager



SDG: 141025-26
 Job: D_TENV_BT B-32
 Client Reference:

Location: Cootehill Historic Landfill Site
 Customer: Traynor Environmental Ltd
 Attention: Nevin Traynor

Order Number:
 Report Number: 291260
 Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
10256814	Sample No.5 Trial Hole 2			
10256811	Sample No.2 Trial Hole 20			
10256812	Sample No.3 Trial Hole 23			
10256813	Sample No.4 Trial Hole 10			
10256810	Sample No.1 Trial Hole 25 Control			

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

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SDG: 141025-26
 Job: D_TENV_BT B-32
 Client Reference:

Location: Cootehill Historic Landfill Site
 Customer: Traynor Environmental Ltd
 Attention: Nevin Traynor

Order Number:
 Report Number: 291260
 Superseded Report:

SOLID Results Legend <input checked="" type="checkbox"/> Test <input checked="" type="checkbox"/> No Determination Possible	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	
		10256810 10256813 10256812 10256811 10256814	Sample No.1 Trial Sample No.4 Trial Sample No.3 Trial Sample No.2 Trial Sample No.5 Trial			400g Tub (ALE214) 400g Tub (ALE214) 400g Tub (ALE214) 400g Tub (ALE214) 400g Tub (ALE214)
	ANC at pH4 and ANC at pH 6	All	NDPs: 5 Tests: 0	N N N N N		
	Anions by Kone (w)	All	NDPs: 0 Tests: 5	X X X X X		
	Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3	X X X		
CEN Readings	All	NDPs: 0 Tests: 5	X X X X X			
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 5	X X X X X			
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 5	X X X X X			
Fluoride	All	NDPs: 0 Tests: 5	X X X X X			
Oil by GC-FID (S)	All	NDPs: 2 Tests: 3	N N X X X			
Loss on Ignition in soils	All	NDPs: 1 Tests: 4	X X X X N			
Mercury Dissolved	All	NDPs: 0 Tests: 5	X X X X X			
Mineral Oil	All	NDPs: 0 Tests: 5	X X X X X			
PAH Value of soil	All	NDPs: 0 Tests: 5	X X X X X			
PCBs by GCMS	All	NDPs: 0 Tests: 5	X X X X X			
pH	All	NDPs: 0 Tests: 5	X X X X X			
Phenols by HPLC (W)	All	NDPs: 0 Tests: 5	X X X X X			

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SDG: 141025-26
 Job: D_TENV_BT B-32
 Client Reference:

Location: Cootehill Historic Landfill Site
 Customer: Traynor Environmental Ltd
 Attention: Nevin Traynor

Order Number:
 Report Number: 291260
 Superseded Report:

SOLID Results Legend <input checked="" type="checkbox"/> Test <input type="checkbox"/> No Determination Possible	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	
		10256810	Sample No. 1 Trial			400g Tub (ALE214)
		10256813	Sample No. 4 Trial			400g Tub (ALE214)
		10256812	Sample No. 3 Trial			400g Tub (ALE214)
		10256811	Sample No. 2 Trial			400g Tub (ALE214)
	10256814	Sample No. 5 Trial			400g Tub (ALE214)	
Sample description	All	NDPs: 0 Tests: 1			X	
Total Dissolved Solids	All	NDPs: 0 Tests: 5			X X X X X	
Total Organic Carbon	All	NDPs: 0 Tests: 5			X X X X X	

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SDG: 141025-26
 Job: D_TENV_BT-32
 Client Reference:

Location: Cootehill Historic Landfill Site
 Customer: Traynor Environmental Ltd
 Attention: Nevin Traynor

Order Number:
 Report Number: 291260
 Superseded Report:

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
10256814	Sample No.5 Trial Hole 2		Dark Brown	Silty Clay Loam	0.063 - 0.1 mm	Glass & Stones	Vegetation
10256811	Sample No.2 Trial Hole 20		Dark Brown	Sandy Loam	0.1 - 2 mm	Vegetation	Stones
10256812	Sample No.3 Trial Hole 23		Dark Brown	Silty Clay Loam	0.063 - 0.1 mm	Glass & Stones	Concrete/Aggregate Crushed Brick
10256813	Sample No.4 Trial Hole 10		Dark Brown	Silty Clay Loam	0.063 - 0.1 mm	Stones	Crushed Brick
10256810	Sample No.1 Trial Hole 25 Control		Dark Brown	Silty Clay Loam	0.063 - 0.1 mm	Glass & Stones	Crushed Brick

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 occurring 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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CERTIFICATE OF ANALYSIS

Validated

SDG: 141025-26
 Job: D_TENV_BT B-32
 Client Reference:

Location: Cootehill Historic Landfill Site
 Customer: Traynor Environmental Ltd
 Attention: Nevin Traynor

Order Number:
 Report Number: 291260
 Superseded Report:

Results Legend			Customer Sample R	Sample No.5 Tri al Hole 2	Sample No.2 Tri al Hole 20	Sample No.3 Tri al Hole 23	Sample No.4 Tri al Hole 10	Sample No.1 Tri al Hole 25 Control
#	ISO17025 accredited.		Depth (m)					
M	mCERTS accredited.		Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
aq	Aqueous / settled sample.		Date Sampled	-	-	-	-	-
diss.filt	Dissolved / filtered sample.		Sample Time					
tot.unfilt	Total / unfiltered sample.		Date Received	24/10/2014	24/10/2014	24/10/2014	24/10/2014	24/10/2014
**	Subcontracted test.		SDG Ref	141025-26	141025-26	141025-26	141025-26	141025-26
	% 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		Lab Sample No.(s)	10256814	10256811	10256812	10256813	10256810
(F)	Trigger breach confirmed		AGS Reference					
1-5&4@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	20	15	22	25	18	
Loss on ignition	<0.7 %	TM018	14.4	11.9	8.45		12.2	
Mineral oil >C10-C40	<1 mg/kg	TM061	138	18.9	95.4	73.6	136	
Organic Carbon, Total	<0.2 %	TM132	9.2	4	3.13	4.21	6.22	
pH	1 pH Units	TM133	8.22	5.95	8.14	7.85	7.76	
PCB congener 28	<3 µg/kg	TM168	6.34	<3	6.05	3.21	7.39	
PCB congener 52	<3 µg/kg	TM168	5.16	<3	3.68	5.6	9.62	
PCB congener 101	<3 µg/kg	TM168	7.75	<3	<3	7.23	11.4	
PCB congener 118	<3 µg/kg	TM168	4.8	<3	<3	4.25	6.61	
PCB congener 138	<3 µg/kg	TM168	12.8	<3	<3	4.78	7.53	
PCB congener 153	<3 µg/kg	TM168	12.2	<3	<3	3.89	5.87	
PCB congener 180	<3 µg/kg	TM168	11.4	<3	<3	<3	<3	
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	60.4	<21	<21	29	48.4	
Polyaromatic hydrocarbons, Total 17	<10 mg/kg	TM213	31.6	<10	18.8	<10	22.4	

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SDG: 141025-26
 Job: D_TENV_BT B-32
 Client Reference:

Location: Cootehill Historic Landfill Site
 Customer: Traynor Environmental Ltd
 Attention: Nevin Traynor

Order Number:
 Report Number: 291260
 Superseded Report:

GRO by GC-FID (S)

Results Legend		Customer Sample R	Sample No.2 Tri al Hole 20	Sample No.4 Tri al Hole 10	Sample No.1 Tri al Hole 25 Cont rol
#	ISO17025 accredited.	Depth (m)			
M	mCERTS accredited.	Sample Type	Soil/Solid	Soil/Solid	Soil/Solid
aq	Aqueous / settled sample.	Date Sampled			
diss.filt	Dissolved / filtered sample.	Sample Time			
tot.unfilt	Total / unfiltered sample.	Date Received	24/10/2014	24/10/2014	24/10/2014
**	Subcontracted test.	SDG Ref	141025-26	141025-26	141025-26
	% 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	Lab Sample No.(s)	10256811	10256813	10256810
(F)	Trigger breach confirmed	AGS Reference			
1-5&*&@	Sample deviation (see appendix)				
Component	LOD/Units	Method			
GRO Surrogate % recovery**	%	TM089	53 2 §	45 2 §	30 2 §
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5 2 § M	<5 2 § M	<5 2 § M
Benzene	<10 µg/kg	TM089	<10 2 § M	<10 2 § M	<10 2 § M
Toluene	<2 µg/kg	TM089	<2 2 § M	<2 2 § M	<2 2 § M
Ethylbenzene	<3 µg/kg	TM089	<3 2 § M	<3 2 § M	<3 2 § M
m,p-Xylene	<6 µg/kg	TM089	<6 2 § M	<6 2 § M	<6 2 § M
o-Xylene	<3 µg/kg	TM089	<3 2 § M	<3 2 § M	<3 2 § M
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9 2 §	<9 2 §	<9 2 §
sum of detected BTEX by GC	<24 µg/kg	TM089	<24 2 §	<24 2 §	<24 2 §

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SDG: 141025-26
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Order Number:
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 Superseded Report:

Asbestos Identification - Solid Samples

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	Sample No.3 Trial Hole 23 SOLID 31/10/2014 15:17:48 141025-26 10256812 TM048	6/11/14	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	Sample No.4 Trial Hole 10 SOLID 31/10/2014 15:12:11 141025-26 10256813 TM048	6/11/14	Simon Postlewhite	Loose fibres in soil	Not Detected (#)	Trace (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	Sample No.1 Trial Hole 25 Control SOLID 31/10/2014 14:38:00 141025-26 10256810 TM048	6/11/14	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

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SDG: 141025-26
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Order Number:
 Report Number: 291260
 Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Cootehill Historic Landfill Site
Mass Sample taken (kg)	0.110	Natural Moisture Content (%)	22
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	82
Particle Size <4mm	>95%		

Case
 SDG 141025-26
 Lab Sample Number(s) 10256810
 Sampled Date
 Customer Sample Ref. Sample No.1 Trial Hole 25 Control
 Depth (m)

Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	<6 or >9	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	6.22
Loss on Ignition (%)	12.2
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	0.0484
Mineral Oil (mg/kg)	136
PAH Sum of 17 (mg/kg)	22.4
pH (pH Units)	7.76
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00117	<0.00012	0.0117	<0.0012	0.5	2	25
Barium	0.0584	<0.00003	0.584	<0.0003	20	100	300
Cadmium	<0.0001	<0.0001	<0.001	<0.001	0.04	1	5
Chromium	0.0129	<0.00022	0.129	<0.0022	0.5	10	70
Copper	0.016	<0.00085	0.16	<0.0085	2	50	100
Mercury Dissolved (CVAF)	0.000022	<0.00001	0.00022	<0.0001	0.01	0.2	2
Molybdenum	0.00313	<0.00024	0.0313	<0.0024	0.5	10	30
Nickel	0.00223	<0.00015	0.0223	<0.0015	0.4	10	40
Lead	0.000542	<0.00002	0.00542	<0.0002	0.5	10	50
Antimony	0.00255	<0.00016	0.0255	<0.0016	0.06	0.7	5
Mercury	0.00176	<0.00039	0.0176	<0.0039	0.1	0.5	7
Zinc	0.00574	<0.00041	0.0574	<0.0041	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	49	<2	490	<20	1000	20000	50000
Total Dissolved Solids	200	<5	2000	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	7.5	<3	75	<30	500	800	1000

Leach Test Information

Date Prepared 29-Oct-2014
 pH (pH Units) 7.91
 Conductivity (µS/cm) 268.00
 Temperature (°C) 19.90
 Volume Leachant (Litres) 0.880

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

10/11/2014 15:43:17
 15:43:07 10/11/2014

SDG: 141025-26 Location: Cootehill Historic Landfill Site Order Number: 291260
 Job: D_TENV_BT B-32 Customer: Traynor Environmental Ltd Report Number: 291260
 Client Reference: Attention: Nevin Traynor Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference Site Location Cootehill Historic Landfill Site
 Mass Sample taken (kg) 0.112 Natural Moisture Content (%) 23.8
 Mass of dry sample (kg) 0.175 Dry Matter Content (%) 80.8
 Particle Size <4mm >95%

Case
 SDG 141025-26
 Lab Sample Number(s) 10256811
 Sampled Date
 Customer Sample Ref. Sample No.2 Trial Hole 20
 Depth (m)

Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
6	-	-
1	-	-
500	-	-
100	-	-
-	<6 or >9	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	4
Loss on Ignition (%)	11.9
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	18.9
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	5.95
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00147	<0.00012	0.0147	<0.0012	0.5	2	25
Barium	0.00866	<0.00003	0.0866	<0.0003	20	100	300
Cadmium	0.000403	<0.00001	0.00403	<0.001	0.04	1	5
Chromium	0.00199	<0.00002	0.0199	<0.0022	0.5	10	70
Copper	0.0838	<0.00085	0.838	<0.0085	2	50	100
Mercury Dissolved (CVAF)	0.0000984	0.00001	0.000984	<0.0001	0.01	0.2	2
Molybdenum	0.000893	<0.00024	0.00893	<0.0024	0.5	10	30
Nickel	0.00621	<0.00015	0.0621	<0.0015	0.4	10	40
Lead	0.00498	<0.00002	0.0498	<0.0002	0.5	10	50
Antimony	0.00262	<0.00016	0.0262	<0.0016	0.06	0.7	5
Chromium	0.00114	<0.00039	0.0114	<0.0039	0.1	0.5	7
Zinc	0.117	<0.00041	1.17	<0.0041	4	50	200
Chloride	2.1	<2	21	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	26.3	<5	263	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	15.7	<3	157	<30	500	800	1000

Leach Test Information

Date Prepared 28-Oct-2014
 pH (pH Units) 6.60
 Conductivity (µS/cm) 29.30
 Temperature (°C) 15.40
 Volume Leachant (Litres) 0.879

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

10/11/2014 15:43:17
 15:43:07 10/11/2014

SDG: 141025-26
 Job: D_TENV_BT-32
 Client Reference:

Location: Cootehill Historic Landfill Site
 Customer: Traynor Environmental Ltd
 Attention: Nevin Traynor

Order Number:
 Report Number: 291260
 Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Cootehill Historic Landfill Site
Mass Sample taken (kg)	0.119	Natural Moisture Content (%)	31.6
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	76
Particle Size <4mm	>95%		

Case
 SDG 141025-26
 Lab Sample Number(s) 10256812
 Sampled Date
 Customer Sample Ref. Sample No.3 Trial Hole 23
 Depth (m)

Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	<6 or >9	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	3.13
Ignition (%)	8.45
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	95.4
PAH Sum of 17 (mg/kg)	18.8
pH (pH Units)	8.14
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00171	<0.00012	0.0171	<0.0012	0.5	2	25
Barium	0.0324	<0.00003	0.324	<0.0003	20	100	300
Cadmium	<0.0001	<0.0001	<0.001	<0.001	0.04	1	5
Chromium	0.00926	<0.0002	0.0926	<0.0022	0.5	10	70
Copper	0.00955	<0.00085	0.0955	<0.0085	2	50	100
Mercury Dissolved (CVAF)	0.0000306	<0.00001	0.000306	<0.0001	0.01	0.2	2
Molybdenum	0.00613	<0.00024	0.0613	<0.0024	0.5	10	30
Nickel	0.00206	<0.00015	0.0206	<0.0015	0.4	10	40
Lead	0.00148	<0.00002	0.0148	<0.0002	0.5	10	50
Antimony	0.00837	<0.00016	0.0837	<0.0016	0.06	0.7	5
Strontium	0.000662	<0.00039	0.00662	<0.0039	0.1	0.5	7
Zinc	0.00503	<0.00041	0.0503	<0.0041	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	53.3	<2	533	<20	1000	20000	50000
Total Dissolved Solids	176	<5	1760	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.46	<3	54.6	<30	500	800	1000

