Summary of Asbestos Quantification Analysis
Soil Samples

Our Ref Combined 4251 Prairie
Client Ref 4251
Contract Title Prairie Site Ground Investigation Works

		Lab No	1663734	1665133	1665140	1665141
		Sample ID	PRAIRIE_AUK_TP101	PRAIRIE_AUK_TP172	PRAIRIE_AUK_TP108	PRAIRIE_AUK_TP108
		Depth	1.00	0.80	1.00	2.00
		Other ID	5	3	5	8
		Sample Type	SOIL	SOIL	SOIL	SOIL
		Sampling Date	01/04/2020	06/04/2020	06/04/2020	06/04/2020
		Sampling Time				
Test	**Method**	**Units**				
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**0.001**	**0.001**	**0.001**	**0.002**
Gravimetric Quantification (a)	DETSC 1102	Mass %	na	na	na	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	0.001	0.001	0.001	0.002
Quantification by PCOM (c)	DETSC 1102	Mass %	na	na	na	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na	na	na	na
Breakdown of Gravimetric Analysis (a)						
Mass of Sample		g	853.49	782.89	1098.85	761.41
ACMs present*		type				
Mass of ACM in sample		g				
% ACM by mass		%				
% asbestos in ACM		%				
% asbestos in sample		%				
Breakdown of Detailed Gravimetric Analysis (b)						
% Amphibole bundles in sample		Mass %	na	0.001	0.001	0.002
% Chrysotile bundles in sample		Mass %	0.001	na	na	na
Breakdown of PCOM Analysis (c)						
% Amphibole fibres in sample		Mass %	na	na	na	na
% Chrysotile fibres in sample		Mass %	na	na	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)						
Amphibole fibres		Fibres/g	na	na	na	na
Chrysotile fibres		Fibres/g	na	na	na	na

* Denotes test or material description outside of UKAS accreditation.
% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
\# denotes deviating sample

Summary of Asbestos Quantification Analysi
Soil Samples

Our Ref Combined 4251 Prairie
Client Ref 4251
Contract Title Prairie Site Ground Investigation Works

		Lab No	1665142	1665589	1665290	1665451
		Sample ID	PRAIRIE_AUK_TP113	PRAIRIE_AUK_TP124	PRAIRIE_AUK_TP122	PRAIRIE_AUK_TP138
		Depth	1.30	1.50	1.00	1.20
		Other ID	5	5	3	3
		Sample Type	SOIL	SOIL	SOIL	SOIL
		Sampling Date	06/04/2020	08/04/2020	08/04/2020	09/04/2020
		Sampling Time				
Test	**Method**	**Units**				
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**0.005**	**0.002**	**0.002**	**0.020**
Gravimetric Quantification (a)	DETSC 1102	Mass %	na	na	0.002	0.020
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	0.005	0.002	na	na
Quantification by PCOM (c)	DETSC 1102	Mass %	na	na	na	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na	na	na	na
Breakdown of Gravimetric Analysis (a)						
Mass of Sample		g	715.05	918.67	1153.64	1191.05
ACMs present*		type			Cement	LFAD
Mass of ACM in sample		g			0.13	0.29
% ACM by mass		%			0.01	0.02
% asbestos in ACM		%			15	85.00
% asbestos in sample		%			0.002	0.020
Breakdown of Detailed Gravimetric Analysis (b)						
% Amphibole bundles in sample		Mass %	na	na	na	na
% Chrysotile bundles in sample		Mass %	0.005	0.002	na	na
Breakdown of PCOM Analysis (c)						
% Amphibole fibres in sample		Mass %	na	na	na	na
% Chrysotile fibres in sample		Mass %	na	na	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)						
Amphibole fibres		Fibres/g	na	na	na	na
Chrysotile fibres		Fibres/g	na	na	na	na

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% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample

Summary of Asbestos Quantification Analysi
Soil Samples

Our Ref	Combined 4251 Prairie
Client Ref	4251
Contract Title	Prairie Site Ground Investigation Works

		Lab No	1665452	1665453	1665454	1665992
		Sample ID	PRAIRIE_AUK_ TP149	PRAIRIE_AUK_ TP168	PRAIRIE_AUK_ TP173	PRAIRIE_AUK_ TP156A
		Depth	1.30	0.05	0.90	0.30
		Other ID	3	1	3	2
		Sample Type	SOIL	SOIL	SOIL	SOIL
		Sampling Date	09/04/2020	09/04/2020	09/04/2020	14/04/2020
		Sampling Time				
Test	**Method**	**Units**				
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**< 0.001**	**< 0.001**	**< 0.001**	**0.001**
Gravimetric Quantification (a)	DETSC 1102	Mass %	na	na	na	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	<0.001	<0.001	<0.001	0.001
Quantification by PCOM (c)	DETSC 1102	Mass %	na	na	na	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na	na	na	na
Breakdown of Gravimetric Analysis (a)						
Mass of Sample		g	965.87	1101.46	952.28	795.26
ACMs present*		type				
Mass of ACM in sample		g				
% ACM by mass		%				
% asbestos in ACM		%				
% asbestos in sample		%				
Breakdown of Detailed Gravimetric Analysis (b)						
% Amphibole bundles in sample		Mass %	na	na	na	na
% Chrysotile bundles in sample		Mass %	<0.001	<0.001	<0.001	0.001
Breakdown of PCOM Analysis (c)						
% Amphibole fibres in sample		Mass %	na	na	na	na
% Chrysotile fibres in sample		Mass %	na	na	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)						
Amphibole fibres		Fibres/g	na	na	na	na
Chrysotile fibres		Fibres/g	na	na	na	na

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% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample

Summary of Asbestos Quantification Analysi

Soil Samples

Our Ref Combined 4251 Prairie
Client Ref 4251
Contract Title Prairie Site Ground Investigation Works

		Lab No	1665995	1666343	1666348	1666611
		Sample ID	PRAIRIE_AUK_TP163	PRAIRIE_AUK_TP135	PRAIRIE_AUK_TP169	PRAIRIE_AUK_TP139B
		Depth	1.20	1.30	1.50	0.30
		Other ID	3	5	3	3
		Sample Type	SOIL	SOIL	SOIL	SOIL
		Sampling Date	14/04/2020	15/04/2020	15/04/2020	16/04/2020
		Sampling Time				
Test	**Method**	**Units**				
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**< 0.001**	**< 0.001**	**< 0.001**	**< 0.001**
Gravimetric Quantification (a)	DETSC 1102	Mass %	na	0.001	na	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	<0.001	na	<0.001	<0.001
Quantification by PCOM (c)	DETSC 1102	Mass %	na	na	na	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na	na	na	na
Breakdown of Gravimetric Analysis (a)						
Mass of Sample		g	483.48	1011.94	1335.01	780.11
ACMs present*		type		LFAD		
Mass of ACM in sample		g		0.01		
% ACM by mass		%		0.00		
% asbestos in ACM		%		85.00		
% asbestos in sample		%		0.001		
Breakdown of Detailed Gravimetric Analysis (b)						
% Amphibole bundles in sample		Mass %	na	na	na	na
% Chrysotile bundles in sample		Mass %	<0.001	na	<0.001	<0.001
Breakdown of PCOM Analysis (c)						
% Amphibole fibres in sample		Mass %	na	na	na	na
% Chrysotile fibres in sample		Mass %	na	na	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)						
Amphibole fibres		Fibres/g	na	na	na	na
Chrysotile fibres		Fibres/g	na	na	na	na

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% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample

Summary of Asbestos Quantification Analysi
Soil Samples

Our Ref Combined 4251 Prairie
Client Ref 4251
Contract Title Prairie Site Ground Investigation Works

		Lab No	1666614	1666615	1666616	1667233
		Sample ID	PRAIRIE_AUK_TP150	PRAIRIE_AUK_TP159	PRAIRIE_AUK_TP190A	PRAIRIE_AUK_TP128
		Depth	1.50	0.60	1.10	0.90
		Other ID	3	3	3	3
		Sample Type	SOIL	SOIL	SOIL	SOIL
		Sampling Date	16/04/2020	16/04/2020	16/04/2020	17/04/2020
		Sampling Time				
Test	**Method**	**Units**				
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**0.009**	**0.002**	**0.003**	**< 0.001**
Gravimetric Quantification (a)	DETSC 1102	Mass %	0.009	0.002	0.003	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	na	na	na	<0.001
Quantification by PCOM (c)	DETSC 1102	Mass %	na	na	na	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na	na	na	na
Breakdown of Gravimetric Analysis (a)						
Mass of Sample		g	932.90	695.59	1052.76	649.46
ACMs present*		type	LFAD	LFAD	LFAD	
Mass of ACM in sample		g	0.10	0.01	0.04	
% ACM by mass		%	0.01	0.00	0.00	
% asbestos in ACM		%	85	85	85	
% asbestos in sample		%	0.009	0.002	0.003	
Breakdown of Detailed Gravimetric Analysis (b)						
% Amphibole bundles in sample		Mass %	na	na	na	na
% Chrysotile bundles in sample		Mass %	na	na	na	<0.001
Breakdown of PCOM Analysis (c)						
% Amphibole fibres in sample		Mass %	na	na	na	na
% Chrysotile fibres in sample		Mass %	na	na	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)						
Amphibole fibres		Fibres/g	na	na	na	na
Chrysotile fibres		Fibres/g	na	na	na	na

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% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample

Summary of Asbestos Quantification Analysi
Soil Samples

Our Ref Combined 4251 Prairie
Client Ref 4251
Contract Title Prairie Site Ground Investigation Works

		Lab No	1667236	1667238	1667501	1667505
		Sample ID	PRAIRIE_AUK_TP147	PRAIRIE_AUK_TP157	PRAIRIE_AUK_TP120A	PRAIRIE_AUK_TP166
		Depth	1.50	0.80	1.00	0.45
		Other ID	4	2	3	3
		Sample Type	SOIL	SOIL	SOIL	SOIL
		Sampling Date	17/04/2020	17/04/2020	20/04/2020	20/04/2020
		Sampling Time				
Test	**Method**	**Units**				
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**< 0.001**	**< 0.001**	**0.001**	**0.001**
Gravimetric Quantification (a)	DETSC 1102	Mass %	na	na	na	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	<0.001	<0.001	0.001	0.001
Quantification by PCOM (c)	DETSC 1102	Mass %	na	na	na	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na	na	na	na
Breakdown of Gravimetric Analysis (a)						
Mass of Sample		g	1033.16	999.70	925.95	1405.15
ACMs present*		type				
Mass of ACM in sample		g				
% ACM by mass		%				
% asbestos in ACM		%				
% asbestos in sample		%				
Breakdown of Detailed Gravimetric Analysis (b)						
% Amphibole bundles in sample		Mass %	<0.001	<0.001	na	0.001
% Chrysotile bundles in sample		Mass %	na	na	0.001	na
Breakdown of PCOM Analysis (c)						
% Amphibole fibres in sample		Mass %	na	na	na	na
% Chrysotile fibres in sample		Mass %	na	na	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)						
Amphibole fibres		Fibres/g	na	na	na	na
Chrysotile fibres		Fibres/g	na	na	na	na

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% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample

Summary of Asbestos Quantification Analysi
Soil Samples

Our Ref Combined 4251 Prairie
Client Ref 4251
Contract Title Prairie Site Ground Investigation Works

		Lab No	1668120	1668125	1668130	1668559
		Sample ID	PRAIRIE_AUK_TP102	PRAIRIE_AUK_TP111	PRAIRIE_AUK_TP152	PRAIRIE_AUK_TP184
		Depth	3.00	1.50	2.00	0.30
		Other ID	11	4	6	2
		Sample Type	SOIL	SOIL	SOIL	SOIL
		Sampling Date	21/04/2020	22/04/2020	22/04/2020	16/04/2020
		Sampling Time				
Test	**Method**	**Units**				
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**< 0.001**	**0.002**	**0.002**	**< 0.001**
Gravimetric Quantification (a)	DETSC 1102	Mass %	na	0.002	na	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	<0.001	na	0.002	<0.001
Quantification by PCOM (c)	DETSC 1102	Mass %	na	na	na	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na	na	na	na
Breakdown of Gravimetric Analysis (a)						
Mass of Sample		g	709.21	825.28	1135.68	1256.23
ACMs present*		type		LFAD		
Mass of ACM in sample		g		0.02		
% ACM by mass		%		0.00		
% asbestos in ACM		%		85		
% asbestos in sample		%		0.002		
Breakdown of Detailed Gravimetric Analysis (b)						
% Amphibole bundles in sample		Mass %	na	na	na	<0.001
% Chrysotile bundles in sample		Mass %	<0.001	na	0.002	na
Breakdown of PCOM Analysis (c)						
% Amphibole fibres in sample		Mass %	na	na	na	na
% Chrysotile fibres in sample		Mass %	na	na	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)						
Amphibole fibres		Fibres/g	na	na	na	na
Chrysotile fibres		Fibres/g	na	na	na	na

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% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
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Summary of Asbestos Quantification Analysi
Soil Samples

Our Ref Combined 4251 Prairie
Client Ref 4251
Contract Title Prairie Site Ground Investigation Works

		Lab No	1668561	1668562	1668869
		Sample ID	PRAIRIE_AUK_TP116	PRAIRIE_AUK_TP117	PRAIRIE_AUK_TP144
		Depth	1.30	3.00	0.80
		Other ID	3	8	3
		Sample Type	SOIL	SOIL	SOIL
		Sampling Date	23/04/2020	23/04/2020	24/04/2020
		Sampling Time			
Test	**Method**	**Units**			
Total Mass% Asbestos (a+b+c)	DETSC 1102	Mass %	**< 0.001**	**< 0.001**	**0.001**
Gravimetric Quantification (a)	DETSC 1102	Mass %	na	na	na
Detailed Gravimetric Quantification (b)	DETSC 1102	Mass %	<0.001	<0.001	0.001
Quantification by PCOM (c)	DETSC 1102	Mass %	na	na	na
Potentially Respirable Fibres (d)	DETSC 1102	Fibres/g	na	na	na
Breakdown of Gravimetric Analysis (a)					
Mass of Sample		g	942.18	883.57	1140.96
ACMs present*		type			
Mass of ACM in sample		g			
% ACM by mass		%			
% asbestos in ACM		%			
% asbestos in sample		%			
Breakdown of Detailed Gravimetric Analysis (b)					
% Amphibole bundles in sample		Mass %	na	na	na
% Chrysotile bundles in sample		Mass %	<0.001	<0.001	0.001
Breakdown of PCOM Analysis (c)					
% Amphibole fibres in sample		Mass %	na	na	na
% Chrysotile fibres in sample		Mass %	na	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)					
Amphibole fibres		Fibres/g	na	na	na
Chrysotile fibres		Fibres/g	na	na	na

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% asbestos in Asbestos Containing Materials (ACMs) is determined by
by reference to HSG 264.
Recommended sample size for quantification is approximately 1kg
# denotes deviating sample

Information in Support of the Analytical Results

Our Ref Combined 4251 Prairie
Client Ref 4251
Contract Prairie Site Ground Investigation Works

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1663605	PRAIRIE_AUK_TP132 1.30 SOIL	02/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1663606	PRAIRIE_AUK_TP131 1.80 SOIL	02/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1663734	PRAIRIE_AUK_TP101 1.00 SOIL	01/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1663735	PRAIRIE_AUK_TP101 2.20 SOIL	01/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1663736	PRAIRIE_AUK_TP104 1.50 SOIL	01/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1663737	PRAIRIE_AUK_TP105 2.50 SOIL	01/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1663978	PRAIRIE_AUK_BH104 5.50 SOIL	03/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665133	PRAIRIE_AUK_TP172 0.80 SOIL	06/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665134	PRAIRIE_AUK_TP175 0.80 SOIL	06/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665135	PRAIRIE_AUK_TP175 1.80 SOIL	06/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665136	PRAIRIE_AUK_TP178 0.80 SOIL	06/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665137	PRAIRIE_AUK_BH106 5.50 SOIL	06/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665138	PRAIRIE_AUK_TP107 1.80 SOIL	06/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665139	PRAIRIE_AUK_TP107 0.80 SOIL	06/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665140	PRAIRIE_AUK_TP108 1.00 SOIL	06/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665141	PRAIRIE_AUK_TP108 2.00 SOIL	06/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665142	PRAIRIE_AUK_TP113 1.30 SOIL	06/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665143	PRAIRIE_AUK_TP175 0.80 LEACHATE	06/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665286	PRAIRIE_AUK_BH103 2.50 SOIL	08/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665287	PRAIRIE_AUK_SW1 0.00 WATER	09/04/20	PB 1L		
1665288	PRAIRIE_AUK_TP115 1.90 SOIL	08/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665289	PRAIRIE_AUK_TP115 0.50 WATER	08/04/20	PB 1L		

Information in Support of the Analytical Results

Our Ref Combined 4251 Prairie
Client Ref 4251
Contract Prairie Site Ground Investigation Works

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1665290	PRAIRIE_AUK_TP122 1.00 SOIL	08/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665291	PRAIRIE_AUK_TP123 0.60 SOIL	08/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665292	PRAIRIE_AUK_TP185 4.30 SOIL	08/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665293	PRAIRIE_AUK_TP186 0.50 SOIL	07/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665294	PRAIRIE_AUK_TP186 1.00 WATER	07/04/20	PB 1L x2		
1665295	PRAIRIE_AUK_TP188 1.00 SOIL	08/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665450	PRAIRIE_AUK_TP121 1.50 SOIL	09/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665451	PRAIRIE_AUK_TP138 1.20 SOIL	09/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665452	PRAIRIE_AUK_TP149 1.30 SOIL	09/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665453	PRAIRIE_AUK_TP168 0.05 SOIL	09/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665454	PRAIRIE_AUK_TP173 0.90 SOIL	09/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665455	PRAIRIE_AUK_SURFACE1 0.00 SOIL	09/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665582	PRAIRIE_AUK_TP108 2.00 LEACHATE	06/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665588	PRAIRIE_AUK_TP114 0.90 SOIL	07/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665589	PRAIRIE_AUK_TP124 1.50 SOIL	08/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665590	PRAIRIE_AUK_TP174 0.80 SOIL	08/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665591	PRAIRIE_AUK_TP174 1.60 SOIL	08/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665592	PRAIRIE_AUK_TP176 0.90 SOIL	07/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665593	PRAIRIE_AUK_TP177 0.60 SOIL	07/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665594	PRAIRIE_AUK_TP189 3.00 SOIL	07/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665595	PRAIRIE_AUK_TP114 0.90 LEACHATE	07/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665610	PRAIRIE_AUK_TP179 1.40 SOIL	09/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665611	PRAIRIE_AUK_TP179 2.00 SOIL	09/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665612	PRAIRIE_AUK_TP181 0.60 SOIL	09/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665613	PRAIRIE_AUK_TP182 0.90 SOIL	09/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		

