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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							Landfill Waste Acceptance Criteria Limits		
							Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**						
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	< 0.001	< 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	0.009	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

Soild 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

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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							Landfill Waste Acceptance Criteria Limits		
							Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			1.1	3	5	6
Loss on Ignition	2610	U	%			1.9	--	–	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			0.004	--	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	0.016	0.003	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.03	0.012	< 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	0.034	< 0.001	0.066	0.051	0.5	10	70
Copper	1450	U	0.014	< 0.001	< 0.050	0.061	2	50	100
Mercury	1450	U	< 0.0005	0.0047	< 0.001	0.04	0.01	0.2	2
Molybdenum	1450	U	0.21	0.019	0.41	0.48	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	0.006	0.001	0.011	0.019	0.06	0.7	5
Selenium	1450	U	0.022	0.003	0.043	0.06	0.1	0.5	7
Zinc	1450	U	0.023	0.004	< 0.50	< 0.50	4	50	200
Chloride	1220	U	180	150	350	1500	800	15000	25000
Fluoride	1220	U	1	0.2	2	3.2	10	150	500
Sulphate	1220	U	390	29	760	830	1000	20000	50000
Total Dissolved Solids	1020	N	3900	320	7600	8600	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

Soild 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

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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							Landfill Waste Acceptance Criteria Limits		
							Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**						
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

Soild 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

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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							Landfill Waste Acceptance Criteria Limits		
							Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			0.4	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	0.017	0.004	< 0.050	0.055	0.5	2	25
Barium	1450	U	0.02	0.004	< 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	0.024	< 0.001	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.012	< 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	0.092	0.01	0.18	0.23	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	0.01	0.002	0.02	0.03	0.06	0.7	5
Selenium	1450	U	0.022	0.002	0.044	0.051	0.1	0.5	7
Zinc	1450	U	0.019	0.002	< 0.50	< 0.50	4	50	200
Chloride	1220	U	360	140	720	1700	800	15000	25000
Fluoride	1220	U	0.53	0.14	1.1	2	10	150	500
Sulphate	1220	U	330	24	660	710	1000	20000	50000
Total Dissolved Solids	1020	N	2600	420	5200	7500	4000	60000	100000
Phenol Index	1920	U	0.11	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	N	< 2.5	< 2.5	< 50	< 50	500	800	1000

Soild 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

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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							Landfill Waste Acceptance Criteria Limits		
							Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			0.49	3	5	6
Loss on Ignition	2610	U	%			1.7	--	–	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			0.27	--	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	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	0.015	< 0.001	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.009	< 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	0.035	0.004	0.069	0.083	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	0.003	< 0.001	< 0.010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.015	0.002	0.03	0.039	0.1	0.5	7
Zinc	1450	U	0.012	< 0.001	< 0.50	< 0.50	4	50	200
Chloride	1220	U	550	90	1100	1600	800	15000	25000
Fluoride	1220	U	0.32	0.12	< 1.0	1.5	10	150	500
Sulphate	1220	U	230	17	460	480	1000	20000	50000
Total Dissolved Solids	1020	N	850	280	1700	3600	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

Soild 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

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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 Limits		
							Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**						
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

Soild 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

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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							Landfill Waste Acceptance Criteria Limits		
							Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			0.39	3	5	6
Loss on Ignition	2610	U	%			1.8	--	–	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				8.2	--	>6	–
Acid Neutralisation Capacity	2015	N	mol/kg			0.003	--	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	0.014	0.002	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.024	0.008	< 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	0.018	< 0.001	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.011	< 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	0.004	0.098	0.11	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	0.002	< 0.001	< 0.010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.021	< 0.001	0.041	0.032	0.1	0.5	7
Zinc	1450	U	0.018	0.004	< 0.50	< 0.50	4	50	200
Chloride	1220	U	620	150	1200	2200	800	15000	25000
Fluoride	1220	U	0.99	0.19	1.9	3.1	10	150	500
Sulphate	1220	U	340	27	670	740	1000	20000	50000
Total Dissolved Solids	1020	N	4000	440	7800	9700	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

Soild 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

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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 Limits		
							Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**						
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

Soild 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

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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							Landfill Waste Acceptance Criteria Limits		
							Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			0.43	3	5	6
Loss on Ignition	2610	U	%			1.9	--	–	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			0.017	--	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	0.004	< 0.050	0.053	0.5	2	25
Barium	1450	U	0.027	0.009	< 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	0.02	< 0.001	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.012	< 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	0.11	0.009	0.21	0.24	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	0.016	0.002	0.032	0.044	0.06	0.7	5
Selenium	1450	U	0.018	0.001	0.036	0.039	0.1	0.5	7
Zinc	1450	U	0.018	0.004	< 0.50	< 0.50	4	50	200
Chloride	1220	U	1600	100	3200	3200	800	15000	25000
Fluoride	1220	U	0.67	0.096	1.3	1.8	10	150	500
Sulphate	1220	U	270	20	540	570	1000	20000	50000
Total Dissolved Solids	1020	N	3000	340	6000	7400	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

Soild 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

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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 Limits		
							Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**						
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	< 0.001	< 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	0.014	< 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

Soild 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

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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							Landfill Waste Acceptance Criteria Limits		
							Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			0.27	3	5	6
Loss on Ignition	2610	U	%			2.3	--	–	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				8.3	--	>6	–
Acid Neutralisation Capacity	2015	N	mol/kg			0.003	--	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	0.011	< 0.001	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.018	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	0.019	< 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	0.042	0.008	0.083	0.13	0.5	10	30
Nickel	1450	U	0.007	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	0.019	0.001	0.038	0.038	0.1	0.5	7
Zinc	1450	U	0.017	0.004	< 0.50	< 0.50	4	50	200
Chloride	1220	U	1700	91	3400	3400	800	15000	25000
Fluoride	1220	U	0.88	0.22	1.7	3.2	10	150	500
Sulphate	1220	U	280	17	550	580	1000	20000	50000
Total Dissolved Solids	1020	N	3200	340	6300	7900	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

Soild 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

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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 Limits		
							Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**						
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

Soild 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

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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							Landfill Waste Acceptance Criteria Limits		
							Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			2.4	3	5	6
Loss on Ignition	2610	U	%			7.9	--	–	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			220	500	–	–
Total (of 17) PAHs	2700	N	mg/kg			52	100	–	–
pH	2010	U				8.2	--	>6	–
Acid Neutralisation Capacity	2015	N	mol/kg			0.003	--	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	0.031	0.003	0.057	0.062	0.5	2	25
Barium	1450	U	0.043	0.036	< 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	0.048	0.004	0.088	0.083	0.5	10	70
Copper	1450	U	0.032	0.002	0.059	< 0.050	2	50	100
Mercury	1450	U	0.0043	0.0005	0.008	0.009	0.01	0.2	2
Molybdenum	1450	U	0.12	0.014	0.22	0.25	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	0.025	0.004	0.046	0.064	0.06	0.7	5
Selenium	1450	U	0.044	0.005	0.081	0.085	0.1	0.5	7
Zinc	1450	U	0.027	0.009	< 0.50	< 0.50	4	50	200
Chloride	1220	U	3800	340	7000	6900	800	15000	25000
Fluoride	1220	U	1.1	0.24	2	3.3	10	150	500
Sulphate	1220	U	330	36	610	660	1000	20000	50000
Total Dissolved Solids	1020	N	7200	940	13000	16000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	N	8	< 2.5	< 50	< 50	500	800	1000

Soild 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

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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							Landfill Waste Acceptance Criteria Limits		
							Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			0.26	3	5	6
Loss on Ignition	2610	U	%			1.7	--	–	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				8.5	--	>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	0.011	0.003	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.025	0.002	< 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	0.016	< 0.001	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.015	< 0.001	< 0.050	< 0.050	2	50	100
Mercury	1450	U	0.0012	< 0.0005	0.002	< 0.005	0.01	0.2	2
Molybdenum	1450	U	0.01	0.002	< 0.050	< 0.050	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	0.001	< 0.001	< 0.010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.016	0.002	0.032	0.037	0.1	0.5	7
Zinc	1450	U	0.022	0.005	< 0.50	< 0.50	4	50	200
Chloride	1220	U	1700	180	3400	3300	800	15000	25000
Fluoride	1220	U	0.7	0.12	1.4	1.8	10	150	500
Sulphate	1220	U	180	20	360	360	1000	20000	50000
Total Dissolved Solids	1020	N	3100	480	6100	7400	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

