

Results Summary - 2 Stage WAC

Project: P14127- Bantry

Chemtest Job No: 15-00369		Chemtest Sample ID: 87537		Sample Ref:		Sample ID: SL7-SL7.4		Top Depth(m): 4.00		Bottom Depth(m):		Sampling Date: 06-Jan-2015	
Determinand	SOP	Accred.	Units	8:1 mg/l	2:1 mg/kg	Cumulative 10:1 mg/kg	Inert Waste Landfill	Stable Non- reactive Hazardous waste in non- hazardous	Hazardous Waste Landfill				
Total Organic Carbon	2625	U	%			0.39	3	5	6				
Loss on Ignition	2610	U	%			1.4	--	--	10				
Total BTEX	2760	U	mg/kg			<0.01	6	--	--				
Total PCBs (7 congeners)	2815	U	mg/kg			<0.10	1	--	--				
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			<10	500	--	--				
Total (of 17) PAHs	2700	N	mg/kg			<2.0	100	--	--				
pH	2010	U				8.4	--	>6	--				
Acid Neutralisation Capacity	2015	N	mol/kg			0.002	--	To evaluate	To evaluate				
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative 10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg						
Arsenic	1450	U	0.003	<0.001	<0.050	<0.050	0.5	2	25				
Barium	1450	U	0.016	<0.001	<0.50	<0.50	20	100	300				
Cadmium	1450	U	<0.0001	<0.0001	<0.010	<0.010	0.04	1	5				
Chromium	1450	U	0.015	0.009	<0.050	0.093	0.5	10	70				
Copper	1450	U	0.007	<0.0005	<0.050	<0.050	2	50	100				
Mercury	1450	U	<0.0005	<0.0005	<0.001	<0.005	0.01	0.2	2				
Molybdenum	1450	U	0.009	0.002	<0.050	<0.050	0.5	10	30				
Nickel	1450	U	0.005	<0.001	<0.050	<0.050	0.4	10	40				
Lead	1450	U	<0.001	<0.001	<0.010	<0.010	0.5	10	50				
Antimony	1450	U	0.001	<0.001	<0.010	<0.010	0.06	0.7	5				
Selenium	1450	U	0.005	<0.001	<0.010	<0.010	0.1	0.5	7				
Zinc	1450	U	0.015	0.001	<0.50	<0.50	4	50	200				
Chloride	1220	U	70	36	140	400	800	15000	25000				
Fluoride	1220	U	0.65	0.22	1.3	2.7	10	150	500				
Sulphate	1220	U	69	7.5	140	150	1000	20000	50000				
Total Dissolved Solids	1020	N	900	130	1800	2200	4000	60000	100000				
Phenol Index	1920	U	<0.030	<0.030	<0.30	<0.50	1	-	-				
Dissolved Organic Carbon	1610	N	<2.5	<2.5	<50	<50	500	800	1000				

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	12

Leachate Test Information	
Leachant volume 1st extract/l	0.327
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.212

Results Summary - 2 Stage WAC

Project: P14127- Bantry

Chemtest Job No: 15-00369
 Chemtest Sample ID: 87538
 Sample Ref:
 Sample ID: SL8-SL8.0
 Top Depth(m): 0.00
 Bottom Depth(m):
 Sampling Date: 06-Jan-2015

Determindand	SOP	Accred.	Units	Landfill Waste Acceptance Criteria		
				Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Total Organic Carbon	2625	U	%	1.1	5	6
Loss on Ignition	2610	U	%	1.9	-	10
Total BTEX	2760	U	mg/kg	<0.01	-	-
Total PCBs (7 congeners)	2815	U	mg/kg	<0.10	-	-
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	<10	-	-
Total (of 17) PAHs	2700	N	mg/kg	<2.0	-	-
pH	2010	U		8.6	>6	-
Acid Neutralisation Capacity	2015	N	mol/kg	0.004	To evaluate	To evaluate
Eluate Analysis			2:1 mg/l	Cumulative 10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg	
Arsenic	1450	U	0.016	<0.003	<0.050	0.5
Barium	1450	U	0.03	0.012	<0.50	20
Cadmium	1450	U	0.0003	<0.0001	<0.010	0.04
Chromium	1450	U	0.034	<0.001	0.066	0.5
Copper	1450	U	0.014	<0.001	<0.050	2
Mercury	1450	U	<0.0005	0.0047	<0.001	0.01
Molybdenum	1450	U	0.21	0.019	0.41	0.5
Nickel	1450	U	0.002	<0.001	<0.050	10
Lead	1450	U	<0.001	<0.001	<0.010	0.4
Antimony	1450	U	0.006	0.001	0.011	0.5
Selenium	1450	U	0.022	0.003	0.043	0.06
Zinc	1450	U	0.023	0.004	<0.50	0.1
Chloride	1220	U	180	150	350	4
Fluoride	1220	U	1	0.2	2	800
Sulphate	1220	U	390	29	760	10
Total Dissolved Solids	1020	N	3900	320	7600	1000
Phenol Index	1920	U	<0.030	<0.030	<0.30	4000
Dissolved Organic Carbon	1610	N	<2.5	<2.5	<50	1
						500

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	20

Leachate Test Information	
Leachant volume 1st extract/l	0.307
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.265

Results Summary - 2 Stage WAC

Project: P14127- Bantry

Chemtest Job No: 15-00369		Chemtest Sample ID: 87539		Sample Ref:		Sample ID: SL8-SL8.1		Top Depth(m): 1.00		Bottom Depth(m):		Sampling Date: 06-Jan-2015	
Determinand	SOP	Accred.	Units	8:1 mg/l	2:1 mg/kg	Cumulative 10:1 mg/kg	Inert Waste Landfill	Stable Non- reactive Hazardous waste in non- hazardous	Hazardous Waste Landfill				
Total Organic Carbon	2625	U	%			0.5	3	5	6				
Loss on Ignition	2610	U	%			2.2	--	--	10				
Total BTEX	2760	U	mg/kg			< 0.01	6	--	--				
Total PCBs (7 congeners)	2815	U	mg/kg			< 0.10	1	--	--				
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			< 10	500	--	--				
Total (of 17) PAHs	2700	N	mg/kg			< 2.0	100	--	--				
pH	2010	U				8.6	--	>6	--				
Acid Neutralisation Capacity	2015	N	mol/kg			0.05	--	To evaluate	To evaluate				
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative 10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg						
Arsenic	1450	U	0.01	< 0.002	< 0.050	< 0.050	0.5	2	25				
Barium	1450	U	0.026	0.006	< 0.50	< 0.50	20	100	300				
Cadmium	1450	U	0.0002	< 0.0001	< 0.010	< 0.010	0.04	1	5				
Chromium	1450	U	0.01	< 0.001	< 0.050	< 0.050	0.5	10	70				
Copper	1450	U	0.007	< 0.001	< 0.050	< 0.050	2	50	100				
Mercury	1450	U	0.0021	< 0.0005	0.004	< 0.005	0.01	0.2	2				
Molybdenum	1450	U	0.13	0.012	0.25	0.3	0.5	10	30				
Nickel	1450	U	0.002	< 0.001	< 0.050	< 0.050	0.4	10	40				
Lead	1450	U	< 0.001	< 0.001	< 0.010	< 0.010	0.5	10	50				
Antimony	1450	U	0.005	< 0.001	< 0.010	< 0.010	0.06	0.7	5				
Selenium	1450	U	0.015	0.001	0.03	0.035	0.1	0.5	7				
Zinc	1450	U	0.014	< 0.001	< 0.50	< 0.50	4	50	200				
Chloride	1220	U	360	80	720	1200	800	15000	25000				
Fluoride	1220	U	0.51	0.12	1	1.8	10	150	500				
Sulphate	1220	U	240	16	480	520	1000	20000	50000				
Total Dissolved Solids	1020	N	2600	290	5200	6600	4000	60000	100000				
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-				
Dissolved Organic Carbon	1610	N	< 2.5	< 2.5	< 50	< 50	500	800	1000				

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	11

Leachate Test Information	
Leachant volume 1st extract/l	0.329
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.28

Results Summary - 2 Stage WAC

Project: P14127- Bantry

Chemtest Job No: 15-00369
 Chemtest Sample ID: 87540
 Sample Ref:
 Sample ID: SL8-SL8.2
 Top Depth(m): 2.00
 Bottom Depth(m):
 Sampling Date: 06-Jan-2015

Determinand	SOP	Accred.	Units
Total Organic Carbon	2625	U	%
Loss on Ignition	2610	U	%
Total BTEX	2760	U	mg/kg
Total PCBs (7 congeners)	2815	U	mg/kg
TPH Total WAC (Mineral Oil)	2670	U	mg/kg
Total (of 17) PAHs	2700	N	mg/kg
pH	2010	U	
Acid Neutralisation Capacity	2015	N	mol/kg

Eluate Analysis	8:1 mg/l	2:1 mg/kg	Cumulative 10:1 mg/kg	Landfill Waste Acceptance Criteria		
				Inert Waste Landfill	Stable Non- reactive Hazardous waste in non- hazardous	Hazardous Waste Landfill
Arsenic	0.004	< 0.050	0.055	3	5	6
Barium	0.004	< 0.50	< 0.50	--	--	10
Cadmium	< 0.0001	< 0.010	< 0.010	6	--	--
Chromium	< 0.001	< 0.050	< 0.050	1	--	--
Copper	< 0.001	< 0.050	< 0.050	500	--	--
Mercury	< 0.0005	< 0.001	< 0.005	100	--	--
Molybdenum	0.01	0.18	0.23	--	>6	--
Nickel	< 0.001	< 0.050	< 0.050	--	To evaluate	To evaluate
Lead	< 0.001	< 0.010	< 0.010	--	To evaluate	To evaluate
Antimony	0.002	0.02	0.03	--	To evaluate	To evaluate
Selenium	0.002	0.044	0.051	--	To evaluate	To evaluate
Zinc	0.002	< 0.50	< 0.50	--	To evaluate	To evaluate
Chloride	140	720	1700	800	15000	25000
Fluoride	0.14	1.1	2	10	150	500
Sulphate	24	660	710	1000	20000	50000
Total Dissolved Solids	420	5200	7500	4000	60000	100000
Phenol Index	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	< 2.5	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	9.1

Leachate Test Information	
Leachant volume 1st extract/l	0.332
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.266

Results Summary - 2 Stage WAC

Project: P14127- Bantry

Chemtest Job No: 15-00369

Chemtest Sample ID: 87541

Sample Ref:

Sample ID: SL8-SL8.3

Top Depth(m): 3.00

Bottom Depth(m):

Sampling Date: 06-Jan-2015

Determindand	SOP	Accred.	Units	Landfill Waste Acceptance Criteria			
				Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill	
Total Organic Carbon	2625	U	%	0.49	5	6	
Loss on Ignition	2610	U	%	1.7	-	10	
Total BTEX	2760	U	mg/kg	<0.01	-	-	
Total PCBs (7 congeners)	2815	U	mg/kg	<0.10	-	-	
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	<10	-	-	
Total (of 17) PAHs	2700	N	mg/kg	<2.0	-	-	
pH	2010	U		8.7	>6	-	
Acid Neutralisation Capacity	2015	N	mol/kg	0.27	To evaluate	To evaluate	
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative 10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
Arsenic	1450	U	0.01	<0.001	<0.050	<0.050	0.5
Barium	1450	U	0.011	<0.001	<0.50	<0.50	20
Cadmium	1450	U	<0.0001	<0.0001	<0.010	<0.010	0.04
Chromium	1450	U	0.015	<0.001	<0.050	<0.050	0.5
Copper	1450	U	0.009	<0.001	<0.050	<0.050	2
Mercury	1450	U	<0.0005	<0.0005	<0.001	<0.005	0.01
Molybdenum	1450	U	0.035	0.004	0.069	0.083	0.5
Nickel	1450	U	0.002	<0.001	<0.050	<0.050	10
Lead	1450	U	<0.001	<0.001	<0.010	<0.010	0.4
Antimony	1450	U	0.003	<0.001	<0.010	<0.010	0.5
Selenium	1450	U	0.015	0.002	0.03	0.039	0.06
Zinc	1450	U	0.012	<0.001	<0.50	<0.50	0.1
Chloride	1220	U	550	90	1100	1600	4
Fluoride	1220	U	0.32	0.12	<1.0	1.5	800
Sulphate	1220	U	230	17	460	480	10
Total Dissolved Solids	1020	N	850	280	1700	3600	1000
Phenol Index	1920	U	<0.030	<0.030	<0.30	<0.50	4000
Dissolved Organic Carbon	1610	N	<2.5	<2.5	<50	<50	1
							500

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	12

Leachate Test Information	
Leachant volume 1st extract/l	0.325
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.257

Results Summary - 2 Stage WAC

Project: P14127- Bantry

Chemtest Job No: 15-00369 Chemtest Sample ID: 87542 Sample Ref: Sample ID: SL8-SL8.4 Top Depth(m): 4.00 Bottom Depth(m): Sampling Date: 06-Jan-2015					Landfill Waste Acceptance Criteria				
Determinand	SOP	Accred.	Units	8:1 mg/l	2:1 mg/kg	Cumulative 10:1 mg/kg	Inert Waste Landfill	Stable Non- reactive Hazardous waste in non- hazardous	Hazardous Waste Landfill
Total Organic Carbon	2625	U	%			< 0.20	3	5	6
Loss on Ignition	2610	U	%			1.6	--	--	10
Total BTEX	2760	U	mg/kg			< 0.01	6	--	--
Total PCBs (7 congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			< 10	500	--	--
Total (of 17) PAHs	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				8.8	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.025	--	To evaluate	To evaluate
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative 10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
Arsenic	1450	U	0.01	< 0.001	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.007	< 0.001	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	< 0.0001	< 0.0001	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	0.015	< 0.001	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.01	< 0.001	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.0005	< 0.0005	< 0.001	< 0.005	0.01	0.2	2
Molybdenum	1450	U	0.05	0.005	0.098	0.12	0.5	10	30
Nickel	1450	U	0.006	< 0.001	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	< 0.001	< 0.001	< 0.010	< 0.010	0.5	10	50
Antimony	1450	U	0.001	< 0.001	< 0.010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.015	0.001	0.029	0.031	0.1	0.5	7
Zinc	1450	U	0.012	< 0.001	< 0.50	< 0.50	4	50	200
Chloride	1220	U	640	84	1300	1600	800	15000	25000
Fluoride	1220	U	0.87	0.16	1.7	2.6	10	150	500
Sulphate	1220	U	230	15	450	460	1000	20000	50000
Total Dissolved Solids	1020	N	2800	320	5500	6800	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	N	< 2.5	< 2.5	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	18

Leachate Test Information	
Leachant volume 1st extract/l	0.312
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.253

Results Summary - 2 Stage WAC

Project: P14127- Bantry

Chemtest Job No: 15-00369

Chemtest Sample ID: 87544

Sample Ref:

Sample ID: SL10-SL10.0

Top Depth(m): 0.00

Bottom Depth(m):

Sampling Date: 06-Jan-2015

Determindand	SOP	Accred.	Units	Landfill Waste Acceptance Criteria		
				Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Total Organic Carbon	2625	U	%	3	5	6
Loss on Ignition	2610	U	%	--	--	10
Total BTEX	2760	U	mg/kg	6	--	--
Total PCBs (7 congeners)	2815	U	mg/kg	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	500	--	--
Total (of 17) PAHs	2700	N	mg/kg	100	--	--
pH	2010	U		--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	--	To evaluate	To evaluate
Eluate Analysis						
Arsenic	1450	U	2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative 10:1 mg/kg
Barium	1450	U	0.014	0.002	< 0.050	< 0.050
Cadmium	1450	U	0.024	0.008	< 0.50	< 0.50
Chromium	1450	U	< 0.0001	< 0.0001	< 0.010	< 0.010
Copper	1450	U	0.018	< 0.001	< 0.050	< 0.050
Mercury	1450	U	0.011	< 0.001	< 0.050	< 0.050
Molybdenum	1450	U	< 0.0005	< 0.0005	< 0.001	< 0.005
Nickel	1450	U	0.05	0.004	0.098	0.11
Lead	1450	U	0.002	< 0.001	< 0.050	< 0.050
Antimony	1450	U	< 0.001	< 0.001	< 0.010	< 0.010
Selenium	1450	U	0.002	< 0.001	< 0.010	< 0.010
Zinc	1450	U	0.021	< 0.001	0.041	0.032
Chloride	1220	U	0.018	0.004	< 0.50	< 0.50
Fluoride	1220	U	620	150	1200	2200
Sulphate	1220	U	0.99	0.19	1.9	3.1
Total Dissolved Solids	1020	U	340	27	670	740
Phenol Index	1920	U	4000	440	7800	9700
Dissolved Organic Carbon	1610	U	< 0.030	< 0.030	< 0.30	< 0.50
		N	< 2.5	< 2.5	< 50	< 50
						Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
						0.5
						2
						100
						1
						10
						50
						2
						0.2
						10
						30
						40
						10
						50
						5
						7
						0.5
						50
						200
						15000
						500
						50000
						100000
						-
						800
						1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	18

Leachate Test Information	
Leachant volume 1st extract/l	0.31
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.264