Information in Support of the Analytical Results

Our Ref Combined 4251 Prairie
Client Ref 4251
Contract Prairie Site Ground Investigation Works

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1665614	PRAIRIE_AUK_TP179 1.40 LEACHATE	09/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665615	PRAIRIE_AUK_TP179 2.00 LEACHATE	09/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665616	PRAIRIE_AUK_TP181 0.60 LEACHATE	09/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665617	PRAIRIE_AUK_TP182 0.90 LEACHATE	09/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665990	PRAIRIE_AUK_TP145 1.60 SOIL	14/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665991	PRAIRIE_AUK_TP146C 1.30 SOIL	14/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665992	PRAIRIE_AUK_TP156A 0.30 SOIL	14/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665993	PRAIRIE_AUK_TP162 1.70 SOIL	14/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665994	PRAIRIE_AUK_TP180 0.30 SOIL	14/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665995	PRAIRIE_AUK_TP163 1.20 SOIL	14/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665996	PRAIRIE_AUK_TP145 1.60 LEACHATE	14/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1665997	PRAIRIE_AUK_TP163 1.20 LEACHATE	14/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1666343	PRAIRIE_AUK_TP135 1.30 SOIL	15/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1666344	PRAIRIE_AUK_TP136 0.80 SOIL	15/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1666345	PRAIRIE_AUK_TP136 2.90 SOIL	15/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1666346	PRAIRIE_AUK_TP165 1.00 SOIL	15/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1666347	PRAIRIE_AUK_TP167 2.50 SOIL	15/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1666348	PRAIRIE_AUK_TP169 1.50 SOIL	15/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1666349	PRAIRIE_AUK_TP136 0.80 LEACHATE	15/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1666610	PRAIRIE_AUK_BH108 2.50 SOIL	15/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1666611	PRAIRIE_AUK_TP139B 0.30 SOIL	16/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1666612	PRAIRIE_AUK_TP139B 3.30 SOIL	16/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1666613	PRAIRIE_AUK_TP148A 1.40 SOIL	16/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1666614	PRAIRIE_AUK_TP150 1.50 SOIL	16/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1666615	PRAIRIE_AUK_TP159 0.60 SOIL	16/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1666616	PRAIRIE_AUK_TP190A 1.10 SOIL	16/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		

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Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1667231	PRAIRIE_AUK_BH105 3.00 SOIL	16/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1667232	PRAIRIE_AUK_TP126 2.60 SOIL	17/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1667233	PRAIRIE_AUK_TP128 0.90 SOIL	17/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1667234	PRAIRIE_AUK_TP129 2.10 SOIL	17/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1667235	PRAIRIE_AUK_TP130 1.00 SOIL	17/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1667236	PRAIRIE_AUK_TP147 1.50 SOIL	17/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1667237	PRAIRIE_AUK_TP158 1.30 SOIL	17/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1667238	PRAIRIE_AUK_TP157 0.80 SOIL	17/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1667239	PRAIRIE_AUK_TP128 0.90 LEACHATE	17/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1667501	PRAIRIE_AUK_TP120A 1.00 SOIL	20/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1667502	PRAIRIE_AUK_TP134 1.00 SOIL	20/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1667503	PRAIRIE_AUK_TP134 2.00 SOIL	20/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1667504	PRAIRIE_AUK_TP161 1.00 SOIL	20/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1667505	PRAIRIE_AUK_TP166 0.45 SOIL	20/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1667506	PRAIRIE_AUK_TP166 1.20 SOIL	20/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1667507	PRAIRIE_AUK_TP171 0.75 SOIL	20/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1667508	PRAIRIE_AUK_TP187 0.70 SOIL	20/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668118	PRAIRIE_AUK_BH110 3.00 SOIL	20/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668119	PRAIRIE_AUK_TP102 1.00 SOIL	21/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668120	PRAIRIE_AUK_TP102 3.00 SOIL	21/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668121	PRAIRIE_AUK_TP103 1.00 SOIL	21/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668122	PRAIRIE_AUK_TP109 1.00 SOIL	21/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668123	PRAIRIE_AUK_TP110 1.00 SOIL	21/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668124	PRAIRIE_AUK_TP110 2.00 SOIL	21/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668125	PRAIRIE_AUK_TP111 1.50 SOIL	22/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668126	PRAIRIE_AUK_TP112 1.50 SOIL	22/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		

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1668127	PRAIRIE_AUK_TP119 1.50 SOIL	22/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668128	PRAIRIE_AUK_TP119 2.50 SOIL	22/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668129	PRAIRIE_AUK_TP133 0.50 SOIL	22/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668130	PRAIRIE_AUK_TP152 2.00 SOIL	22/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668131	PRAIRIE_AUK_TP153 1.10 SOIL	22/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668132	PRAIRIE_AUK_TP154 0.85 SOIL	20/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668133	PRAIRIE_AUK_TP155 0.70 SOIL	21/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668134	PRAIRIE_AUK_TP160 0.75 SOIL	21/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668135	PRAIRIE_AUK_TP170 1.00 SOIL	20/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668136	PRAIRIE_AUK_TP110 1.00 LEACHATE	20/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668137	PRAIRIE_AUK_TP170 1.00 LEACHATE	20/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668557	PRAIRIE_AUK_TP164 0.70 SOIL	16/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668558	PRAIRIE_AUK_TP164 1.30 SOIL	16/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668559	PRAIRIE_AUK_TP184 0.30 SOIL	16/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668560	PRAIRIE_AUK_TP106 1.00 SOIL	23/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668561	PRAIRIE_AUK_TP116 1.30 SOIL	23/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668562	PRAIRIE_AUK_TP117 3.00 SOIL	23/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668563	PRAIRIE_AUK_TP118 1.20 SOIL	23/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668564	PRAIRIE_AUK_TP127 0.30 SOIL	23/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668565	PRAIRIE_AUK_TP127A 2.80 SOIL	23/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668566	PRAIRIE_AUK_TP140 1.00 SOIL	23/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668567	PRAIRIE_AUK_TP141 2.00 SOIL	23/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668568	PRAIRIE_AUK_TP142 0.90 SOIL	23/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668569	PRAIRIE_AUK_TP142 1.50 SOIL	23/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668570	PRAIRIE_AUK_TP143 0.80 SOIL	23/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668571	PRAIRIE_AUK_TP143 1.60 SOIL	23/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		

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1668572	PRAIRIE_AUK_TP151 1.20 SOIL	23/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668573	PRAIRIE_AUK_TP140 1.00 LEACHATE	23/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668574	PRAIRIE_AUK_TP141 2.00 LEACHATE	23/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668575	PRAIRIE_AUK_TP142 1.50 LEACHATE	23/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668657	PRAIRIE_AUK_TP139 1.10 SOIL	16/04/20	No containers logged		
1668869	PRAIRIE_AUK_TP144 0.80 SOIL	24/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1668870	PRAIRIE_AUK_TP144 0.80 LEACHATE	24/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1669251	PRAIRIE_AUK_TP112 2.10 SOIL	22/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1669252	PRAIRIE_AUK_TP112 2.10 LEACHATE	22/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1670142	PRAIRIE_AUK_TP194A 1.40 SOIL	29/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1670143	PRAIRIE_AUK_TP196A 1.40 SOIL	29/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1670144	PRAIRIE_AUK_TP201 3.60 SOIL	28/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1670145	PRAIRIE_AUK_TP201 3.60 LEACHATE	28/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1670502	PRAIRIE_AUK_TP193 0.80 SOIL	30/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1671485	PRAIRIE_AUK_BH102 1.10-7.20 WATER	05/05/20	GB 1L x3, GV, PB 1L		
1671486	PRAIRIE_AUK_BH103 2.25-8.50 WATER	05/05/20	GB 1L x3, GV, PB 1L		
1671487	PRAIRIE_AUK_BH104 6.40-18.50 WATER	05/05/20	GB 1L x3, GV, PB 1L		
1671488	PRAIRIE_AUK_BH105 4.60-11.00 WATER	05/05/20	GB 1L x3, GV, PB 1L		
1671489	PRAIRIE_AUK_BH107 3.16-8.00 WATER	05/05/20	GB 1L x3, GV, PB 1L		
1671490	PRAIRIE_AUK_BH109 5.44-11.80 WATER	05/05/20	GB 1L x3, GV, PB 1L		
1671899	PRAIRIE_AUK_BH101 2.00-10.00 WATER	06/05/20	GB 1L x2, GV, PB 1L		
1671900	PRAIRIE_AUK_BH101 3.00-16.50 WATER	06/05/20	GB 1L x2, GV, PB 1L		

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1671901	PRAIRIE_AUK_BH106 3.94-10.00 WATER	06/05/20	GB 1L x2, GV, PB 1L		
1671902	PRAIRIE_AUK_BH108 2.20-6.00 WATER	06/05/20	GB 1L x2, GV, PB 1L		
1671903	PRAIRIE_AUK_BH108 5.00-14.00 WATER	06/05/20	GB 1L x2, GV, PB 1L		
1671904	PRAIRIE_AUK_BH110 4.00-20.80 WATER	06/05/20	GB 1L x2, GV, PB 1L		
1675436	PRAIRIE_AUK_TP123 0.60 LEACHATE	08/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1675439	PRAIRIE_AUK_TP120A 1.00 LEACHATE	20/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1675441	PRAIRIE_AUK_TP103 1.00 LEACHATE	20/04/20	No containers logged		
1675442	PRAIRIE_AUK_TP194A 1.40 LEACHATE	29/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1675443	PRAIRIE_AUK_TP196A 1.40 LEACHATE	29/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1675450	PRAIRIE_AUK_BH101 3.00 SOIL	27/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1675451	PRAIRIE_AUK_BH107 3.00 SOIL	24/04/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1685108	PRAIRIE_AUK_SW1 0.00 WATER	15/06/20	GB 1L x2, GV, PB 1L, P(other)		
1685109	PRAIRIE_AUK_SW2 0.00 WATER	15/06/20	GB 1L x2, GV, PB 1L, P(other)		
1688245	PRAIRIE_AUK_BH101 1.77-10.00 WATER	17/06/20	GB 1L x2, GV, PB 1L, P(other)		

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Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1688246	PRAIRIE_AUK_BH101 1.78-16.50 WATER	17/06/20	GB 1L x2, GV, PB 1L, P(other)		
1688247	PRAIRIE_AUK_BH102 0.83-7.20 WATER	18/06/20	GB 1L x2, GV, PB 1L, P(other)		
1688248	PRAIRIE_AUK_BH103 1.71-8.50 WATER	17/06/20	GB 1L x2, GV, PB 1L, P(other)		
1688249	PRAIRIE_AUK_BH104 4.06-18.50 WATER	17/06/20	GB 1L x2, GV, PB 1L, P(other)		
1688250	PRAIRIE_AUK_BH105 4.49-11.00 WATER	18/06/20	GB 1L x2, GV, PB 1L, P(other)		
1688251	PRAIRIE_AUK_BH106 2.73-10.00 WATER	17/06/20	GB 1L x2, GV, PB 1L, P(other)		
1688252	PRAIRIE_AUK_BH107 3.21-8.00 WATER	19/06/20	GB 1L x2, GV, PB 1L		
1688253	PRAIRIE_AUK_BH108 1.14-6.00 WATER	18/06/20	GB 1L x2, GV, PB 1L, P(other)		
1688254	PRAIRIE_AUK_BH108 4.95-14.00 WATER	18/06/20	GB 1L x2, GV, PB 1L, P(other)		
1688255	PRAIRIE_AUK_BH109 5.97-11.80 WATER	19/06/20	GB 1L x2, GV, PB 1L		
1688256	PRAIRIE_AUK_BH110 3.84-20.80 WATER	19/06/20	GB 1L x2, GV, PB 1L, P(other)		
1694889	PRAIRIE_AUK_BH101 1.69-10.00 WATER	01/07/20	GB 1L, GV, PB 1L, PU		

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1694890	PRAIRIE_AUK_BH101 1.64-16.50 WATER	01/07/20	GB 1L, GV, PB 1L, PU		
1694891	PRAIRIE_AUK_BH102 0.90-7.20 WATER	02/07/20	GB 1L, GV, PB 1L, PU		
1694892	PRAIRIE_AUK_BH103 1.92-8.50 WATER	01/07/20	GB 1L, GV, PB 1L, PU		
1694893	PRAIRIE_AUK_BH104 6.21-18.50 WATER	02/07/20	GB 1L, GV, PB 1L, PU		
1694894	PRAIRIE_AUK_BH105 4.51-11.00 WATER	02/07/20	GB 1L, GV, PB 1L, PU		
1694895	PRAIRIE_AUK_BH106 3.28-10.00 WATER	02/07/20	GB 1L, GV, PB 1L, PU		
1694896	PRAIRIE_AUK_BH107 3.12-8.00 WATER	02/07/20	GB 1L, GV, PB 1L, PU		
1694897	PRAIRIE_AUK_BH108 0.35-6.00 WATER	02/07/20	GB 1L, GV, PB 1L, PU		
1694898	PRAIRIE_AUK_BH108 4.81-14.00 WATER	02/07/20	GB 1L, GV, PB 1L, PU		
1694899	PRAIRIE_AUK_BH109 6.72-11.80 WATER	02/07/20	GB 1L, GV, PB 1L, PU		
1694900	PRAIRIE_AUK_BH110 3.87-20.80 WATER	02/07/20	GB 1L, GV, PB 1L, PU		
1700277	PRAIRIE_AUK_SW4 0.00 SOIL	15/07/20	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
1700278	PRAIRIE_AUK_SW4 0.00 WATER	15/07/20	PB 1L x2		

Key: G-Glass P-Plastic J-Jar T-Tub B-Bottle V-Vial U-Tube

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.
Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.
The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETSC2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

End of Report

Quality Control

Quality Systems.

Derwentside Environmental Testing Services employs numerous measures to ensure high levels of confidence in the results produced. Our laboratory has been accredited by the United Kingdom Accreditation Service (UKAS) since its inception and operates in full compliance with the internationally recognised standard ISO17025 and the Environment Agency's MCERTS (Monitoring & Certification Scheme) standard for soils and waters, which provides greater assurance to all parties of the reliability of data from chemical analysis.

To obtain a copy of our full UKAS schedule visit the UKAS website at www.ukas.org and search for our laboratory number 2139.

2139

Proficiency Testing Schemes.

DETS participates in seven external proficiency testing schemes in order to monitor and ensure the continuing quality of analysis. These schemes are:

Internal Quality Control.

DETS runs a strict internal quality control system. A minimum of 5% of all samples that undergo analysis in our laboratories are quality control samples. This way we can ensure a high level of confidence in all of the analytical data produced. In addition, MCERTS accredited tests must meet strict, ongoing limits for precision and bias in order to maintain their accreditation status.

SAMPLE HOLDING TIME INFORMATION

Soil

Analyte	Container type	Minimum sample required	Reference	Maximum holding time from sampling	
				pre drying/extraction[1]	post drying/extraction[2]
Ammonium	Glass or plastic	20g	BS ISO18512:2007	1 week	
Anions	Glass or plastic	20g	BS ISO18512:2007	1 month	3 years
BTEX	60ml glass jar	Full container	EPA 8260	2 weeks	N/A
Conductivity	Glass or plastic	20g	BS ISO18512:2007	1 week	3 years
Cyanide	Glass or plastic	20g	EPA 9010B/9012	2 weeks	
Heavy metals	Glass or plastic	10g	BS ISO18512:2007	6 months	30 years
Hexavalent chromium	Glass or plastic	20g	BS ISO18512:2007	1 month	
Loss on ignition	Glass or plastic	10g	BS ISO18512:2007	1 month	
OCP	Glass	20g	BS ISO18512:2007	1 month	
Oil & grease	Glass	20g	EPA 9070/1	1 month	
Organic matter/TOC	Glass or plastic	20g	BS ISO18512:2007	1 month	
PAH	Glass	20g	EPA 8100/8270	2 weeks	6 weeks
PCB	Glass	20g	BS ISO18512:2007	1 month	
pH	Glass or plastic	20g	BS ISO18512:2007	1 week	3 years
Phenols	Glass	20g	EPA 8270	2 weeks	6 weeks
PRO	60ml glass jar	Full container	EPA 8015	2 weeks	N/A
Sulphide	Glass or plastic	20g	BRE SD1	3 weeks	1 month
SVOC	Glass	20g	EPA 8270	2 weeks	6 weeks
TEM/CEM	Glass	20g	EPA 418.1	2 weeks	6 weeks
Thiocyanate	Glass or plastic	20g	EPA 9251	No special requirement	
Total sulphur	Glass or plastic	20g	BS ISO18512:2007	1 month	3 years
TPH (C10-C40)	Glass	20g	EPA 418.1	2 weeks	6 weeks
VOC	60ml glass jar	Full container	EPA 8260	2 weeks	N/A

Sample storage environment 5°C

1. From sampling to extraction
2. Once extracted

Waters

Analyte	Container type	Min sample required (ml)	Reference	Preservative required	Max holding time until extraction
Alkalinity	Glass or plastic	100	EPA 310.2	none	2 weeks
Ammonium	Glass or plastic	20	ISO 5667 3:2012	Sulphuric acid	3 weeks
BOD	Glass or plastic	500	EPA 405.1 5120B	none	2 days
BTEX	Glass vial	Full container	Lab validation	none	2 weeks
Chloride	Glass or plastic	20	ISO 5667 3:2012	none	1 month
COD	Glass or plastic	20	ISO 5667 3:2012	Sulphuric acid	1 month
Conductivity/TDS	Glass or plastic	100	EPA 160.1	none	1 week
Cyanide	Plastic	50	EPA 9012/335.3	Sodium hydroxide	2 weeks
Hexavalent chromium	Glass or plastic	20	ISO 5667 3:2012	none	4 days
Metals	Glass or plastic	20	ISO 5667 3:2012	Nitric acid	1 month
Nitrate	Glass or plastic	20	EPA 353.2	none	2 days
Nitrite	Glass or plastic	20	EPA 600/4 079-020	none	2 days
OCP	Glass	500	EPA 8081A/608	none	1 week
Oil & grease	Glass	500	ISO 5667 3:2012	Hydrochloric acid	1 month
PAH	Glass	500	ISO 5667 3:2012	none	1 week
pH	Glass or plastic	50	Lab validation	none	1 week
PCB	Glass	500	EPA 8082A	none	6 weeks
Phenols	Glass	500	ISO 5667 3:2012	Sulphuric acid	3 weeks
Phosphate	Glass or plastic	20	ISO 5667 3:2012	Sulphuric acid	1 month
PRO	Glass vial	Full container	EPA 8015	none	2 weeks
Sulphate	Glass or plastic	20	ISO 5667 3:2012	none	1 month
Sulphide	Plastic	50	ISO 5667 3:2012	NaOH/Zinc acetate	1 week
Suspended solids	Glass or plastic	100	EPA 160.2 2540D	none	1 week
SVOC	Glass	500	EPA 8270/625	none	1 week
TOC	Glass or plastic	20	ISO 5667 3:2012	Sulphuric/Phosphoric acid	1 week
TON	Glass or plastic	20	EPA 353.2	none	1 month
TPH/EPH	Glass	500	Lab validation	none	1 weeks
VOC	Glass vial	Full container	Lab validation	none	1 week