Soild 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

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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

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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 - Dry Weights, Carbonate, Total Organic Carbon, TPH, Organotins & Density

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

							Customer Sample No	Certified Reference Material	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	SEDIMENT
							Sample Location																			
							Sample Depth (m)	CRM-646	0.0	1.0	0.0	0.0	1.0	2.0	3.0	4.0	0.0	0.0	0.00	0.0	0.00	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																	
Determinand	**CAS No**	**Codes**	**SOP**	**Units**	**Result**	**Recovery %**																		
dry solids (at 105°C)			In house	%	n/a	n/a	44.8	72.1	71.2	46.4	76.6	87.8	88.6	95.0	73.0	40.3	74.5	52.1	54.4	38.9	78.5	85.0
carbonate % dry matter			In house	%	n/a	n/a	3.82	19.6	3.71	4.42	6.78	10.6	9.24	0.95	6.06	14.6	2.53	7.81	1.13	18.6	9.78	5.56
total organic carbon*		S		%	n/a	n/a	3.37	1.43	1.23	3.40	1.33	0.96	0.36	0.60	0.61	4.11	0.41	5.22	2.94	3.33	0.56	0.62
total petroleum hydrocarbons by GCFID (C10 - C40)			In house	mg/kg	n/a	n/a	36.2	< 10.00	< 10.00	17.9	< 10.00	< 10.00	< 10.00	< 10.00	< 10.00	28.6	< 10.00	< 10.00	< 10.00	11.8	< 10.00	< 10.00
dibutyltin (DBT)	1002-53-5		In house	mg/kg	71.7	93.1	< 0.0	0.0	< 0.01	< 0.0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0	< 0.01	< 0.01	< 0.01	< 0.0	0.2	< 0.01
tributyltin (TBT)	56573-85-4		In house	mg/kg	48.2	100.4	0.1	0.1	< 0.01	0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0	< 0.01	< 0.01	0.0	0.1	< 0.01	< 0.01
density (on dry solid)			In house	g/cm3	n/a	n/a	0.7	1.2	1.1	0.7	1.0	1.3	1.5	1.4	1.4	0.7	1.3	0.3	0.9	0.8	1.2	1.3

Dibutyltin and tributyltin results have been dry weight corrected

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Results Summary - Metals + Hexavalent Chromium

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

					Customer Sample No	**Standard Reference Material**		**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**	**SEDIMENT**
					Sample Location	**SRM-2702**																	
					Sample Depth (m)			0.0	1.0	0.0	0.0	1.0	2.0	3.0	4.0	0.0	0.0	0.00	0.0	0.00	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																		
Determinand	**CAS No**	**Codes**	**SOP**	**Mass**	**Units**	**Result**	**Recovery %**																
aluminium*	7429-90-5	SI	ICP-MS	27	mg/kg	70060	83.4	42400	36600	41000	45000	41200	38600	44000	42600	51300	40400	46500	40200	40600	50700	49800	78900
arsenic*	7440-38-2	SI	ICP-MS	75	mg/kg	48.1	106.2	14.4	7.77	8.72	15.8	11.7	11.1	8.94	14.5	13.3	14.3	8.77	15.3	13.7	20.7	11.1	14.8
cadmium*	7440-43-9	SI	ICP-MS	111	mg/kg	1.01	123.2	0.68	0.30	0.38	0.79	4.34	0.37	0.28	0.51	0.93	0.71	0.32	0.76	0.64	0.82	0.26	4.20
chromium*	7440-47-3	SI	ICP-MS	52	mg/kg	347.2	118.3	47.7	36.7	43.1	54.2	42.2	40.2	46.4	46.9	50.0	57.6	45.6	47.0	47.4	64.5	50.5	78.6
copper*	7440-50-8	SI	ICP-MS	65	mg/kg	Not certified	n/a	43.2	11.8	25.4	50.6	12.8	16.5	15.0	18.6	42.1	63.8	26.7	49.5	35.4	36.1	10.1	22.8
lead*	7439-92-1	SI	ICP-MS	208	mg/kg	131.2	91	58.7	35.9	39.4	66.4	39.0	27.4	26.2	37.0	34.2	65.6	27.6	65.7	50.3	54.9	17.5	16.1
lithium*	7439-93-2	SI	ICP-MS	7	mg/kg	Not certified	n/a	29.6	30.2	30.8	32.6	32.3	28.9	33.3	25.8	41.2	26.8	33.4	25.9	25.7	35.6	32.3	37.7
mercury*	7439-97-6	SI	AFS	202	mg/kg	0.44	98.4	2.37	0.14	4.61	0.63	0.65	0.34	0.08	0.06	0.44	0.39	0.30	0.49	0.40	0.36	0.09	0.04
nickel*	7440-02-0	SI	ICP-MS	60	mg/kg	72.4	96	23.5	23.6	24.4	26.9	24.4	26.8	30.5	34.1	30.1	29.8	27.1	24.6	23.9	31.2	28.6	37.0
zinc*	7440-66-6	SI	ICP-MS	65	mg/kg	485.5	100	169	69.0	101	188	78.8	88.0	110	164	86.8	216	105	203	152	167	68.7	255
Hexavalent chromium*	18540-29-9	SI	ICP-MS	52	mg/kg	Not certified	n/a	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

Metals results have been dry weight corrected

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Results Summary - Polycyclic Aromatic Hydrocarbons (EPA 16 PAHs)

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

					Customer Sample No	Certified Reference Material		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**	**SEDIMENT**
					Sample Location	**NIST-1944**																	
					Sample Depth (m)			0.0	1.0	0.0	0.0	1.0	2.0	3.0	4.0	0.0	0.0	0.00	0.0	0.00	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																		
Determinand	**CAS No**	**Codes**	**SOP**	**Mass**	**Units**	**Result**	**Recovery %**																
naphthalene	91-20-3		304	128	ug/kg	Not certified	n/a	39.5	14.3	13.8	30.8	11.2	4.44	3.61	2.21	21.9	32.0	23.6	18.8	19.8	44.0	12.5	3.77
acenaphthylene	208-96-8		304	152	ug/kg	Not certified	n/a	99.8	141	18.4	50.5	150	4.21	3.27	2.42	171	780	248	42.6	173	556	16.8	< 0.100
acenaphthene	83-32-9		304	154	ug/kg	Not certified	n/a	135	53.8	17.8	55.0	39.8	3.53	2.71	5.26	173	172	169	31.7	162	244	12.1	< 0.100
fluorene	86-73-7		304	166	ug/kg	Not certified	n/a	164	97.0	21.1	84.1	85.5	3.87	3.27	2.42	307	288	281	41.9	261	443	19.9	2.94
phenanthrene	85-01-8		304	178	ug/kg	3603	68.4	724	28.3	175	729	70.1	13.0	30.0	21.3	120	444	99.5	401	215	808	8.41	2.71
anthracene	120-12-7		304	178	ug/kg	Not certified	n/a	261	19.7	67.2	241	28.2	6.38	9.14	7.58	51.0	153	35.2	139	69.1	80.8	5.35	2.94
fluoranthene	206-44-0		304	202	ug/kg	6805	76.3	2330	134	665	2120	258	51.8	66.0	17.4	513	1530	435	1620	667	1330	27.0	3.89
pyrene	129-00-0		304	202	ug/kg	6534	67.4	2020	126	574	1810	236	47.3	54.5	17.5	470	1290	379	1320	568	1080	26.2	4.00
benzo(a)anthracene	56-55-3		304	228	ug/kg	3509	74.4	1380	103	420	1180	170	42.5	33.5	20.2	306	834	244	845	367	473	19.6	3.65
chrysene	218-01-9		304	228	ug/kg	3470	71.4	230	15.0	65.3	206	25.8	6.83	5.08	4.74	36.0	159	37.6	156	292	103	12.0	< 0.100
benzo(b)fluoranthene	205-99-2		304	252	ug/kg	4579	75.9	1750	112	538	1450	241	55.1	29.9	27.4	332	1050	294	1000	492	787	22.4	4.00
benzo(k)fluoranthene	207-08-9		304	252	ug/kg	1492	64.9	572	38.7	185	494	77.5	19.5	11.6	8.42	114	1020	96.4	317	157	237	9.43	3.30
benzo(a)pyrene	50-32-8		304	252	ug/kg	2902	67.5	1370	95.6	423	1160	181	51.0	31.1	22.9	274	827	238	797	367	533	24.8	11.1
indeno(1,2,3-c,d)pyrene	193-39-5		304	276	ug/kg	729	96.1	768	54.5	243	651	109	27.3	14.2	11.9	159	489	134	461	224	360	11.5	< 0.100
dibenzo(a,h)anthracene	53-70-3		304	278	ug/kg	2028	73.0	288	26.4	96.2	250	45.2	15.9	11.5	10.3	59.6	179	50.7	164	86.3	125	11.6	< 0.100
benzo(g,h,i)perylene	191-24-2		304	276	ug/kg	2442	86.0	918	62.2	286	798	120	30.5	15.9	14.4	182	549	154	522	257	417	11.8	< 0.100

