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Bristol & Avon Group
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DETS Ltd
Unit 1
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Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 19-08334

Site Reference: Eurovia - St Andrews Road

Project / Job Ref: St Andrews

Order No: None Supplied

Sample Receipt Date: 13/06/2019

Sample Scheduled Date: 13/06/2019

Report Issue Number: 1

Reporting Date: 17/06/2019

Authorised by:

A handwritten signature in grey ink, appearing to read "Dave Ashworth".

Dave Ashworth
Deputy Quality Manager

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Soil Analysis Certificate						
DETS Report No: 19-08334	Date Sampled	11/06/19	11/06/19			
Bristol & Avon Group	Time Sampled	None Supplied	None Supplied			
Site Reference: Eurovia - St Andrews Road	TP / BH No	TP01	TP02			
Project / Job Ref: St Andrews	Additional Refs	None Supplied	None Supplied			
Order No: None Supplied	Depth (m)	None Supplied	None Supplied			
Reporting Date: 17/06/2019	DETS Sample No	414491	414492			

Determinand	Unit	RL	Accreditation					
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected			
Arsenic (As)	mg/kg	< 2	MCERTS	16	53			
W/S Boron	mg/kg	< 1	NONE	< 1	< 1			
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.2	0.5			
Chromium (Cr)	mg/kg	< 2	MCERTS	29	33			
Copper (Cu)	mg/kg	< 4	MCERTS	83	442			
Lead (Pb)	mg/kg	< 3	MCERTS	259	1860			
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1			
Nickel (Ni)	mg/kg	< 3	MCERTS	35	72			
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3			
Zinc (Zn)	mg/kg	< 3	MCERTS	141	512			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C
Subcontracted analysis (S)



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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 19-08334	Date Sampled	11/06/19	11/06/19			
Bristol & Avon Group	Time Sampled	None Supplied	None Supplied			
Site Reference: Eurovia - St Andrews Road	TP / BH No	TP01	TP02			
Project / Job Ref: St Andrews	Additional Refs	None Supplied	None Supplied			
Order No: None Supplied	Depth (m)	None Supplied	None Supplied			
Reporting Date: 17/06/2019	DETS Sample No	414491	414492			

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	0.12			
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	0.16			
Phenanthrene	mg/kg	< 0.1	MCERTS	0.54	3.07			
Anthracene	mg/kg	< 0.1	MCERTS	0.16	0.66			
Fluoranthene	mg/kg	< 0.1	MCERTS	1.76	4.37			
Pyrene	mg/kg	< 0.1	MCERTS	1.55	3.54			
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	1.03	2.02			
Chrysene	mg/kg	< 0.1	MCERTS	1.03	2.19			
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	1.01	1.93			
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.28	0.58			
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.82	1.40			
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.57	0.86			
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.20			
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.40	0.65			
Coronene	mg/kg	< 0.1	NONE	< 0.1	< 0.1			
Total Oily Waste PAHs	mg/kg	< 1	MCERTS	4.7	9.2			
Total Dutch 10 PAHs	mg/kg	< 1	MCERTS	6.6	15.8			
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	9.2	21.7			
Total WAC-17 PAHs	mg/kg	< 1.7	NONE	9.2	21.7			

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Soil Analysis Certificate - EPH Banded (Type F)						
DETS Report No: 19-08334	Date Sampled	11/06/19	11/06/19			
Bristol & Avon Group	Time Sampled	None Supplied	None Supplied			
Site Reference: Eurovia - St Andrews Road	TP / BH No	TP01	TP02			
Project / Job Ref: St Andrews	Additional Refs	None Supplied	None Supplied			
Order No: None Supplied	Depth (m)	None Supplied	None Supplied			
Reporting Date: 17/06/2019	DETS Sample No	414491	414492			

Determinand	Unit	RL	Accreditation					
EPH (>C8 - C10)	mg/kg	< 1	MCERTS	< 1	< 1			
EPH (>C10 - C12)	mg/kg	< 1	MCERTS	< 1	< 1			
EPH (>C12 - C16)	mg/kg	< 1	MCERTS	< 1	2			
EPH (>C16 - C21)	mg/kg	< 1	MCERTS	8	23			
EPH (>C21 - C40)	mg/kg	< 6	MCERTS	35	61			
EPH (C8 - C40)	mg/kg	< 6	MCERTS	43	86			

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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 19-08334	Date Sampled	11/06/19	11/06/19			
Bristol & Avon Group	Time Sampled	None Supplied	None Supplied			
Site Reference: Eurovia - St Andrews Road	TP / BH No	TP01	TP02			
Project / Job Ref: St Andrews	Additional Refs	None Supplied	None Supplied			
Order No: None Supplied	Depth (m)	None Supplied	None Supplied			
Reporting Date: 17/06/2019	DETS Sample No	414491	414492			