Sample storage environment 3°C ± 2°C

DETS INFO 001 – ANALYTICAL METHOD SUMMARY

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETS 036	**Leachate Preparation** **(NRA Method and BS EN 12457 Parts 1-3)**	Leachates are prepared as per the NRA (1994) method and as per BS EN 12457 Parts 1 - 3 one and two stage leachate preparation.	Leaching Test Method for the Assessment of Contaminated Land, Interim Guidance, NRA(1994) BS EN 12457 Part 1,2 & 3	n/a	Not Accredited
DETS 073	**Acid Neutralisation Capacity of Soils and Other Solids**	ANC is a measure of the buffering capacity of soils and other waste materials. The analysis measures the amount of acid required to bring the sample to a fixed pH. The initial pH of the sample extract must be measured before analysis begins. Analysis is performed by the addition of acid in conjunction with pH measurement by pH meter until the specified pH has been reached as indicated by the meter. The result is expressed in mol/kg (dry wt).	Annex B (Preliminary determination of the acid/base consumption) – CEN/TC 292 – WI 292046 – Characterization of waste – Leaching behaviour tests – Acid and Base neutralization capacity test	1.0 mol/kg	Not Accredited
DETS 074	**Low Level PAH by HPLC Fluorescence**	PAH is extracted from one litre of filtered water sample by solid phase extraction. PAH is eluted from the SPE column with DCM evaporated to dryness under nitrogen and redissolved in acetonitrile. Analysis of samples is carried out by HPLC fluorescence.	EPA Method 550 The Analyst 2001, 126:1336-1331 Phenomonex Strata X Application Note for PAH by SPE	0.01ug/L each 5.0 ug/L Total	Not Accredited

DETS INFO 001 – ANALYTICAL METHOD SUMMARY

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 1001	**Sample Pre-Treatment and Preparation of Solids**	Solid samples are classified and identified. Samples requiring analysis for unstable or volatile determinands are analysed as received. Samples requiring analysis for stable and non-volatile determinands are dried at <30◦C or 50◦C, depending on requirements, for a minimum of 16hrs (overnight). Dried samples are crushed in a jaw crusher, if necessary, and then ground using a mechanical mixer mill and sieved through a 250µm sieve to ensure they are homogenous.	BS1377:1990 – Soils for Civil Engineering Purposes The preparation and pre-treatment of potentially contaminated soils prior to chemical analysis – MEWAM – 2006 – Environment Agency (Updated procedure under preparation)	n/a	Not Accredited
DETSC 1002	**Description of Soil Sample Type**	This method outlines the procedure used to describe soil samples with respect to basic type, predominant colour and inclusions. The procedure is carried out during the sample preparation stage.	BS 5930:Section 6:1999	n/a	Not Accredited
DETSC 1003	**Stone and Glass / Metal / Plastic Content of Soil**	This method outlines the procedure used to determine the Stone and Glass/Metal/Plastic content of soil samples. The procedure is carried out during the sample preparation stage.	BS 3882:2007 BS 1377:1990	0.1%	Not Accredited
DETSC 1004	**Moisture Content/Loss on Drying of Soil**	Loss on drying is determined by loss of mass on drying in an oven set at 28ºC or 50ºC. Moisture content is determined by loss of mass on drying in an oven set at 105ºC. The procedure is carried out during the sample preparation stage.	Practical Environmental Analysis. Radojevic & Bashkin. RSC 1999 BS 1377: Part 2:1990 DETS drying time study	0.1%	Not Accredited
DETSC 1101	**Asbestos - Bulk Analysis**	Samples are examined visually for the presence of asbestos containing materials or asbestos fibres. Suspect fibres are removed from the sample and examined using polarised light microscopy to determine whether they are asbestos fibres. If no asbestos fibres are identified by the method after an adequate length of examination time, and after at least two small pinch samples have been examined, then the sample may be reported as 'NAD' (no asbestos detected).	HSG 248 Asbestos: The Analysis Guide for Sampling, Analysis and Clearance Procedures. 2005 McCrone W.C., Asbestos Identification (Second Edition), The McCrone Research Institute, 1987 LAB 30, Application of ISO/IEC17025 for Asbestos Sampling and Testing, UKAS, Edition 2, April 2008	n/a	UKAS

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 1102	**Quantification of asbestos in soils, loose aggregates and ballast**	The method of quantification is divided into three procedures: Gravimetric analysis, detailed gravimetric analysis and PCOM analysis. The analysis may be affected by the client's requirements as determined by contract review, and by the nature of the asbestos found in the sample, e.g. whether ACMs are present, and whether fibre bundles large enough to pick out using tweezers are have been found in the sample.	HSG 248 Asbestos: The Analysis Guide for Sampling, Analysis and Clearance Procedures. 2005 HSG264 Asbestos: The survey guide. HSE Books, 2010. Davies, L. S.T., Wetherill, G. Z., McIntosh, C., McGonagle, C., Addison, J. 1996. Development and validation of an analytical method to determine the amount of asbestos in soils and loose aggregates. HSE Contract Research Report N0. 83/1996. HSE Books	Gravimetric Analysis: 0.01% for 1kg sample Detailed Gravimetric Analysis: 0.001% for 50g sample PCOM Analysis: 0.001%	UKAS
DETSC 1103	**Asbestos Water Absorption Test**	This test involves a sample of the asbestos product being dried and weighed before being immersed in water for a period of time. The sample is then removed from the water and re-weighed. If the amount of water absorbed is <30% by weight, then the sample should be reported as 'Not Licensed'. If ≥30% water is absorbed then the sample should be reported as being 'Licensed', i.e. an asbestos material for which a licence is required to work on.	Work with Materials Containing Asbestos: Approved Code of Practice and Guidance. HSE Books, 2006.	n/a	UKAS
DETSC 2002	**Organic matter content of soil**	The procedure is based upon Walkley and Black's method. Organic matter in soil is oxidised with potassium dichromate in the presence of concentrated sulphuric acid. The excess dichromate is titrated with ferrous sulphate using diphenylamine as an external indicator. The organic matter content is calculated from the amount of dichromate used during the oxidation process based on an empirical relationship.	BS1377 : Part 3 : 1990 Method 3 BS1377 : Part 1 : 1990 BS 3882:2007	0.1%	UKAS MCERTS(Soils)

DETSC 2003	**Loss On Ignition**	Soil is ignited at 440C and the amount of sample lost on ignition is determined gravimetrically. Other specified temperatures may be used but are not accredited.	BS1377 : Part 3 : 1990 Method 4 BS1377 : Part 1 : 1990	0.01%	UKAS MCERTS(Soils)
Method Number	**Title**	**Description**	**Reference**	**LOD**	**Accreditation Status**
DETSC 2004	**Sulphate Content of Soil and Water**	The sulphate in the soil is dissolved in dilute hydrochloric acid, or in an aqueous extract having a water:soil ratio of 2:1 and the insoluble residue is removed by filtration. Waters are also filtered prior to analysis. The sulphate in the filtrate is precipitated as barium sulphate which is then filtered, ignited and weighed.	BS1377 : Part 3 : 1990 Method 5 BS1377 : Part 1 : 1990 BRE SD1: 2005 Concrete in Aggressive Ground	**Acid Soluble:** 0.01% **Water Soluble** 100mg/l **Waters** 10mg/l	UKAS MCERTS(Soils)
DETSC 2005	**Carbonate content of soil by Rapid Titration**	The carbonate present in the soil reacts with a known excess of hydrochloric acid liberating carbon dioxide. The acid remaining after the reaction is determined by titration against sodium hydroxide. The result is calculated in terms of the equivalent proportion of carbon dioxide.	BS 1377: Part 1: 1990. BS 1377: Part 3: 1990: Method 5	1%	UKAS
DETSC 2006	**Water Soluble Chloride Content of Soil & Chloride Content of Water**	The chloride in the soil is dissolved in water and the insoluble material is removed by filtration. Waters are filtered before analysis. The chloride is analysed by Mohr's method. The chloride in a neutral solution is titrated against standard silver nitrate using potassium chromate as an indicator. The colour change is from yellow to brick red.	BS1377 : Part 3 : 1990 Method 7.2 BS1377: Part 1: 1990	**Soil:** 0.01% **Water:** 10mg/l	UKAS MCERTS(Soils)
DETSC 2007	**Acid Soluble Chloride Content of Soil and Concrete**	The chloride in the sample is dissolved in nitric acid and the insoluble material is removed by filtration. The dissolved chloride is analysed by Volhard's method. The chloride in solution is precipitated with a known excess of standard silver nitrate. The excess silver nitrate is titrated against standard ammonium thiocyanate using ferric alum as an indicator. The colour change is white to red.	BS1377 : Part 3 : 1990 Method 7.3 BS1377: Part 1: 1990 BS 1881-124:1988	0.01%	UKAS

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 2008	**pH Value of Soil and Water**	The pH value of a soil suspension in water or a groundwater sample is determined electrometrically using a glass electrode.	BS1377: Part 3: 1990 – Soils for Civil Engineering Purposes – Chemical and Electrochemical Methods	n/a	UKAS (Soils + Waters) MCERTS (Soils + Waters-Trade Effluent only)
DETSC 2009	**Electrical Conductivity of Soil & Water**	The electrical conductance of a soil suspension in water or of a water sample is determined by voltammetry using a conductivity meter. In some cases, the soil may need to be extracted with an aqueous solution of an inorganic salt e.g. the conductivity of topsoil is determined by preparing a suspension of the soil in saturated calcium sulphate.	Standard Methods for the Examination of water and Wastewater Part 2510B 21st Edition 2005 APHA, AWWA, WEF BS3882:2007 Specification for Topsoil	1uS/cm	UKAS
DETSC 2019	**Loose Packed Dry Soil Density**	Dried, ground soil is transferred to a dry, tared measuring cylinder and the volume recorded. The cylinder and its contents are then weighed and the density of the soil calculated.	BS3882:2007 Specification for Topsoil	n/a	Not Accredited

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 2024	**Sulphide in Soil and Water by Iodometry**	Hydrogen sulphide is liberated by acidification of the sample with hydrochloric acid in a steam distillation unit. The hydrogen sulphide produced is carried over with the steam and is absorbed in alkaline zinc acetate. The zinc sulphide produced reacts with iodine formed when iodate-iodide is acidified and the excess iodine titrated with standard thiosulphate.	In House Method based on: Environment Agency The determination of easily liberated sulphide in soils and similar matrices (2010) - Blue Book 228 Method D - The determination of easily liberated sulphide in as received or air-dried samples following acid steam distillation with iodometric titration. Environment Agency The determination of sulphide in waters and associated materials (2007) Draft Method D - The determination of easily liberated sulphide in as received or air-dried samples following phosphoric acid steam distillation with iodometric titration.	**Soils:** 10mg/kg . **Waters:** 250ug/l	**Soils:** UKAS MCERTS(Soils) **Waters:** Not Accredited
DETSC 2030	**Alkalinity in Water**	Alkalinity of a water sample is determined by indicator end point titration with a strong acid from sample pH to pH8.3 (where applicable) and then to pH4.5. From the titres obtained the total alkalinity and concentrations and types of alkalinity present can be calculated.	SCA Method ISBN 0 11 751601 5 The Determination of Alkalinity and Acidity in Water 1981 Instruction Manual for Skalar SP50 Robotic Analyser	20mg/l as CaCO3	UKAS MCERTS(Waters) Trade Effluent only
DETSC 2031	**5 Day Biochemical Oxygen Demand**	The sample, either diluted or undiluted, is placed in a BOD bottle and the initial dissolved oxygen content of the sample is measured using a dissolved oxygen meter. The bottle is placed in an incubator at 20ºC in the dark for 5 days. After this time the bottle is removed and the residual dissolved oxygen content of the sample is measured. The BOD of the sample is calculated from the reduction in the concentration of dissolved oxygen over 5 days.	SCA Method ISBN 0 117522120 5 Day Biochemical Oxygen Demand (BOD5) Second Edition 1988	1 mg/l	UKAS MCERTS(Waters)- Trade Effluent only

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 2032	**Chemical Oxygen Demand**	Oxidisable substances react with sulphuric acid – potassium dichromate solution in the presence of silver sulphate as a catalyst. Chloride is masked by mercury sulphate. The reduction in the yellow colouration of Cr6+ is evaluated using a spectrophotometer for the low range tubes (LCK 314) whilst the green colouration of Cr3+ is evaluated for the medium and high range tubes (LCK 014 and LCK 114).	Environment Agency The determination of chemical oxygen demand in waters and effluents (2007) Methods for the Examination of Waters and Associated Materials	10 mg/l	UKAS MCERTS(Waters)-Trade Effluent only
DETSC 2033	**Total and Dissolved Organic Carbon in Water**	The term TOC (Total Organic Carbon) is used to describe the total content of organically bound carbon in dissolved and undissolved compounds. The TOC content is expressed in mg/l. If DOC (Dissolved Organic Carbon) is required, samples are filtered through a 0.45µm filter paper prior to analysis. Inorganic carbon is expelled by acidification of the sample. TOC is then determined by digestion of the sample with sulphuric acid and peroxodisulphate. Carbon containing compounds are transformed into carbon dioxide. The carbon dioxide evolves and reacts with an indicator solution. The colour change is measured using a spectrophotometer.	Hach-Lange Technical Instructions: LCK 385, LCK 386, LCK 387	2 mg/l	UKAS
DETSC 2034	**Suspended and Settleable Solids in Water**	Suspended matter is removed from a measured volume of sample by filtration under reduced pressure through a pre-treated, pre-weighed glass fibre filter paper. The paper is washed with deionised water to remove dissolved salts and the total suspended matter is determined gravimetrically after drying at 105 ±5°C Settleable solids are determined by subtracting the solids left in suspension after settlement for 1 hour (or other agreed time) from the total suspended matter in the sample.	SCA Method ISBN 011 751957 X Suspended, Settleable and Total Dissolved Solids in Waters and Effluents 1980	5 mg/l	**Suspended Solids:** UKAS MCERTS(Waters)-Trade Effluent only **Settleable Solids:** Not Accredited

DETS INFO 001 – ANALYTICAL METHOD SUMMARY

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 2035	**Total Dissolved Solids in Water**	Water samples are pre-filtered to remove any suspended solids and evaporated in an oven at 180°C. The amount of residual dissolved solids is determined gravimetrically. An estimate of the total dissolved solids can be obtained by measuring the conductivity of the sample. This method is not accredited.	SCA Method ISBN 011 751957 X Suspended, Settleable and Total Dissolved Solids in Waters and Effluents 1980 BS1377: Part 3 : 1990 Section 8	5 mg/l	UKAS
DETSC 2047	**Formaldehyde in Water**	Formaldehyde in soil is extracted in water, with a water to soil ratio of 10:1. The insoluble residue is removed by filtration prior to analysis. Waters are filtered prior to analysis to remove any particulates in suspension. Formaldehyde in the extract or water sample reacts with chromatropic acid-sulphuric acid solution to form a purple coloured complex. The absorbance of the coloured solution is read at 580nm using a suitable visible spectrophotometer.	Formaldehyde by visible absorption spectrophotometry – Method 3500, Issue 2 – NIOSH Manual of Analytical Methods, Fourth edition, August 1994	**Soil:** 0.2mg/kg **Water:** 20µg/l	Not Accredited
DETSC 2048	**Dissolved Oxygen Content of Water**	The dissolved oxygen content of the sample is measured using a dissolved oxygen meter either electrochemically or by fluorescence, or by the titrimetric method developed by Winkler.	SCA Method ISBN 0.11 751442X Dissolved Oxygen in Natural and Waste Waters 1979	0.1 mg/l	Not Accredited
DETSC 2055	**Anions in Water and Aqueous Soil Extracts by Ion Chromatography**	Liquid samples and aqueous soil extracts are filtered through a 0.22µm syringe filter prior to analysis. The filtered samples are injected into an Ion Chromatograph. The anions of interest are separated on the basis of their affinity for the active sites of the column packing material. The separated anions are converted into their highly conductive acid forms and measured by conductivity. The anions are identified on the basis of retention time as compared to standards and quantisation is by measurement of peak area.	Standard Methods for the Examination of Water and Wastewater Section 4110 21st Edition 2005 APHA, AWWA, WEF	**Soil:** 1.0 mg/kg **Water:** 0.1 mg/L	UKAS