Results Summary - 2 Stage WAC

Project: P14127- Bantry

Chemtest Job No: 15-00369 Chemtest Sample ID: 87547 Sample Ref: Sample ID: SL14-SL14.0 Top Depth(m): 0.00 Bottom Depth(m): Sampling Date: 06-Jan-2015					Landfill Waste Acceptance Criteria				
Determinand	SOP	Accred.	Units	8:1 mg/l	2:1 mg/kg	Cumulative 10:1 mg/kg	Inert Waste Landfill	Stable Non- reactive Hazardous waste in non- hazardous	Hazardous Waste Landfill
Total Organic Carbon	2625	U	%			0.31	3	5	6
Loss on Ignition	2610	U	%			2	--	--	10
Total BTEX	2760	U	mg/kg			< 0.01	6	--	--
Total PCBs (7 congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			< 10	500	--	--
Total (of 17) PAHs	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.005	--	To evaluate	To evaluate
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative 10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
Arsenic	1450	U	0.013	0.001	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.026	0.043	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	0.0003	< 0.0001	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	0.017	0.044	< 0.050	0.4	0.5	10	70
Copper	1450	U	0.009	0.009	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.0005	0.0024	< 0.001	0.02	0.01	0.2	2
Molybdenum	1450	U	0.2	0.001	0.38	0.3	0.5	10	30
Nickel	1450	U	0.002	0.002	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	< 0.001	0.005	< 0.010	0.043	0.5	10	50
Antimony	1450	U	0.015	< 0.001	0.029	0.022	0.06	0.7	5
Selenium	1450	U	0.015	0.001	0.029	0.033	0.1	0.5	7
Zinc	1450	U	0.016	0.01	< 0.50	< 0.50	4	50	200
Chloride	1220	U	1500	99	2900	3000	800	15000	25000
Fluoride	1220	U	0.73	0.17	1.4	2.5	10	150	500
Sulphate	1220	U	300	22	590	630	1000	20000	50000
Total Dissolved Solids	1020	N	2800	410	5500	7600	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	N	< 2.5	< 2.5	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	20

Leachate Test Information	
Leachant volume 1st extract/l	0.307
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.257

Results Summary - 2 Stage WAC

Project: P14127- Bantry

Chemtest Job No: 15-00369

Chemtest Sample ID: 87548

Sample Ref:

Sample ID: SL14-SL14.1

Top Depth(m): 1.00

Bottom Depth(m):

Sampling Date: 06-Jan-2015

Determindand	SOP	Accred.	Units	Landfill Waste Acceptance Criteria		
				Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Total Organic Carbon	2625	U	%	0.43	5	6
Loss on Ignition	2610	U	%	1.9	-	10
Total BTEX	2760	U	mg/kg	<0.01	-	-
Total PCBs (7 congeners)	2815	U	mg/kg	<0.10	-	-
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	<10	-	-
Total (of 17) PAHs	2700	N	mg/kg	<2.0	-	-
pH	2010	U		8.8	>6	-
Acid Neutralisation Capacity	2015	N	mol/kg	0.017	To evaluate	To evaluate
Eluate Analysis				Cumulative 10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg	
Arsenic	1450	U	2:1 mg/l	<0.050	0.5	2
Barium	1450	U	0.015	<0.50	20	100
Cadmium	1450	U	0.027	<0.10	0.04	1
Chromium	1450	U	0.0002	<0.050	0.5	10
Copper	1450	U	0.02	<0.050	2	50
Mercury	1450	U	0.012	<0.001	0.01	0.2
Molybdenum	1450	U	<0.0005	<0.005	0.5	10
Nickel	1450	U	0.11	0.21	0.4	10
Lead	1450	U	0.003	<0.050	0.5	10
Antimony	1450	U	<0.001	<0.010	0.06	0.7
Selenium	1450	U	0.016	0.032	0.1	0.5
Zinc	1450	U	0.018	0.036	4	50
Chloride	1220	U	1600	<0.50	800	15000
Fluoride	1220	U	0.67	3200	10	150
Sulphate	1220	U	270	1.3	1000	20000
Total Dissolved Solids	1020	N	3000	540	4000	60000
Phenol Index	1920	U	<0.030	<0.30	1	-
Dissolved Organic Carbon	1610	N	<2.5	<50	500	800

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	11

Leachate Test Information	
Leachant volume 1st extract/l	0.328
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.261

Results Summary - 2 Stage WAC

Project: P14127- Bantry

Chemtest Job No: 15-00369 Chemtest Sample ID: 87549 Sample Ref: Sample ID: SL14-SL14.2 Top Depth(m): 2.00 Bottom Depth(m): Sampling Date: 06-Jan-2015					Landfill Waste Acceptance Criteria				
Determinand	SOP	Accred.	Units	8:1 mg/l	2:1 mg/kg	Cumulative 10:1 mg/kg	Inert Waste Landfill	Stable Non- reactive Hazardous waste in non- hazardous	Hazardous Waste Landfill
Total Organic Carbon	2625	U	%			0.34	3	5	6
Loss on Ignition	2610	U	%			2.2	--	--	10
Total BTEX	2760	U	mg/kg			< 0.01	6	--	--
Total PCBs (7 congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			< 10	500	--	--
Total (of 17) PAHs	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				8.7	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.12	--	To evaluate	To evaluate
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative 10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
Arsenic	1450	U	0.008	< 0.001	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.02	0.003	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	< 0.0001	< 0.0001	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	0.012	< 0.001	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.008	< 0.0005	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.0005	< 0.0005	< 0.001	< 0.005	0.01	0.2	2
Molybdenum	1450	U	0.014	< 0.001	< 0.050	< 0.050	0.5	10	30
Nickel	1450	U	0.001	< 0.001	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	< 0.001	< 0.001	< 0.010	< 0.010	0.5	10	50
Antimony	1450	U	0.002	< 0.001	< 0.010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.013	0.001	0.026	0.03	0.1	0.5	7
Zinc	1450	U	0.01	< 0.001	< 0.50	< 0.50	4	50	200
Chloride	1220	U	1200	63	2400	2400	800	15000	25000
Fluoride	1220	U	0.4	0.13	< 1.0	1.7	10	150	500
Sulphate	1220	U	200	13	400	420	1000	20000	50000
Total Dissolved Solids	1020	N	2300	290	4600	6000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	N	< 2.5	< 2.5	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	9.4

Leachate Test Information	
Leachant volume 1st extract/l	0.332
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.272

Results Summary - 2 Stage WAC

Project: P14127- Bantry

Chemtest Job No: 15-00369
 Chemtest Sample ID: 87551
 Sample Ref:
 Sample ID: SC2-2.1
 Top Depth(m): 1.00
 Bottom Depth(m):
 Sampling Date: 07-Jan-2015

Determinand	SOP	Accred.	Units
Total Organic Carbon	2625	U	%
Loss on Ignition	2610	U	%
Total BTEX	2760	U	mg/kg
Total PCBs (7 congeners)	2815	U	mg/kg
TPH Total WAC (Mineral Oil)	2670	U	mg/kg
Total (of 17) PAHs	2700	N	mg/kg
pH	2010	U	
Acid Neutralisation Capacity	2015	N	mol/kg

Eluate Analysis	8:1 mg/l	2:1 mg/kg	Cumulative 10:1 mg/kg	Landfill Waste Acceptance Criteria		
				Inert Waste Landfill	Stable Non- reactive Hazardous waste in non- hazardous	Hazardous Waste Landfill
Arsenic	< 0.001	< 0.050	< 0.050	3	5	6
Barium	0.003	< 0.50	< 0.50	--	--	10
Cadmium	< 0.0001	< 0.010	< 0.010	6	--	--
Chromium	< 0.001	< 0.050	< 0.050	1	--	--
Copper	0.001	< 0.050	< 0.050	500	--	--
Mercury	< 0.0005	< 0.001	< 0.005	100	--	--
Molybdenum	0.008	0.083	0.13	--	>6	--
Nickel	0.001	< 0.050	< 0.050	--	To evaluate	To evaluate
Lead	< 0.001	< 0.010	< 0.010	--	To evaluate	To evaluate
Antimony	< 0.001	< 0.010	< 0.010	--	To evaluate	To evaluate
Selenium	0.001	0.038	0.038	--	To evaluate	To evaluate
Zinc	0.004	< 0.50	< 0.50	--	To evaluate	To evaluate
Chloride	91	3400	3400	800	15000	25000
Fluoride	0.22	1.7	3.2	10	150	500
Sulphate	17	550	580	1000	20000	50000
Total Dissolved Solids	340	6300	7900	4000	60000	100000
Phenol Index	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	< 2.5	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	15

Leachate Test Information	
Leachant volume 1st extract/l	0.32
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.274

Results Summary - 2 Stage WAC

Project: P14127- Bantry

Chemtest Job No: 15-00369 Chemtest Sample ID: 87552 Sample Ref: Sample ID: SC2-2.2 Top Depth(m): 2.00 Bottom Depth(m): Sampling Date: 07-Jan-2015					Landfill Waste Acceptance Criteria				
Determinand	SOP	Accred.	Units	8:1 mg/l	2:1 mg/kg	Cumulative 10:1 mg/kg	Inert Waste Landfill	Stable Non- reactive Hazardous waste in non- hazardous	Hazardous Waste Landfill
Total Organic Carbon	2625	U	%			< 0.20	3	5	6
Loss on Ignition	2610	U	%			2.5	--	--	10
Total BTEX	2760	U	mg/kg			< 0.01	6	--	--
Total PCBs (7 congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			< 10	500	--	--
Total (of 17) PAHs	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.011	--	To evaluate	To evaluate
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative 10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
Arsenic	1450	U	0.015	< 0.001	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.011	< 0.001	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	0.0001	< 0.0001	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	0.027	< 0.001	0.053	< 0.050	0.5	10	70
Copper	1450	U	0.017	< 0.001	< 0.050	< 0.050	2	50	100
Mercury	1450	U	0.0007	< 0.0005	0.001	< 0.005	0.01	0.2	2
Molybdenum	1450	U	< 0.001	< 0.001	< 0.050	< 0.050	0.5	10	30
Nickel	1450	U	0.003	< 0.001	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	< 0.001	< 0.001	< 0.010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.001	< 0.001	< 0.010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.024	0.002	0.047	0.043	0.1	0.5	7
Zinc	1450	U	0.023	< 0.001	< 0.50	< 0.50	4	50	200
Chloride	1220	U	2400	110	4700	3700	800	15000	25000
Fluoride	1220	U	0.42	0.14	< 1.0	1.7	10	150	500
Sulphate	1220	U	360	16	700	550	1000	20000	50000
Total Dissolved Solids	1020	N	300	230	580	2400	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	N	< 2.5	< 2.5	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	20

Leachate Test Information	
Leachant volume 1st extract/l	0.305
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.197

Results Summary - 2 Stage WAC

Project: P14127- Bantry

Chemtest Job No: 15-00369
 Chemtest Sample ID: 87553
 Sample Ref:
 Sample ID: SC01-1.0
 Top Depth(m): 0.30
 Bottom Depth(m):
 Sampling Date: 07-Jan-2015

Determindand	SOP	Accred.	Units	Landfill Waste Acceptance Criteria		
				Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Total Organic Carbon	2625	U	%	3	5	6
Loss on Ignition	2610	U	%	--	--	10
Total BTEX	2760	U	mg/kg	6	--	--
Total PCBs (7 congeners)	2815	U	mg/kg	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	500	--	--
Total (of 17) PAHs	2700	N	mg/kg	100	--	--
pH	2010	U		--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	--	To evaluate	To evaluate
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative 10:1 mg/kg
Arsenic	1450	U	0.031	0.003	0.057	0.062
Barium	1450	U	0.043	0.036	< 0.50	< 0.50
Cadmium	1450	U	0.0002	< 0.0001	< 0.010	< 0.010
Chromium	1450	U	0.048	0.004	0.088	0.083
Copper	1450	U	0.032	0.002	0.059	< 0.050
Mercury	1450	U	0.0043	0.0005	0.008	0.009
Molybdenum	1450	U	0.12	0.014	0.22	0.25
Nickel	1450	U	0.003	< 0.001	< 0.050	< 0.050
Lead	1450	U	< 0.001	< 0.001	< 0.010	< 0.010
Antimony	1450	U	0.025	0.004	0.046	0.064
Selenium	1450	U	0.044	0.005	0.081	0.085
Zinc	1450	U	0.027	0.009	< 0.50	< 0.50
Chloride	1220	U	3800	340	7000	6900
Fluoride	1220	U	1.1	0.24	2	3.3
Sulphate	1220	U	330	36	610	660
Total Dissolved Solids	1020	N	7200	940	13000	16000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50
Dissolved Organic Carbon	1610	N	8	< 2.5	< 50	< 50
				Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
				0.5	2	25
				20	100	300
				0.04	1	5
				0.5	10	70
				2	50	100
				0.01	0.2	2
				0.5	10	30
				0.4	10	40
				0.5	10	50
				0.06	0.7	5
				0.1	0.5	7
				4	50	200
				800	15000	25000
				10	150	500
				1000	20000	50000
				4000	60000	100000
				1	-	-
				500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	33

Leachate Test Information	
Leachant volume 1st extract/l	0.262
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.181

Results Summary - 2 Stage WAC

Project: P14127- Bantry

Chemtest Job No: 15-00369 Chemtest Sample ID: 87556 Sample Ref: Sample ID: SC06-6.2 Top Depth(m): 2.00 Bottom Depth(m): Sampling Date: 07-Jan-2015		SOP		Accred.		Units		Landfill Waste Acceptance Criteria			
Determinand								Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill	
Total Organic Carbon		2625	U			%		3	5	6	
Loss on Ignition		2610	U			%		--	--	10	
Total BTEX		2760	U			mg/kg		6	--	--	
Total PCBs (7 congeners)		2815	U			mg/kg		1	--	--	
TPH Total WAC (Mineral Oil)		2670	U			mg/kg		500	--	--	
Total (of 17) PAHs		2700	N			mg/kg		100	--	--	
pH		2010	U					--	>6	--	
Acid Neutralisation Capacity		2015	N			mol/kg		--	To evaluate	To evaluate	
Eluate Analysis								8:1 mg/l	2:1 mg/kg	Cumulative 10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
Arsenic		1450	U			0.011		< 0.003	< 0.050	< 0.050	0.5
Barium		1450	U			0.025		0.002	< 0.50	< 0.50	20
Cadmium		1450	U			< 0.0001		< 0.0001	< 0.010	< 0.010	0.04
Chromium		1450	U			0.016		< 0.001	< 0.050	< 0.050	0.5
Copper		1450	U			0.015		< 0.001	< 0.050	< 0.050	2
Mercury		1450	U			0.0012		< 0.0005	0.002	< 0.005	0.01
Molybdenum		1450	U			0.01		0.002	< 0.050	< 0.050	0.5
Nickel		1450	U			0.002		< 0.001	< 0.050	< 0.050	10
Lead		1450	U			< 0.001		< 0.001	< 0.010	< 0.010	0.4
Antimony		1450	U			0.001		< 0.001	< 0.010	< 0.010	0.5
Selenium		1450	U			0.016		0.002	< 0.010	< 0.010	0.06
Zinc		1450	U			0.022		0.005	0.032	0.037	0.1
Chloride		1220	U			1700		180	< 0.50	< 0.50	4
Fluoride		1220	U			0.7		0.12	3400	3300	800
Sulphate		1220	U			180		20	1.4	1.8	10
Total Dissolved Solids		1020	N			3100		480	360	360	1000
Phenol Index		1920	U			< 0.030		< 0.030	6100	7400	4000
Dissolved Organic Carbon		1610	N			< 2.5		< 2.5	< 0.30	< 0.50	1
									< 50	< 50	500

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	14

Leachate Test Information	
Leachant volume 1st extract/l	0.321
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.175

Report Information

Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVCOs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at our Coventry laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container

Sample Retention and Disposal

All soil samples will be retained for a period of 60 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.co.uk



2 Shaftesbury Industrial Centre, Icknield Way, Letchworth Garden City, Hertfordshire, SG6 1HE
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Certificate of Analysis

Report No.: 15-41578

Issue No.: 2
Date of Issue 12/02/2015

Customer Details: Colette Kelly
Priority Geotechnical Ltd
Unit 12
Owenacurra Business Park
Midleton
Co Cork

Order No.: 7451

Customer Reference: Not given

Quotation Reference: 141121/17

Description: 16 sediment samples in plastic containers

Date Received: 15/1/2015

Test Methods: Details available on request (refer to SOP code against relevant result/s)

Notes: None

Approved By: Marco Lattughi, Operational Director

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service.
Observations and interpretations are outside of the scope of UKAS accreditation.
Results reported herein relate only to the items supplied to the laboratory for testing.

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Results Summary - Polycyclic Aromatic Hydrocarbons (EPA 16 PAHs)

Report No.: 15-41578

Customer Reference: Not given

Order No: 7451

Determinand	CAS No	Codes	SOP	Mass	Units	Recovery %	Certified Reference Material		Customer Sample No															
							Result	Recovery %	SI02	SI03	SI05	SI06	SI07.1	SI07.2	SI07.3	SI07.4	SI08	SI09	SI10	SI11	SI12	SI13	SI14	SI15
naphthalene	91-20-3	304	304	25.5	ug/kg	n/a	Not certified	261710	261711	261712	261713	261714	261715	261716	261717	261718	261719	261720	261721	261722	261723	261724		
acenaphthylene	208-96-8	304	304	141	ug/kg	n/a	Not certified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
acenaphthene	83-32-9	304	304	53.8	ug/kg	n/a	Not certified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
fluorene	190-28-2	304	304	184	ug/kg	68.4	Not certified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
phenanthrene	85-01-8	304	304	724	ug/kg	68.4	Not certified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
anthracene	120-12-7	304	304	178	ug/kg	n/a	Not certified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
fluoranthene	206-44-0	304	304	230	ug/kg	76.3	Not certified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
pyrene	129-00-0	304	304	202	ug/kg	67.4	Not certified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
benzo(a)anthracene	56-55-3	304	304	1380	ug/kg	74.4	Not certified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
chrysene	218-01-9	304	304	230	ug/kg	71.4	Not certified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
benzo(b)fluoranthene	205-99-2	304	304	1750	ug/kg	75.9	Not certified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
benzo(k)fluoranthene	205-99-2	304	304	1750	ug/kg	75.9	Not certified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
benzo(e)pyrene	205-99-2	304	304	1750	ug/kg	75.9	Not certified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
indeno(1,2,3-cd)perylene	193-39-5	304	304	376	ug/kg	91.3	Not certified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
indeno(1,2,3-cd)perylene	193-39-5	304	304	376	ug/kg	91.3	Not certified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
benzo(g,h,i)perylene	53-70-3	304	304	278	ug/kg	73.0	Not certified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
benzo(g,h,i)perylene	191-24-2	304	304	276	ug/kg	86.0	Not certified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

PAH results have been dry weight corrected

This report is for internal purposes only.
 No further distribution or use required for any other use.