PAH results have been dry weight corrected

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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	Certified Reference Material Result	Recovery %	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	SEDIMENT
Sample Location					NIST-1944																	
Sample Depth (m)							0.0	1.0	0.0	0.0	1.0	2.0	3.0	4.0	0.0	0.0	0.00	0.0	0.00	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																						
aldrin	309-00-2		In house	ug/kg	n/a	n/a	< 1.12	< 1.00	< 1.00	< 1.08	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.24	< 1.00	< 1.00	< 1.00	< 1.29	< 1.00	< 1.00
alpha-hexachlorocyclohexane (alpha-HCH)	319-84-6		In house	ug/kg	n/a	n/a	< 1.12	< 1.00	< 1.00	< 1.08	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.24	< 1.00	< 1.00	< 1.00	< 1.29	< 1.00	< 1.00
beta-hexachlorocyclohexane (beta-HCH, beta-BHC)	319-85-7		In house	ug/kg	n/a	n/a	< 1.12	< 1.00	< 1.00	< 1.08	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.24	< 1.00	< 1.00	< 1.00	< 1.29	< 1.00	< 1.00
delta-hexachlorocyclohexane (delta-HCH)	319-86-8		In house	ug/kg	n/a	n/a	< 1.12	< 1.00	< 1.00	< 1.08	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.24	< 1.00	< 1.00	< 1.00	< 1.29	< 1.00	< 1.00
gamma-hexachlorocyclohexane (lindane)	58-89-9		In house	ug/kg	n/a	n/a	< 1.12	< 1.00	< 1.00	< 1.08	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.24	< 1.00	< 1.00	< 1.00	< 1.29	< 1.00	< 1.00
hexachlorobenzene (HCB)	118-74-1		In house	ug/kg	n/a	n/a	< 1.12	< 1.00	< 1.00	< 1.08	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.24	< 1.00	< 1.00	< 1.00	< 1.29	< 1.00	< 1.00
dieldrin	60-57-1		In house	ug/kg	n/a	n/a	< 1.12	< 1.00	< 1.00	< 1.08	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.24	< 1.00	< 1.00	< 1.00	< 1.29	< 1.00	< 1.00
endrin	72-20-8		In house	ug/kg	n/a	n/a	< 1.12	< 1.00	< 1.00	< 1.08	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.24	< 1.00	< 1.00	< 1.00	< 1.29	< 1.00	< 1.00
p,p'-DDD	3424-82-6		In house	ug/kg	n/a	n/a	< 1.12	< 1.00	< 1.00	< 1.08	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.24	< 1.00	< 1.00	< 1.00	< 1.29	< 1.00	< 1.00
p,p'-DDT	72-54-8		In house	ug/kg	n/a	n/a	< 1.12	< 1.00	< 1.00	< 1.08	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.24	< 1.00	< 1.00	< 1.00	< 1.29	< 1.00	< 1.00
p,p'-DDE	50-29-3		In house	ug/kg	n/a	n/a	< 1.12	< 1.00	< 1.00	< 1.08	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.24	< 1.00	< 1.00	< 1.00	< 1.29	< 1.00	< 1.00
2,4,4'-trichlorobiphenyl (PCB congener 28)	7012-37-5		319	ug/kg	84.3	104.3	101	< 0.10	< 0.10	< 0.22	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.25	< 0.10	< 0.10	< 0.10	< 0.26	< 0.10	< 0.10
2,2',5,5'-tetrachlorobiphenyl (PCB congener 52)	35693-99-3		319	ug/kg	88.4	111.3	< 0.22	< 0.20	< 0.10	< 0.22	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.25	< 0.10	< 0.10	< 0.10	< 0.26	< 0.10	< 0.10
2,2',4,5,5'-pentachlorobiphenyl (PCB congener 101)	37680-73-2		319	ug/kg	71.1	96.8	< 0.22	0.28	< 0.10	< 0.22	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.25	< 0.10	< 0.10	< 0.10	< 0.26	< 0.10	< 0.10
2,3',4,4',5-pentachlorobiphenyl (PCB congener 118)	31508-00-6		319	ug/kg	60.1	103.6	< 0.22	0.83	< 0.10	< 0.22	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.25	< 0.10	< 0.10	< 0.10	< 0.26	< 0.10	< 0.10
2,2',3,4,4',5-hexachlorobiphenyl (PCB 138)	35065-28-2		319	ug/kg	79.6	128.1	1.34	< 0.20	2.25	1.51	< 0.20	< 0.10	< 0.10	< 0.10	< 0.20	1.49	< 0.10	0.96	0.92	2.32	< 0.10	< 0.10
2,2',4,4',5,5'-hexachlorobiphenyl (PCB 153)	35065-27-1		319	ug/kg	75.6	102.5	2.68	< 0.20	3.65	3.45	0.39	< 0.10	< 0.10	< 0.10	0.41	2.73	< 0.20	2.30	2.02	3.86	< 0.10	< 0.10
2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB 180)	35065-29-3		319	ug/kg	53.8	121.5	8.93	0.28	8.14	11.0	1.37	0.34	< 0.10	< 0.10	0.82	8.69	0.54	5.76	6.06	11.6	< 0.10	< 0.10

OCL and PCB results have been dry weight corrected

RPS

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Results Summary - PSA Results