Leach Test Information

Date Prepared 29-Oct-2014
 pH (pH Units) 7.40
 Conductivity (µS/cm) 236.00
 Temperature (°C) 20.70
 Volume Leachant (Litres) 0.872

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
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10/11/2014 15:43:17
 15:43:07 10/11/2014

SDG: 141025-26
 Job: D_TENV_BT-32
 Client Reference:

Location: Cootehill Historic Landfill Site
 Customer: Traynor Environmental Ltd
 Attention: Nevin Traynor

Order Number:
 Report Number: 291260
 Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Cootehill Historic Landfill Site
Mass Sample taken (kg)	0.117	Natural Moisture Content (%)	30.7
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	76.5
Particle Size <4mm	>95%		

Case
 SDG 141025-26
 Lab Sample Number(s) 10256813
 Sampled Date
 Customer Sample Ref. Sample No.4 Trial Hole 10
 Depth (m)

Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	-
6	-	-
1	-	-
500	-	-
100	-	-
-	<6 or >9	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	4.21
Ignition (%)	-
Sum of BTEX (mg/kg)	<0.024
Sum of 7 PCBs (mg/kg)	0.029
Mineral Oil (mg/kg)	73.6
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	7.85
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00165	<0.00012	0.0165	<0.0012	0.5	2	25
Barium	0.0559	<0.00003	0.559	<0.0003	20	100	300
Cadmium	<0.0001	<0.0001	<0.001	<0.001	0.04	1	5
Chromium	0.00245	<0.00032	0.0245	<0.0022	0.5	10	70
Copper	0.00745	<0.00085	0.0745	<0.0085	2	50	100
Mercury Dissolved (CVAF)	0.0000634	<0.00001	0.000634	<0.0001	0.01	0.2	2
Molybdenum	0.014	<0.00024	0.14	<0.0024	0.5	10	30
Nickel	0.00332	<0.00015	0.0332	<0.0015	0.4	10	40
Lead	0.00108	<0.00002	0.0108	<0.0002	0.5	10	50
Antimony	0.00577	<0.00016	0.0577	<0.0016	0.06	0.7	5
Chromium	0.000844	<0.00039	0.00844	<0.0039	0.1	0.5	7
Zinc	0.00335	<0.00041	0.0335	<0.0041	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	37	<2	370	<20	1000	20000	50000
Total Dissolved Solids	173	<5	1730	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.6	<3	46	<30	500	800	1000

Leach Test Information

Date Prepared 28-Oct-2014
 pH (pH Units) 8.00
 Conductivity (µS/cm) 235.00
 Temperature (°C) 19.70
 Volume Leachant (Litres) 0.872

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

SDG: 141025-26
 Job: D_TENV_BT B-32
 Client Reference:

Location: Cootehill Historic Landfill Site
 Customer: Traynor Environmental Ltd
 Attention: Nevin Traynor

Order Number:
 Report Number: 291260
 Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference: Cootehill Historic Landfill Site
 Site Location: Cootehill Historic Landfill Site
 Mass Sample taken (kg): 0.128
 Natural Moisture Content (%): 42.3
 Mass of dry sample (kg): 0.175
 Dry Matter Content (%): 70.3
 Particle Size <4mm: >95%

Case: 141025-26
 SDG: 141025-26
 Lab Sample Number(s): 10256814
 Sampled Date:
 Customer Sample Ref.: Sample No.5 Trial Hole 2
 Depth (m):

Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	<6 or >9	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	9.2
Loss on Ignition (%)	14.4
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	0.0604
Mineral Oil (mg/kg)	138
PAH Sum of 17 (mg/kg)	31.6
pH (pH Units)	8.22
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00147	<0.00012	0.0147	<0.0012	0.5	2	25
Barium	0.0331	<0.00003	0.331	<0.0003	20	100	300
Cadmium	<0.0001	<0.0001	<0.001	<0.001	0.04	1	5
Chromium	0.00423	<0.0002	0.0423	<0.0022	0.5	10	70
Copper	0.0072	<0.00085	0.072	<0.0085	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00524	<0.00024	0.0524	<0.0024	0.5	10	30
Nickel	0.00204	<0.00015	0.0204	<0.0015	0.4	10	40
Lead	0.00123	<0.00002	0.0123	<0.0002	0.5	10	50
Antimony	0.0089	<0.00016	0.089	<0.0016	0.06	0.7	5
Strontium	0.000464	<0.00039	0.00464	<0.0039	0.1	0.5	7
Zinc	0.00536	<0.00041	0.0536	<0.0041	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	15.6	<2	156	<20	1000	20000	50000
Total Dissolved Solids	130	<5	1300	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.61	<3	36.1	<30	500	800	1000

Leach Test Information

Date Prepared: 28-Oct-2014
 pH (pH Units): 8.00
 Conductivity (µS/cm): 173.00
 Temperature (°C): 20.00
 Volume Leachant (Litres): 0.862

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

10/11/2014 15:43:17
 15:43:07 10/11/2014

SDG: 141025-26 Location: Cootehill Historic Landfill Site Order Number: 291260
 Job: D_TENV_BT B-32 Customer: Traynor Environmental Ltd Report Number: 291260
 Client Reference: Attention: Nevin Traynor Superseded Report:

Notification of NDPs (No determination possible)

Date Received : 25/10/2014 10:03:39

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
10256811	Sample No.2 Trial Hole 20		ANC at pH4 and ANC at pH 6	Insufficient Sample
10256814	Sample No.5 Trial Hole 2		ANC at pH4 and ANC at pH 6	Insufficient Sample
10256810	Sample No.1 Trial Hole 25 Control		ANC at pH4 and ANC at pH 6	Insufficient Sample
10256812	Sample No.3 Trial Hole 23		GRO by GC-FID (S)	Insufficient Sample
10256812	Sample No.3 Trial Hole 23		ANC at pH4 and ANC at pH 6	Insufficient Sample
10256813	Sample No.4 Trial Hole 10		Loss on Ignition in soils	Unsuitable sample for analysis
10256813	Sample No.4 Trial Hole 10		ANC at pH4 and ANC at pH 6	Insufficient Sample
10256814	Sample No.5 Trial Hole 2		GRO by GC-FID (S)	Insufficient Sample

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SDG: 141025-26
 Job: D_TENV_BT-32
 Client Reference:

Location: Cootehill Historic Landfill Site
 Customer: Traynor Environmental Ltd
 Attention: Nevin Traynor

Order Number:
 Report Number: 291260
 Superseded Report:

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
ASB_PREP				
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step		
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM061	Method for the Determination of EPH, Massachusetts Dept. of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water		
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser		
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils		
TM182	CEN/TC 292 - WI 292046-characterization of waste-leaching Behaviour Tests- Acid and Base Neutralization Capacity Test	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM213	In-house Method	Rapid Determination of PAHs by GC-FID		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		

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

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SDG: 141025-26
 Job: D_TENV_BT B-32
 Client Reference:

Location: Cootehill Historic Landfill Site
 Customer: Traynor Environmental Ltd
 Attention: Nevin Traynor

Order Number:
 Report Number: 291260
 Superseded Report:

Test Completion Dates

Lab Sample No(s) Customer Sample Ref.	10256814	10256811	10256812	10256813	10256810
	Sample No.5 Trial Hole 2	Sample No.2 Trial Hole 20	Sample No.3 Trial Hole 23	Sample No.4 Trial Hole 10	Sample No.1 Trial Hole 25 Control
AGS Ref.					
Depth					
Type	SOLID	SOLID	SOLID	SOLID	SOLID
Anions by Kone (w)	30-Oct-2014	30-Oct-2014	03-Nov-2014	30-Oct-2014	03-Nov-2014
Asbestos ID in Solid Samples			07-Nov-2014	07-Nov-2014	07-Nov-2014
CEN 10:1 Leachate (1 Stage)	28-Oct-2014	28-Oct-2014	29-Oct-2014	28-Oct-2014	29-Oct-2014
CEN Readings	30-Oct-2014	29-Oct-2014	31-Oct-2014	30-Oct-2014	31-Oct-2014
Dissolved Metals by ICP-MS	03-Nov-2014	03-Nov-2014	03-Nov-2014	03-Nov-2014	03-Nov-2014
Dissolved Organic/Inorganic Carbon	03-Nov-2014	03-Nov-2014	03-Nov-2014	03-Nov-2014	03-Nov-2014
Fluoride	31-Oct-2014	31-Oct-2014	03-Nov-2014	31-Oct-2014	03-Nov-2014
GRO by GC-FID (S)		08-Nov-2014		10-Nov-2014	10-Nov-2014
Loss on Ignition in soils	04-Nov-2014	04-Nov-2014	10-Nov-2014		10-Nov-2014
Mercury Dissolved	31-Oct-2014	31-Oct-2014	03-Nov-2014	31-Oct-2014	03-Nov-2014
Mineral Oil	06-Nov-2014	06-Nov-2014	06-Nov-2014	06-Nov-2014	06-Nov-2014
PAH Value of soil	04-Nov-2014	04-Nov-2014	04-Nov-2014	04-Nov-2014	04-Nov-2014
PCBs by GCMS	06-Nov-2014	06-Nov-2014	06-Nov-2014	06-Nov-2014	06-Nov-2014
pH	04-Nov-2014	03-Nov-2014	05-Nov-2014	03-Nov-2014	03-Nov-2014
Phenols by HPLC (W)	03-Nov-2014	03-Nov-2014	03-Nov-2014	03-Nov-2014	03-Nov-2014
Sample description	27-Oct-2014	27-Oct-2014	27-Oct-2014	27-Oct-2014	27-Oct-2014
Dissolved Solids	31-Oct-2014	31-Oct-2014	31-Oct-2014	31-Oct-2014	31-Oct-2014
Total Organic Carbon	05-Nov-2014	05-Nov-2014	06-Nov-2014	06-Nov-2014	06-Nov-2014

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SDG: 141025-26
 Job: D_TENV_BT-2
 Client Reference:

Location: Cootehill Historic Landfill Site
 Customer: Traynor Environmental Ltd
 Attention: Nevin Traynor

Order Number:
 Report Number: 291260
 Superseded Report:

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 asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete 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 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. Results 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 Dimethylphenol, 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
5	Samples exceeded holding time before preservation was performed
6	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 Anorthophyllite	-
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.