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Results Summary - Organochlorine Pesticides & Polychlorinated Biphenyls (ICES 7)

Report No.: 15-41578

Customer Reference:

Not given

Order No:

7451

Determinand	CAS No.	Codes	SOP	Units	Result	Recovery %	Certified Reference Material		Customer Sample No		Customer Sample ID		RPS Sample No		RPS Sample Type		Sample Location		Sample Depth (m)		Sampling Date		Sampling Time		
							SL02	SL03	SL05	SL06	SL07.1	SL07.2	SL07.3	SL07.4	SL07.5	SL07.6	SL08	SL09	SL10	SL11	SL12	SL13	SL14	SL15	
alpha-hexachlorocyclopentadiene (alpha-HCH)	319-86-2		In house	ug/kg	n/a	n/a	261710	261711	261712	261713	261714	261715	261716	261718	261719	261720	261721	261722	261723	261724					
beta-hexachlorocyclopentadiene (beta-HCH, beta-BHC)	319-86-7		In house	ug/kg	n/a	n/a	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.24	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
delta-hexachlorocyclohexane (delta-HCH)	319-86-8		In house	ug/kg	n/a	n/a	< 1.12	< 1.00	< 1.08	< 1.00	< 1.00	< 1.00	< 1.00	< 1.24	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
gamma-hexachlorocyclohexane (lindane)	58-89-9		In house	ug/kg	n/a	n/a	< 1.12	< 1.00	< 1.08	< 1.00	< 1.00	< 1.00	< 1.00	< 1.24	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
hexachlorobenzene (HCB)	118-74-1		In house	ug/kg	n/a	n/a	< 1.12	< 1.00	< 1.08	< 1.00	< 1.00	< 1.00	< 1.00	< 1.24	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
dieldrin	69-57-1		In house	ug/kg	n/a	n/a	< 1.12	< 1.00	< 1.08	< 1.00	< 1.00	< 1.00	< 1.00	< 1.24	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
endrin	72-20-8		In house	ug/kg	n/a	n/a	< 1.12	< 1.00	< 1.08	< 1.00	< 1.00	< 1.00	< 1.00	< 1.24	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
DDE	3424-82-6		In house	ug/kg	n/a	n/a	< 1.12	< 1.00	< 1.08	< 1.00	< 1.00	< 1.00	< 1.00	< 1.24	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
DDE-DT	72-54-8		In house	ug/kg	n/a	n/a	< 1.12	< 1.00	< 1.08	< 1.00	< 1.00	< 1.00	< 1.00	< 1.24	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
DDE-DT-DT	72-54-8		In house	ug/kg	n/a	n/a	< 1.12	< 1.00	< 1.08	< 1.00	< 1.00	< 1.00	< 1.00	< 1.24	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
2,2',4,4'-tetrachlorobiphenyl (PCB congener 18)	319-29-3		In house	ug/kg	n/a	n/a	< 0.28	< 0.20	< 0.25	< 0.20	< 0.20	< 0.20	< 0.20	< 0.25	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2,2',5,5'-tetrachlorobiphenyl (PCB congener 57)	35693-28-3		In house	ug/kg	88.2	111.3	< 0.28	< 0.20	< 0.25	< 0.20	< 0.20	< 0.20	< 0.20	< 0.25	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2,2',4,4',5-tetrachlorobiphenyl (PCB congener 101)	37680-73-2		In house	ug/kg	71.1	96.8	< 0.22	< 0.20	< 0.25	< 0.20	< 0.20	< 0.20	< 0.20	< 0.25	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2,2',3,4,4',5-pentachlorobiphenyl (PCB congener 118)	31508-00-6		In house	ug/kg	60.1	103.6	< 0.22	< 0.20	< 0.25	< 0.20	< 0.20	< 0.20	< 0.20	< 0.25	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2,2',3,4,4',5'-hexachlorobiphenyl (PCB 138)	35065-28-2		In house	ug/kg	79.6	128.1	1.34	< 0.20	2.25	1.54	< 0.20	< 0.10	< 0.10	< 0.20	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
2,2',4,4',5'-hexachlorobiphenyl (PCB 153)	35065-27-1		In house	ug/kg	75.6	102.5	2.68	< 0.20	3.65	3.45	< 0.10	< 0.10	< 0.10	< 0.41	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB 180)	35065-29-3		In house	ug/kg	53.8	121.5	8.93	0.28	6.14	11.0	0.34	< 0.10	< 0.10	8.69	< 0.10	< 0.10	6.06	11.6	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

OCL and PCB results have been dry weight corrected

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Results Summary - PSA Results

Report No: 15-41578
 Customer Reference: Not given
 Order No: 7451

Customer Sample No	SLO2	SLO3	SLO5	SLO6	SLO7.1	SLO7.2	SLO7.3	SLO7.4	SLO8	SLO9	SLO10	SLO11	SLO12	SLO13	SLO14	SLO15						
Customer Sample ID	261709	261710	261711	261712	261713	261714	261715	261716	261717	261718	261719	261720	261721	261722	261723	261724						
RPS Sample No	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT						
Sample Location	0.0	1.0	0.0	0.0	1.0	2.0	3.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0						
Sample Depth (m)	07/01/2015	06/01/2015	05/01/2015	07/01/2015	06/01/2015	06/01/2015	06/01/2015	06/01/2015	06/01/2015	06/01/2015	05/01/2015	05/01/2015	06/01/2015	06/01/2015	06/01/2015	07/01/2015						
Sampling Date																						
Sampling Time																						
Determinand	CAS No.	Codes	SOP	Units	Unimodal, Poorly Sorted	Bimodal, Poorly Sorted	Unimodal, Poorly Sorted	Unimodal, Poorly Sorted	Bimodal, Very Poorly Sorted	Bimodal, Very Poorly Sorted	Polymodal, Very Poorly Sorted	Trimodal, Very Poorly Sorted	Trimodal, Poorly Sorted	Polymodal, Poorly Sorted	Unimodal, Moderately Sorted	Bimodal, Poorly Sorted	Bimodal, Poorly Sorted	Unimodal, Very Poorly Sorted	Trimodal, Very Poorly Sorted	Unimodal, Poorly Sorted		
sample type*		S																				
textural group (GRADISTAT)*		S			Muddy Sand	Gravelly Sand	Poorly Sorted	Muddy Sand	Sandy Gravel	Medium Silty Sandy Gravel	Sandy Coarse Gravel	Medium Silty Sandy Gravel	Very Fine Gravelly Silty Sand	Gravelly Muddy Sand	Moderately Sorted Medium Sand	Muddy Sand	Muddy Sand	Very Coarse Silty Sand	Very Coarse Silty Sand	Very Coarse Silty Sand	Very Fine Coarse Silty Sand	Sandy Mud
sediment name*		S			Very Coarse Silty Sand	Very Fine Gravelly Sand	Poorly Sorted Fine Sand	Very Coarse Silty Sand	Sandy Coarse Gravel	Medium Silty Sandy Gravel	Sandy Coarse Gravel	Medium Silty Sandy Gravel	Very Fine Gravelly Silty Sand	Gravelly Muddy Sand	Moderately Sorted Medium Sand	Muddy Sand	Muddy Sand	Very Coarse Silty Sand	Very Coarse Silty Sand	Very Coarse Silty Sand	Very Fine Coarse Silty Sand	Sandy Mud
arithmetic mean (method of moments)*		um			211	2320	391	221	4770	8188	5940	8110	1850	1630	352	221	221	215	4810	377		
arithmetic skewness (method of moments)*		um			1.65	2.94	1.15	1.43	1.23	0.359	1.07	0.506	2.50	2.67	0.838	1.11	1.44	1.39	1.27	5.39		
arithmetic kurtosis (method of moments)*		um			5.15	18.7	4.14	4.44	2.78	1.69	2.47	1.97	9.35	9.09	3.30	3.45	4.37	4.21	2.68	35.3		
geometric mean (method of moments)*		um			129	933	221	120	898	3250	2250	4070	836	259	287	147	138	103	734	10.2		
geometric skewness (method of moments)*		um			3.31	3.55	2.31	3.58	2.71	7.43	4.66	5.29	3.73	7.39	2.00	3.60	3.19	4.16	8.75	10.2		
geometric kurtosis (method of moments)*		um			-0.822	-0.038	-1.54	-0.799	0.018	-1.59	-0.32	-1.91	-0.465	0.185	-1.41	-0.814	-0.872	-0.693	0.030	6.726		
logarithmic mean (method of moments)*		um			4.63	5.86	2.52	3.47	2.57	5.05	3.17	2.19	4.74	2.64	2.21	3.58	3.15	2.98	2.61	5.58		
logarithmic skewness (method of moments)*		um			3.06	0.099	1.18	3.06	0.156	-1.70	-1.20	-2.02	0.258	1.95	1.80	2.77	2.86	3.28	0.446	6.62		
logarithmic kurtosis (method of moments)*		um			1.72	1.82	1.21	1.84	2.95	2.89	2.42	2.40	1.90	2.89	1.00	1.85	1.67	2.06	3.13	0.94		
mean (Folk and Ward method - um)*		um			0.822	0.038	1.54	0.799	-0.018	1.59	0.322	1.91	0.465	-0.185	1.41	0.814	0.872	0.693	-0.030	-6.726		
skewness (Folk and Ward method - um)*		um			4.63	5.86	2.52	3.47	2.57	5.05	3.17	2.19	4.74	2.64	2.21	3.58	3.15	2.98	2.61	5.58		
kurtosis (Folk and Ward method - um)*		um			1.72	1.82	1.21	1.84	2.95	2.89	2.42	2.40	1.90	2.89	1.00	1.85	1.67	2.06	3.13	0.94		
mean (Folk and Ward method - phi)*		phi			2.96	0.107	2.07	2.98	-0.192	1.90	-1.37	-2.24	0.119	1.86	1.73	2.63	2.74	3.23	-0.083	6.70		
skewness (Folk and Ward method - phi)*		phi			1.69	1.58	1.07	1.84	2.97	2.70	2.03	1.78	3.05	0.888	1.84	1.64	2.00	2.00	3.31	0.20		
kurtosis (Folk and Ward method - phi)*		phi			0.119	-0.368	0.122	0.216	-0.351	0.569	-0.143	0.425	-0.226	-0.168	0.095	0.134	0.116	0.240	-0.237	-0.178		
mean description (Folk and Ward method)*		S			Fine Sand	Coarse Sand	Poorly Sorted	Fine Sand	Poorly Sorted	Very Coarse Sand	Very Fine Gravel	Very Fine Gravel	Fine Gravel	Coarse Sand	Medium Sand	Medium Sand	Fine Sand	Fine Sand	Very Fine Sand	Very Coarse Sand	Medium Silty	
sorting description (Folk and Ward method)*		S			Fine Sand	Poorly Sorted	Poorly Sorted	Fine Sand	Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted	Moderately Sorted	Fine Sand	Fine Sand	Very Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted	
skewness description (Folk and Ward method)*		S			Fine Skewed	Very Coarse Skewed	Fine Skewed	Fine Skewed	Very Coarse Skewed	Very Fine Skewed	Very Fine Skewed	Very Fine Skewed	Very Fine Skewed	Coarse Skewed	Coarse Skewed	Symmetrical	Fine Skewed	Fine Skewed	Very Coarse Skewed	Very Coarse Skewed	Coarse Skewed	
kurtosis description (Folk and Ward method)*		S			Leptokurtic	Leptokurtic	Leptokurtic	Leptokurtic	Leptokurtic	Leptokurtic	Leptokurtic	Leptokurtic	Leptokurtic	Leptokurtic	Leptokurtic	Leptokurtic	Leptokurtic	Leptokurtic	Leptokurtic	Leptokurtic	Leptokurtic	
MODE 1 - um*		um			108	855	215	215	19200	3560	19200	19200	606	215	303	108	108	215	19200	6.7		
MODE 2 - um*		um																				
MODE 3 - um*		um				3.74			1.25	-1.24	0.747	-2.24	-0.743	3.24		0.247	2.24		0.247			
MODE 1 - phi*		phi				13600			-0.98	0.605	9600			855		215			665			
MODE 2 - phi*		phi			3.24	0.247	2.24	2.24	-4.24	-3.74	-4.24	-3.74	0.747	2.24	1.75	3.24	3.24	2.24	2.24	4.24	7.25	
MODE 3 - phi*		phi																				
D10 - um*		um			24.1	327	94.0	19.7	130	159	391	239	232	31.3	132	24.9	30.8	12.8	74.8	2.0		
D50 - um*		um			134	763	241	147	518	6560	2020	6550	728	212	307	166	154	132	523	8.5		
D90 - um*		um			526	6080	538	543	18000	18300	18300	18300	5250	5360	638	708	573	556	19200	70.6		
(D90-D10) - um*		um			21.9	161.6	5.94	27.6	150	115	4.432	-1.7	22.7	25.1	4.89	28.4	18.6	43.3	25.6	35.8		
(D90 - D10) - um*		um			502	5750	464	523	17800	18200	18300	17900	5020	5340	506	683	542	543	19100	68.6		
(D75/D25) - um*		um			3.95	3.12	2.48	5.23	39.1	2.80	19.7	5.23	4.64	11.8	2.25	5.39	4.05	7.48	18.8	5.36		
(D25 - D75) - um*		um			197	1050	225	245	8130	2070	8980	10300	1490	760	254	324	233	265	3560	17.2		
D10 - phi*		phi			0.927	-0.60	0.842	0.881	-4.17	-4.20	-4.23	-4.20	-2.39	-2.24	0.649	0.499	0.803	0.847	-4.26	3.83		
D50 - phi*		phi			2.90	0.391	2.05	2.76	0.950	2.24	-1.01	-2.71	0.459	2.24	1.70	2.59	2.70	2.92	0.935	6.87		
D90 - phi*		phi			5.38	1.61	3.41	5.67	3.06	3.20	1.36	0.19	2.11	5.55	2.92	5.33	6.02	6.28	3.74	6.99		
(D90-D10) - phi*		phi			5.80	-0.620	4.05	6.43	0.40	0.632	-0.321	-0.881	-0.881	-2.29	4.50	10.7	6.25	7.41	-0.878	3.35		
(D90 - D10) - phi*		phi			4.45	4.22	2.57	4.79	7.23	6.85	5.58	5.38	4.50	7.97	2.27	4.83	4.22	5.44	8.00	5.16		
(D75/D25) - phi*		phi			2.03	-1.61	0.93	2.39	-0.631	0.219	-0.158	0.369	-1.41	14.5	3.64	2.83	2.19	2.70	-1.21	1.44		
(D75 - D25) - phi*		phi			1.98	1.64	1.31	2.59	5.64	2.96	3.98	2.22	3.96	1.17	2.43	2.02	2.90	4.23	2.42			
% gravel*		%			0.00	19.7	0.00	0.00	0.00	73.1	50.2	78.5	23.9	17.7	0.00	0.00	0.00	0.00	27.5	0.00		
% sand*		%			36.7	78.1	84.1	24.5	20.2	48.7	71.9	72.9	59.4	86.6	78.8	80.3	68.1	63.5	10.6			
% mud*		%			23.3	2.13	5.92	76.3	6.66	1.38	3.64	3.21	22.8	3.10	21.2	19.7	31.9	9.03	89.1			
% very coarse gravel (>32-64mm or <-5>-6phi)*		%			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
% coarse gravel (>16-32mm or <-4>-5phi)*		%			0.00	3.57	0.00	4.06	16.3	16.7	18.7	16.7	0.00	0.00	0.00	0.00	0.00	0.00	21.6	0.00		
% medium gravel (>8-16mm or <-3>-4phi)*		%			0.00	4.51	0.00	4.00	10.2	29.0	8.55	28.3	4.82	0.00	0.00	0.00	0.00	1.68	0.00			
% fine gravel (>4-8mm or <-2>-3phi)*		%			0.00	3.91	0.00	3.00	4.24	13.1	10.3	19.2	9.39	5.91	0.00	0.00	0.00	1.51	0.00			
% very fine gravel (>2-4mm or <-1>-2phi)*		%			0.00	7.75	0.00	0.00	1.40	14.2	12.7	14.3	9.73	4.73	0.00	0.00	0.00	0.00	2.71	0.00		
% very coarse sand (>1-2mm or <0>-1phi)*		%			0.00	14.4	0.00	2.91	8.26	14.6	6.84	12.5	4.59	0.00	0.00	0.00	0.00	3.86	0.00			
% coarse sand (>0.5-1mm or <-1>-0phi)*		%			10.8	46.6	12.7	11.6	17.1	2.50	20.0	3.95	30.6	10.7	19.4	19.4	12.7	12.2	20.0	1.72		
% medium sand (>																						



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Results Summary - PSA Size Class & Statistics

Report No.: 15-41578

Customer Reference: Not given

Order No: 7451

Customer Sample No

Customer Sample ID

RPS Sample No

Sample Type

Sample Location

Sample Depth (m)