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

Determinand	CAS No	Codes	SOP	Units	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	0.00	0.0	0.00	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																				
Determinand	**CAS No**	**Codes**	**SOP**	**Units**																
sample type*		S			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, Very Poorly Sorted	Unimodal, Moderately Sorted	Bimodal, Poorly Sorted	Bimodal, Poorly Sorted	Unimodal, Very Poorly Sorted	Trimodal, Very Poorly Sorted	Unimodal, Poorly Sorted
textural group (GRADISTAT)*		S			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
sediment name*		S			Very Coarse Silty Fine Sand	Very Fine Gravelly Coarse Sand	Poorly Sorted Fine Sand	Very Coarse Silty Fine Sand	Sandy Coarse Gravel	Medium Silty Sandy Medium Gravel	Sandy Coarse Gravel	Medium Silty Sandy Medium Gravel	Very Fine Gravelly Coarse Sand	Medium Gravelly Very Coarse Silty Fine	Moderately Sorted Medium Sand	Very Coarse Silty Fine Sand	Very Coarse Silty Fine Sand	Very Coarse Silty Fine Sand	Coarse Gravelly Coarse Silty Coarse Sand	Very Fine Sandy Fine Silt
arithmetic mean (method of moments)*		S		um	211	2320	291	221	4770	8180	5940	8110	1850	1630	352	271	233	215	4810	37.7
arithmetic sorting (method of moments)*		S		um	213	4270	191	217	7160	6840	7110	6460	2640	3440	198	259	221	225	7740	106
arithmetic skewness (method of moments)*		S		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)*		S		um	5.15	10.7	4.14	4.44	2.78	1.69	2.47	1.97	9.35	9.09	3.30	3.05	4.37	4.21	2.68	35.3
geometic mean (method of moments)*		S		um	120	933	221	120	898	3250	2290	4070	836	259	287	147	138	103	734	10.2
geometic sorting (method of moments)*		S		um	3.31	3.55	2.31	3.58	7.71	7.43	4.66	5.29	3.73	7.39	2.00	3.60	3.19	4.16	8.75	4.10
geometic skewness (method of moments)*		S		um	-0.822	-0.038	-1.54	-0.799	0.018	-1.59	-0.332	-1.91	-0.465	0.185	-1.41	-0.814	-0.872	-0.693	0.030	0.726
geometic kurtosis (method of moments)*		S		um	4.03	5.86	7.52	3.47	2.57	5.05	3.17	7.19	4.74	2.64	7.21	3.58	4.15	2.94	2.61	3.58
logarithmic mean (method of moments)*		S		phi	3.06	0.099	2.18	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 sorting (method of moments)*		S		phi	1.73	1.83	1.21	1.84	2.95	2.89	2.22	2.40	1.90	2.89	1.00	1.85	1.67	2.06	3.13	2.04
logarithmic skewness (method of moments)*		S		phi	0.822	0.038	1.54	0.799	-0.018	1.59	0.332	1.91	0.465	-0.185	1.41	0.814	0.872	0.693	-0.030	-0.726
logarithmic kurtosis (method of moments)*		S		phi	4.03	5.86	7.52	3.47	2.57	5.05	3.17	7.19	4.74	2.64	7.21	3.58	4.15	2.94	2.61	3.58
mean (Folk and Ward method - um)*		S		um	129	929	238	126	1140	3740	2590	5060	921	275	302	161	150	107	1060	9.6
sorting (Folk and Ward method - um)*		S		um	3.24	2.99	2.09	3.57	7.81	6.49	4.61	4.09	3.42	8.30	1.85	3.58	3.11	4.25	9.93	3.99
skewness (Folk and Ward method - um)*		S		um	-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 (Folk and Ward method - um)*		S		um	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
mean (Folk and Ward method - phi)*		S		phi	2.96	0.107	2.07	2.98	-0.192	-1.90	-1.37	-2.34	0.119	1.86	1.73	2.63	2.74	3.23	-0.083	6.70
sorting (Folk and Ward method - phi)*		S		phi	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 (Folk and Ward method - phi)*		S		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
kurtosis (Folk and Ward method - phi)*		S		phi	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
mean description (Folk and Ward method)*		S			Fine Sand	Coarse Sand	Fine Sand	Fine Sand	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 Silt
sorting description (Folk and Ward method)*		S			Poorly Sorted	Poorly Sorted	Poorly Sorted	Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted	Poorly Sorted	Very Poorly Sorted	Moderately Sorted	Poorly Sorted	Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted	Poorly Sorted
skewness description (Folk and Ward method)*		S			Fine Skewed	Very Coarse Skewed	Fine Skewed	Fine Skewed	Very Coarse Skewed	Very Fine Skewed	Coarse Skewed	Very Fine Skewed	Coarse Skewed	Coarse Skewed	Symmetrical	Fine Skewed	Fine Skewed	Fine Skewed	Coarse Skewed	Coarse Skewed
kurtosis description (Folk and Ward method)*		S			Leptokurtic	Leptokurtic	Leptokurtic	Mesokurtic	Platykurtic	Leptokurtic	Platykurtic	Leptokurtic	Mesokurtic	Leptokurtic	Mesokurtic	Mesokurtic	Leptokurtic	Mesokurtic	Mesokurtic	Leptokurtic
MODE 1 - um*		S		um	108	855	215	215	19200	13600	19200	19200	605	215	303	108	108	215	19200	6.7
MODE 2 - um*		S		um							1700	4800	4800	13600					215	
MODE 3 - um*		S		um		-3.74			1.25	-1.24	0.747	-3.24	-0.743	3.24		0.247	2.24		0.747	
MODE 1 - phi*		S		phi		13600			428	2400	605	9600	1700	108		855	215		605	
MODE 2 - phi*		S		phi	3.24	0.247	2.24	2.24	-4.24	-3.74	-4.24	-4.24	0.747	2.24	1.75	3.24	3.24	2.24	-4.24	7.25
MODE 3 - phi*		S		phi							-0.743	-2.24	-2.24	-3.74					2.24	
D10 - um*		S		um	24.1	327	94.0	19.7	120	159	391	439	232	21.3	132	24.9	30.8	12.8	74.8	2.0
D50 - um*		S		um	134	763	241	147	518	6560	2020	6550	728	212	307	166	154	132	523	8.5
D90 - um*		S		um	526	6080	558	543	18000	18300	18700	18300	5250	5360	638	708	573	556	19200	70.6
(D90/D10) - um*		S		um	21.9	18.6	5.94	27.6	150	115	47.9	41.7	22.7	251	4.84	28.4	18.6	43.3	256	35.8
(D90 - D10) - um*		S		um	502	5750	464	523	17800	18200	18300	17900	5020	5340	506	683	542	543	19100	68.6
(D75/D25) - um*		S		um	3.95	3.12	2.48	5.23	32.1	7.80	13.7	5.23	4.64	11.8	2.25	5.39	4.05	7.48	18.8	5.36
(D75 - D25) - um*		S		um	197	1050	225	245	8130	22100	8880	10300	1490	760	254	324	233	265	3560	17.2
D10 - phi*		S		phi	0.927	-2.60	0.842	0.881	-4.17	-4.20	-4.23	-4.20	-2.39	-2.42	0.649	0.499	0.803	0.847	-4.26	3.83
D50 - phi*		S		phi	2.90	0.391	2.05	2.76	0.950	-2.71	-1.01	-2.71	0.459	2.24	1.70	2.59	2.70	2.92	0.935	6.87
D90 - phi*		S		phi	5.38	1.61	3.41	5.67	3.06	2.65	1.36	1.19	2.11	5.55	2.92	5.33	5.02	6.28	3.74	8.99
(D90/D10) - phi*		S		phi	5.80	-0.620	4.05	6.43	-0.734	-0.632	-0.321	-0.283	-0.881	-2.29	4.50	10.7	6.25	7.41	-0.878	2.35
(D90 - D10) - phi*		S		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*		S		phi	2.03	-1.61	1.93	2.39	-0.631	0.219	-0.158	0.349	-1.41	14.3	2.04	2.83	2.19	2.70	-1.21	1.44
(D75 - D25) - phi*		S		phi	1.98	1.64	1.31	2.39	5.00	2.96	3.78	2.39	2.22	3.56	1.17	2.43	2.02	2.90	4.23	2.42
% gravel*		S		%	0.00	19.7	0.00	0.00	31.1	73.1	50.2	78.5	23.9	17.7	0.00	0.00	0.00	0.00	27.5	0.00
% sand*		S		%	76.7	78.1	94.1	73.7	62.5	20.2	48.7	17.9	72.9	59.4	96.9	78.8	80.3	68.1	63.5	10.9
% mud*		S		%	23.3	2.13	5.92	26.3	6.39	6.66	1.18	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)*		S		%	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 (>16<32mm or <-4>-5phi)*		S		%	0.00	3.57	0.00	0.00	15.3	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)*		S		%	0.00	4.51	0.00	0.00	10.2	29.0	8.55	28.3	4.82	7.09	0.00	0.00	0.00	0.00	1.68	0.00
% fine gravel (>4<8mm or <-2>-3phi)*		S		%	0.00	3.91	0.00	0.00	4.24	13.1	10.3	19.2	9.39	5.91	0.00	0.00	0.00	0.00	1.51	0.00
% very fine gravel (>2<4mm or <-1>-2phi)*		S		%	0.00	7.73	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)*		S		%	0.00	14.4	0.00	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)*		S		%	10.8	40.6	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 (>0.25<0.5mm or <2>1phi)*		S		%	15.5	20.0	35.1	19.4	25.5	3.63	11.1	3.67	21.9	13.0	44.2	17.2	18.6	18.5	17.9	1.59
% fine sand (>0.125<0.25mm or <3>2phi)*		S		%	26.5	2.23	35.4	24.5	13.2	3.60	2.28	2.27	6.23	16.6	27.8	22.8	26.6	20.9	15.5	2.78
% very fine sand (>0.0625<0.125mm or <4>3phi)*		S		%	23.9	0.95	10.9	18.3	3.93	2.23	0.70	1.17	1.56	14.5	5.44	19.4	22.4	16.5	6.21	4.83
% very coarse silt (>0.03125<0.0625mm or <5>4phi*		S		%	10.8	0.44	2.31	10.9	1.82	1.44	0.25	0.78	0.97	9.03	1.60	9.19	9.60	10.9	2.07	7.46
% coarse silt (>0.015625<0.03125mm or <6>5phi)*		S		%	5.92	0.54	1.87	7.60	1.54	1.70	0.28	0.88	0.86	6.44	0.84	5.63	4.82	8.95	2.41	13.2
% medium silt (>0.007813<0.015625mm or <7>6phi)*		S		%	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	21.4
% fine silt (>0.003906<0.007813mm or <8>7phi)*		S		%	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	22.3
% very fine silt (>0.001953<0.003906mm or <9>8phi*		S		%	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	15.0
% clay (<0.001953mm or >9phi)*		S		%	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