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 2076	**Sulphate and Magnesium Content of 2:1 Aqueous Extract of Soil by ICP-OES**	The sulphate and magnesium in the soil are extracted in an aqueous extract having water: soil ratio of 2:1 and the insoluble material is removed by filtration. The concentrations of sulphate and magnesium in the filtrate are determined by Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES). The wavelengths used for identification and quantification are 181.972nm for sulphate and 285.213nm for magnesium.	BS1377 : Part 3: 1990 Method 5 BS1377 : Part 1: 1990 TRL 447 Sulphate Specification for Structural Backfills 2005 BRE SD1:2005 Concrete in Aggressive Ground 2005	10mg/L	**Sulphate:** UKAS MCERTS(Soils) **Magnesium:** Not Accredited
DETSC 2084	**Total Organic Carbon by PrimacATC Analyser**	Soil samples are treated with phosphoric acid to expel any inorganic carbonates. The samples are then heated at high temperature in a continuous flow of air so that any organic carbon is oxidised to carbon dioxide. The gas is then allowed to cool and analysed by an infra-red detector.	PrimacsATC Analyser – User Manual, Skalar	0.47%	MCERTS(Soils)
DETSC 2085	**Total and Dissolved Organic Carbon in Water**	**Direct TOC Analysis** The sample is acidified, stirred and purged to remove the IC before the sample is injected and handled as in the TC Analysis. The sample is filtered before acidification for DOC. **TC Analysis** The sample is injected by an automated septum less rotary port into a high temperature reactor. In the reactor, at a temperature of 750 - 950°C all organic and inorganic carbon is oxidized to the gaseous carbon dioxide (CO2). The catalyst that is present in the reactor catalysis the oxidation to completion. A flow of air transports these oxidation products to the detectors. The oxygen required for reaction is taken from the airflow. The products are led into the non-dispersive infrared detector where the carbon dioxide is determined. The carbon dioxide is measured at a wavelength of 4.2 µm by NDIR detection.	Standard Methods for the Examination of Water and Wastewater Section 5310 B 21st Edition 2005 APHA, AWWA, WEF HMSO Methods for the Examination of Waters and Associated Materials – The Instrumental Determination of Total Organic Carbon and Related Determinands 1995	lmg/l as C	UKAS

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 2119	**Exchangeable Ammonia in Soil**	An intense blue-green complex, related to indophenol blue, is formed by the reaction of ammonia with hypochlorite and sodium salicylate, with sodium nitroprusside acting as a catalyst. The complex is measured at 655nm and is related to the ammonia concentration by means of a calibration curve. Sodium citrate is added to overcome interfering ions.	MAFF/ADAS Reference Book 427 – the Analysis of Agricultural Materials – Method 53, Ammonium, Nitrate and Nitrite-Nitrogen, Potassium Chloride Extractable	0.5mg/kg	UKAS MCERTS(Soils)
DETSC 2120	**Ammonia in Water by Spectrophotometry**	An intense blue-green complex, related to indophenol blue, is formed by the reaction of ammonia with hypochlorite and sodium salicylate, with sodium nitroprusside acting as a catalyst. The complex is measured at 655nm and is related to the ammonia concentration by means of a calibration curve. Sodium citrate is added to overcome interfering ions.	Environment Agency Ammonia in Waters 1981 ISBN 0117516139 Methods for the Examination of Waters and Associated Materials	20µg/l	UKAS
DETSC 2121	**Total Kjeldahl Nitrogen Content of Soils and Waters**	The sample is digested with sulphuric acid and a mixture of catalysts to convert organic nitrogen to ammonia. The sample is then distilled under alkaline conditions, and the distilled ammonia is absorbed in sulphuric acid. The ammonia content of the distillate is then determined colorimetrically either using the UV/vis spectrophotometer or the Konelab 60i. Ammonia reacts with hypochlorite ions generated by the alkaline hydrolysis of sodium dichloroisocyanurate to form monochloramine. Monochloramine reacts with salicylate ions in the presence of sodium nitroprusside at around pH 12.6 to form a blue compound. The absorbance of this compound is measured spectrophotometrically at wavelength 660nm	The Analysis of Agricultural Materials – MAFF/ADAS Reference Book 427 – HMSO BS 3882: 2007 Specification for topsoil Standard Methods for the Examination of Water and Wastewater Part 4500-N. 21st Edition 2005 APHA, WWA, WEF	**Soil:** 0.01% **Water:** 2mg/l	Not Accredited
DETSC 2123	**Water Soluble Boron in Soil & Boron in Water**	Boron in soil is extracted in boiling saline water. Waters are filtered prior to analysis to remove any particulates in suspension. The water soluble boron in the extract or filtrate reacts with azomethine–H to produce a yellow coloured complex. The resulting colour absorbance is measured at 420nm using a suitable visible spectrophotometer.	SecondSite Property (now National Grid Property Holdings) - Guidance for assessing and managing potential contamination on former gasworks and associated sites (Part I) (Version 3) Method 17.12 The analysis of Agricultural materials MAFF/ADAS – reference book 427	**Soil:** 0.2mg/kg **Water:** 100ug/L	UKAS MCERTS(Soils)

			HMSO		

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 2130	**Cyanides & Monohydric Phenols by Skalar**	Water samples are filtered through a 0.45µm syringe filter and solid samples are extracted with 1M caustic soda prior to analysis on the automated flow analyser. The method determines total cyanide, easily liberated cyanide, complex cyanide, thiocyanate and monohydric phenols	Skalar methods: I295-001 w/r+P7 I295-002 w/r+P7 293-902 w/r+P7 497-001	**Soils mg/kg:** Total & Free CN=0.1, Thio=0.6, Phenol=0.3 **Waters ug/L:** Total CN=40, Free CN=20, Thio=20, Phenol=100	UKAS MCERTS(Soils)
DETSC 2140	**Sugar in Mixing Water for Cement**	Waters are filtered prior to analysis to remove any particulates in suspension. The sugar in the filtrate reacts with phenol and sulphuric acid to produce a yellow-orange coloured complex. The resulting colour absorbance is measured at 490nm using a suitable visible spectrophotometer.	Colorimetric Method for Determination of Sugars and Related Substances MICHEL DUBOIS, K. A. GILLES, J. K. HAMILTON, P. A. REBERS, and FRED SMITH - Division of Biochemistry, University of Minnesota, St. Paul, Minnesota.	10mg/l	Not Accredited
DETSC 2201	**Nitrite in Waters and Leachates by Konelab 60i**	Nitrite is determined colorimetrically using the Konelab60i autoanalyser. The nitrite colour reaction occurs at pH 2.0 to 2.5 by coupling diazotized Sulphanilamide with N-1-naphthyl-ethylenediamine. The absorbance of this compound is measured spectrophotometrically at 520nm.	Standard Methods for the Examination of Water and Wastewater Part 4500-NO2 B – 21st Edition 2005 APHA, AWWA, WEF Aquakem Method Nitrite in Waters Iss No 2 Methods for the Examination of Water and Associated Materials Oxidised Nitrogen in Waters 1981.	0.04mg/l (as N)	UKAS

			EPA Method 354.1 Nitrite, spectrophotometric (Approved at 40 CFR Part 136, not approved at Part 141)		

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 2202	**Total Oxidised Nitrogen in Waters and Leachates by Konelab 60i**	Nitrate is reduced to nitrite by hydrazine under alkaline conditions. The total nitrite ions are then reacted with sulphanilamide and N-1-naphthylethylenediamine dihydrochloride under acidic conditions to form a reddish purple azo-dye. The absorbance of this compound is measured spectrophotometrically at 540 nm using the Konelab 60i autoanalyser.	Standard Methods for the Examination of Water and Wastewater Part 4500-NO2 B and Part 4500-NO3 H – 21st Edition 2005 APHA, AWWA, WEF Aquakem Method Total Oxidised Nitrogen. Methods for the Examination of Water and Associated Materials Oxidised Nitrogen in Waters 1981. EPA Method 353.1 Nitrate, Nitrite Colorimetric Automated Hydrazine Reduction (Approved at 40 CFR Part 136, Not approved at Part 141)	0.7mg/l (as N)	UKAS
DETSC 2203	**Hexavalent Chromium in Waters and Leachates by Konelab 60i**	Hexavalent Chromium is determined colorimetrically using the Konelab 60i autoanalyser. Hexavalent chromium reacts with diphenylcarbizide in acid solution and produces a red-violet colour. The absorbance of this compound is measured spectrophotometrically at 540nm.	Standard Methods for the Examination of Water and Wastewater Part 3500-Cr – 21st Edition 2005 APHA, AWWA, WEF USEPA 7196-A Aquakem Method. Hexavalent Chromium	10µg/l	UKAS
DETSC 2204	**Hexavalent Chromium in Soil by Konelab 60i**	Hexavalent Chromium is determined colorimetrically using the Konelab 60i autoanalyser. Hexavalent chromium reacts with diphenylcarbizide in acid solution and produces a red-violet colour. The absorbance of this compound is measured spectrophotometrically at 540nm.	Aquakem Method. Hexavalent Chromium	1mg/kg	Not Accredited

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 2205	**Reactive & Total Phosphorus in Waters and Leachates by Konelab 60i**	Phosphate is determined colorimetrically using the Konelab60i autoanalyser. The orthophosphate ion reacts with ammonium molybdate and antimony potassium tartrate under acidic conditions to form a 12-molybdophosphoric acid complex. The complex is then reduced with ascorbic acid to form a blue heteropoly compound. The absorbance of this compound is measured spectrophotometrically at wavelength 880nm.	Standard Methods for the Examination of Water and Wastewater Part 4500-P E– 21st Edition 2005 APHA, AWWA, WEF Aquakem Method. Phosphate in Waters Issue 2	0.01mg/l	**Reactive Phosphorus:** UKAS MCERTS (Waters-Trade Effluent only) **Total Phosphorus:** Not Accredited
DETSC 2206	**High Level Ammonia in Waters and Leachates by Konelab 60i**	Ammonia is determined colorimetrically using the Konelab60i autoanalyser. Ammonia reacts with hypochlorite ions generated by the alkaline hydrolysis of sodium dichloroisocyanurate to form monochloramine. Monochloramine reacts with salicylate ions in the presence of sodium nitroprusside at around pH 12.6 to form a blue compound. The absorbance of this compound is measured spectrophotometrically at wavelength 660nm.	Methods for the Examination of Waters and Associated Materials Ammonia in Waters 1981 ISBN 0117516139. Aquakem Method. Ammonia in Waters Issue 2	0.8mg/l	UKAS
DETSC 2207	**Low Level Ammonia in Waters and Leachates by Konelab 60i**	Ammonia is determined colorimetrically using the Konelab60i autoanalyser. Ammonia reacts with hypochlorite ions generated by the alkaline hydrolysis of sodium dichloroisocyanurate to form monochloramine. Monochloramine reacts with salicylate ions in the presence of sodium nitroprusside at around pH 12.6 to form a blue compound. The absorbance of this compound is measured spectrophotometrically at wavelength 660nm.	Methods for the Examination of Waters and Associated Materials Ammonia in Waters 1981 ISBN 0117516139. Aquakem Method. Ammonia in Waters Issue 2	0.015mg/l	UKAS

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 2208	**Sulphide in Waters and Leachates by Konelab 60i**	Sulphide is determined colorimetrically using the Konelab60i autoanalyser. Potassium Dichromate converts N-N-Diethyl-p-phenylenediamine to the free radical which reacts rapidly with sulphide to produce the coloured 'DPD Blue' or 'Ethylene Blue'. The absorbance can then be measured at wavelength 660nm.	The determination of sulphide in waters and associated materials (2007) - SCA - Draft (March 2007) Aquakem Method. Sulphide SP001 Issue 2 Standard Methods for the Examination of Water and Wastewater, 21st Edition 2005, Part 4500. ISBN0-87553-223-3	10µg/l	UKAS
DETSC 2210	**Ferrous Iron in Waters and Leachates by Konelab 60i**	Three molecules of phenanthroline chelate with each atom of ferrous iron to form an orange/red complex. The intensity of the coloured solution is stable between pH3 to pH9. Rapid colour development occurs between pH2.9 and pH3.5 in the presence of excess phenanthroline. The resulting colour absorbance is measured at 510nm	Aquakem Method Ferrous Iron FIR001 Issue 2	0.1mg/l	Not Accredited
DETSC 2211	**Silicate in Waters and Leachates by Konelab 60i**	Reactive forms of silicon in acid solution, below pH2, react with ammonium molybdate ions to form a yellow silicomolybdate. Ascorbic acid reduces the yellow silicomolybdate to produce a blue silicomolybdate complex. Oxalic acid is added to destroy any molybdophosphoric acid formed.	ASTM D7126 - 10 Standard Test Method for On-Line Colorimetric Measurement of Silica Aquakem Method Silica SIL Issue 2	0.1mg/l	Not Accredited
DETSC 2301	**Metals in Soil by ICP-OES** As, Ba, Be, Cd, Cr, Co, Cu, Fe, Mn, Mo, Ni, Pb, Se, V, Zn	Metals in soil are extracted using aqua regia and their concentrations are determined by Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES). Any metals not listed can be determined but are not accredited under UKAS or MCERTS for soils.	Standard Methods for the Examination of Water and Wastewater Part 3120 B – 21st Edition 2005, AWWA, WEF	**mg/kg:** As, Be Cu, Ni =0.2, Ba=1.5, Cd=0.1, Cr=0.15, Co=0.7, Mn=20, Mo=0.4, Pb=0.3, Fe=1200, Se=0.5, V=0.8, Zn=1.0	UKAS (all listed) MCERTS (All soils listed except Fe)

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 2302	**Metals in Waters by ICP-OES** Al, As, Ca, Cd, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, Pb, Se, Zn	Concentrations of metals in water are determined by Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES). Any metals not listed can be determined but are not accredited under UKAS or MCERTS for waters	Standard Methods for the Examination of Water and Wastewater Part 3120 B – 21st Edition 2005 APHA, AWWA, WEF	**µg/l:** Al=6.5, As= 7.1, Ca=100, Cd=0.3, Cr=0.75, Cu=0.75, Fe=70, K=20, Mg=5, Na=12, Ni=2.7, Pb=4, Se=11.3, Zn=3.8	**Dissolved:** UKAS (all listed) MCERTS(Waters)-Trade Effluent only (Al, Cd, Cr, Cu, Ni, Pb, Zn) **Total:** Not Accredited
DETSC 2303	**Total Hardness (By Calculation)**	The concentrations of calcium and magnesium are determined using the appropriate methodologies. The hardness is a measure of the sum of the calcium and magnesium concentration expressed as calcium carbonate.	Standard Methods for the Examination of Water and Wastewater Part 3120 B – 21st Edition 2005 APHA, AWWA, WEF	n/a	UKAS
DETSC 2304	**Zinc Equivalent in Soil (By Calculation)**	The concentrations of copper, nickel and zinc concentrations are determined using the appropriate methodologies. The zinc equivalent is a measure of the combined toxicity of the three metals, relative to the toxicity of zinc.	n/a	n/a	Not Accredited
DETSC 2306	**Metals in Waters by ICP-MS** Ag, Al, As, Ba, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Sn, V, Zn	Concentrations of metals in water are determined by Inductively Coupled Plasma Mass Spectroscopy (ICP-MS). Any metals not listed can be determined but are not accredited under UKAS.	Standard Methods for the Examination of Water and Wastewater Part 3125 B – 21st Edition 2005 APHA, AWWA, WEF	**µg/l:** Ag=0.13, Al=10.0, As=0.16, Ba=0.26, Ca=90, Cd=0.03, Co=0.16, Cr=0.25, Cu=0.40, Fe=5.50, Hg=0.01, K=80, Mg=20, Mn=0.22, Mo=1.1, Na=70, Ni=0.50, P=18.0, Pb=0.09, Sb=0.17, Se=0.25, Sn=0.40, V=0.60, Zn=1.3	**Dissolved:** UKAS (all listed) **Total:** Not Accredited

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 2320	**Total Sulphur in Soil by ICP**	Sulphur compounds in soil are extracted using aqua regia and the insoluble residue is removed by filtration. The concentration of sulphur in the filtrate is determined by Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES). Loss of sulphur as H2S is prevented by oxidation of the sulphur compounds to sulphate by the aqua regia.	TRL 447 Sulphate Specification for Structural Backfills 2005 BRE SD1 Concrete in Aggressive Ground 2005	0.01%	UKAS
DETSC 2321	**Total Sulphate content of Soil by ICP-OES**	The sulphate in the soil is extracted in dilute hydrochloric acid and the insoluble residue is removed by filtration. The filtrate is made up to volume and the concentration of sulphate in the filtrate is determined by Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES).	BS1377 : Part 3: 1990 Method 5 BS1377 : Part 1 : 1990	0.01%	UKAS MCERTS(Soils)
DETSC 2322	**Total Potential Sulfate and Total Oxidisable Sulphur (By Calculation)**	Sulphur compounds in soil are extracted using aqua regia and the insoluble residue is removed by filtration. The concentration of sulphur in the filtrate is determined by Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES). Loss of sulphur as H2S is prevented by oxidation of the sulphur compounds to sulphate by the aqua regia. The wavelength used for identification and quantification of sulphate is 181.972nm. The sulphate in the soil is extracted in dilute hydrochloric acid and the insoluble residue is removed by filtration. The filtrate is made up to volume and the concentration of sulphate in the filtrate is determined by Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES). The wavelength used for identification and quantification of sulphate is 181.972nm. The two results obtained from the above tests may then be combined to calculate the Total Potential Sulphate and Total Oxidisable Sulphur content	BS1377 : Part 3: 1990 Method 5 BS1377 : Part 1 : 1990	0.01%	Not Accredited

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 2324	**Mercury in Waters by Atomic Fluorescence Spectroscopy**	Waters and aqueous samples are preserved by fixing with concentrated nitric acid. Treatment with tin (II) chloride reduces mercury (II) to mercury (0) vapour which is detected using atomic fluorescence spectrometry.	Standard Methods for the Examination of Water and Wastewater Part 3112 B – 21st Edition 2005 APHA, AWWA, WEF PSA Method – Millennium Merlin Method for Total Mercury in Drinking, Surface, Ground, Industrial and Domestic Wastewaters and Saline Waters	0.05µg/l	UKAS
DETSC 2325	**Mercury in Soil Atomic Fluorescence Spectroscopy**	The mercury is extracted from soil in aqua regia with gentle refluxing. The extract is filtered to remove particulates and diluted to volume. Treatment with tin (II) chloride reduces mercury (II) to mercury (0) vapour which is detected using atomic fluorescence spectrometry.	PSA Method – Millennium Merlin Method for Mercury in Sludge, Soils and Sediments	0.05 mg/kg	UKAS MCERTS(Soils)
DETSC 2332	**Inorganic and Methyl Mercury Speciation**	Soils are air-dried and crushed before being subjected to a two-stage microwave extraction procedure for Inorganic (Hg(II)) and Methyl (MeHg) mercury. Waters and aqueous samples are filtered to remove particulates. An aliquot is separated via HPLC before treatment with bromate-bromide and tin (II) chloride to generate mercury and the mercury is determined by atomic fluorescence spectroscopy.	USEPA Method 3200 – Mercury Species Fractionation and Quantification by Microwave Assisted Extraction. PSA Application Note 053 – Mercury Speciation Using The Millenium Merlin Speciation System	**Soil:** 100µg/kg **Water:** 1µg/l	Not Accredited
DETSC 2333	**Elemental Mercury Speciation**	Soils, waters and aqueous samples are tested on an as-received bases. A known quantity of sample is extracted using argon and the released elemental mercury is trapped. The trapped mercury is released upon heating in a scarifier module and determined by atomic fluorescence spectroscopy.		**Soil:** 0.6µg/kg **Water:** 1µg/l	Not Accredited