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

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C



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Waste Acceptance Criteria Analytical Certificate - BS EN 12457/2									
DETS Report No: 19-08334		Date Sampled	11/06/19			Landfill Waste Acceptance Criteria Limits			
Bristol & Avon Group		Time Sampled	None Supplied						
Site Reference: Eurovia - St Andrews Road		TP / BH No	TP01						
Project / Job Ref: St Andrews		Additional Refs	None Supplied						
Order No: None Supplied		Depth (m)	None Supplied						
Reporting Date: 17/06/2019		DETS Sample No	414491						
Determinand	Unit	MDL							
TOC ^{MU}	%	< 0.1	1.6						
Loss on Ignition	%	< 0.01	5.90						
BTEX ^{MU}	mg/kg	< 0.05	< 0.05						
Sum of PCBs	mg/kg	< 0.1	< 0.1						
Mineral Oil ^{MU}	mg/kg	< 10	< 10						
Total PAH ^{MU}	mg/kg	< 1.7	9.2						
pH ^{MU}	pH Units	N/a	6.1						
Acid Neutralisation Capacity	mol/kg (+/-)	< 1	1.6						
Eluate Analysis			10:1 mg/l			Cumulative 10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
Arsenic ^U		< 0.01				< 0.1	0.5	2	25
Barium ^U		0.05				0.5	20	100	300
Cadmium ^U		< 0.0005				< 0.005	0.04	1	5
Chromium ^U		< 0.005				< 0.05	0.5	10	70
Copper ^U		< 0.01				< 0.1	2	50	100
Mercury ^U		< 0.0005				< 0.01	0.01	0.2	2
Molybdenum ^U		0.016				0.16	0.5	10	30
Nickel ^U		< 0.007				< 0.07	0.4	10	40
Lead ^U		< 0.005				< 0.05	0.5	10	50
Antimony ^U		< 0.0060				< 0.06	0.06	0.7	5
Selenium ^U		< 0.005				< 0.05	0.1	0.5	7
Zinc ^U		< 0.005				< 0.05	4	50	200
Chloride ^U		3				33	800	15000	25000
Fluoride ^U		0.7				7	10	150	500
Sulphate ^U		9				85	1000	20000	50000
TDS		98				980	4000	60000	100000
Phenol Index		< 0.01				< 0.1	1	-	-
DOC		24.3				243	500	800	1000
Leach Test Information									
Sample Mass (kg)			0.12						
Dry Matter (%)			75.4						
Moisture (%)			32.6						
Stage 1									
Volume Eluate L10 (litres)			0.87						
Results are expressed on a dry weight basis, after correction for moisture content where applicable									
Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepancies with current legislation									
M Denotes MCERTS accredited test									
U Denotes ISO17025 accredited test									



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Waste Acceptance Criteria Analytical Certificate - BS EN 12457/2									
DETS Report No: 19-08334		Date Sampled	11/06/19			Landfill Waste Acceptance Criteria Limits			
Bristol & Avon Group		Time Sampled	None Supplied						
Site Reference: Eurovia - St Andrews Road		TP / BH No	TP02						
Project / Job Ref: St Andrews		Additional Refs	None Supplied						
Order No: None Supplied		Depth (m)	None Supplied						
Reporting Date: 17/06/2019		DETS Sample No	414492						
Determinand	Unit	MDL							
TOC ^{MU}	%	< 0.1	3						
Loss on Ignition	%	< 0.01	11.20						
BTEX ^{MU}	mg/kg	< 0.05	< 0.05						
Sum of PCBs	mg/kg	< 0.1	< 0.1						
Mineral Oil ^{MU}	mg/kg	< 10	< 10						
Total PAH ^{MU}	mg/kg	< 1.7	21.7						
pH ^{MU}	pH Units	N/a	6.4						
Acid Neutralisation Capacity	mol/kg (+/-)	< 1	1.3						
Eluate Analysis			10:1			Cumulative	Limit values for compliance leaching test		
			mg/l			10:1	using BS EN 12457-3 at L/S 10 l/kg		
						mg/kg	(mg/kg)		
Arsenic ^U			< 0.01			< 0.1	0.5	2	25
Barium ^U			0.09			0.9	20	100	300
Cadmium ^U			< 0.0005			< 0.005	0.04	1	5
Chromium ^U			< 0.005			< 0.05	0.5	10	70
Copper ^U			< 0.01			< 0.1	2	50	100
Mercury ^U			< 0.0005			< 0.01	0.01	0.2	2
Molybdenum ^U			0.009			0.09	0.5	10	30
Nickel ^U			< 0.007			< 0.07	0.4	10	40
Lead ^U			< 0.005			< 0.05	0.5	10	50
Antimony ^U			0.0093			0.09	0.06	0.7	5
Selenium ^U			< 0.005			< 0.05	0.1	0.5	7
Zinc ^U			< 0.005			< 0.05	4	50	200
Chloride ^U			3			26	800	15000	25000
Fluoride ^U			0.5			5	10	150	500
Sulphate ^U			15			147	1000	20000	50000
TDS			105			1050	4000	60000	100000
Phenol Index			< 0.01			< 0.1	1	-	-
DOC			13.2			132	500	800	1000
Leach Test Information									
Sample Mass (kg)			0.11						
Dry Matter (%)			81.7						
Moisture (%)			22.4						
Stage 1									
Volume Eluate L10 (litres)			0.88						
Results are expressed on a dry weight basis, after correction for moisture content where applicable									
Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepancies with current legislation									
M Denotes MCERTS accredited test									
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Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 19-08334	
Bristol & Avon Group	
Site Reference: Eurovia - St Andrews Road	
Project / Job Ref: St Andrews	
Order No: None Supplied	
Reporting Date: 17/06/2019	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
414491	TP01	None Supplied	None Supplied	24.5	Brown loamy clay
414492	TP02	None Supplied	None Supplied	18.3	Black loamy clay with stones

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



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Soil Analysis Certificate - Methodology & Miscellaneous Information	
DETS Report No: 19-08334	
Bristol & Avon Group	
Site Reference: Eurovia - St Andrews Road	
Project / Job Ref: St Andrews	
Order No: None Supplied	
Reporting Date: 17/06/2019	

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received