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Results Summary - PSA Size Class & Statistics

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	1.0	1.0	2.0	3.0	4.0	0.0	0.0	0.00	0.0	0.00	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																
Sediment	**mm**	**phi ϕ**	**Units**																
Very coarse gravel	>32<64	<-5>-6	%	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	>16<32	<-4>-5	%	0.00	3.57	0.00	0.00	15.90	16.70	18.70	16.70	0.00	0.00	0.00	0.00	0.00	0.00	21.60	0.00
Medium gravel	>8<16	<-3>-4	%	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	>4<8	<-2>-3	%	0.00	3.91	0.00	0.00	4.24	9.10	10.30	19.20	9.39	5.91	0.00	0.00	0.00	0.00	1.51	0.00
Very fine gravel	>2<4	<-1>-2	%	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	>1<2	<0>-1	%	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	>0.5<1	<1>0	%	10.80	40.60	12.70	11.60	17.10	2.59	20.00	3.95	30.60	10.70	19.40	19.40	12.70	12.20	20.00	1.72
Medium sand	>0.25<0.5	<2>1	%	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	>0.125<0.25	<3>2	%	26.50	2.23	35.40	24.50	13.20	3.60	4.28	2.27	6.23	16.60	27.80	22.80	26.60	20.90	15.50	2.78
Very fine sand	>0.0625<0.125	<4>3	%	23.90	0.95	10.90	18.30	3.93	2.23	0.70	1.17	1.56	14.50	5.44	19.40	22.40	16.50	6.21	4.83
Very coarse silt	>0.03125<0.0625	<5>4	%	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	>0.015625<0.03125	<6>5	%	5.92	0.54	1.87	7.60	1.54	1.70	0.26	0.88	0.86	6.44	0.84	5.63	4.82	8.95	2.41	13.20
Medium silt	>0.007813<0.015625	<7>6	%	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	>0.003906<0.007813	<8>7	%	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	>0.001953<0.003906	<9>8	%	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	<0.001953	>9	%	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	-0.192	-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	6.66	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. & Pye, 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	0.00	0.0	0.00	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	58.80	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	4.20	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	0.70	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

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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 equlibrium 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

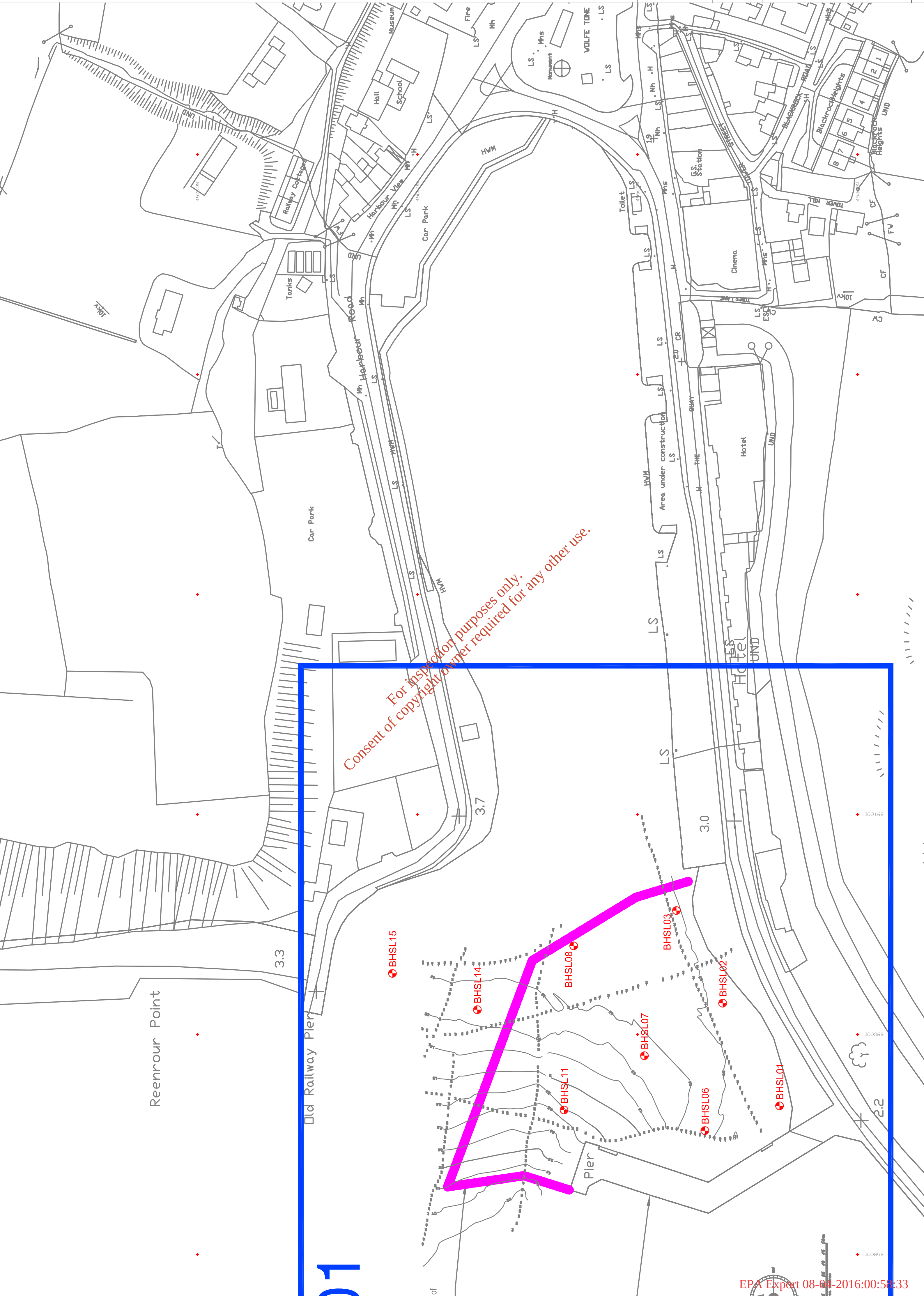
RPS Letchworth	UKAS Test House 1663
RPS Manchester	UKAS Test House 0605
ESG Scientifics (TOC, CaCO3 & CrV	UKAS Test House 0001
Thompson PSA only	