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 2400	**Unified Barge Bioaccessible Metals in Soils**	The Unified BARGE Method (UBM) is a an in vitro method for simulating the human digestive system. Synthetic digestive fluids are used to simulate the fluids present in the body. Both inorganic solutions (Containing inorganic salts such as KCl, NaCletc), and organic solutions (Containing organic compounds such as Urea, Glucose etc) are mixed with enzymes to produce 4 Synthetic digestive fluids saliva (S), Gastric fluid (G), duodenal fluid (D) and bile (B). These solutions are then used to mimic the effect of a sample passing through a human gastro intestinal tract by shaking portions of the sample at 37^{0}C, human body temperature (17.4).	EPA 9200.2-86 April 2012- Standard Operating Procedure for an In Vitro Bioaccessibility Assay for Lead in Soil BGS Chemical& Biological Hazards Programme Open Report OR/07/027 - Inter-laboratory Trial of a Unified Bioaccessibility Procedure	V = 1.0mg/kg Cr = 5.0mg/kg Co = 1.0mg/kg Ni = 5.0mg/kg As = 0.5mg/kg Se = 0.5mg/kg Cd = 0.5mg/kg Pb = 1.0mg/kg	Not Accredited
DETSC 3001	**Solvent Extractable Matter in Soil**	Soil samples are extracted with a water-immiscible solvent and filtered to remove the water. The solvent is evaporated and the amount of extractable matter in the sample is determined gravimetrically.	In-house method based on:- Problems Arising from the Redevelopment of Gas Works and Similar Sites - AERE Harwell Laboratory 1981. Environmental Agency The Determination of Material Extractable by Carbon Tetrachloride and of Certain Hydrocarbon Oil and Grease Components in sewage Sludge – 1978	40mg/kg	**Toluene & Cyclohexane:** UKAS **Other Solvents:** Not Accredited
DETSC 3002	**Oil & Grease/Solvent Extractable Matter in Waters**	A known volume of sample is acidified to pH<2 and extracted three times with an organic solvent, such as n-Hexane, in a separating funnel. The solvent is removed by evaporation and the amount of extractable matter in the sample is determined gravimetrically.	APHA 21st Edition, 2005 – Method 5520 B. Oil & Grease - Partition Gravimetric Method USEPA Method 1664, Revision A: n-Hexane Extractable Material (HEM: Oil & Grease) and Silica Treated N-Hexane Extractable Material (SGT-HEM; Non Polar Material) by Extraction and Gravimetry.	1mg/l for 500ml sample	UKAS

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 3049	**Elemental Sulphur in Soils and Waters by HPLC**	Soils are extracted in dichloromethane (DCM) by sonication. The elemental sulphur concentration is determined by high performance liquid chromatography (HPLC) with UV detection using a C_{18} (e.g. 250mm x 4.6mm) column and a mobile phase composed of 95% methanol and 5% water. Waters and aqueous extracts of soils are extracted using DCM in a separating funnel, filtered, and the concentration determined using HPLC.	National Grid Property Holdings Limited, Methods for the Collection and Analysis of Samples from National Grid Sites, Version 1, September 2006. Section 3.12 Soil Analysis: Elemental Sulphur.	**Soil:** 0.75mg/kg **Waters:** 90ug/l	**Soil:** UKAS MCERTS(Soils) **Water:** UKAS
DETSC 3072	**Aliphatic / Aromatic TPH by GC-FID**	Aliphatic and aromatic petroleum hydrocarbons (C_{10}-C_{35}) are extracted from soil and water using n-Hexane. The fractions are separated by solid phase extraction using silica columns, whereby the aliphatic fraction is eluted first with n-Hexane and the aromatic portion is eluted second with dichloromethane. The total, aliphatic, and aromatic concentrations are determined by gas chromatography flame ionisation detection (GC-FID) using a capillary column and hydrogen as the carrier gas. The chromatographic data is further characterized by subdivision into approximate boiling point/carbon number ranges with respect to n-alkane retention time markers.	National Grid Property Holdings Limited, Methods for the Collection and Analysis of Samples from National Grid Sites, Version 1, September 2006. Section 3.12 Soil Analysis: Draft TNRCC Method 1006	**Soil mg/kg:** AL10-12 =1.5 AL12-16 =1.2 AL16-21 =1.5 AL21-35 =3.4 AR10-12 =0.9 AR12-16 =0.5 AR16-21 =0.6 AR21-35 =1.4 **Water:** 1ug/l	**Soil:** UKAS MCERTS(Soils) (C10-C35 only) **Water:** Not Accredited
DETSC 3301	**PAH in Soil by GC-FID**	Soils and associated materials are extracted in dichloromethane (DCM) using sonication. The PAH concentration is recorded both as “Total PAH” and as “Speciated PAH”, specified in terms of the 16 US EPA “Priority Pollutant” Polycyclic Aromatic Hydrocarbons. Concentrations are determined by gas chromatography using a BPX 50 (30m; 0.25µm ID; 0.25µm film) capillary column (or equivalent).	In-house method based on US EPA Method 8100, Polynuclear Aromatic Hydrocarbons	0.5 mg/kg each 1.6 mg/kg Total PAH	UKAS (16 PAH's only)
DETSC 3302	**Hexane / Acetone Extracted PAH in Soil by GC-FID**	Soils are extracted into hexane: acetone by shaking. The PAH concentration is recorded both as “Total PAH” and as “Speciated PAH”, specified in terms of the 16 US EPA “Priority Pollutant” Polycyclic Aromatic Hydrocarbons. Concentrations are determined by gas chromatography using a BPX 50 (30m; 0.25µm ID; 0.25µm film) capillary column (or equivalent).	In-house method based on US EPA Method 8100, Polynuclear Aromatic Hydrocarbons	0.1 mg/kg each 1.6 mg/kg Total PAH	Not Accredited

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 3303	**Polyaromatic Hydrocarbons in Soils by GC-MS**	The PAHs in the soil sample are extracted into hexane: acetone by shaking. The PAHs in the extract are separated by gas chromatography and identified by the mass selective detector. The concentration of each PAH is determined by referencing individual mass peak areas to the appropriate internal standard mass peak area. Quantification is carried out within the instrument software.	In-house method based on EPA Method 8270- US EPA Method 8270, Revision C, Semivolatile Organic Compounds by Gas Chromatography – Mass Spectrometry (GC/MS)	0.03 mg/kg each 0.10 mg/kg Total PAH	UKAS (All 16 PAH's) MCERTS (not Fluorene, Anthracene, Chrysene or Total)
DETSC 3304	**Polyaromatic Hydrocarbons in Waters by GC-MS**	The PAHs in the water sample are extracted into dichloromethane by shaking. The PAHs in the extract are separated by gas chromatography and identified by the mass selective detector. The concentration of each PAH is determined by referencing individual mass peak areas to the appropriate internal standard mass peak area. Quantification is carried out within the Instrument software.	In-house method based on EPA Method 8270- US EPA Method 8270, Revision 3, Semivolatile Organic Compounds by Gas Chromatography – Mass Spectrometry (GC/MS) In-house method based on EPA Method 3510C- EPA Method 3510C, Revision 3, Separatory Funnel Liquid-Liquid Extraction	10 ng/l each	UKAS (16 PAH's only)
DETSC 3311	**Extractable Petroleum Hydrocarbons (EPH) in Soil, Ballast and Water**	This method is designed to determine total concentrations of extractable petroleum hydrocarbons (EPH) in solid and aqueous matrices. This method uses a dichloromethane (DCM) extraction followed by quantification using gas chromatography/flame ionisation detection (GC-FID) analysis using a 1:1 mixture of diesel and mineral oil as calibration standards and n-alkane markers to establish the boiling point ranges. This method is used for the quantitative analysis of “Total EPH” (C10-C40) and as “Speciated EPH”, specified in terms of the “diesel range” (C10-C24), and “mineral oil range” (C24-C40).	USEPA Method 3550C – Ultrasonic Extraction USEPA Method 8015B – Non-Halogenated Organics Using GC/FID	**Soil:** 10 mg/kg **Ballast:** 10mg/kg **Water:** 10µg/l	**Soil:** UKAS MCERTS(Soils) **Water:** UKAS

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 3312	**Hexane Extractable Petroleum Hydrocarbons (HPH)**	This method is designed to determine total concentrations of extractable petroleum hydrocarbons (EPH) in solid matrices. This method uses a hexane: acetone (9.4) extraction followed by quantification using gas chromatography/flame ionisation detection (GC-FID) analysis using a 1:1 mixture of diesel and mineral oil as calibration standards and n-alkane markers to establish the boiling point ranges. This method is used for the quantitative analysis of "Total EPH" (C10-C40) and as "Speciated EPH", specified in terms of the "diesel range" (C10- C24) and "mineral oil range" (C24-C40).	USEPA Method 8015B – Non-Halogenated Organics Using GC/FID	**Soil:** 5 mg/kg	Not Accredited
DETSC 3321	**BTEX, MTBE & PRO in Soils by Headspace GC-FID**	BTEX, MTBE and PRO in soils are determined via Headspace GC-FID. Individual aromatic compounds are quantified by external calibration against known standards. PRO range is banded using alkane markers to define retention time windows.	EPA Methods 5021 and 8015D	0.01 mg/kg	UKAS MCERTS(Soils) Not accredited for PRO range (C5-10)
DETSC 3322	**BTEX, MTBE & PRO in Waters & Leachates by Headspace GC-FID**	BTEX, MTBE and PRO in soils are determined via Headspace GC-FID. Individual aromatic compounds are quantified by external calibration against known standards. PRO range is banded using alkane markers to define retention time windows.	EPA Methods 5021 and 8015D	1 µg/l	UKAS
DETSC 3401	**PCBs in Soils by GC-MS**	An as-received soil sample is extracted in Hexane:Acetone (1:2) using sonication methodology. The sample is separated by gas chromatography and identified by mass selective detector. Quantification is carried out within the instrument software.	EPA Method 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography.	**µg/kg** PCB 28=1.25 PCB 52=1.12 PCB 101=1.32 PCB 118=1.43 PCB 153=2.08 PCB 138=1.35 PCB 180=1.42	UKAS MCERTS(Soils)

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 3402	**Polychlorinated Biphenols in Waters by GC/MS**	The water sample is extracted in DCM on a reciprocal shaker. The sample is separated by gas chromatography and identified by mass selective detector. Quantification is carried out within the GC-MS software using an internal standard.	EPA Method 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography.	**ng/l** PCB 28=208 PCB 52=161 PCB 101=211 PCB 118+123=513 PCB 153=163 PCB 138=107 PCB 180=132 PCB 105=133 PCB 114=253 PCB 126=399 PCB 156=253 PCB 157=119 PCB 167=248 PCB 169=181 PCB 189=271 PCB 77=202 PCB 81=186	UKAS
DETSC 3432	**Volatile Organic Compounds in Waters by Headspace GC-MS**	The method covers the range of volatile organic compounds with boiling points up to 220°C. Water samples are heated and agitated in a crimp cap vial. This drives the volatile components in to the headspace. An aliquot of the headspace is taken and injected in to a gas chromatograph with mass selective detection (GC-MS).The detector operates in full scan mode and is calibrated with standards containing known concentrations of the compounds of interest.	USEPA Method 8260B Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS), Revision 2, December 1996	1 ug/l except: DCM (27), 2,2-Dichloropropane (2), Bromochloromethane (4), Bromodichloromethane (4), m+p-Xylene (2), 1,3-Dichlorobenzene (2)	UKAS except: Trichlorofluoromethane, Methylene Chloride, 1,1,1-Trichloroethane,

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 3433	**Semi-Volatile Organic Compounds in Soils by GCMS**	The SVOCs in the soil sample are extracted into DCM: Acetone by shaking. The SVOCs in the extract are separated by gas chromatography and identified by the mass selective detector. The concentration of each SVOC is determined by referencing individual mass peak areas to the appropriate internal standard mass peak area. Quantification is carried out within the instrument software.	In-house method based on EPA Method 8270- US EPA Method 8270, Revision 3, Semi volatile Organic Compounds by Gas Chromatography – Mass Spectrometry (GC/MS)	Individual SVOCs 0.1 mg/kg	UKAS
DETSC 5001	**Ash Content of Coal**	The ash content of the sample is determined gravimetrically. A known weight of the sample is placed in a prepared ash crucible and placed in a furnace. The furnace is heated to 750ºC ±10ºC where the temperature is maintained. Following combustion the crucible and sample are removed, cooled and reweighed.	ASTM D3174-11 BS 1016-104.4 1998 ISO 1171: 2010	0.1%	UKAS
DETSC 5002	**Ash & LOI Content of Solid Biomass & Solid Recovered Fuels**	The ash and LOI content of the sample is determined gravimetrically. A known weight of the sample is placed in a prepared ash crucible and placed in a furnace. The furnace is heated to 550ºC ±10ºC where the temperature is maintained. Following combustion the crucible and sample are removed, cooled and reweighed.	BS EN 14775:2009 BS EN 15403:2011	0.1%	UKAS
DETSC 5003	**Volatile Matter Content of Solid Biomass, Solid Recovered Fuels and Coal**	A known weight of the sample produced for volatile matter determination is placed in a suitable crucible fitted with a lid. The crucible and sample is weighed and heated in a furnace with a limited air through put at a temperature of 900ºC ±10ºC for 7 minutes. The sample and crucible are re-weighed and the volatile matter content determined by difference.	BSEN15148:2009 – Solid Biofuels Determination of the Content of Volatile Matter BS EN 15402:2011 - Solid Recovered Fuels - Determination of the Content of Volatile Matter	0.1%	UKAS

DETS INFO 001 – ANALYTICAL METHOD SUMMARY

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 5004	**Total Moisture / Dry Solids Content of Solid Biomass & Solid Recovered Fuels & Coal**	The sample produced for general analysis is placed into a suitable prepared and weighed tray and reweighed. The sample is dried at 105ºC to constant weight and the total moisture / dry solids content is calculated from the reduction in weight.	BSEN 14774 Parts 1 & 2 2009 DD CEN/TS 15414 Parts 1 & 2: 2010	0.1%	UKAS
DETSC 5005	**Analysis Moisture Content of Solid Biomass, Solid Recovered Fuels & Coal**	The sample produced for total moisture determination in accordance with DETSC 5009 or DETSC 5010 is placed in a suitable pre-weighed tray and reweighed. The sample is then dried at 105°C ±2°C to constant weight and then weighed again. The analysis moisture content is calculated from the reduction in weight.	BS EN 14774-3 2009 BS EN 15414-3 2011 BS 1016-104.1 -1999 ISO 11722 – 1999	n/a	UKAS
DETSC 5007	**Calorific Value of Solid Biomass, Solid Recovered Fuels & Coal**	Calorific value of a material is determined in an Isoperbol calorimeter by burning it in pure oxygen in a combustion bomb. A known amount of sample is placed in a combustion bomb which is then pressurised to 30bar with oxygen. A calorimeter bucket is filled with a known amount of deionised water which is placed in the calorimeter and the bomb placed in the bucket. The system is allowed to equilibrate and the bomb fired by electrical connection. The difference in temperature of the water in the calorimeter bucket caused by the ignition of the material in the bomb is measured and the calorific value calculated	BS EN 14918: Solid biofuels – Determination of calorific value BS EN 15400: Solid recovered fuels - Determination of calorific value	1MJ/kg	UKAS
DETSC 5008	**Calorific Value of Soil**	A known amount of sample material is burnt in a combustion bomb that is immersed in water in a calorimeter and the difference in the water temperature before and after ignition measured. The calorific value of the sample material is calculated making any necessary corrections for heat generation not associated with the combusting sample. A gelatine capsule will be required to assist combustion which is also corrected for in the final calculations.	BS 1016-105 1992 ISO 19208 ASTM 5865	1MJ/kg	UKAS

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 5009	**Sample Preparation of Solid Biomass & Solid Recovered Fuels**	If analysis is required on the original material (i.e. Bulk Density) a sub-sample will be taken after initial mixing after which the sample is then reduced by cutting/chopping oversized pieces of material. The material is then mixed and subdivided by manual means during which process representative samples are taken for analysis i.e. total moisture. The remainder of the sample is dried and then reduced to <1mm and again mixed and subdivided to produce the sample for laboratory analysis.	BS EN 14780:2011 BS EN 15413:2011	n/a	Not Accredited
DETSC 5010	**Sample Preparation of Coal**	If required the sample received is first mixed and a sample taken for bulk density or bulk density is carried out on the whole initial sample. The remaining sample or the whole sample used for bulk density is then reduced to <10mm preferably by jaw crushing. The material is then mixed and subdivided by mechanical or manual means during which process representative samples are taken for any analysis required at this stage i.e. total moisture, The remainder of the sample is again mixed and subdivided to produce the sample for laboratory analysis which may require drying prior to crushing to <212 microns. If there is excessive water content a pre- drying stage of the whole sample may have to be carried out before sample blending and subdivision commences.	BS ISO 13909-4: 2001	n/a	Not Accredited
DETSC 5011	**Calculation of Fixed Carbon Content of Coal, SRF and Solid Biomass Fuels**	The total moisture, analysis moisture, ash and volatile matter content are determined by approved methods. The values obtained are deducted from 100 and this gives the fixed carbon value of the fuel.	DD CENT/S 15296:2006 BS 1016.100:1994 BS ISO 17246:2005	0.1%	Not Accredited