Sampling Date

Sampling Time

	SL02	SL03	SL05	SL06	SL07.1	SL07.2	SL07.3	SL07.4	SL08	SL09	SL10	SL11	SL12	SL13	SL14	SL15
Very coarse gravel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coarse gravel	0.00	3.57	0.00	0.00	1.90	16.70	18.70	16.70	0.00	0.00	0.00	0.00	0.00	0.00	21.60	0.00
Medium gravel	0.00	4.51	0.00	0.00	10.20	29.00	8.55	28.30	4.82	7.09	0.00	0.00	0.00	0.00	1.68	0.00
Fine gravel	0.00	3.91	0.00	0.00	4.24	19.10	10.30	19.20	9.39	5.91	0.00	0.00	0.00	0.00	1.51	0.00
Very fine gravel	0.00	7.73	0.00	0.00	1.40	14.30	12.70	14.30	9.73	4.73	0.00	0.00	0.00	0.00	2.71	0.00
Very coarse sand	0.00	14.40	0.00	0.00	2.91	8.26	14.60	6.84	12.50	4.59	0.00	0.00	0.00	0.00	3.86	0.00
Coarse sand	10.80	40.60	12.70	11.60	17.10	2.90	20.00	3.95	30.60	10.70	19.40	19.40	12.70	12.20	20.00	1.72
Medium sand	15.50	20.00	35.10	19.40	25.50	3.63	11.10	3.67	21.90	13.00	44.20	17.20	18.60	18.50	17.90	1.59
Fine sand	26.50	2.23	35.40	24.50	13.20	3.60	2.28	2.27	6.23	16.60	27.80	22.80	26.60	20.90	15.50	2.78
Very fine sand	23.90	0.95	10.90	18.30	3.93	2.23	10.20	1.17	1.56	14.50	5.44	19.40	22.40	16.50	6.21	4.83
Very coarse silt	10.80	0.44	2.31	10.90	1.82	1.44	0.25	0.78	0.97	9.03	1.60	9.19	9.60	10.90	2.07	7.46
Coarse silt	5.92	0.94	1.87	7.60	1.84	1.70	0.88	0.88	0.86	6.44	0.84	5.63	4.82	8.95	2.41	13.20
Medium silt	3.55	0.56	1.00	4.39	1.48	1.77	0.32	0.91	0.75	4.10	0.51	3.50	2.91	6.50	2.21	21.40
Fine silt	1.68	0.34	0.52	1.98	0.93	1.06	0.21	0.62	0.38	1.97	0.15	1.71	1.37	3.35	1.40	22.30
Very fine silt	0.79	0.23	0.15	0.84	0.41	0.43	0.11	0.29	0.24	0.83	0.00	0.78	0.65	1.39	0.62	15.00
Clay	0.53	0.02	0.07	0.53	0.20	0.26	0.02	0.17	0.00	0.45	0.00	0.40	0.36	0.82	0.32	9.83
Statistics*																
Mean (phi)	2.96	0.107	2.07	2.98	-1.192	-1.90	-1.37	-2.34	0.119	1.86	1.73	2.63	2.74	3.23	-0.083	6.70
Sorting	1.69	1.58	1.07	1.84	2.97	2.70	2.20	2.03	1.78	3.05	0.888	1.84	1.64	2.09	3.31	2.00
Skewness	0.119	-0.368	0.122	0.216	-0.351	0.569	-0.143	0.425	-0.226	-0.168	0.095	0.134	0.116	0.240	-0.237	-0.178
Kurtosis	1.22	1.47	1.20	1.04	0.742	1.31	0.678	1.24	1.09	1.16	1.05	1.03	1.15	0.938	0.988	1.17
% Silt/Clay	%	23.27	2.13	5.92	26.24	6.38	1.19	3.65	3.20	22.82	3.10	21.21	19.71	31.91	9.03	89.19
Textural Group**	Muddy Sand	Gravelly Sand	Sand	Muddy Sand	Sandy Gravel	Muddy Sandy Gravel	Sandy Gravel	Muddy Sandy Gravel	Gravelly Sand	Gravelly Muddy Sand	Sand	Muddy Sand	Muddy Sand	Muddy Sand	Gravelly Muddy Sand	Sandy Mud

* Folk & Ward

** GRADISTAT classification system (Blott, S. J. & Pyle, K., 2001)



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Results Summary - PSA Wentworth Scale

Report No: 15-41578

Customer Reference: Not given

Order No: 7451

Customer Sample No	SL02	SL03	SL05	SL06	SL07.1	SL07.2	SL07.3	SL07.4	SL08	SL09	SL10	SL11	SL12	SL13	SL14	SL15
Customer Sample ID																
RPS Sample No	261709	261710	261711	261712	261713	261714	261715	261716	261717	261718	261719	261720	261721	261722	261723	261724
Sample Type	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Location																
Sample Depth (m)	0.0	1.0	0.0	0.0	1.0	2.0	3.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
Sampling Date	07/01/2015	06/01/2015	05/01/2015	07/01/2015	06/01/2015	06/01/2015	06/01/2015	06/01/2015	06/01/2015	06/01/2015	05/01/2015	05/01/2015	06/01/2015	06/01/2015	06/01/2015	07/01/2015
Sampling Time																
Parameter	Units															
Pebble	0.00	11.99	0.00	0.00	29.74	38.80	37.55	64.20	14.21	13.00	0.00	0.00	0.00	0.00	24.79	0.00
Granule	0.00	7.73	0.00	0.00	1.40	14.20	12.70	14.30	9.73	4.73	0.00	0.00	0.00	0.00	2.71	0.00
Very coarse sand	0.00	14.40	0.00	0.00	2.91	8.26	14.60	6.84	12.50	4.59	0.00	0.00	0.00	0.00	3.86	0.00
Coarse sand	10.80	40.60	12.70	11.60	17.10	2.50	20.00	3.95	30.60	10.70	19.40	19.40	12.70	12.20	20.00	1.72
Medium sand	15.50	20.00	35.10	19.40	25.50	3.63	11.10	3.67	21.90	13.00	44.20	17.20	18.60	18.50	17.90	1.59
Fine sand	26.50	2.23	35.40	24.50	13.20	3.60	2.28	2.27	6.23	16.60	27.80	22.80	26.60	20.90	15.50	2.78
Very fine sand	23.90	0.95	10.90	18.30	3.93	2.23	1.17	1.17	1.56	14.50	5.44	19.40	22.40	16.50	6.21	4.83
Silt Clay	23.27	2.13	5.92	26.24	6.38	6.66	1.09	3.65	3.20	22.82	3.10	21.21	19.71	31.91	9.03	89.19
Total	100.0	100.0	100.0	100.0	100.2	99.9	100.1	100.1	99.9	99.9	99.9	100.0	100.0	100.0	100.0	100.1

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Report No.: 15-41578
Customer Reference: Not given
Order No: 7451

Comments

Sample	Description	Job Comments
261709	16 sediment samples in plastic containers	Colour: Dark Grey / black Texture: Fine Silt Odour: Sea Animals: No
261710	16 sediment samples in plastic containers	Colour: Dark Grey / Black Texture: Fine silt, fine sand, shell fragments & pebbles Odour: Sea Animals: N
261711	16 sediment samples in plastic containers	Colour: Black Texture: Fine silt Odour: Strong sea Animals: No
261712	16 sediment samples in plastic containers	Colour: Black Texture: Fine silt Odour: Sea Animals: No
261713	16 sediment samples in plastic containers	Colour: Dark grey/Black Texture: Coarse silt, shells & stones Odour: Sea Animals: No
261714	16 sediment samples in plastic containers	Colour: Dark grey/ Black Texture: Coarse silt, shells and stones Odour: Sea Animals: No
261715	16 sediment samples in plastic containers	Colour: Dark grey / Black Texture: Coarse silt, shells & stones Odour: Sea Animals: No
261716	16 sediment samples in plastic containers	Colour: Dark Grey / Black Texture: Very coarse sand & lots of stones Odour: Sea Animals: No
261717	16 sediment samples in plastic containers	Colour: Black Texture: Very coarse sand & lots of shell fragments Odour: Sea Animals: No
261718	16 sediment samples in plastic containers	Colour: Black Texture: Fine silt Odour: Sea Animals: No
261719	16 sediment samples in plastic containers	Colour: Dark Brown Texture: Silt/fine sand Odour: Sea Animals: No
261720	16 sediment samples in plastic containers	Colour: Black Texture: Fine silt with leaf litter Odour: Sea Animals: No
261721	16 sediment samples in plastic containers	Colour: Black Texture: Fine silt Odour: Sea Animals: No
261722	16 sediment samples in plastic containers	Colour: Black Texture: Fine Silt Odour: Sea Animals: No
261723	16 sediment samples in plastic containers	Colour: Dark grey Texture: Coarse silt, fine sand, shells & stones Odour: Sea Animals: No DBT for this sample was above the calibration range (1 - 100ppb) r2 for the calibration is 0.9999 so the result is by extrapolation, precision and accuracy may however have been affected.
261724	16 sediment samples in plastic containers	Colour: Light Grey Texture: Clay/silt Odour: No odour Animals: No

Report Information

Results for soil/sediment samples are expressed on a dry weight basis unless otherwise stated.

Key to Report Codes

S	Subcontracted to approved laboratory
SI	Subcontracted to internal RPS Group Laboratory
I/S	Insufficient Sample
U/S	Unsuitable sample
S	Subcontracted to approved laboratory
SU	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
I/S	Insufficient Sample
Waters	1 month from the issue date of this report
Other Liquids	2 months from the issue date of this report
Solids (including sediments)	2 months from the issue date of this report

*Sample retention may be subject to agreement with the customer for particular projects

Analytical Methods

PAH's and PCB's	GCMS analysis following extraction of the wet sediment with hexane:acetone by ultrasonic and equilibrium extraction. Extract cleaned-up with alumina and activated copper.
Total Hydrocarbons	GCFID analysis following extraction of the wet sediment with dichloromethane:methanol by ultrasonic extraction and subsequent partitioning with water. Extract cleaned-up with silica and activated copper.
Metals	ICP-MS analysis following microwave assisted digestion in hydrofluoric acid of the dried (<30°C) and ground sediment.
TOC	Combustion and infrared analysis following carbonate removal with hydrochloric acid.
Carbonate Content	Gravimetric analysis of a dri portion of the sediment following carbonate removal with hydrochloric acid.
PSA	Wet and dry sieving followed by laser diffraction analysis.
Density	Determination of density from the dry sediment by gravimetric analysis of a known volume of sediment.
Moisture content and dry solids at 105°C	A portion of the wet sediment is dried at 105°C to constant weight.
TBT and DBT	GCMS analysis following the extraction of the wet sediment and subsequent derivatisation.

Please note: All testing carried out using the <2mm fraction

Laboratories

RPS Letchworth	UKAS Test House 1663
RPS Manchester	UKAS Test House 0605
ESG Scientifics (TOC, CaCO3 & CrV)	UKAS Test House 0001
Thompson PSA only	

APPENDIX C

EXPLORATION LOCATION PLANS

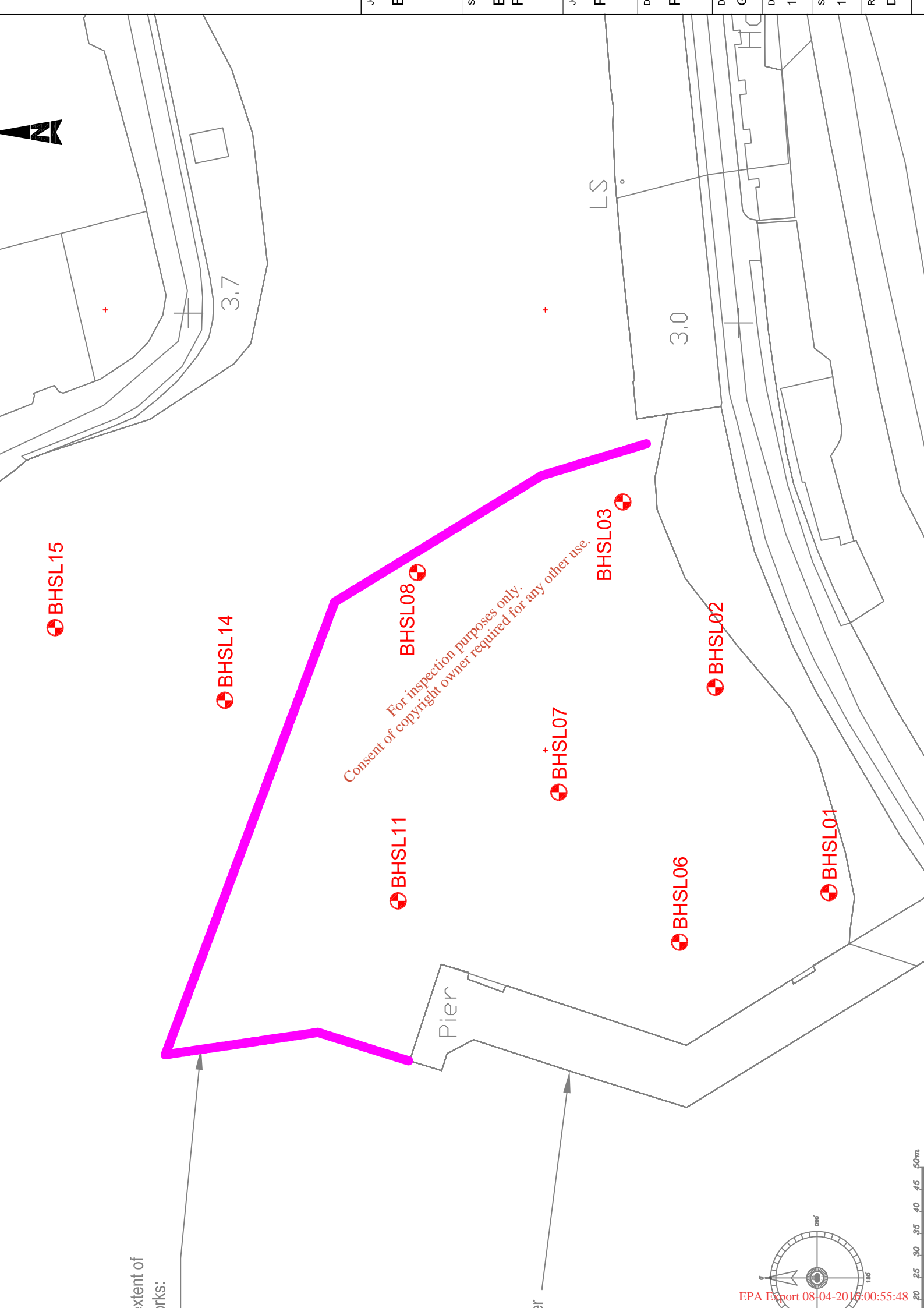
Exploration Location Layout

P14127-SI-A

Exploration Location Plans

P14127-SI-01

Location	Easting	Northing	mCD	<i>Elevation, mOD Malin</i>	Depth, m bsbl	Date dd/mm/yyyy
BHSL01	98967.628	48435.555	+0.604	-1.596	1.2m	07/01/2015
BHSL02	99014.258	48461.403	+0.504	-1.696	2.3m	07/01/2015
BHSL03	99056.382	48482.395	+0.551	-1.649	2.2m	06/01/3015
BHLS06	9856.372	48469.488	+0.417	-2.783	2.3m	07/01/2015
BHSL07	98990.43	48496.943	+0.024	-2.176	4.0m	06/01/2015
BHSL08	99040.324	48529.069	+0.663	-1.537	4.0m	06/01/2015
BHSL11	98965.749	48533.467	-2.456	-4.656	2.0m	05/01/2015
BHSL14	99011.328	48572.843	-0.218	-2.418	2.10m	06/01/2015
BHSL15	99027.815	48611.418	-0.749	-2.949	0.8m	05/01/2015



BHSL15

BHSL14

BHSL11

BHSL08

BHSL07

BHSL03

BHSL06

BHSL02

BHSL01

Extent of
marks:

Pier

LS

3.0

3.7





Bantry Inner Harbour - Phase 1 Development
Environmental Quantitative Risk Assessment

Appendix C – Aquatic Services Unit Baseline Data 2015

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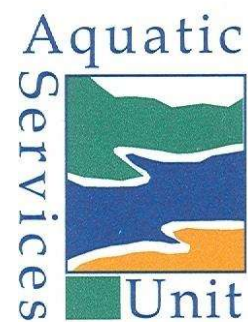
Bantry Inner Harbour Development Water Quality Monitoring Report

Prepared by: Aquatic Services Unit
ERI Building
Lee Road
Cork

For : Malachy Walsh and Partners
Park House
Mahon Technology Park
Bessboro Road
Blackrock
Cork

Date: July 2015

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Methodology

Atlantic Services Unit have been assisted by Malachy Walsh Partners to assess suspended solids measurements at three locations within Bantry Bay. In addition, they were requested to undertake sediment sampling at two of these locations.

Equipment

All sampling locations were pre-determined by Malachy Walsh staff. Table 1 and Figure 1 show the navigated to each of the sampling positions using its own 10m Rigid Inflatable Boat (RIB).

Water Sampling

At each site:

- Sampling positions were navigated to using a Trimble Geo 6X GPS system. The boat was moored at pre-determined points and the engine turned off.
- Once on station, the depth, time and sampling position were recorded.
- The Nansen Bottle was removed from its sealed packaging, prepared and deployed to a depth of three meters. The messenger was then released to close the water sampler and retrieve the sample.
- A small amount of retrieved sample was used to rinse out pre-labelled sample bottles, which was then discarded before the bottle was filled with sample transferred directly from the Nansen Bottle.
- Samples were stored in sealable insulated cooler boxes filled with ice packs.
- Once all equipment and containers were stored correctly, the engine was re-started, anchor recovered and the boat proceeded to the next station.

Sediment Sampling

Sediment samples were collected from two sampling locations SL-01 and SL-02 – 100m from the shore. Samples were collected using a 10m stainless steel Van Veen Grab.

At each site:

- Sampling positions were navigated to using a Trimble Geo 6X GPS system. The boat was moored at pre-determined points and the engine turned off.
- Once on station, the depth, time and sampling position were recorded.
- The Van-Veen Grab was removed from its sealed packaging, prepared and lowered to the seabed to collect sufficient samples. Pre-labelled sampling bottles were filled using nylon scoops and stored in sealable insulated cooler boxes filled with ice packs.

Sample Processing

On return to the laboratory:

- Collected samples were logged into the laboratory notebook and prepared for shipping.
- Samples were cross checked against field data sheets to ensure all information was recorded on the labels.
- The Chain of Custody Sheets and Sample Manifest Sheets for the NLS Laboratory were then completed and photocopied.