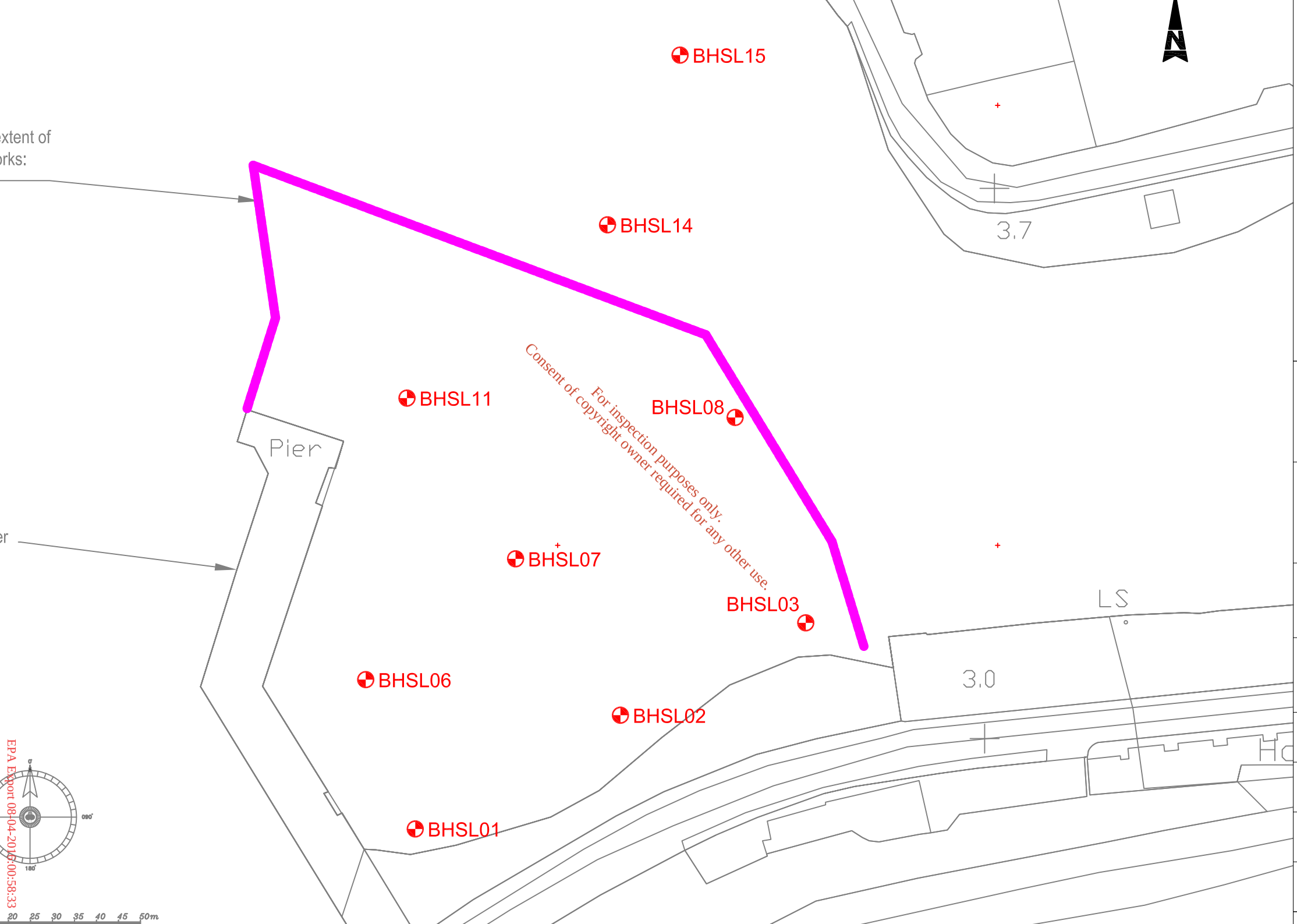
APPENDIX C

EXPLORATION LOCATION PLANS

Exploration Location Layout	P14127-SI-A
Exploration Location Plans	P14127-SI-01

Location	Easting	Northing	mCD	*Elevation, mOD Malin*	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	*-1.783*	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

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Bantry Inner Harbour - Phase 1 Development

Environmental Quantitative Risk Assessment

Appendix C – Aquatic Services Unit Baseline Data 2015

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

Introduction [illegible] Brief

Aquatic Services Unit have been asked by Malachy Walsh Partners to assess suspended solids measurements at three locations within Bantry Bay, Co. Cork. In addition, ASU were requested to undertake sediment sampling at two of these locations.

Methodology

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

Water Sampling

At each site:

- Sampling positions were navigated to using a Trimble Geo [illegible] 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 be 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 stowed 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-[illegible] and SL-[illegible] – Figure [illegible]) on [illegible]th May [illegible]. Samples were collected using a [illegible]m² stainless steel Van Veen Grab.

At each site:

- Sampling positions were navigated to using a Trimble Geo [illegible] 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 sea bed 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

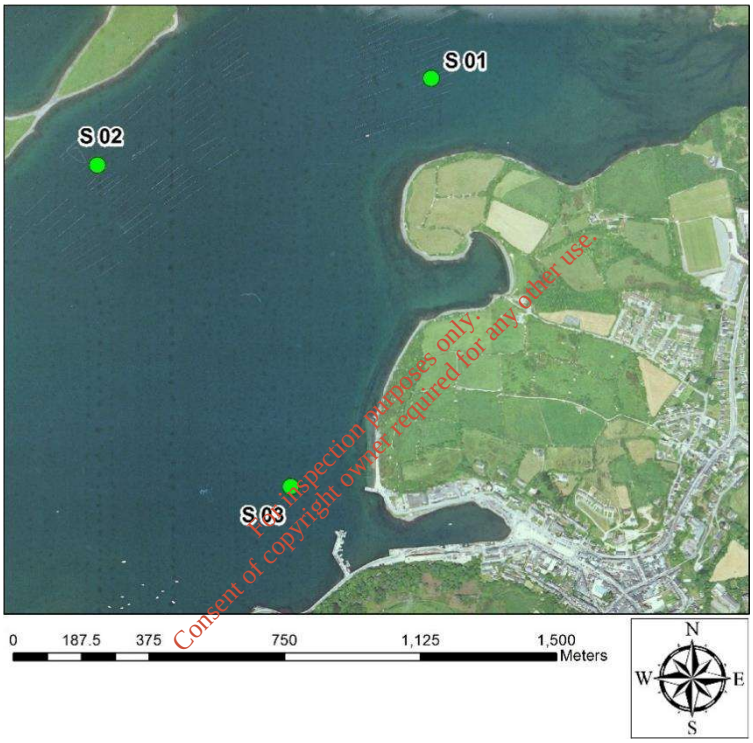
On returning to the laboratory:

- Collected samples were logged into the laboratory note book 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 □ ere □ rapped in b□bble □ rap and stored in a refri□erator at 4°C until shipping□
- Samples □ ere shipped in sealed□cooler bo□es□□sin□ □□L co□rier service□ NLS Laboratory □ as contacted to alert them to the arrival of samples□and inform them of □ aybill n□mbers□

Sample Analysis

The samples collected in Bantry Bay □ ere analysed by the National Laboratory Service □NLS□ Laboratory in Leeds□ These laboratories are mana□ed by the □nvironment □□ency in the □□□□and are approved laboratories □nder the □nited □in□dom □ccreditation Service □□□□S□□ □ll of the parameters re□□ired for analyses □ ere determined □sin□ □□□□S accredited methodolo□ies and meet the detection limits as specified in the □b re□□irements



□i□□□e □□ Location of samplin□ locations in Bantry Bay□□o□□or□□

□□□□e □□ □ ater and sediment sample locations in Bantry Bay□□o□□or□□□ositions are □iven in □rish National □rid

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□ ater samples □ ere collected over a f□ll tidal cycle from Lo□ □ ater □L□ □to Lo□ □ ater □L□ □d□rin□ □ inter□sprin□ and s□mmer months in both Sprin□ tides and Neap tides□ □

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?e???

Water Collection

Winter – Spring 2015

Samples w ere collected d?rin? the neap tide cycle of 04 th M arch 2015. Time of Lo? w ater start w as at 10:19 (0 ?6m) and L? ?nd w as at 22:32 (0 ?6m).