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 5012	**Determination of Biomass Content of SRF**	Approximately 5g of the sample is dissolved in 150ml of 78% Sulphuric Acid for 16 hours ±2 hours after which 35ml of 30% Hydrogen Peroxide is added and the sample left for an additional 5 hours ±1 hour. At the end of this period 300ml of deionised water is added to the sample and the residue remaining filtered off using a glass fibre filter paper, washing the residue with an additional 300ml of deionised water. The filter paper and residue are placed in a pre-weighed crucible and dried at 1500C until completely dry. The filter paper is reweighed after drying and the non biomass residue determined. Corrections for carbonates content is made by determining the ash content of the original sample and the non biomass residue remaining. The result can also be expressed by percentage calorific value by performing a calorific valve on the solid captured on the filter paper.	BS EN 15440 Solid recovered fuels - Methods for the determination of biomass content	n/a	UKAS
DETSC 5013	**Determination Of Carbon, Hydrogen, Nitrogen & Oxygen In Solid Biomass, Solid Recovered Fuels & Coal**	A known mass of fuel is weighed into tin capsules which are dropped sequentially into the combustion reactor prior to the arrival of oxygen. The sample and tin capsule react with oxygen and combust at temperatures of 1700-1800 °C and the sample is broken down into its elemental components N2, CO2, and H2O. High performance copper wires absorb the excess oxygen not used for sample combustion. The gases flow through the gas chromatographic (GC) separation column which is kept at a constant temperature. As they pass through the GC column, the gases are separated and are detected sequentially by the thermal conductivity detector (TCD). The TCD generates a signal, which is proportional to the amount of element in the sample. The instrument software compares the elemental peak to a known standard material (after calibration) and generates a report for each element on a weight basis. The oxygen is calculated by deducting these quantities from 100 along with the moisture, ash, sulphur & chlorine contents determined by other methods.	BS EN 15104:2011 Solid biofuels - Determination of total content of carbon, hydrogen and nitrogen - Instrumental methods BS EN 15407:2011 Solid recovered fuels - Methods for the determination of carbon (C), hydrogen (H) and nitrogen(N) content BS EN 15296:2011 Solid biofuels - Conversion of analytical results from one basis to another	Carbon 0.10% Nitrogen 0.30% Hydrogen 0.30% Oxygen 3.55%	UKAS

DETS INFO 001 – ANALYTICAL METHOD SUMMARY

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 5014	**Metals in Coal, SRF and Biomass by ICP**	Metals in coal, solid recovered fuel (SRF) and biomass samples are extracted by microwave using Hydrogen Peroxide (to oxidise and break down organic matter) and Aqua Regia (to dissolve the matrix and hold the metals in solution). Their concentrations are determined by Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES).	BS EN 15410 - Solid recovered fuels - Methods for the determination of the content of major elements (Al, Ca, Fe, K, Mg, Na, P, Si, Ti) BS EN 15411 - Solid recovered fuels - Methods for the determination of the content of trace elements (As, Ba, Be, Cd, Co, Cr, Cu, Hg, Mo, Mn, Ni, Pb, Sb, Se, Tl, V and Zn) BS EN 15290 - Solid biofuels - Determination of major elements - Al, Ca, Fe, Mg, P, K, Si, Na and Ti BS EN 15297 - Solid biofuels - Determination of minor elements - As, Cd, Co, Cr, Cu, Hg, Mn, Mo, Ni, Pb, Sb, V and Zn	**0.1 mg/kg:** As, Be, Cd, Co, Mn, Ni, P, Pb, Sb, Se, Sn, Ti, V, Zn **0.2mg/kg:** Cr, Cu, Tl **0.5mg/kg:** Mo **1mg/kg:** Al, Fe, K, Mg **5mg/kg:** Ca **10mg/kg:** Ag, Ba, Rh, Sr, Te	UKAS: Al, As (SRF only), Ca, Cd, Co, Cr, Cu, K, Mg, Mn, Na (SRF only), Ni, P, Pb, Se, Sn, Tl, V, Zn All other metals not accredited
DETSC 5015	**Mercury in Coal, SRF and Biomass by Atomic Fluorescence Spectroscopy**	The mercury is extracted from coal, SRF and biomass in aqua regia with gentle refluxing. The extract is filtered to remove particulates and diluted to volume. Treatment of the resulting solution with tin (II) chloride reduces mercury (II) to mercury (0) vapour which is then quantitatively detected using atomic fluorescence spectrometry.	PSA Method – Millennium Merlin Method for Mercury in Sludge, Soils and Sediments.	0.055mg/kg	UKAS

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 5016	**Total Sulphur Content Of Coal, SRF And Biomass**	Sulphur compounds in SRF and biomass are extracted using aqua regia / hydrogen peroxide and the insoluble residue is removed by filtration. The concentration of sulphur in the filtrate is determined by Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES). Loss of sulphur as H2S is prevented by oxidation of the sulphur compounds to sulphate by the aqua regia. The use of hydrogen peroxide enhances the oxidation properties of nitric acid especially in the digestion of organics. Sulphur compounds in coal are determined by ICP-OES from the aqueous washings of the combustion products after firing in a bomb calorimeter.	TRL Report TRL447 (Updated) - Sulphate specification for structural backfills 2005	0.001mg/kg	UKAS
DETSC 5017	**Sulphur, Chlorine, Fluorine & Bromine Content of Solid Biomass, Solid Recovered Fuels and Coal by IC**	A known weight of fuel is burnt in a pressurised bomb in pure oxygen. After firing of the bomb, it is stood for a minimum of five minutes to allow the combustion products to settle then the oxygen is slowly released over a period of at least three minutes. The bomb is then taken apart and the bomb electrodes rinsed with deionised water into the inside of the bomb. These washings are then decanted into a 50ml volumetric flask. The inside of the bomb is rinsed with deionised water and the washings added to those in the volumetric flask. The contents of the volumetric flask are made up to volume with deionised water and stored for the analysis of sulphur, chloride, fluoride and bromide by ion chromatography.	Operating Instruction Manual No. 442M 6200 Parr Oxygen Bomb Calorimeter Operating Instruction Manual No. 205M 1108 Oxygen Combustion Bomb Operating Instruction Manual No. 454M 6510 Water Handling System	0.01% Chlorine 0.01% Fluorine 0.01% Bromine 0.04% Sulphur (Coal only)	UKAS

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 5018	**XRF Analysis of Coal, Biomass, SRF and Cement**	When X-rays are targeted at a material they will cause electrons to be ejected from the component atoms (Ionisation). The ejection of electrons will cause the electronic structure of the component atoms to become unstable resulting in electrons from the higher energy outer orbitals "falling" into the inner orbitals to compensate. This causes a release of energy in the form of a photon equal to the energy difference between the two orbitals involved. Thus the material emits radiation which has energy characteristics of the atoms present. In energy dispersive X-ray fluorescence the fluorescent X-rays emitted are directed to a detector from which the data is processed by a multichannel analyser, producing a digital spectrum which is processed to obtain analytical data. The instrument analytical parameters are set up for the matrix type. A sample cell is prepared by placing a piece of prolene film over the outer cell and then inserting the inner cell. This gives a complete cell with a clear prolene base. A portion of the sample is placed into the cell and then analysed.	Rigaku NEX CG EDXRF instruction manual	**Cement:** 0.01% BaO, Cr_2O_3, CuO, PbO, Rb_2O, SrO, ZnO 0.02% Cl, V_2O_5 0.05% TiO_2 0.1% Mn_2O_3, P_2O_5, SO_3 0.5% K_2O 1% Al_2O_3, CaO, CdO, Co_2O_3, Fe_2O_3, MgO, Na_2O, NiO, SiO_2, Y_2O_3 **Fuel:** 0.01% Co, Cr, Cu, I, Li, Mn, Ni, P, Pb, Sn, Ti, V, Zn 0.02% Al, Ba, S, Si 0.1% Mg 0.2% Ca 0.5% As, Cd, Hg, Mo, Na, Sb, Se, Th, Tl 1% Ag	UKAS Al, As, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Mo, Na, Ni, P, Sb, Si, Sn, Tl, Ti, V, Zn Al2O3, BaO, CaO, Cl, Cr2O3, CuO, Fe2O3, K2O, MgO, Mn2O3, Na2O, P2O5, PbO, Rb2O, SiO2, SO3, SrO, TiO2, V2O5, ZnO All other testing not accredited
DETSC 5019	**Determination of Biodegradable Municipal Waste Content (Compositional Analysis)**	The method is based on handpicking the BMW fraction from the municipal waste sample, and then weighing the amount of BMW sorted and expressing this as a percentage on a wet weight basis of the weight of the whole municipal waste sample.	ENVIRONMENT AGENCY: Guidance on monitoring of MBT and other treatment processes for the landfill allowances schemes (LATS and LAS) for England and Wales	n/a	Not Accredited
DETSC 5020	**Determination of Bulk Density in Solid Biomass and Solid Recovered Fuels**	The test portion is filled into a standard container of a given size and shape and weighed afterwards. Bulk density is calculated from the net weight per standard volume and reported for the moisture content.	BS EN 15103:2009 Solid Biofuels- Determination of bulk density BS EN 15401:2010 Solid Recovered Fuels- Determination of bulk density	$0.5 kg/m^3$	Not Accredited

Method Number	Title	Description	Reference	LOD	Accreditation Status
DETSC 5021	**Auto Ignition Temperature**	A quantity of the sample is placed into a metal tray or crucible and placed into an oven or furnace. The temperature of the oven / furnace is increased in predefined increments and the temperature in which the sample ignites is noted.	None	25°C	Not Accredited

APPENDIX D

Statistical Analysis

Slag Dominant Made Ground Analysis Summary

Analyte	Number of Detections	Maximum Concentration (mg/kg)	Minimum Concentration (mg/kg)	Mean Concentration (mg/kg)	Standard Deviation
Aluminium	15	15	77000	8100	38721
Antimony	15	13	11	0.5	3.48
Arsenic	15	15	24	1.6	10.91
Barium	15	15	1300	160	412
Beryllium	15	15	9.7	0.4	4.84
Boron, Water Soluble	15	15	16	1.3	3.91
Cadmium	15	14	0.8	0.05	0.33
Chromium	15	15	750	9.1	176
Chromium, Hexavalent	15	0	0.5	0.5	0.50
Copper	15	15	220	10	53.57
Iron	15	15	180000	8900	54093
Lead	15	15	330	4.6	46.84
Magnesium	15	15	41000	14000	27643
Manganese	15	15	37000	870	8469.29
Mercury	15	11	0.68	0.025	0.17
Molybdenum	15	13	4.9	0.2	1.79
Nickel	15	15	35	2.9	12.60
Silicon	15	15	160000	38000	79357
Vanadium	15	15	3300	31	505
Zinc	15	15	550	33	132
pH	15	12.2	9.7	11.01	0.80
Cyanide, Total	15	50	0.1	8.44	13.67
Cyanide, Free	3	0.5	0.05	0.10	0.12
Thiocyanate	9	3.7	0.3	0.94	0.96
Organic matter	15	4.5	0.5	1.66	0.93
Sulphate Aqueous Extract as SO4	15	1100	17	463	311
Sulphur (free)	12	120	0.375	24.38	37.69
Phenols (monohydric)	7	0.6	0.3	0.42	0.10
Total PAH	14	2600	0.05	254	652

Where <MDL a value of 50% the MDL is used in statistical calculations

Granular Made Ground Analysis Summary

Analyte	Number of Detections	Maximum Concentration (mg/kg)	Minimum Concentration (mg/kg)	Mean Concentration (mg/kg)	Standard Deviation
Aluminium	77	53000	890	17299	10790
Antimony	72	69	0.5	6.11	8.93
Arsenic	77	2100	1.8	55.53	236
Barium	77	1100	40	337	207
Beryllium	75	7	0.1	2.04	1.40
Boron, Water Soluble	77	39	0.4	2.93	4.43
Cadmium	73	24	0.05	1.63	3.68
Chromium	77	740	1.7	131.88	142.58
Chromium, Hexavalent	0	0.5	0.5	0.50	0.00
Copper	77	20000	5.9	363	2261
Iron	77	450000	2700	81921	70506
Lead	77	1800	9.3	204	338
Magnesium	77	40000	1500	13240	8096
Manganese	77	99000	61	10540	16279
Mercury	66	4.1	0.025	0.50	0.84
Molybdenum	74	73	0.2	4.99	9.50
Nickel	77	200	1.6	36.10	31.46
Silicon	76	230000	9400	72722	42388
Vanadium	77	1700	7.9	332	395
Zinc	77	4200	37	499	803
pH	77	12.2	7.5	10.22	1.30
Cyanide, Total	74	3300	0.05	81.52	402
Cyanide, Free	19	4.5	0.05	0.18	0.52
Thiocyanate	36	69	0.3	2.18	8.14
Organic matter	77	14	0.4	3.71	3.31
Sulphate Aqueous Extract as SO4	77	1800	10	331	338
Sulphur (free)	44	1000	0.375	24.91	116
Phenols (monohydric)	15	210	0.3	15.49	52.04
Total PAH	70	110000	0.05	1722	12974

Where <MDL a value of 50% the MDL is used in statistical calculations

Cohesive Made Ground Analysis Summary

Analyte	Number of Detections	Maximum Concentration (mg/kg)	Minimum Concentration (mg/kg)	Mean Concentration (mg/kg)	Standard Deviation
Aluminium	6	19000	2700	13617	5413
Antimony	5	36	0.5	7.67	12.70
Arsenic	6	130	9.2	34.17	43.12
Barium	6	630	92	325	175
Beryllium	5	2	0.1	1.33	0.63
Boron, Water Soluble	6	2.6	1	1.92	0.54
Cadmium	5	5.7	0.05	1.21	2.01
Chromium	6	310	25	86.83	101.27
Chromium, Hexavalent	0	0.5	0.5	0.50	0.00
Copper	6	1400	23	269.17	506
Iron	6	650000	33000	144000	226460
Lead	6	550	36	144	184
Magnesium	6	9500	2600	5917	2486
Manganese	6	4000	440	1537	1191
Mercury	5	0.23	0.025	0.11	0.06
Molybdenum	6	61	0.7	11.07	22.33
Nickel	6	320	22	79.17	108
Silicon	6	190000	16000	123000	74124
Vanadium	6	210	40	99.83	59.50
Zinc	6	890	81	298	276
pH	6	10.7	8.5	9.40	0.85
Cyanide, Total	4	22	0.05	3.87	8.11
Cyanide, Free	1	0.1	0.05	0.06	0.02
Thiocyanate	3	0.7	0.3	0.48	0.19
Organic matter	6	6.4	1.2	2.85	1.74
Sulphate Aqueous Extract as SO4	6	770	130	305	212
Sulphur (free)	3	11	0.375	3.72	4.23
Phenols (monohydric)	2	0.8	0.4	0.60	0.20
Total PAH	5	14	0.49	4.26	4.97

Where <MDL a value of 50% the MDL is used in statistical calculations

Tidal Flat Deposits Analysis Summary

Analyte	Number of Detections	Maximum Concentration (mg/kg)	Minimum Concentration (mg/kg)	Mean Concentration (mg/kg)	Standard Deviation
Aluminium	10	21000	9000	13120	3276
Antimony	9	17	0.5	3.44	4.77
Arsenic	10	78	6.2	23.78	25.89
Barium	10	430	84	239	96.87
Beryllium	10	2.5	0.6	1.28	0.48
Boron, Water Soluble	10	3.1	0.5	1.43	0.70
Cadmium	9	2.7	0.05	0.51	0.74
Chromium	10	180	20	53.40	47.61
Chromium, Hexavalent	0	0.5	0.5	0.50	0.00
Copper	10	650	17	123	196
Iron	10	320000	23000	77500	87891
Lead	10	310	23	71.30	82.72
Magnesium	10	9500	2300	5360	2250
Manganese	10	4100	370	1449	1105
Mercury	6	0.19	0.025	0.08	0.06
Molybdenum	9	29	0.2	3.99	8.47
Nickel	10	200	11	53.80	52.10
Silicon	10	190000	48000	144100	43480
Vanadium	10	230	27	74.90	66.68
Zinc	10	510	58	186.60	144.43
pH	10	10.4	7.2	8.96	0.82
Cyanide, Total	8	120	0.05	12.77	35.75
Cyanide, Free	1	0.2	0.05	0.07	0.05
Thiocyanate	2	1.8	0.3	0.54	0.50
Sulphate Aqueous Extract as SO_4	10	8.6	0.4	3.63	2.61
Sulphur	10	540	35	215	159
Phenols (monohydric)	2	3.9	0.4	2.15	1.75
USEPA 16 PAH	6	1700	0.05	214	562

*Where <MDL a value of 50% the MDL is used in statistical calculations

Statistical analysis not conducted on Glaciolacustrine Deposits and Glacial Till due to limited sample numbers.