- Sample bottles were wrapped in bubble wrap and stored in a refrigerator at 4°C until shipping
- Samples were shipped in sealed cooler boxes in a L courier service NLS Laboratory was contacted to alert them to the arrival of samples and inform them of any bill numbers

Sample Analysis

The samples collected in Bantry Bay were analysed by the National Laboratory Service (NLS) Laboratory in Leeds. These laboratories are managed by the Environment Agency in the UK and are approved laboratories under the United Kingdom Accreditation Service (UKAS) 21 of the parameters required for analyses were determined using UKAS accredited methodologies and meet the detection limits as specified in the lab requirements

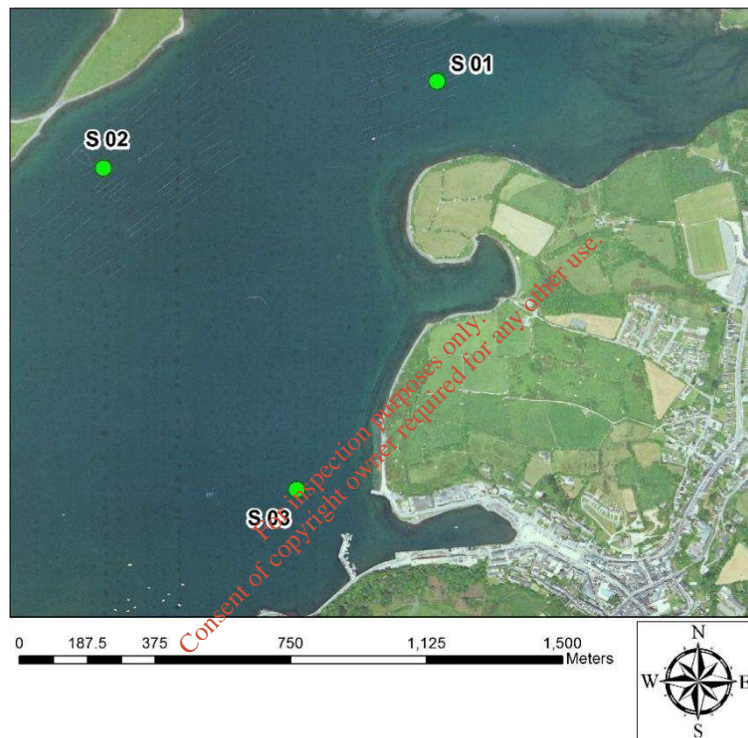


Figure 1 Location of sampling locations in Bantry Bay

The water and sediment sample locations in Bantry Bay positions are given in Irish National Grid

	Longitude	Latitude
S01	10° 00' 00"	52° 00' 00"
S02	10° 00' 00"	52° 00' 00"
S03	10° 00' 00"	52° 00' 00"

Water samples were collected over a full tidal cycle from Low Water to Low Water during winter and summer months in both Spring tides and Neap tides

Water sample collection dates

	Date
Initial	20th March 2012
Initial	20th March 2012
Pre-1	20th April 2012
Pre-1	20th - 21st May 2012
Pre-2	20th June 2012
Pre-3	20th - 21st June 2012

Sediment sample collection dates

	Date
Sediment	20th May 2012

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Water Collection

Winter – Spring 2015

Samples were collected during the neap tide cycle of 27th March 2015. Time of Low Water start was at 00:00 and Low End was at 00:00 00:00

0000 00 Boat log for sample collection in Bantry Bay

		00	00 00	00	00 00	00
S1	Time	00:00	00:00	00:00	00:00	00:00
	Depth Site	00m	00m	00m	00m	00m
	Ave Conditions	Flat	Flat	Slightly choppy	Flat	Flat
	Wind Conditions	Calm	Fresh	Fresh	Calm	Calm
	Weather	Dry	Dry	Dry	Dry	Dry
S2	Time	00:00	00:00	00:00	00:00	00:00
	Depth Site	00m	00m	00m	00m	00m
	Ave Conditions	Flat	Flat	Slightly choppy	Flat	Flat
	Wind Conditions	Calm	Fresh	Fresh	Calm	Calm
	Weather	Dry	Dry	Dry	Dry	Dry
S3	Time	00:00	00:00	00:00	00:00	00:00
	Depth Site	00m	00m	00m	00m	00m
	Ave Conditions	Flat	Flat	Slightly choppy	Flat	Flat
	Wind Conditions	Calm	Calm	Fresh	Calm	Calm
	Weather	Dry	Dry	Dry	Dry	Dry

0000 00 Turbidity and Suspended Solids results from marine water samples collected at the three collection sites in Bantry Bay

	00		02		00	
	000000	000000	000000	000000	000000	000000
	00 00 00	00 00 00	00 00 00	00 00 00	00 00 00	00 00 00
	00 00 00	00 00 00	00 00 00	00 00 00	00 00 00	00 00 00
00 0000	000	0000	000	000	000	000
00 00	000	0000	000	000	000	0000
00	000	000	000	000	000	000
00 00	000	0000	000	0000	000	000
00 End	000	0000	000	000	000	000

0000 00 00 0000 and 00 0000 results

	00		02		00	
	000	00	000	00	000	00
	00 00 00	00 00 00	00 00 00	00 00 00	00 00 00	00 00 00
00 End	00000000	00000	00000000	00000	00000000	00000

Winter – Neap 2015

Samples were collected during the neap tide cycle of 22nd March 2015. Time of Low Water started as at 07:30 and Low Water ended as at 17:30.

Table 1: Boat log for sample collection in Bantry Bay

		S1		S2		S3	
		Time	Depth	Time	Depth	Time	Depth
Time		07:30	07:30	07:30	07:30	07:30	07:30
Depth	Site	10m	10m	10m	10m	10m	10m
Ave	Conditions	Lat	Lat	Lat	Lat	Lat	Lat
Wind	Conditions	alm	alm	alm	alm	alm	alm
Weather		ry	ry	ry	ry	ry	ry
Time		07:30	07:30	07:30	07:30	07:30	07:30
Depth	Site	10m	10m	10m	10m	10m	10m
Ave	Conditions	Lat	Lat	Lat	Lat	Lat	Lat
Wind	Conditions	alm	alm	alm	alm	alm	alm
Weather		ry	ry	ry	ry	ry	ry
Time		07:30	07:30	07:30	07:30	07:30	07:30
Depth	Site	10m	10m	10m	10m	10m	10m
Ave	Conditions	Lat	Lat	Lat	Lat	Lat	Lat
Wind	Conditions	alm	alm	alm	alm	alm	alm
Weather		ry	ry	ry	ry	ry	ry

Table 2: Turbidity and Suspended Solids results from marine water samples collected at the three collection sites in Bantry Bay

	S1		S2		S3	
	Turbidity	Suspended Solids	Turbidity	Suspended Solids	Turbidity	Suspended Solids
Time	07:30	07:30	07:30	07:30	07:30	07:30
Depth	10m	10m	10m	10m	10m	10m
Site	S1	S1	S2	S2	S3	S3
End	07:30	07:30	07:30	07:30	07:30	07:30

Table 3: Uranium and Mercury results

	S1		S2		S3	
	Uranium	Mercury	Uranium	Mercury	Uranium	Mercury
Time	07:30	07:30	07:30	07:30	07:30	07:30
Depth	10m	10m	10m	10m	10m	10m
Site	S1	S1	S2	S2	S3	S3
End	07:30	07:30	07:30	07:30	07:30	07:30

Spring - Neap

Samples were collected during the neap tide cycle of 22nd April 2016. Time of Low Water start was at 09:00 am and Low Water end was at 03:00 pm.

Table 2: Boat log for sample collection in Bantry Bay

TS	Time	Depth	Site	Salinity	Temperature	Weather
		m	Code			
TS1	Time	09:00	TS1	32.5	12.5	Clear
	Depth (m)	10	TS1	32.5	12.5	Clear
	Salinity	32.5	TS1	32.5	12.5	Clear
	Temperature	12.5	TS1	32.5	12.5	Clear
TS2	Time	10:00	TS2	32.5	12.5	Clear
	Depth (m)	10	TS2	32.5	12.5	Clear
	Salinity	32.5	TS2	32.5	12.5	Clear
	Temperature	12.5	TS2	32.5	12.5	Clear
TS3	Time	11:00	TS3	32.5	12.5	Clear
	Depth (m)	10	TS3	32.5	12.5	Clear
	Salinity	32.5	TS3	32.5	12.5	Clear
	Temperature	12.5	TS3	32.5	12.5	Clear

Table 3: Turbidity and Suspended Solids results from marine water samples collected at the three collection sites in Bantry Bay

Date	TS1		TS2		TS3	
	Turbidity (NTU)	Suspended Solids (mg/L)	Turbidity (NTU)	Suspended Solids (mg/L)	Turbidity (NTU)	Suspended Solids (mg/L)
22/04/2016	1.5	0	1.5	0.5	1.5	0.5
23/04/2016	1.5	0.5	1.5	0.5	1.5	0.5
24/04/2016	1.5	0.5	1.5	0.5	1.5	0.5
25/04/2016	1.5	0.5	1.5	0.5	NR	0.5
26/04/2016	1.5	0.5	1.5	0.5	1.5	0.5

Table 4: Permethrin and Dieldrin results

Date	TS1		TS2		TS3	
	Permethrin (ng/L)	Dieldrin (ng/L)	Permethrin (ng/L)	Dieldrin (ng/L)	Permethrin (ng/L)	Dieldrin (ng/L)
22/04/2016	0.05	0.05	0.05	0.05	0.05	0.05
23/04/2016	0.05	0.05	0.05	0.05	0.05	0.05
24/04/2016	0.05	0.05	0.05	0.05	0.05	0.05
25/04/2016	0.05	0.05	0.05	0.05	0.05	0.05
26/04/2016	0.05	0.05	0.05	0.05	0.05	0.05

Spring – Spring

Samples were collected during the spring tide cycle of 22nd – 23rd day 2022. Time of Low Water start was at 08:00 AM and Low End was at 02:00 PM.

Table 2: Boat log for sample collection in Bantry Bay

TS	Time	W1	W2	W3	W4	W5
		Depth	Site	Lat	Long	Lat
S1	Wave Conditions	Flat	Moderate	Flat	Flat	Flat
	Wind Conditions	Calm	Fresh	Calm	Calm	Calm
	Weather	Shower	Dry	Dry	Dry	Dry
	Time	08:00	09:00	09:00	09:00	09:00
S2	Wave Conditions	Flat	Moderate	Flat	Flat	Flat
	Wind Conditions	Calm	Fresh	Calm	Calm	Calm
	Weather	Dry	Dry	Dry	Dry	Dry
	Time	09:00	09:00	09:00	09:00	09:00
S3	Wave Conditions	Flat	Moderate	Flat	Flat	Flat
	Wind Conditions	Calm	Fresh	Calm	Calm	Calm
	Weather	Dry	Dry	Dry	Dry	Dry
	Time	09:00	09:00	09:00	09:00	09:00

Table 3: Turbidity and Suspended Solids results from marine water samples collected at the three collection sites in Bantry Bay

TS	Time	W1		W2		W3	
		Turbidity	Suspended Solids	Turbidity	Suspended Solids	Turbidity	Suspended Solids
S1	08:00	10	10	10	10	10	10
S1	09:00	10	10	10	10	10	10
S2	09:00	10	10	10	10	10	10
S2	09:00	10	10	10	10	10	10
S3	09:00	10	10	10	10	10	10

Table 4: Peranotin and Mercury results

TS	Time	W1		W2		W3	
		Peranotin	Mercury	Peranotin	Mercury	Peranotin	Mercury
S1	08:00	0.00	0.00	0.00	0.00	0.00	0.00
S1	09:00	0.00	0.00	0.00	0.00	0.00	0.00
S2	09:00	0.00	0.00	0.00	0.00	0.00	0.00
S2	09:00	0.00	0.00	0.00	0.00	0.00	0.00
S3	09:00	0.00	0.00	0.00	0.00	0.00	0.00

Summer - Spring

Samples were collected during the neap tide cycle of 22nd June 2012. Time of Low Water start was at 09:00 am and Low Water end was at 02:00 pm.

Table 2: Boat log for sample collection in Bantry Bay

		S1		S2		S3	
		Time	Depth	Time	Depth	Time	Depth
Time		09:00	09:00	09:00	09:00	09:00	09:00
Depth	Site	0.5m	0.5m	0.5m	0.5m	0.5m	0.5m
Ave	Conditions	Lat	Lat	Lat	Lat	Lat	Lat
Wind	Conditions	Cal	Cal	Cal	Cal	Cal	Breezy
Weather		Dist	Dist	Dry	Dry	Dry	Rain
Time		09:30	09:30	09:30	09:30	09:30	09:30
Depth	Site	0.5m	0.5m	0.5m	0.5m	0.5m	0.5m
Ave	Conditions	Lat	Lat	Lat	Lat	Lat	Lat
Wind	Conditions	Cal	Cal	Cal	Cal	Cal	Breezy
Weather		Dist	Dist	Dry	Dry	Dry	Rain
Time		10:00	10:00	10:00	10:00	10:00	10:00
Depth	Site	0.5m	0.5m	0.5m	0.5m	0.5m	0.5m
Ave	Conditions	Lat	Lat	Lat	Lat	Lat	Lat
Wind	Conditions	Cal	Cal	Cal	Cal	Cal	Breezy
Weather		Dist	Dist	Dry	Dry	Dry	Rain

Table 3: Turbidity and Suspended Solids results from marine water samples collected at the three collection sites in Bantry Bay

	S1		S2		S3	
	Turbidity	Suspended Solids	Turbidity	Suspended Solids	Turbidity	Suspended Solids
Time	09:00	0.5	09:00	0.5	09:00	0.5
Time	09:30	0.5	09:30	0.5	09:30	0.5
Time	10:00	0.5	10:00	0.5	10:00	0.5
Time	10:30	0.5	10:30	0.5	10:30	0.5
Time	11:00	0.5	11:00	0.5	11:00	0.5

Table 4: Uranium and Mercury results

	S1		S2		S3	
	Uranium	Mercury	Uranium	Mercury	Uranium	Mercury
Time	09:00	0.5	09:00	0.5	09:00	0.5
Time	09:30	0.5	09:30	0.5	09:30	0.5
Time	10:00	0.5	10:00	0.5	10:00	0.5
Time	10:30	0.5	10:30	0.5	10:30	0.5
Time	11:00	0.5	11:00	0.5	11:00	0.5

Summer – Neap

Samples were collected during the neap tide cycle of 22nd – 27th June 2012. Time of Low Water after start was at 09:00 am and Low End was at 03:00 pm.

Table 1: Boat log for sample collection in Bantry Bay

		S1		S2		S3	
		Time	Depth	Time	Depth	Time	Depth
Site							
Wave Conditions	Lat						
Wind Conditions	alm						
Weather	ry						
Time							
Depth							
Wave Conditions	Lat						
Wind Conditions	alm						
Weather	ry						
Time							
Depth							
Wave Conditions	Lat						
Wind Conditions	alm						
Weather	ry						

Table 2: Turbidity and Suspended Solids results from marine water samples collected at the three collection sites in Bantry Bay

	S1		S2		S3	
	Turbidity	Suspended Solids	Turbidity	Suspended Solids	Turbidity	Suspended Solids
Time						
Depth						
Wave						
Wind						

Table 3: Perfluorinated and Mercury results

	S1		S2		S3	
	Perfluorinated	Mercury	Perfluorinated	Mercury	Perfluorinated	Mercury
Time						
Depth						
Wave						
Wind						

Sediment Collection

Samples were collected during the Spring – Spring tidal cycle of 20th day

Time and weather data

	20	21
Time	11:00	11:00
Average conditions	Flat	Flat
Wind conditions	Calm	Calm
Weather	Dry	Dry

Site sediment characteristics

	20	21
Date	08/20/2016	08/21/2016
Location	00000	00000
Northings	00000	00000
Sample Depth	0m	0m
Method of Sampling	0.1m ² Van Veen Grab	0.1m ² Van Veen Grab
Laboratory Name	NLS	NLS
Visual Inspection	Sandy 0.1m ² Stron ² S ² lphide smell from the sediment. 0.1m ² highly anoxic. No evidence of live fauna in the sediment. Some mussel shells present in the sediment matrix.	Sandy 0.1m ² highly anoxic sediment. No evidence of live fauna but a lot of mussel shell present on the sediment surface.
Water Content	0000	0000
Gravel	0000	0000
Sand	0000	0000
0.1m ²	0000	0000
Total Organic Carbon	0000	0000

Notes on the sediment

00000 Sandy 0.1m² Stron² S²lphide smell from the sediment. 0.1m² highly anoxic. No evidence of live fauna in the sediment. Some mussel shells present in the sediment matrix.

00002 Sandy 0.1m² highly anoxic sediment. No evidence of live fauna but a lot of mussel shell present on the sediment surface.

Photographic Record of Sediment Samples



Figure 22 Photo of grab sample from SL-222



Figure 23 Photo of grab sample from SL-222

WAC Suite

The following parameters were tested as part of the WAC Suite

Parameters for analysis

1. BS EN 12286 elutriate determinations in mg/L at LPS for As, Ba, Cd, Cr, Cu, Pb, Hg, Ni, Mn, Sb, Se, Zn, TBT, BT, total dissolved solids, TSS, phenol index, dissolved organic carbon, total oil and grease or petroleum
2. pH
3. Acid Neutralisation Capacity (ANC)
4. Total Organic Carbon (TOC)
5. Loss on Ignition (LOI)
6. Benzene, toluene, ethylene, styrene BT, BT compounds
7. Polychlorinated biphenyls (PCBs) congeners
8. Polycyclic aromatic hydrocarbons (PAHs)
9. Mineral oil/petroleum hydrocarbons (MOPHs)

Results from the WAC suite of parameters are presented in the following table. Detailed results including limits of detection (LOD) results etc are included in the appended PDF and Excel files. The determination of TBT from sediment elutriate falls outside the normal WAC suite and the results presented here although carried out by the NLS are not ISO accredited.