???e IV: Boat lo? for sample collection in Bantry Bay

		??	?? ?3	H?	?w ??	??
S1	Time	10:10	13?20	16:17	19:10	22:00
	?epth @ Site	7.0 m	7?9m	9.3 m	8?1 m	6.7 m
	w ave ?onditions	?lat	?lat	Sli?htly ?hoppy	?lat	?lat
	w ind ?onditions	?alm	?resh	?resh	?alm	?alm
	w eather	Dry	Dry	Dry	Dry	Dry
S2	Time	10:20	13:06	16:05	19:25	22?13
	?epth @ Site	8.9 m	10.0 m	11.6 m	9?9m	8.8 m
	w ave ?onditions	?lat	?lat	Sli?htly ?hoppy	?lat	?lat
	w ind ?onditions	?alm	?resh	?resh	?alm	?alm
	w eather	Dry	Dry	?ry	Dry	Dry
S3	Time	10:27	12:57	15:59	19:33	22:25
	?epth @ Site	6.7 m	7?6m	9.0 m	7?8m	6.4 m
	w ave ?onditions	?lat	?lat	Sli?htly ?hoppy	?lat	?lat
	w ind ?onditions	?alm	?alm	?resh	?alm	?alm
	w eather	Dry	?ry	Dry	Dry	Dry

???e V: T?rbidity and S?spended Solids res?lts from marine w ater samples collected at the three collection sites in Bantry Bay.

	S1		S2		S3	
	Turb idity (N??)	???pended ???d? (m ?/)	????idi?? (N???	???pended ???d? (m ??)	????idi?? (N???	???pended Sol ds (m g?l)
?? ?t ?rt	1?2	<3?0	1.1	4.7	1.9	5?9
LW +3	1?0	<3?0	2.0	3.3	1.4	<3.0
??	1?2	3?5	1.2	6.4	1.6	4?5
?W +3	1?4	<3?0	1.1	<3.0	1.1	3.1
?? ?nd	1?0	<3?0	1.4	4.5	1.3	3?9

???e VI: O r?anotin and M erc?ry res?lts.

	S1		S2		S3	
	TBT (µ??l)	H g (µg ?l)	TBT (µ?/l)	H g (µ??l)	TBT (µ??l)	H g (µ??l)
?? ?nd	<0?0005	<0?01	<0?0005	<0.01	<0?0005	<0?01

Winter – Neap 2015

Samples were collected during the neap tide cycle of 13th March 2015. Time of Low Water start was at 03:21 (1.0m) and Low End was at 15:35 (1.0 m).

Table VI : Boat log for sample collection in Bantry Bay

		[illegible]	[illegible] [illegible]	High	[illegible]W + [illegible]	[illegible]
S1	Time	03:10	06:20	09:10	12:09	15:12
	Depth @ Site	7.3 m	8.1 m	8.9 m	8.1 m	7.3 m
	Wave Conditions	Flat	Flat	Flat	Flat	Flat
	Wind Conditions	Calm	Calm	Calm	Calm	Calm
	Weather	Dry	Dry	Dry	Dry	Dry
S2	Time	03:25	06:24	09:15	12:16	15:20
	Depth @ Site	9.5 m	10.2 m	11.0 m	10.1 m	9.2 m
	Wave Conditions	Flat	Flat	Flat	Flat	Flat
	Wind Conditions	Calm	Calm	Calm	Calm	Calm
	Weather	Dry	Dry	Dry	Dry	Dry
S3	Time	03:30	06:31	09:21	12:22	15:30
	Depth @ Site	7.3 m	8.1 m	8.9 m	7.9 m	7.2 m
	Wave Conditions	Flat	Flat	Flat	Flat	Flat
	Wind Conditions	Calm	Calm	Calm	Calm	Calm
	Weather	Dry	Dry	Dry	Dry	Dry

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

	S1		S2		S3	
	Turbidity (NTU)	Suspended Solids (mg/l)	Turbidity (NTU)	Suspended Solids (mg/l)	Turbidity (NTU)	Suspended Solids (mg/l)
[illegible] Start	1.4	5.4	1.9	4.3	2.0	5.1
LW +3	1.3	7.2	1.8	6.0	2.3	6.3
[illegible]	1.6	6.7	2.0	5.8	2.2	6.9
HW +3	1.9	<3.0	1.6	3.5	1.3	5.6
[illegible] End	1.4	4.0	1.5	6.3	1.4	7.3

Table IX: Organotin and Mercury results.

	S1		S2		S3	
	DBT (µg/l)	Hg (µg/l)	TBT (µg/l)	Pg (µg/l)	[illegible] (µg/l)	Hg (µg/l)
[illegible] End	<0.0005	<0.01	<0.0005	<0.01	<0.0005	<0.01

Spring - Neap

Samples w ere collected d□rin□ the neap tide cycle of 28 th □pril 2015. Time of Lo□ w ater start w as at 07:34 (1.0 m) and L□ □nd w as at 20:04 (0 □9 m).

□□□□e X□ Boat lo□ for sample collection in Bantry Bay

		□□	□□ □□	H□	□W +□	□□
S1	Time	07:28	10□39	13:39	17:00	20:00
	□epth @ Site	7.9	8□9	9.6	8□4	7.9
	w ave □onditions	□lat	□hoppy	□hoppy	□hoppy	□hoppy
	w ind □onditions	□alm	□resh	□resh	Stron□	□resh
	w eather	Dry	Dry	Dry	Rain	Sho□ ers
S2	Time	07:33	10:44	13:44	17:05	20□05
	□epth @ Site	9.7	10.2	10.9	10.0	9.5
	w ave □onditions	□lat	□hoppy	□hoppy	□hoppy	□hoppy
	w ind □onditions	□alm	□resh	□resh	Stron□	□resh
	w eather	Dry	Dry	Dry	Rain	Sho□ ers
S3	Time	07:37	10□49	13:53	17:22	20:11
	□epth @ Site	7.5	8□1	8□4	7□9	7.3
	w ave □onditions	□lat	□hoppy	□hoppy	□hoppy	□hoppy
	w ind □onditions	□alm	□resh	□resh	Stron□	□resh
	w eather	Dry	Dry	Dry	Rain	Sho□ ers

□□□□e XI: T□rbidity and S□spended Solids res□lts from marine w ater samples collected at the three collection sites in Bantry Bay.

	S1		S2		S3	
	Turb idity (N□□)	□□□pended □□□id□ (m □/ i)	□□□idi□□ (N TU□	□□□pended □□id□ (m □□□)	□□□idi□□ (N TU□	□□□pended Sol ds (m g□l)
□□ Start	<1.0	5	<1	5.2	1.8	<3.0
LW □3	1□0	3□6	1.8	6.4	<1□0	7□8
□□	2□1	4□2	<1□0	5.6	<1□0	10.1
H W □3	2□3	<3□0	<1□0	4.0	NR	8□8
□□ □nd	1□1	<3□0	<1□0	6.2	1.0	4.5

□□□□e □□: O r□anotin and M erc□ry res□lts.

	□1		S2		S3	
	□BT (µ□/l)	H g (µg □l)	TBT (µ□/l)	□g (µ□□l)	□□□ (µ□□l)	H□ (µ□□l)
□□ □nd	<0.0005	<0□01	<0□0005	<0.01	<0□0005	<0.01

Spring – Spring

Samples w ere collected d□rin□ the sprin□ tide cycle of 07 th – 08 th M ay 2015. Time of Lo□ w ater start w as at 13□46 (0 □6m) and L□ □nd w as at 02:00 (0.6 m).