ALcontrol Laboratories

Customer Sample ID Sample No.1 TH 25 Sample No.3 TH 23 Sample No.4 TH 10 Sample No.5 TH 2 Sample No.2 TH 20 Control

	Depth	-	-	-	-	-
SDG(s):	141025-26	AGS Id				
Customer:	Traynor Environmental Ltd Belturbet (4142)	Sample Type	SOLID	SOLID	SOLID	SOLID
Client:	Cootehill Historic Landfill Site	Sampled Date				
Order no:		Sample Received Date	25/10/2014	25/10/2014	25/10/2014	25/10/2014
		Final Instruction Date	27/10/2014	27/10/2014	27/10/2014	27/10/2014
All results expressed on a dry weight basis		Report Completed Date	17/11/2014	17/11/2014	17/11/2014	17/11/2014
		SDG	141025-26	141025-26	141025-26	141025-26
		Lab Sample Number	10256810	10256812	10256813	10256814
		Sample Temperature	10.0	10.0	10.0	10.0

Analysis	Test	Method	Units	LOD				
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Carbon

CEN 10:1 - Carbon, Organic (diss.filt)	TM090	mg/kg	<30	75	54.6	46	36.1	157
CEN 10:1 - Carbon, Organic (diss.filt)	TM090	mg/l	<3	75	5.46	4.6	3.61	15.7

Waste Ac

CEN 10:1 - Temperature	PM115	°C		19.9	20.7	19.7	20	15.4
CEN 10:1 - pH	PM115	pH Units		7.91	7.4	8	8	6.6
CEN 10:1 - Conductivity @ 20 deg.C	PM115	µS/cm		268	236	235	173	29.3

Inorganic

CEN 10:1 - Dissolved solids, Total (meter)	TM123	mg/kg	<50	2000	1760	1730	1300	263
CEN 10:1 - Dissolved solids, Total (meter)	TM123	mg/l	<5	200	176	173	130	26.3
CEN 10:1 - Fluoride	TM104	mg/kg	<5	<5	<5	<5	<5	<5
CEN 10:1 - Fluoride	TM104	mg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CEN 10:1 - Sulphate	TM184	mg/l	<2	49	53.3	37	15.6	<2
CEN 10:1 - Sulphate	TM184	mg/kg	<20	490	533	370	156	<20
CEN 10:1 - Chloride	TM184	mg/kg	<20	<20	<20	<20	<20	21
CEN 10:1 - Chloride	TM184	mg/l	<2	<2	<2	<2	<2	2.1

Filtered (l

CEN 10:1 - Mercury (diss.filt)	TM183	mg/l	<0.00	0.000022	0.0000306	0.0000634	<0.00001	0.0000984
CEN 10:1 - Mercury (diss.filt)	TM183	mg/kg	<0.00	0.00022	0.000306	0.000634	<0.0001	0.000984
CEN 10:1 - Antimony (diss.filt)	TM152	mg/kg	<0.00	0.0255	0.0837	0.0577	0.089	0.0262

CEN 10:1 - Antimony (diss.filt)	TM152	mg/l	<0.00	0.00255	0.00837	0.00577	0.0089	0.00262
CEN 10:1 - Arsenic (diss.filt)	TM152	mg/l	<0.00	0.00117	0.00171	0.00165	0.00147	0.00147
CEN 10:1 - Arsenic (diss.filt)	TM152	mg/kg	<0.00	0.0117	0.0171	0.0165	0.0147	0.0147
CEN 10:1 - Barium (diss.filt)	TM152	mg/l	<0.00	0.0584	0.0324	0.0559	0.0331	0.00866
CEN 10:1 - Barium (diss.filt)	TM152	mg/kg	<0.00	0.584	0.324	0.559	0.331	0.0866
CEN 10:1 - Cadmium (diss.filt)	TM152	mg/l	<0.00	<0.0001	<0.0001	<0.0001	<0.0001	0.000403
CEN 10:1 - Cadmium (diss.filt)	TM152	mg/kg	<0.00	<0.001	<0.001	<0.001	<0.001	0.00403
CEN 10:1 - Chromium (diss.filt)	TM152	mg/l	<0.00	0.0129	0.00926	0.00245	0.00423	0.00199
CEN 10:1 - Chromium (diss.filt)	TM152	mg/kg	<0.00	0.129	0.0926	0.0245	0.0423	0.0199
CEN 10:1 - Copper (diss.filt)	TM152	mg/l	<0.00	0.016	0.00955	0.00745	0.0072	0.0838
CEN 10:1 - Copper (diss.filt)	TM152	mg/kg	<0.00	0.16	0.0955	0.0745	0.072	0.838
CEN 10:1 - Lead (diss.filt)	TM152	mg/l	<0.00	0.000542	0.00148	0.00108	0.00123	0.00498
CEN 10:1 - Lead (diss.filt)	TM152	mg/kg	<0.00	0.00542	0.0148	0.0108	0.0123	0.0498
CEN 10:1 - Molybdenum (diss.filt)	TM152	mg/l	<0.00	0.00313	0.00613	0.014	0.00524	0.000893
CEN 10:1 - Molybdenum (diss.filt)	TM152	mg/kg	<0.00	0.0313	0.0613	0.14	0.0524	0.00893
CEN 10:1 - Nickel (diss.filt)	TM152	mg/l	<0.00	0.00223	0.00206	0.00332	0.00204	0.00621
CEN 10:1 - Nickel (diss.filt)	TM152	mg/kg	<0.00	0.0223	0.0206	0.0332	0.0204	0.0621
CEN 10:1 - Selenium (diss.filt)	TM152	mg/l	<0.00	0.00176	0.000662	0.000844	0.000464	0.00114
CEN 10:1 - Selenium (diss.filt)	TM152	mg/kg	<0.00	0.0176	0.00662	0.00844	0.00464	0.0114
CEN 10:1 - Zinc (diss.filt)	TM152	mg/l	<0.00	0.00574	0.00503	0.00335	0.00536	0.117
CEN 10:1 - Zinc (diss.filt)	TM152	mg/kg	<0.00	0.0574	0.0503	0.0335	0.0536	1.17