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Site analysis results

Analysis	Unit	Result	Limit
Diethyl Tin as Leachate	mg/L	0.0	0.0
Tributyl Tin as Leachate	mg/L	0.0	0.0
Sulphate Leachable as S	mg/L	0.0	0.0
Carbonaceous Dissolved Leachable as C	mg/L	0.0	0.0
Sb Leachable	mg/L	0.0	0.0
As Leachable	mg/L	0.0	0.0
Ba Leachable	mg/L	0.0	0.0
Cd Leachable	mg/L	0.0	0.0
Cr Leachable	mg/L	0.0	0.0
Co Leachable	mg/L	0.0	0.0
1 Pb Leachable	mg/L	0.0	0.0
Mo Leachable	mg/L	0.0	0.0
Ni Leachable	mg/L	0.0	0.0
Se Leachable	mg/L	0.0	0.0
Mn Leachable	mg/L	0.0	0.0
Zn Leachable	mg/L	0.0	0.0
Total Dissolved Solids Leachable	mg/L	0.0	0.0
Tributyl Tin as Leachate	mg/L	0.0	0.0
Li Leachable	mg/L	0.0	0.0
Fe Leachable	mg/L	0.0	0.0
Phenols Monohydric Leachable	mg/L	0.0	0.0
2 pH Solid sample	pH units	7.0	7.0
pH Leachable	pH units	7.0	7.0
3 Acid Neutralisation Capacity (pH 8.2-8.5)	mg/L	0.0	0.0
Acid Neutralisation Capacity (pH 4.2-4.5)	mg/L	0.0	0.0
4 Total Organic Carbon	mg/L	0.0	0.0
5 Loss on Ignition (%)	%	0.0	0.0
Total Benzene Toluene Ethylbenzene and Xylene	mg/L	0.0	0.0
1,2-Dimethylbenzene (o-xylene)	mg/L	0.0	0.0
6 Benzene	mg/L	0.0	0.0
1,4-Dimethylbenzene (p-xylene)	mg/L	0.0	0.0
Ethylbenzene	mg/L	0.0	0.0
Toluene (m-xylene)	mg/L	0.0	0.0

MI Suite

All results for the MI Suite are presented in the accompanying excel sheet –
MI Report - Bantry redacted.xls

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Appendix 2- National Laboratory Services Report for Sediment Chemistry and Site

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David Gillespie
Aquatic Services Unit
Aquatic Services Unit
Environmental Research Institute
Lee Road
Cork

Dear David

Please find attached the results for the batch of 5 samples described below.

Samples Registered on:	12-May-2015
Analysis Started on:	12-May-2015
Analysis Completed on:	24-Jun-2015
Results for Batch Number	20078634
Your Purchase Order Number:	None Supplied

You will be invoiced shortly by our accounts department.

If we can be of further assistance then please do not hesitate to contact us.

Yours sincerely



Vici Morgan
Customer Services Team Leader
Tel: (0113) 231 2178
nls@environment-agency.gov.uk

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation. Details of analytical procedures and performance data are available on request. The date of sample analysis is available on request.

The Environment Agency carries out analytical work to high standards and within the scope of its UKAS accreditation, but has no knowledge of whether the circumstances or the validity of the procedures used to obtain the samples provided to the laboratory were representative of the need for which the information was required.

The Environment Agency and/or its staff does not therefore accept any liability for the consequences of any acts or omissions made on the basis of the analysis or advice or interpretation provided.

Client: Aquatic Services Unit Project: 12005 Marine Analysis
 Quote Description: WAC Suite
 Folder No: 003082320 Sampled on: 7-May-15 @ 14:00
 Comments: SL 01
 Quote No: 12005 Matrix: Sediment

Analyte	Result	Units	Flag	MRV	Accred	Lab ID	Testcode
PAH : Total : Dry Wt :- {Polynuclear Aromatic Hydrocarbon	<0.407	mg/kg			None	NLS	864
PCB : Total (28, 52, 101, 118, 138, 153, 180)	<0.0100	mg/kg			None	NLS	864
Total Benzene Toluene Ethylbenzene and Xylene : Dry Wt	<0.0200	mg/kg			None	NLS	864
Acid Neutralisation Capacity (pH 4) : Dry Wt	1.33	mol/kg		0.3	UKAS	LE	741
Acid Neutralisation Capacity (pH 7) : Dry Wt	<0.8	mol/kg		0.3	UKAS	LE	741
Conductivity : Solid sample	10.9	mS/cm	DB, DC	0.01	UKAS	LE	908
pH : Solid sample	8.34	pH Units	DB, DC	0.2	UKAS	LE	908
Hydrocarbons >C10 - C40 (Total) : Dry Wt	<100	mg/kg		50	None	LE	1128
Dibutyl Tin : Dry Wt as Cation	<8	ug/kg		3	UKAS	LE	897
Tributyl Tin : Dry Wt as Cation	<8	ug/kg		3	UKAS	LE	897
Acenaphthene : Dry Wt	<15	ug/kg		15	UKAS	LE	1511
Acenaphthylene : Dry Wt	<20	ug/kg		20	UKAS	LE	1511
Anthanthrene : Dry Wt	<40	ug/kg		30	UKAS	LE	1511
Anthracene : Dry Wt	<20	ug/kg		20	UKAS	LE	1511
Benzo (b + k) fluoranthene : Dry Wt	59.3	ug/kg		20	UKAS	LE	1511
Benzo(a)anthracene : Dry Wt	21.4	ug/kg		20	UKAS	LE	1511
Benzo(a)pyrene : Dry Wt	25.6	ug/kg		20	UKAS	LE	1511
Benzo(b)fluoranthene : Dry Wt	39.8	ug/kg		20	UKAS	LE	1511
Benzo(e)pyrene : Dry Wt	24.5	ug/kg		20	UKAS	LE	1511
Benzo(ghi)perylene : Dry Wt	26.3	ug/kg		10	UKAS	LE	1511
Benzo(k)fluoranthene : Dry Wt	<20	ug/kg		20	UKAS	LE	1511
Chrysene : Dry Wt	<30	ug/kg		30	UKAS	LE	1511
Coronene : Dry Wt	<10	ug/kg		10	None	LE	1511
Cyclopenta(cd)pyrene : Dry Wt	<10	ug/kg		10	UKAS	LE	1511
Dibenzo(ah)anthracene : Dry Wt	6.40	ug/kg		3	UKAS	LE	1511
Fluoranthene : Dry Wt	52.2	ug/kg		20	UKAS	LE	1511
Fluorene : Dry Wt	<10	ug/kg		10	UKAS	LE	1511
Indeno(1,2,3-cd)pyrene : Dry Wt	<30	ug/kg		30	UKAS	LE	1511
Naphthalene : Dry Wt	10.4	ug/kg		10	UKAS	LE	1511
Perylene : Dry Wt	106	ug/kg		30	None	LE	1511
Phenanthrene : Dry Wt	26.1	ug/kg		20	UKAS	LE	1511
Pyrene : Dry Wt	43.8	ug/kg		20	UKAS	LE	1511
PCB - 028 : Dry Wt	<2	ug/kg		2	UKAS	LE	1508
PCB - 052 : Dry Wt	<1	ug/kg		1	UKAS	LE	1508
PCB - 101 : Dry Wt	<2	ug/kg		2	UKAS	LE	1508

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PCB - 118 : Dry Wt	<2	ug/kg	2	UKAS	LE	1508
PCB - 138 : Dry Wt	<1	ug/kg	1	UKAS	LE	1508
PCB - 153 : Dry Wt	<1	ug/kg	1	UKAS	LE	1508
PCB - 180 : Dry Wt	<1	ug/kg	1	UKAS	LE	1508
1,2-Dimethylbenzene : Dry Wt :- {o-Xylene}	<3	ug/kg	1	UKAS	LE	928
				ELEVATED_MRV : Dry weight calculation		
Benzene : Dry Wt	<3	ug/kg	1	UKAS	LE	928
				ELEVATED_MRV : Dry weight calculation		
Dimethylbenzene : Sum of (1,3- 1,4-) : Dry Wt	<5	ug/kg	2	UKAS	LE	928
				ELEVATED_MRV : Dry weight calculation		
Ethylbenzene : Dry Wt	<1	ug/kg	0.5	UKAS	LE	928
				ELEVATED_MRV : Dry weight calculation		
Toluene : Dry Wt :- {Methylbenzene}	<8	ug/kg	3	UKAS	LE	928
				ELEVATED_MRV : Dry weight calculation		
Sulphate, Leachable : Dry Wt as SO4	7610	mg/kg	50	UKAS	LE	1493
Conductivity at 20C, Leachable	4800	uS/cm	100	UKAS	LE	446
Carbon, Organic, Dissolved, Leachable : Dry Wt as C	255	mg/kg	2	UKAS	LE	461
Dry Solids @ 30°C	36.7	%	0.5	None	LE	1130
Dry Solids @ 105°C	29.8	%	0.5	UKAS	LE	911
Loss on Ignition @ 500°C	12.5	%	0.5	UKAS	LE	911
Antimony, Leachable : Dry Wt	0.0142	mg/kg	0.01	UKAS	LE	1483
Arsenic, Leachable : Dry Wt	0.0726	mg/kg	0.008	UKAS	LE	1483
Barium, Leachable : Dry Wt	<0.131	mg/kg	0.1	UKAS	LE	1483
Cadmium, Leachable : Dry Wt	<0.00134	mg/kg	0.001	UKAS	LE	1483
Chromium, Leachable : Dry Wt	0.00571	mg/kg	0.005	UKAS	LE	1483
Copper, Leachable : Dry Wt	0.0814	mg/kg	0.01	UKAS	LE	1483
Lead, Leachable : Dry Wt	<0.0241	mg/kg	0.02	UKAS	LE	1483
Molybdenum, Leachable : Dry Wt	0.582	mg/kg	0.02	UKAS	LE	1483
Nickel, Leachable : Dry Wt	0.104	mg/kg	0.01	UKAS	LE	1483
Selenium, Leachable : Dry Wt	0.0216	mg/kg	0.01	UKAS	LE	1483
Zinc, Leachable : Dry Wt	<0.111	mg/kg	0.03	UKAS	LE	1483
BS EN 12457-3 two stage leach test mgkg	1.00	Coded	0	None	LE	503
Dry weight @ 105	100	%	0.5	None	LE	503
Leaching BatchNo	20079018	Unitless		None	LE	503
Leaching Method	4	Coded	0	UKAS	LE	503
Soil Proportion Used	1.10	Unitless	0	None	LE	503
Stage 1 Leachate Dilution	2.0	Unitless	0	None	LE	503
Stage 1 Leachate FolderNo	003259332	N/A		None	LE	503
Stage 2 Leachate FolderNo	003259333	N/A		None	LE	503
Volume of Stage 1 eluate	273	ml	0	None	LE	503
Wet sample weight	193	g	0	None	LE	503
Mercury Leachable : Dry Wt	<0.000114	mg/kg	0.0001	UKAS	LE	508
Chloride, Leachable : Dry Wt	1630	mg/kg	100	UKAS	LE	531
Fluoride, Leachable : Dry Wt	10.5	mg/kg	0.5	UKAS	LE	531
pH, Leachable	8.31	pH Units	0.5	UKAS	LE	549
Phenols, Monohydric Leachable : Dry Wt	<0.457	mg/kg	0.4	None	LE	554
Accreditation Assessment	2	No.	1	None	LE	924
Additional Material Present	Report	Text	0	None	LE	924

Drying Method	Report	Text	0	None	LE	924
Rejected Matter	NoResult	%	0	None	LE	924
Sample Colour	Report	Text	0	None	LE	924
Sample Matrix	Report	Text	0	None	LE	924
Sample Preparation	Report	Text		None	LE	924

The sample appeared to be black clay sediment + shells

The sample was crushed using a jaw crusher.
The sample was then sieved until it passed through a 2mm sieve.
The sample was received unpreserved.

All parameters are determined on the air-dried (<30degC) portion except those requiring a wet sample fraction where as received (wet) sample was used.

Dry Weight (DW) results are reported as determined at <30degC.

Total Dissolved Solids Leachable : Dry Wt	80500	mg/kg	1	UKAS	LE	608
Carbon, Organic : Dry Wt as C	2.75	%	0.1	UKAS	SC	535

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Client: Aquatic Services Unit Project: 12005 Marine Analysis
 Quote Description: WAC Suite
 Folder No: 003082321 Sampled on: 7-May-15 @ 14:25
 Comments: SL 02
 Quote No: 12005 Matrix: Sediment

Analyte	Result	Units	Flag	MRV	Accred	Lab ID	Testcode
PAH : Total : Dry Wt :- {Polynuclear Aromatic Hydrocarbon	<0.417	mg/kg			None	NLS	864
PCB : Total (28, 52, 101, 118, 138, 153, 180)	<0.0100	mg/kg			None	NLS	864
Total Benzene Toluene Ethylbenzene and Xylene : Dry Wt	<0.0170	mg/kg			None	NLS	864
Acid Neutralisation Capacity (pH 4) : Dry Wt	2.68	mol/kg		0.3	UKAS	LE	741
Acid Neutralisation Capacity (pH 7) : Dry Wt	<0.7	mol/kg		0.3	UKAS	LE	741
ELEVATED_MRV : Dry weight calculation							
Conductivity : Solid sample	10.3	mS/cm	DB, DC	0.01	UKAS	LE	908
pH : Solid sample	8.41	pH Units	DB, DC	0.2	UKAS	LE	908
Hydrocarbons >C10 - C40 (Total) : Dry Wt	<100	mg/kg		50	None	LE	1128
ELEVATED_MRV : Dry weight calculation							
Dibutyl Tin : Dry Wt as Cation	<7	ug/kg		3	UKAS	LE	897
ELEVATED_MRV : Dry weight calculation							
Tributyl Tin : Dry Wt as Cation	<7	ug/kg		3	UKAS	LE	897
ELEVATED_MRV : Dry weight calculation							
Acenaphthene : Dry Wt	<20	ug/kg		15	UKAS	LE	1511
ELEVATED_MRV : Matrix interference							
Acenaphthylene : Dry Wt	<20	ug/kg		20	UKAS	LE	1511
Anthanthrene : Dry Wt	<30	ug/kg		30	UKAS	LE	1511
Anthracene : Dry Wt	<20	ug/kg		20	UKAS	LE	1511
Benzo (b + k) fluoranthene : Dry Wt	70.8	ug/kg		20	UKAS	LE	1511
Benzo(a)anthracene : Dry Wt	<20	ug/kg		20	UKAS	LE	1511
Benzo(a)pyrene : Dry Wt	21.5	ug/kg		20	UKAS	LE	1511
Benzo(b)fluoranthene : Dry Wt	53.1	ug/kg		20	UKAS	LE	1511
Benzo(e)pyrene : Dry Wt	25.7	ug/kg		20	UKAS	LE	1511
Benzo(ghi)perylene : Dry Wt	26.7	ug/kg		10	UKAS	LE	1511
Benzo(k)fluoranthene : Dry Wt	<20	ug/kg		20	UKAS	LE	1511
Chrysene : Dry Wt	<30	ug/kg		30	UKAS	LE	1511
Coronene : Dry Wt	<10	ug/kg		10	None	LE	1511
Cyclopenta(cd)pyrene : Dry Wt	<10	ug/kg		10	UKAS	LE	1511
Dibenzo(ah)anthracene : Dry Wt	5.43	ug/kg		3	UKAS	LE	1511
Fluoranthene : Dry Wt	53.2	ug/kg		20	UKAS	LE	1511
Fluorene : Dry Wt	<10	ug/kg		10	UKAS	LE	1511
Indeno(1,2,3-cd)pyrene : Dry Wt	<30	ug/kg		30	UKAS	LE	1511
Naphthalene : Dry Wt	12.5	ug/kg		10	UKAS	LE	1511
Perylene : Dry Wt	96.2	ug/kg		30	None	LE	1511
Phenanthrene : Dry Wt	29.5	ug/kg		20	UKAS	LE	1511
Pyrene : Dry Wt	37.3	ug/kg		20	UKAS	LE	1511
PCB - 028 : Dry Wt	<2	ug/kg		2	UKAS	LE	1508
PCB - 052 : Dry Wt	<1	ug/kg		1	UKAS	LE	1508
PCB - 101 : Dry Wt	<2	ug/kg		2	UKAS	LE	1508