APPENDIX E

GQRA – Summary of Soil Screen

Table E1: Soil GAC Protective of Human Health

Contaminant of Concern	MDL	Units	Human Health (Commercial Worker)	GAC Source	Maximum Concentration Measured	Maximum Concentration Measured (Made Ground - Slag)	Maximum Concentration Measured (Cohesive Made Ground)	Maximum Concentration Measured (Granular Made Ground)	Maximum Concentration Measured (Tidal Flat Deposits)	Maximum Concentration Measured (Glaciolacustrine Deposits)	Maximum Concentration Measured (Glacial Till)
Metals											
Aluminium	1	mg/kg			77,000	77,000	19,000	53,000	21,000	17,000	15,000
Antimony	1	mg/kg	470	USEPA	69	11	36	69	17	10	1.5
Arsenic	0.2	mg/kg	640	S4UL	2100	24	130	2100	78	14	6.4
Barium	2	mg/kg	19,000	Arcadis	1,300	1,300	630	1,100	430	330	160
Beryllium	0.2	mg/kg	12	S4UL	10	10	2.0	7.0	2.5	1.9	1.2
Boron, Water Soluble	0.2	mg/kg	240,000	S4UL	39	16	2.6	39	3.1	3.2	1.1
Cadmium	0.1	mg/kg	190	S4UL	24	0.8	5.7	24	2.7	1.0	0.2
Chromium	0.15	mg/kg	8,600	S4UL	750	750	310	740	180	76	52
Chromium, Hexavalent	1	mg/kg	33	S4UL	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Copper	0.2	mg/kg	68,000	S4UL	20,000	220	1,400	20,000	650	420	32
Iron	25	mg/kg			650,000	180,000	650,000	450,000	320,000	46,000	32,000
Lead	0.3	mg/kg	2,300	C4SL	1,800	330	550	1,800	310	210	20
Magnesium	1	mg/kg			41,000	41,000	9,500	40,000	9,500	12,000	14,000
Manganese	20	mg/kg			99,000	37,000	4,000	99,000	4,100	1,800	1,200
Mercury	0.05	mg/kg	*58**	S4UL	4.1	0.7	0.2	4.1	0.2	0.3	0.8
Molybdenum	0.4	mg/kg	5,540	Arcadis	73	4.9	61	73	29	1.0	0.8
Nickel	1	mg/kg	980	S4UL	320	35	320	200	200	40	25
Silicon	10	mg/kg			230,000	160,000	190,000	230,000	190,000	180,000	140,000
Vanadium	0.8	mg/kg	9,000	S4UL	3,300	3,300	210	1,700	230	200	150
Zinc	1	mg/kg	730,000	S4UL	4,200	550	890	4,200	510	350	69
Inorganics											
Loss on Ignition at 440oC	0.01	%	-		26	0.00	0.00	26	0.00	0.00	0.00
pH		pH	-		12	12	11	12	10	10	11
Calorific Value	1	MJ/kg	-		14	0.00	0.00	14	0.00	0.00	8
Cyanide, Total	0.1	mg/kg			3300	50	22	3300	120	13	0.2
Cyanide, Free	0.1	mg/kg	150	USEPA	4.5	0.5	0.1	4.5	0.2	0.1	0.1
Thiocyanate	0.6	mg/kg	230	USEPA	69	3.7	0.7	69	1.8	0.7	0.3
Organic matter	0.1	%	-		14	4.5	6.4	14	8.6	5.8	1.9
Sulphate Aqueous Extract as SO4	10	mg/l	-		1,800	1,100	770	1,800	540	590	310
Sulphur (free)	0.75	mg/kg	-		1,000	120	11	1,000	6.8	5.2	0.9
Petroleum Hydrocarbons											
Aliphatic C5-C6	0.01	mg/kg	*3200***	S4UL	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Aliphatic C6-C8	0.01	mg/kg	*7800***	S4UL	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Aliphatic C8-C10	0.01	mg/kg	*2000***	S4UL	1.5	0.1	0.1	1.5	0.4	0.01	0.01
Aliphatic C10-C12	1.5	mg/kg	*9700***	S4UL	11	7.1	11	10	0.8	6.5	0.8
Aliphatic C12-C16	1.2	mg/kg	*59000***	S4UL	*130*	45	41	130	7.2	16	0.6
Aliphatic C16-C21	1.5	mg/kg	1,600,000	S4UL	*1,300*	190	260	1,300	31	45	0.8
Aliphatic C21-C35	3.4	mg/kg	1,600,000	S4UL	*6,100*	43	2,300	6,100	3.6	99	1.7
Aliphatic C5-C35	10	mg/kg	na		7,000	280	2,600	7,000	39	170	<10
Aromatic C5-C7	0.01	mg/kg	*26000***	S4UL	6.0	0.2	0.01	6.0	0.5	0.01	0.01
Aromatic C7-C8	0.01	mg/kg	*56000***	S4UL	5.6	0.1	0.1	5.6	0.2	0.01	0.01
Aromatic C8-C10	0.01	mg/kg	*3500***	S4UL	15	4.4	0.1	15	0.6	0.01	0.01
Aromatic C10-C12	0.9	mg/kg	*16000***	S4UL	*6,800*	6,800	2.1	1,700	85	1.3	0.5
Aromatic C12-C16	0.5	mg/kg	*36000***	S4UL	*3,500*	3,500	21	2,500	310	1.6	0.3
Aromatic C16-C21	0.6	mg/kg	28,000	S4UL	*1,400*	620	160	1,400	160	13	0.3
Aromatic C21-C35	1.4	mg/kg	28,000	S4UL	*6,600*	170	1,000	6,600	96	55	0.7
Aromatic C5-C35	10	mg/kg	na		11,000	11,000	1,200	8,100	650	71	<10
TPH Ali/Aro Total	10	mg/kg	na		15,000	11,000	3,800	15,000	690	240	5.0
EPH (C10-C40)	10	mg/kg	na		10,000	1,100	78	10,000	1,200	<10	<10
PAHs											
Naphthalene	0.03	mg/kg	*1,900*	Wood	37000	1,100	0.2	37000	440	0.3	0.1
Acenaphthylene	0.03	mg/kg	*83000***	S4UL	*5,600*	46	0.1	5,600	31	0.1	0.02
Acenaphthene	0.03	mg/kg	*84000***	S4UL	*1,300*	780	0.6	1,300	340	0.4	0.1
Fluorene	0.03	mg/kg	*63000***	S4UL	*6,200*	330	0.6	6,200	220	0.3	0.1
Phenanthrene	0.03	mg/kg	22,000	S4UL	*22,000*	230	3.1	22,000	290	0.3	0.2
Anthracene	0.03	mg/kg	520,000	S4UL	*5,700*	49	0.5	5,700	53	0.1	0.0
Fluoranthene	0.03	mg/kg	23,000	S4UL	*11,000*	41	3.0	11,000	87	1.0	0.1
Pyrene	0.03	mg/kg	54,000	S4UL	*9,700*	37	2.3	9,700	62	0.9	0.1
Benzo(a)anthracene	0.03	mg/kg	170	S4UL	4600	20	0.7	4600	27	0.4	0.1
Chrysene	0.03	mg/kg	350	S4UL	3600	12	0.9	3600	23	0.4	0.1
Benzo(b)fluoranthene	0.03	mg/kg	44	S4UL	91	18	0.9	91	23	0.4	0.1
Benzo(k)fluoranthene	0.03	mg/kg	1,200	S4UL	*59*	5.6	0.3	59	10	0.2	0.02
Benzo(a)pyrene	0.03	mg/kg	77	Wood	120	9.4	0.6	120	20	0.3	0.03
Indeno(1,2,3-c,d)pyrene	0.03	mg/kg	500	S4UL	*53*	3.1	0.3	53	8.6	0.1	0.02
Dibenzo(a,h)anthracene	0.03	mg/kg	3.5	S4UL	15	1.1	0.1	15	2.5	0.03	0.02
Benzo(g,h,i)perylene	0.03	mg/kg	3,900	S4UL	64	3.2	0.4	64	10	0.2	0.02
PAH - USEPA 16, Total	0.1	mg/kg	na		7,700	2,600	14	110,000	1,700	4.3	1.0
PCBs											
PCB 28 + PCB 31	0.01	mg/kg	-		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 52	0.01	mg/kg	-		0.26	<0.01	<0.01	0.26	<0.01	<0.01	<0.01
PCB 101	0.01	mg/kg	-		0.44	<0.01	<0.01	0.44	<0.01	<0.01	<0.01
PCB 118	0.01	mg/kg	-		0.40	<0.01	<0.01	0.40	<0.01	<0.01	<0.01
PCB 153	0.01	mg/kg	-		0.24	<0.01	<0.01	0.24	<0.01	<0.01	<0.01
PCB 138	0.01	mg/kg	-		0.40	<0.01	<0.01	0.40	<0.01	<0.01	<0.01
PCB 180	0.01	mg/kg	-		0.05	<0.01	<0.01	0.05	<0.01	<0.01	<0.01
PCB 7 Total	0.01	mg/kg	na		1.80	<0.01	<0.01	1.80	<0.01	<0.01	<0.01
Phenols											
Phenol - Monohydric	0.3	mg/kg	760	S4UL	9	1	1	210	4	1	1

The following GACs have been used in order of availablity:

S4UL: (Commercial End Use, 1% SOM)	LQM / CIEH (2015) The LQM / CIEH S4ULs for Human Health Risk Assessment. Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3223. All rights reserved.
C4SL: (Commerical End Use)	Department for Environment, Food and Rural Affairs (DEFRA) (2014) SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document, December 2014
Arcadis	Where published criteria above are not available, Arcadis has derived GAC based on EA guidance and assumptions in line with current industry standards and standard CLEA inputs for a commerical land use.
USEPA	GAC based on US Environmental Protection Agency (USEPA) Regional Screening Levels (RSL). Available at https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables

Wood derived GAC based on CLEA v1.07 were presented in the Wood 2019 report for benzo(a)pyrene and naphthalene. It is understood that these values were acceptable to the regulator for this site and as such they have been retained here.

Notes

GAC	Generic Assessment Criteria
na	Comprises multiple contaminant, no applicable GAC
*123**	S4UL exceeds the vapour saturation limit
*123***	S4UL exceeds the solubility saturation limit
-	No applicable GAC readily available
▨	Elements present naturally in soil with typically low toxicity
<0.1	Concentration less then the method detection limit
-	Not analysed
🟥	Contaminant of Concern in excess of Human Health GAC

Table F1: Leachate GAC Protective of Human Health and Water Resources

Contaminant of Concern	MDL	Units	Human Health Inhalation GAC (On-site Commerical Worker)	EQS (Estuaries and Coastal Waters)	DWS	Maximum Concentration Measured
Metals						
Antimony, Dissolved	0.17	ug/l	NVP	-	5	18
Arsenic, Dissolved	0.16	ug/l	NVP	25	10	41
Barium, Dissolved	0.26	ug/l	NVP	-	700	70
Beryllium, Dissolved	0.1	ug/l	NVP	-	-	<0.1
Boron, Dissolved	12	ug/l	NVP	7000	1000	180
Cadmium, Dissolved	0.03	ug/l	NVP	0.2	5	0.11
Chromium, Dissolved	0.25	ug/l	NVP	-	50	43
Chromium, Hexavalent	7	ug/l	-	0.6		8.1
Copper, Dissolved	0.4	ug/l	NVP	3.76	2000	30
Iron, Dissolved	5.5	ug/l	NVP	1000	200	1700
Lead, Dissolved	0.09	ug/l	NVP	1.3	10	16
Magnesium, Dissolved	0.02	mg/l	NVP	-	-	24
Manganese, Dissolved	0.22	ug/l	NVP	-	50	890
Mercury, Dissolved	0.01	ug/l	NVP	0.07	1	1.2
Molybdenum, Dissolved	1.1	ug/l	-	-	70	77
Nickel, Dissolved	0.5	ug/l	NVP	8.6	20	18
Vanadium, Dissolved	0.6	ug/l	NVP	100	-	26
Zinc, Dissolved	1.3	ug/l	NVP	7.9	3000	33
Inorganics						
pH	-	pH	-	6 - 8.5	-	10.7
Cyanide, Total	40	ug/l	-	1	50	2200
Ammoniacal Nitrogen as N	0.015	mg/l	-	-	0.5	3.2
Chloride	0.1	mg/l	-	-	-	15
Sulphate as SO4	0.1	mg/l	-	-	-	400
Petroleum Hydrocarbons						
Aliphatic C5-C6	0.1	ug/l	>SOL	#	#	<0.1
Aliphatic C6-C8	0.1	ug/l	>SOL	#	#	19
Aliphatic C8-C10	0.1	ug/l	>SOL	#	#	820
Aliphatic C10-C12	1	ug/l	>SOL	#	#	7.1
Aliphatic C12-C16	1	ug/l	>SOL	#	#	340
Aliphatic C16-C21	1	ug/l	NR	#	#	130
Aliphatic C21-C35	1	ug/l	NR			1000
Aromatic C5-C7	0.1	ug/l	57000	8	1	6.6
Aromatic C7-C8	0.1	ug/l	>SOL	74	700	15
Aromatic C8-C10	0.1	ug/l	>SOL	#	#	<0.1
Aromatic C10-C12	1	ug/l	>SOL	#	#	3400
Aromatic C12-C16	1	ug/l	>SOL	#	#	13000
Aromatic C16-C21	1	ug/l	NR	#	#	610
Aromatic C21-C35	1	ug/l	NR	#	#	670
TPH Ali/Aro Total	10	ug/l	na	50*	10**	17000
PAHs						
Naphthalene	0.05	ug/l	>SOL	2	2	11000
Acenaphthylene	0.01	ug/l	>SOL	-	-	390
Acenaphthene	0.01	ug/l	>SOL	-	-	1100
Fluorene	0.01	ug/l	>SOL	-	-	380
Phenanthrene	0.01	ug/l	>SOL	-	-	360
Anthracene	0.01	ug/l	>SOL	0.1	-	57
Fluoranthene	0.01	ug/l	>SOL	0.0063	-	66
Pyrene	0.01	ug/l	>SOL	-	-	41
Benzo(a)anthracene	0.01	ug/l	>SOL	-	-	24
Chrysene	0.01	ug/l	>SOL	-	-	20
Benzo(b)fluoranthene	0.01	ug/l	>SOL	0.017	0.025	35
Benzo(k)fluoranthene	0.01	ug/l	>SOL	0.017	0.025	11
Benzo(a)pyrene	0.01	ug/l	>SOL	0.027	0.01	21
Indeno(1,2,3-c,d)pyrene	0.01	ug/l	>SOL	-	0.025	22
Dibenzo(a,h)anthracene	0.01	ug/l	>SOL	-	-	10
Benzo(g,h,i)perylene	0.01	ug/l	>SOL	0.00082	0.025	20
PAH Total	0.2	ug/l	>SOL	na		13000
Phenols						
Phenol - Monohydric	100	ug/l	>SOL	7.7	7.7	2600

The following GACs have been used:

Arcadis	Where published criteria above are not available, Arcadis has derived GAC based on EA guidance and assumptions in line with current industry standards and standard CLEA inputs for a commerical land use.

Notes

GAC	Generic Assessment Criteria
DWS	Drinking Water Standard
EQS	Environmental Quality Standard (Estuaries and Coastal Waters)
NVP	Contaminant has low vapour phase in groundwater
>SOL	Target acceptable risk not exceeded at the theoretical solubility concentration
NR	No appropriate inhalation reference dose identified during review of toxicological data
na	Comprises multiple contaminant, no applicable GAC
-	No water quality standard identified as suitable for deriving generic assessment criteria
#	No GAC for individua TPH fractions given that the compliacne criteria is for sum TPH
<0.1	Concentration less then the method detection limit
🟥	Contaminant of Concern in excess of Human Health GAC
1.23	Contaminant of Concern in excess of DWS
1.23	Contaminant of Concern in excess of EQS
1.23	Contaminant of Concern in excess of DWS and EQS
*	EC Surface Water Directive, 1975
**	Water Supply (Water Quality) Regulation, 1989

Table E2: Soil GAC Protective of Human Health

Contaminant of Concern	MDL	Units	Human Health (Commercial Worker)	GAC Source	Maximum Concentration Measured
VOCs					
Vinyl Chloride	0.01	mg/kg	0.059	S4UL	<0.01
1,1 Dichloroethylene	0.01	mg/kg	1,000	USEPA	<0.01
Trans-1,2-dichloroethylene	0.01	mg/kg	23,000	USEPA	<0.01
1,1-dichloroethane	0.01	mg/kg	16	USEPA	<0.01
Cis-1,2-dichloroethylene	0.01	mg/kg	2,300	USEPA	<0.01
2,2-dichloropropane	0.01	mg/kg	-		<0.01
Bromochloromethane	0.01	mg/kg	630	USEPA	<0.01
Chloroform	0.01	mg/kg	99	S4UL	<0.01
1,1,1-trichloroethane	0.01	mg/kg	660	S4UL	<0.01
1,1-dichloropropene	0.01	mg/kg	-		<0.01
Carbon tetrachloride	0.01	mg/kg	2.9	S4UL	<0.01
Benzene	0.01	mg/kg	27	S4UL	13
1,2-dichloroethane	0.01	mg/kg	0.67	S4UL	0.64
Trichloroethylene	0.01	mg/kg	1.2	S4UL	<0.01
1,2-dichloropropane	0.01	mg/kg	11.0	USEPA	<0.01
Dibromomethane	0.01	mg/kg	99.0	USEPA	<0.01
Bromodichloromethane	0.01	mg/kg	1.3	USEPA	<0.01
cis-1,3-dichloropropene	0.01	mg/kg	8.2	USEPA	<0.01
Toluene	0.01	mg/kg	56,000	S4UL	12
trans-1,3-dichloropropene	0.01	mg/kg	8.2	USEPA	<0.01
1,1,2-trichloroethane	0.01	mg/kg	5	USEPA	<0.01
Tetrachloroethylene	0.01	mg/kg	19	S4UL	<0.01
1,3-dichloropropane	0.01	mg/kg	23,000	USEPA	<0.01
Dibromochloromethane	0.01	mg/kg	39	USEPA	<0.01
1,2-dibromoethane	0.01	mg/kg	0.16	USEPA	<0.01
Chlorobenzene	0.01	mg/kg	56	S4UL	<0.01
1,1,1,2-tetrachloroethane	0.01	mg/kg	110	S4UL	0.01
Ethylbenzene	0.01	mg/kg	5,700	S4UL	2.3
m+p-Xylene	0.01	mg/kg	5,900	S4UL	17
o-Xylene	0.01	mg/kg	6,600	S4UL	8.1
Styrene	0.01	mg/kg	35,000	USEPA	5.6
Bromoform	0.01	mg/kg	86	USEPA	<0.01
Isopropylbenzene	0.01	mg/kg	-		0.2
Bromobenzene	0.01	mg/kg	1,800	USEPA	<0.01
1,2,3-trichloropropane	0.01	mg/kg	0.11	USEPA	<0.01
n-propylbenzene	0.01	mg/kg	-		<0.01
2-chlorotoluene	0.01	mg/kg	23,000	USEPA	<0.01
1,3,5-trimethylbenzene	0.01	mg/kg	1,500	USEPA	7.0
4-chlorotoluene	0.01	mg/kg	23,000	USEPA	<0.01
Tert-butylbenzene	0.01	mg/kg	120,000	USEPA	2.9
1,2,4-trimethylbenzene	0.01	mg/kg	1,800	USEPA	10
sec-butylbenzene	0.01	mg/kg	120,000	USEPA	<0.01
p-isopropyltoluene	0.01	mg/kg	-		0.27
1,3-dichlorobenzene	0.01	mg/kg	30	S4UL	<0.01
1,4-dichlorobenzene	0.01	mg/kg	4,400	S4UL	<0.01
n-butylbenzene	0.01	mg/kg	58,000	USEPA	<0.01
1,2-dichlorobenzene	0.01	mg/kg	2,000	S4UL	<0.01
1,2-dibromo-3-chloropropane	0.01	mg/kg	0.06	USEPA	<0.01
1,2,4-trichlorobenzene	0.01	mg/kg	220	S4UL	<0.01
Hexachlorobutadiene	0.01	mg/kg	31	S4UL	<0.01
1,2,3-trichlorobenzene	0.01	mg/kg	102	S4UL	0.53
MTBE	0.01	mg/kg	210	USEPA	<0.01

The following GACs have been used in order of availablity:

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C4SL: (Commerical End Use)	Department for Environment, Food and Rural Affairs (DEFRA) (2014) SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document, December 2014
Arcadis	Where published criteria above are not available, Arcadis has derived GAC based on EA guidance and assumptions in line with current industry standards and standard CLEA inputs for a commerical land use.
USEPA	GAC based on US Environmental Protection Agency (USEPA) Regional Screening Levels (RSL). Available at https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables

Notes

GAC	Generic Assessment Criteria
na	Comprises multiple contaminant, no applicable GAC
*123**	S4UL exceeds the vapour saturation limit
*123***	S4UL exceeds the solubility saturation limit
-	No applicable GAC readily available
■	Elements present naturally in soil with typically low toxicity
<0.1	Concentration less then the method detection limit
-	Not analysed
🟥	Contaminant of Concern in excess of Human Health GAC

Table F3: Soil GAC Protective of Human Health

Contaminant of Concern	MDL	Units	Human Health (Commercial Worker)	GAC Source	Maximum Concentration Measured
3&4-Methylphenol	0.1	mg/kg	82,000	USEPA	150
2,4-Dimethylphenol	0.1	mg/kg	16,000	USEPA	4.7
Bis-(dichloroethoxy)methane	0.1	mg/kg	-		<0.01
2,4-Dichlorophenol	0.1	mg/kg	2,500	USEPA	<0.01
1,2,4-Trichlorobenzene	0.1	mg/kg	110	USEPA	<0.01
4-Chloro-3-methylphenol	0.1	mg/kg	82,000	USEPA	<0.01
2-Methylnaphthalene	0.1	mg/kg	3,000	USEPA	3000
Hexachlorocyclopentadiene	0.1	mg/kg	8	USEPA	<0.01
2,4,6-Trichlorophenol	0.1	mg/kg	210	USEPA	<0.01
2,4,5-Trichlorophenol	0.1	mg/kg	82,000	USEPA	<0.01
2-Chloronaphthalene	0.1	mg/kg	60,000	USEPA	<0.01
2-Nitroaniline	0.1	mg/kg	8,000	USEPA	<0.01
2,4-Dinitrotoluene	0.1	mg/kg	7.4	USEPA	<0.01
3-Nitroaniline	0.1	mg/kg	-		<0.01
4-Nitrophenol	0.1	mg/kg	-		<0.01
Dibenzofuran	0.1	mg/kg	1,000	USEPA	3300
2,6-Dinitrotoluene	0.1	mg/kg	1.50	USEPA	<0.01
2,3,4,6-Tetrachlorophenol	0.1	mg/kg	25,000	USEPA	<0.01
Diethylphthalate	0.1	mg/kg	660,000	USEPA	<0.01
4-Chlorophenylphenylether	0.1	mg/kg	-		<0.01
4-Nitroaniline	0.1	mg/kg	110	USEPA	<0.01
2-Methyl-4,6-Dinitrophenol	0.1	mg/kg	-		<0.01
Diphenylamine	0.1	mg/kg	82,000	USEPA	<0.01
4-Bromophenylphenylether	0.1	mg/kg	-		<0.01
Hexachlorobenzene	0.1	mg/kg	110	S4UL	<0.01
Pentachlorophenol	0.1	mg/kg	400	S4UL	<0.01
Di-n-butylphthalate	0.1	mg/kg	-		<0.01
Butylbenzylphthalate	0.1	mg/kg	1,200	USEPA	<0.01
Bis(2-ethylhexyl)phthalate	0.1	mg/kg	160	USEPA	1.0
Di-n-octylphthalate	0.1	mg/kg	8,200	USEPA	<0.01
1,4-Dinitrobenzene	0.1	mg/kg	82	USEPA	72
Dimethylphthalate	0.1	mg/kg	-		<0.01
1,3-Dinitrobenzene	0.1	mg/kg	82	USEPA	<0.01
1,2-Dinitrobenzene	0.1	mg/kg	82	USEPA	<0.01
2,3,5,6-Tetrachlorophenol	0.1	mg/kg	-		<0.01
Azobenzene	0.1	mg/kg	26	USEPA	<0.01
Carbazole	0.1	mg/kg	-		2200

The following GACs have been used in order of availablity:

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C4SL: (Commerical End Use)	Department for Environment, Food and Rural Affairs (DEFRA) (2014) SP1010: Development of
Arcadis	Where published criteria above are not available, Arcadis has derived GAC based on EA
USEPA	GAC based on US Environmental Protection Agency (USEPA) Regional Screening Levels

Notes

GAC	Generic Assessment Criteria
na	Comprises multiple contaminant, no applicable GAC
*123**	S4UL exceeds the vapour saturation limit
*123***	S4UL exceeds the solubility saturation limit
-	No applicable GAC readily available
▨	Elements present naturally in soil with typically low toxicity
<0.1	Concentration less then the method detection limit
-	Not analysed
🟥	Contaminant of Concern in excess of Human Health GAC

APPENDIX F

GQRA – Summary of Soil Leachate Screen

Table G1: Groundwater GAC Protective of Human Health and Water Resources

Contaminant of Concern	MDL	Units	Human Health Inhalation GAC (On-site Commerical Worker)	EQS (Estuaries and Coastal Waters)	DWS	Maximum Concentration Measured (5 and 6 May 2020)	Maximum Concentration Measured - Made Ground (5 and 6 May 2020)	Maximum Concentration Measured - Glacial Lacustrine (5 and 6 May 2020)	Maximum Concentration Measured - Glacial Till (5 and 6 May 2020)	Maximum Concentration Measured - Mercia Mudstone (5 and 6 May 2020)	Maximum Concentration Measured - Redcar Mudstone Formation (5 and 6 May 2020)
Metals											
Aluminium, Dissolved	10	ug/l	-	-	200	710	80	710	470	170	260
Antimony, Dissolved	0.17	ug/l	NVP	-	5	2.4	1.3	2.4	1.3	0.69	1.2
Arsenic, Dissolved	0.16	ug/l	NVP	25	10	6.7	6.7	5.3	3.7	1.7	5.1
Barium, Dissolved	0.26	ug/l	NVP	-	700	1000	1000	68	110	87	180
Beryllium, Dissolved	0.1	ug/l	NVP	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Boron, Dissolved	12	ug/l	NVP	7000	1000	520	370	440	390	520	86
Cadmium, Dissolved	0.03	ug/l	NVP	0.2	5	0.14	0.14	0.07	0.08	<0.03	<0.03
Calcium, Dissolved	0.09	mg/l	-	-	-	980	980	940	340	930	38
Chromium, Total	0.25	ug/l	NVP	-	50	110	110	26	57	30	110
Chromium, Hexavalent	7	ug/l	-	0.6		<7	<7	<7	<7	<7	<7
Copper, Dissolved	0.4	ug/l	NVP	3.76	2000	11	11	4.6	2.2	3.1	0
Iron, Dissolved	5.5	ug/l	NVP	1000	200	780	17	780	600	73	160
Lead, Dissolved	0.09	ug/l	NVP	1.3	10	20	20	1.1	1	0.44	0.15
Magnesium, Dissolved	0.02	mg/l	NVP	-	-	93	0.14	93	88	90	17
Manganese, Dissolved	0.22	ug/l	NVP	-	50	810	6.5	720	810	590	85
Mercury, Dissolved	0.01	ug/l	NVP	0.07	1	0.33	0.06	0.11	0.13	0.09	0.33
Molybdenum, Dissolved	1.1	ug/l	-	-	70	51	11	51	33	17	23
Nickel, Dissolved	0.5	ug/l	NVP	8.6	20	7.1	7.1	4.1	4.5	3.7	1.2
Sodium, Dissolved	0.07	mg/l	-	-	200	320	31	320	310	220	99
Vanadium, Dissolved	0.6	ug/l	NVP	100	-	17	2.1	17	11	0.9	1.2
Zinc, Dissolved	1.3	ug/l	NVP	7.9	3000	86	86	6.7	5.5	16	<1.3
Inorganics											
pH	-	pH	-	6 - 8.5	-	12.5	12.5	9.2	8.5	8.2	7.9
Cyanide, Total	40	ug/l	-	1	50	410	410	100	64	<40	<40
Cyanide, Free	20	ug/l	-	-	-	86	<20	86	27	<20	<20
Thiocyanate	40	ug/l	-	-	-	150	150	120	130	94	130
DOC	2	mg/l	-	-	-	24	15	7.9	24	2.2	12
Ammoniacal Nitrogen as N	0.015	mg/l	-	-	0.5	1	1	0.8	0.98	0.32	0.45
Chloride	0.1	mg/l	-	-	-	240	29	240	230	85	83
Nitrate as N	0.1	mg/l	-	-	50	1.1	0.29	1.1	0.32	0.32	0.26
Nitrite as N	0.035	mg/l	-	-	0.5	0.049	<0.035	0.049	<0.035	<0.035	<0.035
Salinity (Calculated)	0.01	%	-	-	-	3.3	3.3	1.4	1.4	1.5	0.4
Silicate as SiO2	0.1	mg/l	-	-	-	16	2	12	16	9.4	8.1
Sulphate as SO4	0.1	mg/l	-	-	-	1500	510	1300	840	1500	54
Sulphur (free)	84	ug/l	-	-	-	460	<84	<84	<84	<84	460
Petroleum Hydrocarbons											
Aliphatic C5-C6	0.1	ug/l	>SOL	#	#	20	<0.1	<0.1	<0.1	<0.1	20
Aliphatic C6-C8	0.1	ug/l	>SOL	#	#	160	<0.1	<0.1	<0.1	<0.1	160
Aliphatic C8-C10	0.1	ug/l	>SOL	#	#	210	<0.1	<0.1	<0.1	<0.1	210
Aliphatic C10-C12	1	ug/l	>SOL	#	#	13	<1	<1	<1	<1	13
Aliphatic C12-C16	1	ug/l	>SOL	#	#	330	<1	<1	<1	<1	330
Aliphatic C16-C21	1	ug/l	NR	#	#	1200	<1	<1	<1	<1	1200
Aliphatic C21-C35	1	ug/l	NR			230	<1	<1	<1	<1	230
Aliphatic C5-C35	10	ug/l	na	-	-	2200	<10	<10	<10	<10	2200
Aromatic C5-C7	0.1	ug/l	57000	8	1	130	<0.1	<0.1	<0.1	<0.1	130
Aromatic C7-C8	0.1	ug/l	>SOL	74	700	41	<0.1	<0.1	<0.1	<0.1	41
Aromatic C8-C10	0.1	ug/l	>SOL	#	#	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aromatic C10-C12	1	ug/l	>SOL	#	#	1200	<1	6.4	<1	<1	1200
Aromatic C12-C16	1	ug/l	>SOL	#	#	4600	<1	24	<1	14	4600
Aromatic C16-C21	1	ug/l	NR	#	#	1100	<1	8.5	<1	16	1100
Aromatic C21-C35	1	ug/l	NR	#	#	140	<1	1.1	<1	1.3	140
Aromatic C5-C35	10	ug/l	na	-	-	7200	<10	40	<10	31	7200
TPH Ali/Aro Total	10	ug/l	na	50*	10**	9400	<10	40	<10	31	9400
PAHs											
Naphthalene	0.05	ug/l	>SOL	2	2	4900	690	1.4	0.57	4.3	4900
Acenaphthylene	0.01	ug/l	>SOL	-	-	69	69	0.23	0.07	1.1	19
Acenaphthene	0.01	ug/l	>SOL	-	-	1600	690	3.5	1.3	22	1600
Fluorene	0.01	ug/l	>SOL	-	-	540	310	2	0.85	23	540
Phenanthrene	0.01	ug/l	>SOL	-	-	630	210	2.7	1	44	630
Anthracene	0.01	ug/l	>SOL	0.1	-	55	35	0.4	0.14	6.2	55
Fluoranthene	0.01	ug/l	>SOL	0.0063	-	35	28	0.46	0.17	4.5	35
Pyrene	0.01	ug/l	>SOL	-	-	21	18	0.3	0.12	2.6	21
Benzo(a)anthracene	0.01	ug/l	>SOL	-	-	6.4	3.4	0.11	0.03	0.35	6.4
Chrysene	0.01	ug/l	>SOL	-	-	5.9	3.7	0.11	0.04	0.61	5.9
Benzo(b)fluoranthene	0.01	ug/l	>SOL	0.017	0.025	5.8	4.5	0.24	0.04	0.4	5.8
Benzo(k)fluoranthene	0.01	ug/l	>SOL	0.017	0.025	2.6	1.5	0.06	0.02	0.1	2.6
Benzo(a)pyrene	0.01	ug/l	>SOL	0.027	0.01	2.8	2.4	0.12	0.02	0.22	2.8
Indeno(1,2,3-c,d)pyrene	0.01	ug/l	>SOL	-	0.025	2.6	1.2	0.21	0.04	0.32	2.6
Dibenzo(a,h)anthracene	0.01	ug/l	>SOL	-	-	0.11	0.11	0.04	0	0.05	0
Benzo(g,h,i)perylene	0.01	ug/l	>SOL	0.00082	0.025	2.6	1.6	0.2	0.05	0.3	2.6
PAH Total	0.2	ug/l	>SOL	-	-	7800	2100	11	4.3	110	7800
Phenols											
Phenol - Monohydric	100	ug/l	>SOL	7.7	7.7	3400	3400	<100	<100	<100	<100

The following GACs have been used:

Arcadis	Where published criteria above are not available, Arcadis has derived GAC based on EA guidance and assumptions in line with current industry standards and standard CLEA inputs for a commerical land use.

Notes

GAC	Generic Assessment Criteria
DWS	Drinking Water Standard
EQS	Environmental Quality Standard (Estuaries and Coastal Waters)
NVP	Contaminant has low vapour phase in groundwater
>SOL	Target acceptable risk not exceeded at the theoretical solubility concentration
NR	No appropriate inhalation reference dose identified during review of toxicological
na	Comprises multiple contaminant, no applicable GAC
-	No water quality standard identified as suitable for deriving generic assessment
#	No GAC for individua TPH fractions given that the compliacne criteria is for sum
<0.1	Concentration less then the method detection limit
🟥	Contaminant of Concern in excess of Human Health GAC
1.23	Contaminant of Concern in excess of DWS
1.23	Contaminant of Concern in excess of EQS
1.23	Contaminant of Concern in excess of DWS and EQS
*	EC Surface Water Directive, 1975
**	Water Supply (Water Quality) Regulation, 1989
1	Based on values of 0.4µg/l for sum trichlorobenzene
2	Based on values of 10µg/l combined for TCE and PCE and 50µg/l combined for cis-DCE and trans-DCE
3	Total value for trihalomethanes (chloroform, bromoform, dibromochloromethane and bromodichloromethane).

APPENDIX G

GQRA – Summary of Groundwater Screen

Table G2: Groundwater GAC Protective of Human Health and Water Resources

Contaminant of Concern	MDL	Units	Human Health Inhalation GAC (On-site Commerical Worker)	EQS (Estuaries and Coastal Waters)	DWS	Maximum Concentration Measured (5 and 6 May 2020)	Maximum Concentration Measured - Made Ground (5 and 6 May 2020)	Maximum Concentration Measured - Glacial Lacustrine (5 and 6 May 2020)	Maximum Concentration Measured - Glacial Till (5 and 6 May 2020)	Maximum Concentration Measured - Mercia Mudstone (5 and 6 May 2020)	Maximum Concentration Measured - Redcar Mudstone Formation (5 and 6 May 2020)
VOCs											
Dichlorodifluoromethane	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
Chloromethane	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
Vinyl Chloride	1	ug/l	5000	-	0.5	<1	<1	<1	<1	<1	<1
Bromomethane	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
Chloroethane	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
1,1-dichloroethylene	1	ug/l	740000	-	140	<1	<1	<1	<1	<1	<1
Methylene Chloride	27	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
Trans-1,2-dichloroethylene	1	ug/l	430000	-	25[2]	<1	<1	<1	<1	<1	<1
1,1-dichloroethane	1	ug/l	1600000	-	2.7	<1	<1	<1	<1	<1	<1
Cis-1,2-dichloroethylene	1	ug/l	120000	-	25[2]	<1	<1	<1	<1	<1	<1
2,2-dichloropropane	2	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
Bromochloromethane	4	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
Chloroform	1	ug/l	820000	2.5	100[3]	<1	<1	<1	<1	<1	<1
1,1,1-trichloroethane	1	ug/l	>SOL	100	2000	<1	<1	<1	<1	<1	<1
1,1-dichloropropene	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
Benzene	1	ug/l	57000	8	1	<1	<1	<1	<1	<1	<1
1,2-dichloroethane	1	ug/l	3600	10	3	7	<1	<1	<1	<1	7
Trichloroethylene	1	ug/l	13000	10	5[2]	<1	<1	<1	<1	<1	<1
1,2-dichloropropane	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
Dibromomethane	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
Bromodichloromethane	4	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
cis-1,3-dichloropropene	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
Toluene	1	ug/l	>SOL	74	700	48	<1	<1	<1	<1	48
trans-1,3-dichloropropene	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
1,1,2-trichloroethane	1	ug/l	-	300	-	<1	<1	<1	<1	<1	<1
Tetrachloroethylene	1	ug/l	140000	10	5[2]	<1	<1	<1	<1	<1	<1
1,3-dichloropropane	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
Dibromochloromethane	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
1,2-dibromoethane	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
Chlorobenzene	1	ug/l	130000	-	100	<1	<1	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	ug/l	>SOL	-	300	11	<1	<1	<1	<1	11
m+p-Xylene	2	ug/l	>SOL	30	500	77	<1	<1	<1	<1	77
o-Xylene	1	ug/l	>SOL			30	<1	<1	<1	<1	30
Styrene	1	ug/l	-	-	-	4	<1	<1	<1	<1	4
Bromoform	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
Isopropylbenzene	1	ug/l	-	-	-	1	<1	<1	<1	<1	1
1,1,2,2-tetrachloroethane	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
Bromobenzene	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
1,2,3-trichloropropane	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
n-propylbenzene	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
2-chlorotoluene	1	ug/l	-	-	-	2	<1	<1	<1	<1	2
1,3,5-trimethylbenzene	1	ug/l	-	-	-	14	<1	<1	<1	<1	14
4-chlorotoluene	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
Tert-butylbenzene	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
1,2,4-trimethylbenzene	1	ug/l	-	-	-	34	<1	<1	<1	<1	34
sec-butylbenzene	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
p-isopropyltoluene	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
1,3-dichlorobenzene	2	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
1,4-dichlorobenzene	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
n-butylbenzene	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
1,2-dichlorobenzene	1	ug/l	-	-	-	<1	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	1	ug/l	-	-	-	64	<1	64	<1	<1	<1
1,2,4-trichlorobenzene	1	ug/l	-	0.4[1]	-	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	1	ug/l	-	0.6	-	<1	<1	<1	<1	<1	<1
1,2,3-trichlorobenzene	1	ug/l	-	0.4[1]	-	<1	<1	<1	<1	<1	<1
MTBE	1	ug/l	24000000	-	15	<1	<1	<1	<1	<1	<1

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