Phenols

CEN 10:1 - Phenols, Total Detected monohy. TM259	mg/l	<0.01	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016
CEN 10:1 - Phenols, Total Detected monohy. TM259	mg/kg	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16

TIER 2

ENVIRONMENTAL RISK ASSESSMENT

SURFACE WATER ANALYSIS RESULTS

ALCONTROL LABORATORIES CERTIFICATE OF ANALYSIS

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Traynor Environmental Ltd
Belturbet Business Park
Creeny
Belturbet
Co. Cavan

Attention: Nevin Traynor

CERTIFICATE OF ANALYSIS

Date: 31 October 2014
Customer: D_TENV_BT
Sample Delivery Group (SDG): 141025-22
Your Reference:
Location: Cootehill Historic Landfill Site
Report No: 290271

We received 2 samples on Friday October 24, 2014 and 2 of these samples were scheduled for analysis which was completed on Friday October 31, 2014. 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



SDG: 141025-22	Location: Cootehill Historic Landfill Site	Order Number:
Job: D_TENV_BTB-32	Customer: Traynor Environmental Ltd	Report Number: 290271
Client Reference:	Attention: Nevin Traynor	Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
10256745	SAMPLE No2 - DOWNSTREAM			
10256744	SAMPLE No1- UPSTREAM			

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

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SDG: 141025-22
 Job: D_TENV_BT B-32
 Client Reference:

Location: Cootehill Historic Landfill Site
 Customer: Traynor Environmental Ltd
 Attention: Nevin Traynor

Order Number:
 Report Number: 290271
 Superseded Report:

LIQUID Results Legend <input checked="" type="checkbox"/> Test <input checked="" type="checkbox"/> No Determination Possible	Lab Sample No(s)	10256745	10256744
	Customer Sample Reference	SAMPLE No1 - UPSTREAM SAMPLE No2 - DOWNSTREAM	
	AGS Reference		
	Depth (m)		
	Container	11plastic (ALEZ21) Dissolved Metals Pr	11plastic (ALEZ21) Dissolved Metals Pr
Alkalinity as CaCO3	All	NDPs: 0 Tests: 2	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Ammonium Low	All	NDPs: 0 Tests: 2	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Anions by Kone (w)	All	NDPs: 0 Tests: 2	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
BOD True Total	All	NDPs: 0 Tests: 2	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Colour Test	All	NDPs: 0 Tests: 2	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 2	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Fluoride	All	NDPs: 0 Tests: 2	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Mercury Dissolved	All	NDPs: 0 Tests: 2	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Metals by iCap-OES Dissolved (W)	All	NDPs: 0 Tests: 2	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
pH Value	All	NDPs: 0 Tests: 2	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Total Dissolved Solids	All	NDPs: 0 Tests: 2	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>

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SDG: 141025-22
 Job: D_TENV_BT-32
 Client Reference:

Location: Cootehill Historic Landfill Site
 Customer: Traynor Environmental Ltd
 Attention: Nevin Traynor

Order Number:
 Report Number: 290271
 Superseded Report:

Results Legend		Customer Sample R	SAMPLE No2 - DO WNSTREAM	SAMPLE No1- UPS TREAM
#	ISO17025 accredited.	Depth (m)		
M	mCERTS accredited.	Sample Type	Water(GW/SW)	Water(GW/SW)
aq	Aqueous / settled sample.	Date Sampled		
diss.filt	Dissolved / filtered sample.	Sample Time		
totunfilt	Total / unfiltered sample.	Date Received	24/10/2014	24/10/2014
*	Subcontracted test.	SDG Ref	141025-22	141025-22
**	% 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	Lab Sample No.(s)	10256745	10256744
(F)	Trigger breach confirmed	AGS Reference		
1-5&#@	Sample deviation (see appendix)			
Component	LOD/Units	Method		
Alkalinity, Total as CaCO3	<2 mg/l	TM043	165	165
			§ #	§ #
BOD, unfiltered	<1 mg/l	TM045	<1	<1
			§ #	§ #
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099	0.0379	0.0193
			§ #	§ #
Free Ammonia as N	<0.01 mg/l	TM099	<0.01	<0.01
			§	§
Fluoride	<0.5 mg/l	TM104	<0.5	<0.5
			§ #	§ #
Conductivity @ 20 deg.C	<0.005 mS/cm	TM120	0.447	0.43
			§ #	§ #
Dissolved solids, Total (ter)	<5 mg/l	TM123	334	330
			§ #	§ #
Organic (diss.filt)	<0.12 µg/l	TM152	0.873	0.758
			§ #	§ #
Boron (diss.filt)	<9.4 µg/l	TM152	26	23.9
			§ #	§ #
Cadmium (diss.filt)	<0.1 µg/l	TM152	<0.1	<0.1
			§ #	§ #
Copper (diss.filt)	<0.85 µg/l	TM152	2.06	2.69
			§ #	§ #
Lead (diss.filt)	<0.02 µg/l	TM152	0.089	0.165
			§ #	§ #
Manganese (diss.filt)	<0.04 µg/l	TM152	1.41	1.3
			§ #	§ #
Nickel (diss.filt)	<0.15 µg/l	TM152	2.76	2.78
			§ #	§ #
Zinc (diss.filt)	<0.41 µg/l	TM152	4.53	8.1
			§ #	§ #
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01	<0.01
			§ #	§ #
Sulphate	<2 mg/l	TM184	68.1	68.9
			§ #	§ #
Chloride	<2 mg/l	TM184	21.1	21.3
			§ #	§ #
Phosphate (ortho) as PO4	<0.05 mg/l	TM184	0.093	<0.05
			§ #	§ #
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184	1.57	1.55
			§ #	§ #
Cyanide, Total	<0.05 mg/l	TM227	<0.05	<0.05
			§ #	§ #
Calcium (diss.filt)	<0.012 mg/l	TM228	73.2	70.6
			§ #	§ #
Sodium (diss.filt)	<0.076 mg/l	TM228	15.9	15.1
			§ #	§ #
Magnesium (diss.filt)	<0.036 mg/l	TM228	8.85	8.3
			§ #	§ #
Potassium (diss.filt)	<1 mg/l	TM228	4.2	3.82
			§ #	§ #
Iron (diss.filt)	<0.019 mg/l	TM228	0.0847	0.0921
			§ #	§ #
pH	<1 pH Units	TM256	7.98	7.99
			§ #	§ #
Apparent Colour	<1 mg/l Pt/Co	TM261	358	277
			§	§
True Colour	<1 mg/l Pt/Co	TM261	163	193
			§	§

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SDG: 141025-22
 Job: D_TENV_BT-32
 Client Reference:

Location: Cootehill Historic Landfill Site
 Customer: Traynor Environmental Ltd
 Attention: Nevin Traynor

Order Number:
 Report Number: 290271
 Superseded Report:

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample *	Surrogate Corrected
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples		
TM045	MEWAM BOD5 2nd Ed.HMSO 1988 / Method 5210B, AWWA/APHA, 20th Ed., 1999; SCA Blue Book 130	Determination of BOD5 (ATU) Filtered by Oxygen Meter on liquids		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser		
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter		
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate		
TM228	US EPA Method 6010B	Determination of Major Cations in Water by iCap 6500 Duo ICP-OES		
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter		
TM261	Colour and Turbidity of Waters, Methods for the Examination of Waters and Associated Materials, HMSO, 1981, ISBN 0 11 7519553.	Determination of True and Apparent Colour by Spectrophotometry		

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

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SDG: 141025-22
 Job: D_TENV_BT B-32
 Client Reference:

Location: Cootehill Historic Landfill Site
 Customer: Traynor Environmental Ltd
 Attention: Nevin Traynor

Order Number:
 Report Number: 290271
 Superseded Report:

Test Completion Dates

Lab Sample No(s) Customer Sample Ref.	10256745	10256744
	SAMPLE No2 - DO VNSTREAM	SAMPLE No1- UPS TREAM
AGS Ref.		
Depth		
Type	LIQUID	LIQUID
Alkalinity as CaCO3	28-Oct-2014	28-Oct-2014
Ammonium Low	29-Oct-2014	31-Oct-2014
Anions by Kone (w)	29-Oct-2014	29-Oct-2014
BOD True Total	30-Oct-2014	30-Oct-2014
Colour Test	30-Oct-2014	30-Oct-2014
Conductivity (at 20 deg.C)	28-Oct-2014	28-Oct-2014
Cyanide Comp/Free/Total/Thiocyanate	28-Oct-2014	28-Oct-2014
Dissolved Metals by ICP-MS	30-Oct-2014	30-Oct-2014
Fluoride	28-Oct-2014	28-Oct-2014
Mercury Dissolved	31-Oct-2014	31-Oct-2014
Metals by iCap-OES Dissolved (W)	29-Oct-2014	29-Oct-2014
pH Value	27-Oct-2014	27-Oct-2014
Total Dissolved Solids	31-Oct-2014	31-Oct-2014

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SDG: 141025-22
 Job: D_TENV_BT B-32
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 Customer: Traynor Environmental Ltd
 Attention: Nevin Traynor

Order Number:
 Report Number: 290271
 Superseded Report:

Appendix General

- 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.
- Samples will be run in duplicate upon request, but an additional charge may be incurred.
- 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.
- 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.
- We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete 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 record will be utilised.
- 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.
- 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.
- If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.
- NDP -No determination possible due to insufficient/unsuitable sample.
- Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.
- Results relate only to the items tested.
- LODs for wet tests reported on a dry weight basis are not corrected for moisture content.
- 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 %.
- Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.
- 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 Dimethylphenol, 3,5 Dimethylphenol).
- Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).
- Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
- 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.
- Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

- 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.
- For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.
- 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.
- 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
5	Samples exceeded holding time before preservation was performed
6	Sampled on date not provided
7	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.