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PCB - 118 : Dry Wt	<2	ug/kg	2	UKAS	LE	1508	
PCB - 138 : Dry Wt	<1	ug/kg	1	UKAS	LE	1508	
PCB - 153 : Dry Wt	<1	ug/kg	1	UKAS	LE	1508	
PCB - 180 : Dry Wt	<1	ug/kg	1	UKAS	LE	1508	
1,2-Dimethylbenzene : Dry Wt :- {o-Xylene}	<2	ug/kg	DB, DC	1	UKAS	LE	928
			ELEVATED_MRV : Dry weight calculation				
Benzene : Dry Wt	<2	ug/kg	DB, DC	1	UKAS	LE	928
			ELEVATED_MRV : Dry weight calculation				
Dimethylbenzene : Sum of (1,3- 1,4-) : Dry Wt	<5	ug/kg	DB, DC	2	UKAS	LE	928
			ELEVATED_MRV : Dry weight calculation				
Ethylbenzene : Dry Wt	<1	ug/kg	DB, DC	0.5	UKAS	LE	928
			ELEVATED_MRV : Dry weight calculation				
Toluene : Dry Wt :- {Methylbenzene}	<7	ug/kg	DB, DC	3	UKAS	LE	928
			ELEVATED_MRV : Dry weight calculation				
Sulphate, Leachable : Dry Wt as SO4	5240	mg/kg	DC	50	UKAS	LE	1493
Conductivity at 20C, Leachable	3350	uS/cm	DC	100	UKAS	LE	446
Carbon, Organic, Dissolved, Leachable : Dry Wt as C	388	mg/kg		2	UKAS	LE	461
Dry Solids @ 30°C	43.7	%		0.5	None	LE	1130
Dry Solids @ 105°C	41.3	%		0.5	UKAS	LE	911
Loss on Ignition @ 500°C	12.4	%		0.5	UKAS	LE	911
Antimony, Leachable : Dry Wt	0.0330	mg/kg		0.01	UKAS	LE	1483
Arsenic, Leachable : Dry Wt	0.0773	mg/kg		0.008	UKAS	LE	1483
Barium, Leachable : Dry Wt	<0.114	mg/kg		0.1	UKAS	LE	1483
Cadmium, Leachable : Dry Wt	<0.00178	mg/kg		0.001	UKAS	LE	1483
Chromium, Leachable : Dry Wt	0.00572	mg/kg		0.005	UKAS	LE	1483
Copper, Leachable : Dry Wt	0.156	mg/kg		0.01	UKAS	LE	1483
Lead, Leachable : Dry Wt	<0.0229	mg/kg		0.02	UKAS	LE	1483
Molybdenum, Leachable : Dry Wt	0.733	mg/kg		0.02	UKAS	LE	1483
Nickel, Leachable : Dry Wt	0.0532	mg/kg		0.01	UKAS	LE	1483
Selenium, Leachable : Dry Wt	0.0245	mg/kg		0.01	UKAS	LE	1483
Zinc, Leachable : Dry Wt	<0.119	mg/kg		0.03	UKAS	LE	1483
BS EN 12457-3 two stage leach test mgkg	1.00	Coded		0	None	LE	503
Dry weight @ 105	100	%		0.5	None	LE	503
Leaching BatchNo	20079018	Unitless			None	LE	503
Leaching Method	4	Coded		0	UKAS	LE	503
Soil Proportion Used	1.10	Unitless		0	None	LE	503
Stage 1 Leachate Dilution	2.0	Unitless		0	None	LE	503
Stage 1 Leachate FolderNo	003259336	N/A			None	LE	503
Stage 2 Leachate FolderNo	003259339	N/A			None	LE	503
Volume of Stage 1 eluate	279	ml		0	None	LE	503
Wet sample weight	193	g		0	None	LE	503
Mercury Leachable : Dry Wt	<0.000114	mg/kg		0.0001	UKAS	LE	508
Chloride, Leachable : Dry Wt	1500	mg/kg	DB, DC	100	UKAS	LE	531
Fluoride, Leachable : Dry Wt	10.9	mg/kg	DB, DC	0.5	UKAS	LE	531
pH, Leachable	8.43	pH Units	DC	0.5	UKAS	LE	549
Phenols, Monohydric Leachable : Dry Wt	<0.458	mg/kg	DC	0.4	None	LE	554
Accreditation Assessment	2	No.		1	None	LE	924
Additional Material Present	Report	Text		0	None	LE	924

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Drying Method	Report	Text	0	None	LE	924
Rejected Matter	NoResult	%	0	None	LE	924
Sample Colour	Report	Text	0	None	LE	924
Sample Matrix	Report	Text	0	None	LE	924
Sample Preparation	Report	Text		None	LE	924

The sample appeared to be black clay sediment + shells

The sample was crushed using a jaw crusher.
The sample was then sieved until it passed through a 2mm sieve.
The sample was received unpreserved.

All parameters are determined on the air-dried (<30degC) portion except those requiring a wet sample fraction where as received (wet) sample was used.

Dry Weight (DW) results are reported as determined at <30degC.

Total Dissolved Solids Leachable : Dry Wt	57300	mg/kg	1	UKAS	LE	608
Carbon, Organic : Dry Wt as C	2.46	%	0.1	UKAS	SC	535

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Client: Aquatic Services Unit Project: 12005 Marine Analysis
 Quote Description: Marine Institute Suite
 Folder No: 003082330 Sampled on: 7-May-15 @ 14:00
 Comments: SL 01
 Quote No: 12005 Matrix: Sediment

Analyte	Result	Units	Flag	MRV	Accred	Lab ID	Testcode
Moisture Content, Air dried 105 C	67.5	%			None	NLS	864
Hydrocarbons : Total : Dry Wt as Ekofisk	162	mg/kg		0.3	UKAS	LE	402
Mercury : Dry Wt	0.0757	mg/kg		0.002	UKAS	LE	1082
Aluminium, HF Digest : Dry Wt	59900	mg/kg		90	UKAS	LE	756
Arsenic, HF Digest : Dry Wt	12.9	mg/kg		0.2	UKAS	LE	341
Cadmium, HF Digest : Dry Wt	0.328	mg/kg		0.01	UKAS	LE	341
Chromium, HF Digest : Dry Wt	69.8	mg/kg		3	UKAS	LE	341
Copper, HF Digest : Dry Wt	28.0	mg/kg		0.4	UKAS	LE	341
Lead, HF Digest : Dry Wt	28.6	mg/kg		0.2	UKAS	LE	341
Lithium, HF Digest : Dry Wt	49.2	mg/kg		0.5	UKAS	LE	341
Nickel, HF Digest : Dry Wt	31.6	mg/kg		0.6	UKAS	LE	341
Zinc : HF Digest : Dry Wt	108	mg/kg		0.05	UKAS	LE	341
Aldrin : Dry Wt	<0.5	ug/kg		0.5	UKAS	LE	672
DDE -pp : Dry Wt	0.114	ug/kg		0.1	UKAS	LE	672
DDT -op : Dry Wt	<0.1	ug/kg		0.1	UKAS	LE	672
DDT -pp : Dry Wt	<0.1	ug/kg		0.1	UKAS	LE	672
Dieldrin : Dry Wt	<0.5	ug/kg		0.5	UKAS	LE	672
Endrin : Dry Wt	<0.5	ug/kg		0.5	UKAS	LE	672
HCH -alpha : Dry Wt	<0.1	ug/kg		0.1	UKAS	LE	672
HCH -beta : Dry Wt	<0.1	ug/kg		0.1	UKAS	LE	672
HCH -delta : Dry Wt	<0.1	ug/kg		0.1	UKAS	LE	672
HCH -gamma : Dry Wt :- {Lindane}	<0.1	ug/kg		0.1	UKAS	LE	672
Hexachlorobenzene : Dry Wt	<0.1	ug/kg		0.1	UKAS	LE	672
Hexachlorobutadiene : Dry Wt	<0.1	ug/kg		0.1	UKAS	LE	672
Isodrin : Dry Wt	<0.5	ug/kg		0.5	UKAS	LE	672
TDE - pp : Dry Wt	<0.1	ug/kg		0.1	UKAS	LE	672
Acenaphthene : Dry Wt	2.09	ug/kg		1	UKAS	LE	1051
Acenaphthylene : Dry Wt	1.26	ug/kg		1	None	LE	1051
Anthracene : Dry Wt	5.31	ug/kg		1	UKAS	LE	1051
Benzo(a)anthracene : Dry Wt	21.4	ug/kg		1	UKAS	LE	1051
Benzo(a)pyrene : Dry Wt	25.9	ug/kg		1	UKAS	LE	1051
Benzo(b)fluoranthene : Dry Wt	33.0	ug/kg		1	UKAS	LE	1051
Benzo(ghi)perylene : Dry Wt	26.4	ug/kg		1	UKAS	LE	1051
Benzo(k)fluoranthene : Dry Wt	13.8	ug/kg		1	UKAS	LE	1051
Chrysene : Dry Wt	18.6	ug/kg		3	UKAS	LE	1051
Dibenzo(ah)anthracene : Dry Wt	2.92	ug/kg		1	UKAS	LE	1051
Fluoranthene : Dry Wt	52.3	ug/kg		1	UKAS	LE	1051
Fluorene : Dry Wt	6.32	ug/kg		5	UKAS	LE	1051
Indeno(1,2,3-c,d)pyrene : Dry Wt	24.7	ug/kg		1	UKAS	LE	1051
Naphthalene : Dry Wt	10.0	ug/kg		5	UKAS	LE	1051

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Phenanthrene : Dry Wt	24.4	ug/kg	5	UKAS	LE	1051
Pyrene : Dry Wt	39.8	ug/kg	1	UKAS	LE	1051
PCB - 028 : Dry Wt	<0.1	ug/kg	0.1	UKAS	LE	685
PCB - 052 : Dry Wt	<0.1	ug/kg	0.1	UKAS	LE	685
PCB - 101 : Dry Wt	<0.1	ug/kg	0.1	UKAS	LE	685
PCB - 118 : Dry Wt	<0.1	ug/kg	0.1	UKAS	LE	685
PCB - 138 : Dry Wt	0.180	ug/kg	0.1	UKAS	LE	685
PCB - 153 : Dry Wt	0.323	ug/kg	0.1	UKAS	LE	685
PCB - 180 : Dry Wt	0.308	ug/kg	0.1	UKAS	LE	685
Dibutyl Tin : Dry Wt as Cation	<7	ug/kg	3	UKAS	LE	897
				ELEVATED_MRV : Dry weight calculation		
Tributyl Tin : Dry Wt as Cation	<7	ug/kg	3	UKAS	LE	897
				ELEVATED_MRV : Dry weight calculation		
Dry Solids @ 30°C	39.6	%	0.5	None	LE	1130
Dry Solids @ 105°C	32.5	%	0.5	UKAS	LE	911
Loss on Ignition @ 500°C	12.3	%	0.5	UKAS	LE	911
Accreditation Assessment	2	No.		None	LE	924
Additional Material Present	Report	Text	0	None	LE	924
Drying Method	Report	Text	0	None	LE	924
Rejected Matter	NoResult	%	0	None	LE	924
Sample Colour	Report	Text	0	None	LE	924
Sample Matrix	Report	Text	0	None	LE	924
Sample Preparation	Report	Text		None	LE	924

The sample appeared to be black clay sediment with shells.

The sample was crushed using a jaw crusher.

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The sample was received unpreserved.

All parameters are determined on the air-dried (<30degC) portion except those requiring a wet sample fraction where as received (wet) sample was used.

Dry Weight (DW) results are reported as determined at <30degC.

Carbon, Organic : Dry Wt as C	2.80	%	0.1	UKAS	SC	535
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Client: Aquatic Services Unit Project: 12005 Marine Analysis
 Quote Description: Marine Institute Suite
 Folder No: 003082331 Sampled on: 7-May-15 @ 14:25
 Comments: SL 02
 Quote No: 12005 Matrix: Sediment

Analyte	Result	Units	Flag	MRV	Accred	Lab ID	Testcode
Moisture Content, Air dried 105 C	60.1	%			None	NLS	864
Hydrocarbons : Total : Dry Wt as Ekofisk	96.5	mg/kg		0.3	UKAS	LE	402
Mercury : Dry Wt	0.0511	mg/kg		0.002	UKAS	LE	1082
Aluminium, HF Digest : Dry Wt	64200	mg/kg		90	UKAS	LE	756
Arsenic, HF Digest : Dry Wt	13.3	mg/kg		0.2	UKAS	LE	341
Cadmium, HF Digest : Dry Wt	0.265	mg/kg		0.01	UKAS	LE	341
Chromium, HF Digest : Dry Wt	75.5	mg/kg		3	UKAS	LE	341
Copper, HF Digest : Dry Wt	24.7	mg/kg		0.4	UKAS	LE	341
Lead, HF Digest : Dry Wt	32.6	mg/kg		0.2	UKAS	LE	341
Lithium, HF Digest : Dry Wt	59.0	mg/kg		0.5	UKAS	LE	341
Nickel, HF Digest : Dry Wt	33.3	mg/kg		0.6	UKAS	LE	341
Zinc : HF Digest : Dry Wt	110	mg/kg		0.05	UKAS	LE	341
Aldrin : Dry Wt	<0.5	ug/kg		0.5	UKAS	LE	672
DDE -pp : Dry Wt	0.114	ug/kg		0.1	UKAS	LE	672
DDT -op : Dry Wt	<0.1	ug/kg		0.1	UKAS	LE	672
DDT -pp : Dry Wt	<0.1	ug/kg		0.1	UKAS	LE	672
Dieldrin : Dry Wt	<0.5	ug/kg		0.5	UKAS	LE	672
Endrin : Dry Wt	<0.5	ug/kg		0.5	UKAS	LE	672
HCH -alpha : Dry Wt	<0.1	ug/kg		0.1	UKAS	LE	672
HCH -beta : Dry Wt	<0.1	ug/kg		0.1	UKAS	LE	672
HCH -delta : Dry Wt	<0.1	ug/kg		0.1	UKAS	LE	672
HCH -gamma : Dry Wt :- {Lindane}	<0.1	ug/kg		0.1	UKAS	LE	672
Hexachlorobenzene : Dry Wt	<0.1	ug/kg		0.1	UKAS	LE	672
Hexachlorobutadiene : Dry Wt	<0.1	ug/kg		0.1	UKAS	LE	672
Isodrin : Dry Wt	<0.5	ug/kg		0.5	UKAS	LE	672
TDE - pp : Dry Wt	<0.1	ug/kg		0.1	UKAS	LE	672
Acenaphthene : Dry Wt	2.30	ug/kg		1	UKAS	LE	1051
Acenaphthylene : Dry Wt	<1	ug/kg		1	None	LE	1051
Anthracene : Dry Wt	5.36	ug/kg		1	UKAS	LE	1051
Benzo(a)anthracene : Dry Wt	20.2	ug/kg		1	UKAS	LE	1051
Benzo(a)pyrene : Dry Wt	23.7	ug/kg		1	UKAS	LE	1051
Benzo(b)fluoranthene : Dry Wt	41.9	ug/kg		1	UKAS	LE	1051
Benzo(ghi)perylene : Dry Wt	28.2	ug/kg		1	UKAS	LE	1051
Benzo(k)fluoranthene : Dry Wt	16.4	ug/kg		1	UKAS	LE	1051
Chrysene : Dry Wt	18.5	ug/kg		3	UKAS	LE	1051
Dibenzo(ah)anthracene : Dry Wt	3.06	ug/kg		1	UKAS	LE	1051
Fluoranthene : Dry Wt	54.6	ug/kg		1	UKAS	LE	1051
Fluorene : Dry Wt	7.10	ug/kg		5	UKAS	LE	1051
Indeno(1,2,3-c,d)pyrene : Dry Wt	30.1	ug/kg		1	UKAS	LE	1051
Naphthalene : Dry Wt	13.1	ug/kg		5	UKAS	LE	1051

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Phenanthrene : Dry Wt	28.5	ug/kg	5	UKAS	LE	1051
Pyrene : Dry Wt	34.3	ug/kg	1	UKAS	LE	1051
PCB - 028 : Dry Wt	<0.1	ug/kg	0.1	UKAS	LE	685
PCB - 052 : Dry Wt	<0.1	ug/kg	0.1	UKAS	LE	685
PCB - 101 : Dry Wt	0.113	ug/kg	0.1	UKAS	LE	685
PCB - 118 : Dry Wt	0.123	ug/kg	0.1	UKAS	LE	685
PCB - 138 : Dry Wt	0.263	ug/kg	0.1	UKAS	LE	685
PCB - 153 : Dry Wt	0.464	ug/kg	0.1	UKAS	LE	685
PCB - 180 : Dry Wt	0.325	ug/kg	0.1	UKAS	LE	685
Dibutyl Tin : Dry Wt as Cation	<6	ug/kg	3	UKAS	LE	897
				ELEVATED_MRV : Dry weight calculation		
Tributyl Tin : Dry Wt as Cation	<6	ug/kg	3	UKAS	LE	897
				ELEVATED_MRV : Dry weight calculation		
Dry Solids @ 30°C	46.4	%	0.5	None	LE	1130
Dry Solids @ 105°C	39.9	%	0.5	UKAS	LE	911
Loss on Ignition @ 500°C	12.3	%	0.5	UKAS	LE	911
Accreditation Assessment	2	No.		None	LE	924
Additional Material Present	Report	Text	0	None	LE	924
Drying Method	Report	Text	0	None	LE	924
Rejected Matter	NoResult	%	0	None	LE	924
Sample Colour	Report	Text	0	None	LE	924
Sample Matrix	Report	Text	0	None	LE	924
Sample Preparation	Report	Text		None	LE	924

The sample appeared to be black clay sediment with shells.

The sample was crushed using a jaw crusher.

The sample was then sieved until it passed through a 2mm sieve.

The sample was received unpreserved.

All parameters are determined on the air-dried (<30degC) portion except those requiring a wet sample fraction where as received (wet) sample was used.

Dry Weight (DW) results are reported as determined at <30degC.

Carbon, Organic : Dry Wt as C	2.31	%	0.1	UKAS	SC	535
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Client: Aquatic Services Unit Project: 12005 Marine Analysis
 Quote Description: Marine Institute Suite
 Folder No: 003247887 Sampled on: Date Not Supplied
 Comments: CRM
 Quote No: 12005 Matrix: Sediment

Analyte	Result	Units	Flag	MRV	Accred	Lab ID	Testcode
Mercury : Dry Wt	0.0831	mg/kg	DA	0.002	UKAS	LE	1082
Aluminium, HF Digest : Dry Wt	89000	mg/kg	DA	90	UKAS	LE	756
Arsenic, HF Digest : Dry Wt	20.8	mg/kg	DA	0.2	UKAS	LE	341
Cadmium, HF Digest : Dry Wt	0.250	mg/kg	DA	0.01	UKAS	LE	341
Chromium, HF Digest : Dry Wt	97.9	mg/kg	DA	3	UKAS	LE	341
Copper, HF Digest : Dry Wt	32.7	mg/kg	DA	0.4	UKAS	LE	341
Lead, HF Digest : Dry Wt	21.5	mg/kg	DA	0.2	UKAS	LE	341
Lithium, HF Digest : Dry Wt	76.6	mg/kg	DA	0.5	UKAS	LE	341
Nickel, HF Digest : Dry Wt	44.5	mg/kg	DA	0.6	UKAS	LE	341
Zinc : HF Digest : Dry Wt	156	mg/kg	DA	0.05	UKAS	LE	341
Aldrin : Dry Wt	<0.5	ug/kg	DA	0.5	UKAS	LE	672
DDE -pp : Dry Wt	0.688	ug/kg	DA	0.1	UKAS	LE	672
DDT -op : Dry Wt	<0.1	ug/kg	DA	0.1	UKAS	LE	672
DDT -pp : Dry Wt	0.146	ug/kg	DA	0.1	UKAS	LE	672
Dieldrin : Dry Wt	0.661	ug/kg	DA	0.5	UKAS	LE	672
Endrin : Dry Wt	<0.5	ug/kg	DA	0.5	UKAS	LE	672
HCH -alpha : Dry Wt	<0.1	ug/kg	DA	0.1	UKAS	LE	672
HCH -beta : Dry Wt	<0.1	ug/kg	DA	0.1	UKAS	LE	672
HCH -delta : Dry Wt	<0.1	ug/kg	DA	0.1	UKAS	LE	672
HCH -gamma : Dry Wt :- {Lindane}	0.125	ug/kg	DA	0.1	UKAS	LE	672
Hexachlorobenzene : Dry Wt	0.120	ug/kg	DA	0.1	UKAS	LE	672
Hexachlorobutadiene : Dry Wt	<0.1	ug/kg	DA	0.1	UKAS	LE	672
Isodrin : Dry Wt	<0.5	ug/kg	DA	0.5	UKAS	LE	672
TDE - pp : Dry Wt	0.977	ug/kg	DA	0.1	UKAS	LE	672
Acenaphthene : Dry Wt	7.88	ug/kg	DA	1	UKAS	LE	1051
Acenaphthylene : Dry Wt	2.66	ug/kg	DA	1	None	LE	1051
Anthracene : Dry Wt	12.0	ug/kg	DA	1	UKAS	LE	1051
Benzo(a)anthracene : Dry Wt	56.4	ug/kg	DA	1	UKAS	LE	1051
Benzo(a)pyrene : Dry Wt	63.9	ug/kg	DA	1	UKAS	LE	1051
Benzo(b)fluoranthene : Dry Wt	98.8	ug/kg	DA	1	UKAS	LE	1051
Benzo(ghi)perylene : Dry Wt	103	ug/kg	DA	1	UKAS	LE	1051
Benzo(k)fluoranthene : Dry Wt	44.4	ug/kg	DA	1	UKAS	LE	1051
Chrysene : Dry Wt	46.3	ug/kg	DA	3	UKAS	LE	1051
Dibenzo(ah)anthracene : Dry Wt	12.9	ug/kg	DA	1	UKAS	LE	1051
Fluoranthene : Dry Wt	119	ug/kg	DA	1	UKAS	LE	1051
Fluorene : Dry Wt	11.2	ug/kg	DA	5	UKAS	LE	1051
Indeno(1,2,3-c,d)pyrene : Dry Wt	98.3	ug/kg	DA	1	UKAS	LE	1051
Naphthalene : Dry Wt	29.7	ug/kg	DA	5	UKAS	LE	1051
Phenanthrene : Dry Wt	83.0	ug/kg	DA	5	UKAS	LE	1051
Pyrene : Dry Wt	101	ug/kg	DA	1	UKAS	LE	1051

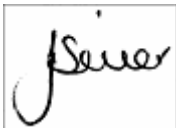
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PCB - 028 : Dry Wt	0.370	ug/kg	DA	0.1	UKAS	LE	685
PCB - 052 : Dry Wt	0.418	ug/kg	DA	0.1	UKAS	LE	685
PCB - 101 : Dry Wt	0.445	ug/kg	DA	0.1	UKAS	LE	685
PCB - 118 : Dry Wt	0.450	ug/kg	DA	0.1	UKAS	LE	685
PCB - 138 : Dry Wt	0.454	ug/kg	DA	0.1	UKAS	LE	685
PCB - 153 : Dry Wt	0.508	ug/kg	DA	0.1	UKAS	LE	685
PCB - 180 : Dry Wt	0.228	ug/kg	DA	0.1	UKAS	LE	685
Dry Solids @ 30°C	NoResult	%	DA	0.5	None	LE	1130
Accreditation Assessment	NoResult	No.	DA	1	None	LE	924
Additional Material Present	Report	Text	DA	0	None	LE	924
Drying Method	Report	Text	DA	0	None	LE	924
Rejected Matter	NoResult	%	DA	0	None	LE	924
Sample Colour	Report	Text	DA	0	None	LE	924
Sample Matrix	Report	Text	DA	0	None	LE	924
Sample Preparation	Report	Text	DA		None	LE	924

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Method Description Summary for all samples in batch Number 20078634

341 LE M Metals ICP-MS Sediment - HF Digest Open Vessel Hotplate Digest, determined by ICPMS, samples are sieved to <63um.
 402 LE I Hydrocarbons by UV- methanol digested, pentane xch, by UV fluorescence spectrometry
 446 Conductivity (leach) - determined by specific conductivity electrode; from "as received" sample
 461 DOC (leach) - by colorimetry; DW result calculated; from "as received" sample
 503 LE P Leachability 01 - Leaching method - (2)-12457-1 (1stg,2:1); (3)-12457-2 (1-stg,10:1); (4)-12457-3 (2-stg,2+8:1); from "as received" sample
 508 Mercury (leach) - by CV-AFS; DW result calculated; from "as received" sample
 531 Nutrients (leach) - by colorimetry; DW result calculated; from "as received" sample
 535 LE I TOC 01 - combusted with oxygen; thermal conductivity detection
 549 pH (leach) - by pH electrode; from "as received" sample
 554 Phenols (leach) - 4AMP reaction; by colorimetry; DW result calculated; from "as received" sample
 608 TDS (leach) - by gravimetry; DW result calculated; from "as received" sample
 672 LE O OCP_PAH_PCB in Marine Biota and Sediment - solvent extracted, determined by GCMS QQQ
 685 LE O OCP_PAH_PCB in Marine Biota and Sediment - solvent extracted, determined by GCMS QQQ
 741 LE I ANC 01 - acid titrated to pH 4 or 7; determined by pH electrode; from "as received" sample
 756 LE M Metals Marine (ICPOES) - Open Vessel Hotplate HF digest, determined by ICPOES, samples are sieved to <63um.
 864 Parameter by calculation
 897 LE O Organotins (GCMS) 01 - acetic acid/methanol extracted; derivatised; determined GCMS (SIM); from "as received" sample
 908 LE I pH & EC - pH, Conductivity - water extracted; determined by specific electrode; from "as received" sample
 911 LE I Dry Solids & Lol 01 - Dry Solids (105C), Loss on Ignition (500C) - thermally treated; determined by gravimetry
 924 Sample Preparation; Dry Solids (30°C); from "as received" sample
 928 LE O VOC (GCMS) 01 - water extracted; gently heated; determined by HS-GCMS (SIM); from "as received" sample
 1051 LE O OCP_PAH_PCB in Marine Biota and Sediment - solvent extracted, determined by GCMS QQQ
 1082 LE M Mercury CSEMP - microwave aqua regia digested, acidic SnCl2 reduced, determined by CV-AFS, samples are sieved to <63um.
 1128 LE O EPH >C5-C44 (GC-FID) 01 - Hydrocarbon screen including arom/aliph banding by GC-FID; from "as received" sample
 1130 LE P Soil Preparation 01: The sample is air-dried at <30°C in a controlled environment until a constant weight it achieved.
 1483 Not Available
 1493 Anions Leach - Determined by IC, DW result calculated, from as received sample
 1508 LE O MR solid(GCMS) 01-03-organics GCMS extracted,hexane,xch,by GCMS(scan mode)
 1511 LE O MR solid(GCMS) 01-03-organics GCMS extracted,hexane,xch,by GCMS(scan mode)



Jo Senior
Laboratory Site Manager

All reporting limits quoted are those achievable for clean samples of the relevant matrix. No allowance is made for instances when dilutions are necessary owing to the nature of the sample or insufficient volume of the sample being available. In these cases higher reporting limits may be quoted and will be above the MRV.

Solid sample results are determined on a "dried" sample fraction except for parameters where the method description identifies that "as received" sample was used.

Key to Results Flags:

- DA Sampling date/time has not been provided and no assessment of sample stability can be made. It is possible that the results may be compromised.
- DB Samples received outside specified holding times. It is possible that the results may be compromised.
- DC Analysis started outside of specified holding time. It is possible that the results may be compromised.

The analysis start date specified is the date of the first test, dates for other analysis are available on request.

Please note all samples will be retained for 10 working days for aqueous samples and 30 working days for solid samples after reporting unless otherwise agreed with Customer Services

Key to Accreditation: UKAS = Methodology accredited to ISO/IEC 17025:2005, MCertS = Methodology accredited to MCertS Performance Standard for testing of soils, none = Methodology not accredited

Key to Lab ID: LE = Leeds, NM = Nottingham, SX = Starcross, SC = Sub-Contracted outside NLS, FI = Field Data - outside NLS, NLS = Calculated

Any subsequent version of this report denoted with a higher version number will supersede this and any previous versions

Key to WAC Leach Test WAC Leach test : 1 = BS 1377 leach test , 2 = single stage l/s 2:1 BS EN 12457-1 leaching test , 3 = single stage l/s 10:1 BS EN 12457-2 leaching test , 4 = double stage l/s 10:1 BS EN 12457-3 leaching test

END OF TEST REPORT

Appendix 2- National Laboratory Services Report for TBT Leachability on Bantry Sediment Samples

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David Gillespie
Aquatic Services Unit
Aquatic Services Unit
Environmental Research Institute
Lee Road
Cork

Dear David

Please find attached the results for the batch of 2 samples described below.

Samples Registered on:	28-May-2015
Analysis Started on:	01-Jun-2015
Analysis Completed on:	04-Jun-2015
Results for Batch Number	20078960
Your Purchase Order Number:	None Supplied

You will be invoiced shortly by our accounts department.

If we can be of further assistance then please do not hesitate to contact us.

Yours sincerely



Vici Morgan
Customer Services Team Leader
Tel: (0113) 231 2178
nls@environment-agency.gov.uk

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation. Details of analytical procedures and performance data are available on request. The date of sample analysis is available on request.

The Environment Agency carries out analytical work to high standards and within the scope of its UKAS accreditation, but has no knowledge of whether the circumstances or the validity of the procedures used to obtain the samples provided to the laboratory were representative of the need for which the information was required.

The Environment Agency and/or its staff does not therefore accept any liability for the consequences of any acts or omissions made on the basis of the analysis or advice or interpretation provided.

Final Report

Report ID - 20078960 - 1

Batch description: Marine sediment prepared leachate

Reported on:
04-Jun-2015

Client: Aquatic Services Unit Project: Marine Analysis
 Quote Description: TBT Analysis
 Folder No: 003258566 Sampled on: 7-May-15 @ 14:00
 Comments: SL 01 - Leachate prepared according to BS EN 12457-2-2:2002 @ 10 l/kg
 Quote No: 12005 Matrix: Prepared Leachate

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Flag</u> <small>DB, DC</small>	<u>MRV</u>	<u>Accred</u>	<u>Lab ID</u>	<u>Testcode</u>
Tributyl Tin as Cation	<0.003	ug/l		0.0005	None	SX	59
ELEVATED_MRV : Matrix interference							

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Final Report

Report ID - 20078960 - 1

Batch description: Marine sediment prepared leachate

Reported on:
04-Jun-2015

Client: Aquatic Services Unit Project: Marine Analysis
 Quote Description: TBT Analysis
 Folder No: 003258567 Sampled on: 7-May-15 @ 14:25
 Comments: SL 02 - Leachate prepared according to BS EN 12457-2-2:2002 @ 10 l/kg
 Quote No: 12005 Matrix: Prepared Leachate

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Flag</u> <small>DB, DC</small>	<u>MRV</u>	<u>Accred</u>	<u>Lab ID</u>	<u>Testcode</u>
Tributyl Tin as Cation	<0.003	ug/l		0.0005	None	SX	59
ELEVATED_MRV : Matrix interference							

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Method Description Summary for all samples in batch Number 20078960

59 SX O TINS - Organotins (speciated) - solvent extracted; determined by GCMS



James Trout
Laboratory Site Manager

All reporting limits quoted are those achievable for clean samples of the relevant matrix. No allowance is made for instances when dilutions are necessary owing to the nature of the sample or insufficient volume of the sample being available. In these cases higher reporting limits may be quoted and will be above the MRV.

Solid sample results are determined on a "dried" sample fraction except for parameters where the method description identifies that "as received" sample was used.

Key to Results Flags:

DB Samples received outside specified holding times. It is possible that the results may be compromised.

DC Analysis started outside of specified holding time. It is possible that the results may be compromised.

The analysis start date specified is the date of the first test, dates for other analysis are available on request.

Please note all samples will be retained for 10 working days for aqueous samples and 30 working days for solid samples after reporting unless otherwise agreed with Customer Services

Key to Accreditation: UKAS = Methodology accredited to ISO/IEC 17025:2005, MCertS = Methodology accredited to MCertS Performance Standard for testing of soils, none = Methodology not accredited

Key to Lab ID: LE = Leeds, NM = Nottingham, SX = Starcross, SC = Sub-Contracted outside NLS, FI = Field Data - outside NLS, NLS = Calculated

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END OF TEST REPORT

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EPA Dumping at Sea Permit Application - Material Analysis Reporting Form (Version 1.0)
Sheet 1. Instructions

Instructions

As part of an application for a Dumping at Sea (DAS) Permit, sediment chemistry results must be submitted using this form. When completing this form, please ensure that you:

- * Complete all worksheets in full - i.e. sheets "2. Project Info", "3. Results" and "4. QA".
- * Report all results in the units specified (e.g. mg kg⁻¹ versus µg kg⁻¹).
- * Do not alter the format of this spreadsheet by changing units, by moving columns or by inserting new columns amongst the existing used columns.
- * Insert additional rows as necessary at the end of the existing rows in sheet. "3 Results"
- * Insert other determinants as necessary in the empty columns to the right in sheet. "3 Results".
- * Any additional information should be included as inserted comments or in the Notes column in sheet. "3 Results".
- * Provide a brief description of methodology used in sheet "2. Project Info".
- * Enter the measured value (as well as the certified value) for Certified Reference material in sheet "4.
- * If in-house reference material is used, insert the measured value and the range normally achieved.
- * Refer to the Dumping at Sea Application Form Guidance Note for further relevant information:
<http://www.epa.ie/downloads/forms/lic/das/name,30267,en.html>

Key	
Location	Bantry
CRMs	Certified reference materials used in analyses for metals, organics & TBT
Fraction analysed	Specify which fraction of sediment was analysed. < 2mm is requested, but some labs use < 63µm
Analysing laboratory	Main laboratory where samples were sent to for analysis
Sub-contract lab	Sub-contracted laboratory where samples were sent by main laboratory
Sample ID code	Sample number assigned by sampler
Lab Report ID	Code assigned by analysing laboratory
Position (dd/mm.mmm)	Give lat/long coordinates in degrees & decimal minutes (dd mm.mmm) of the position where the sample was taken. List also the datum & projection.
Sampling depth (m)	The depth below the seabed surface at which the sample was collected.
<2mm	Grain size % < 2mm
<63µm	Grain size % < 63µm
OC	Organic carbon (NOT organic matter)
TEH	Total extractable hydrocarbons
Cu	Copper
Zn	Zinc
Cd	Cadmium
Hg	Mercury
Pb	Lead
As	Arsenic
Cr	Chromium
Mn	Manganese
Ni	Nickel
Li	Lithium
Al	Aluminium
DBT	Dibutyl tin
TBT	Tributyl tin
Σ TBT + DBT	Sum of di-butyl tin & tri-butyl tin
Σ 7 PCB	Sum of the seven ICES polychlorinated biphenyls: PCB 028, PCB 052, PCB 101, PCB 138, BCB 153, PCB 180, PCB 118.
Σ 16 PAH	Sum of US EPA 16 polycyclic aromatic hydrocarbons: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Dibenzo(ah)anthracene, Benzo(ghi)perylene, Indeno(123-cd)pyrene.
γ-HCH	1α,2α,3β,4α,5α,6β-hexachlorocyclohexane (Lindane)
HCB	Hexachlorobenzene



1. General Information	
Applicant (company name)	
Location (port/harbour)	
Dredge Quantity (tonnes)	
Permit Application Reg. No. (to be assigned by EPA)	
2. Survey Information	
Survey Company	Aquatic Service Unit
Sampling Date	07/05/2015
Analysing Laboratory	National Laboratory Service, Leeds
Sub Contract Lab	
Analysis Date	12/05/2015
3. Methods Information	
Fraction analysed	All<2mm, metals <63um.
Water content of sample (reported as %)	Percentage
Are results reported as wet weight or dry weight?	Dry Weight
Granulometry method	Dry Sieve Granulometry
TEH method	UV methanol digest/pentane exchange-UV Fluorescence Spectrophotometry
Organic carbon (OC) method	Oxygen combustion, thermal conductivity detection
Metals (incl. mercury & arsenic) extraction type	Open vessel hotplate HF digestion, Hg Microwave Aqua regia digested.
Methods of detection (metals, incl. mercury & arsenic)	ICPOES, Hg CV-AFS
Organics extraction types	Solvent extracted
Methods of detection (PCBs / PAHs / TBT / DBT)	GCMS,

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EPA Dumping at Sea Permit Application - Material Analysis Reporting Form (Version 1.0)
 Sheet 3, Results

Sample ID code	DBT mg kg ⁻¹	TBT mg kg ⁻¹	Σ TBT + DBT mg kg ⁻¹	PCB 028 ug kg ⁻¹	PCB 052 ug kg ⁻¹	PCB 101 ug kg ⁻¹	PCB 138 ug kg ⁻¹	PCB 153 ug kg ⁻¹	PCB 180 ug kg ⁻¹	PCB 118 ug kg ⁻¹	Σ 7 PCB ug kg ⁻¹	PAH Acenaphthene ug kg ⁻¹	PAH Acenaphthylene ug kg ⁻¹	PAH Anthracene ug kg ⁻¹
DP-01A	0.02	0.06	0.08	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.700	15.6	43.2	47.6
Bantry SL-01	<0.007	0.007	<0.014	<0.1	<0.1	<0.1	0.18	0.323	0.308	<0.1	<1.031	2.09	1.26	5.31
Bantry SL-02	<0.006	<0.006	<0.012	<0.1	<0.1	0.113	0.268	0.464	0.325	0.123	<1.488	2.3	<1	5.36
<insert more rows as necessary>														

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