□□□□e □□□: Boat lo□ for sample collection in Bantry Bay

		□□	□□ +□	□□	H□ □□	□□
S1	Time	13:53	16:55	19:35	22:44	01:50
	□epth @ Site	7.0 m	8.3 m	9.5 m	8□3m	7□0m
	w ave □onditions	□lat	M oderate	□lat	□lat	□lat
	w ind □onditions	□alm	□resh	□alm	□alm	□alm
	w eather	Sho□ ers	Dry	Dry	Dry	Dry
S2	Time	13:47	16:50	19:40	23:00	02:09
	□epth @ Site	8.9 m	10□4m	11.7 m	9□3m	9□1m
	w ave □onditions	□lat	M oderate	□lat	□lat	□lat
	w ind □onditions	□alm	□resh	□alm	□alm	□alm
	w eather	Dry	Dry	Dry	Dry	Dry
S3	Time	13:44	17:00	19:50	23:10	01:35
	□epth @ Site	7.0 m	8.4 m	9.6 m	8□0m	6□8m
	w ave □onditions	□lat	M oderate	□lat	□lat	□lat
	w ind □onditions	□alm	□resh	□alm	□alm	□alm
	w eather	Dry	Dry	Dry	Dry	Dry

□□□□e XIV: T□rbidity and S□spended Solids res□lts from marine w ater samples collected at the three collection sites in Bantry Bay.

	S1		S2		S3	
	Turb idity (N□□)	□□□pended □□□id□ (m □/ i)	□□□idi□□ (N TU□	□□□pended □□id□ (m □□□)	□□□idi□□ (N TU□	□□□pended Sol ds (m g□l)
□□ Start	<1.0	5□0	<1 □0	4.2	<1 □0	4.2
LW □3	1□1	3□6	<1 □0	<3.0	<1 □0	<3.0
□□	<1.0	4□9	<1 □0	<3.0	<1 □0	4.3
H W □3	<1.0	3□6	<1 □0	4.0	1.4	<3.0
□□ □nd	<1.0	<3□0	1.4	3.9	<1 □0	3.5

□□□□e □□□ O r□anotin and M erc□ry res□lts.

	□1		S2		S3	
	□BT (µ□/l)	H g (µg □l)	TBT (µ□/l)	□g (µ□□l)	□□□ (µ□□l)	H□ (µ□□l)
□□ □nd	<0.0005	<0 □01	<0 □0005	<0.01	<0 □0005	<0.01

Summer - Spring

Samples w ere collected d□rin□ the neap tide cycle of 16 th □□ne 2015. Time of Lo□ w ater start w as at 11:26 (0 □6m) and L□ □nd w as at 23:51 (0 □5m).

□□□□e X□I: Boat lo□ for sample collection in Bantry Bay

		□□	□□ □□	H□	□W +□	□□
S1	Time	11:26	14□25	17:30	20:30	23:25
	□epth @ Site	6.6 m	8□1 m	9.5 m	8□1 m	6.5 m
	w ave □onditions	□lat	□lat	□lat	□lat	□lat
	w ind □onditions	□alm	□alm	□alm	□alm	Bree□y
	w eather	M ist	M ist	D ry	D ry	Rain
S2	Time	11:35	14:30	17:36	20:36	23□35
	□epth @ Site	8.8 m	10.0 m	11.6 m	10□0m	8.5 m
	w ave □onditions	□lat	□lat	□lat	□lat	□lat
	w ind □onditions	□alm	□alm	□alm	□alm	Bree□y
	w eather	M ist	M ist	D ry	D ry	Rain
S3	Time	11:40	14□35	17:41	20:41	23:45
	□epth @ Site	6.7 m	7□9m	9.3 m	7□7m	6.6 m
	w ave □onditions	□lat	□lat	□lat	□lat	□lat
	w ind □onditions	□alm	□alm	□alm	□alm	Bree□y
	w eather	M ist	M ist	D ry	D ry	Rain

□□□□e XVI : T□rbidity and S□spended Solids res□lts from marine w ater samples collected at the three collection sites in Bantry Bay.

	S1		S2		S3	
	Turb idity (N□□)	□□□pended □□□id□ (m □/ i)	□□□idi□□ (N TU□	□□□pended □□id□ (m □□□)	□□□idi□□ (N TU□	□□□pended Sol ds (m g□l)
□□ Start	<1.0	3□6	<1 □0	<3.0	<1 □0	3.4
LW □3	<1.0	<3 □0	<1 □0	3.7	<1 □0	<3.0
□□	<1.0	4□6	<1 □0	<3.0	<1 □0	<3.0
H W □3	<1.0	3□1	1.0	<3.0	<1 □0	4□2
□□ □nd	<1.0	3□8	<1 □0	5.2	<1 □0	4.0

□□□□e □□□□: O r□anotin and M erc□ry res□lts.

	□1		S2		S3	
	□BT (µ□/l)	H g (µg □l)	TBT (µ□/l)	□g (µ□□l)	□□□ (µ□□l)	H□ (µ□□l)
□□ □nd	<0.0005	<0 □01	<0 □0005	<0.01	<0 □0005	<0.01

Summer – Neap

Samples were collected during the neap tide cycle of 23rd – 24th June 2015. Time of Low Water start was at 16:26 (1.0m) and Low End was at 05:02 (1.0m).

Table IXX: Boat log for sample collection in Bantry Bay

S1	Time	16:16	19:35	22:25	01:55	05:00
	Depth @ Site	7.4 m	8.1 m	9.0 m	8.0 m	7.4 m
	Wave Conditions	Calm	Calm	Calm	Calm	Calm
	Wind Conditions	Calm	Calm	Calm	Calm	Calm
	Weather	Dry	Dry	Misty	Misty	Dry
S2	Time	16:26	19:30	22:20	01:45	04:55
	Depth @ Site	9.5 m	10.2 m	10.9 m	10.0 m	9.3 m
	Wave Conditions	Calm	Calm	Calm	Calm	Calm
	Wind Conditions	Calm	Calm	Calm	Calm	Calm
	Weather	Dry	Dry	Misty	Misty	Dry
S3	Time	16:31	19:40	22:30	02:10	05:10
	Depth @ Site	7.3m	8.1 m	8.9 m	7.8m	7.2 m
	Wave Conditions	Calm	Calm	Calm	Calm	Calm
	Wind Conditions	Calm	Calm	Calm	Calm	Calm
	Weather	Dry	Dry	Misty	Misty	Dry

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

	S1		S2		S3	
	Turbidity (NTU)	Suspended Solids (mg/l)	Turbidity (NTU)	Suspended Solids (mg/l)	Turbidity (NTU)	Suspended Solids (mg/l)
HW Start	<1.0	<3.0	<1.0	3.2	1.0	3.6
LW +3	<1.0	<3.0	<1.0	<3.0	<1.0	4.9
LW	<1.0	9.6	<1.0	3.9	<1.0	3.5
HW +3	<1.0	<3.0	<1.0	<3.0	<1.0	3.0
HW End	<1.0	<3.0	1.0	<3.0	1.2	3.5

Table XI: Organotin and Mercury results.

	S1		S2		S3	
	TBT (µg/l)	Hg (µg/l)	TBT (µg/l)	Hg (µg/l)	TBT (µg/l)	Hg (µg/l)
HW End	<0.0005	<0.01	<0.0005	<0.01	<0.0005	<0.01

Sediment Collection

Samples □ ere collected d□rin□ the Sprin□ – Sprin□ tidal cycle of □□th □ ay□□□□□

□□□□e □□□□□ Time and □ eather data

	□□□	□□2
Time	□□□□□	□□□□□
□ ave □onditions	□lat	□lat
□ ind □onditions	□alm	□alm
□ eather	□ry	□ry

□□□□e □□□□□ □ □S□ite sediment characteristics

	□□□□□	□□□□2
□ate	□□□□□□□□□□□	□□□□□□□□□□□
□astin□	□□□□□	□□□□□
Northin□	□□□□□	□□□□□
Sample □epth	□m	□□□m
□ ethod of Samplin□	□□□m□ □an □een □rab	□□□m□ □an □een □rab
Laboratory Name	NLS	NLS
□is□al □nspection	Sandy □ □d□ Stron□ S□lphide smell from the sediment□ □i□hly ano□ic□ No evidence of live fa□na in the sediment□ Some m□ssel shells present in the sediment matri□□	Sandy □ □d□ □i□hly ano□ic sediment□ No evidence of live fa□na b□t a lot of m□ssel shell present on the sediment s□rface□
□ ater □ontent	□□□□□	□□□□□
□ravel	□□□□□	□□□□
Sand	□□□□□	□□□□□
□ □d	□□□□□	□□□□□
Total □ r□anic □arbon	□□□□	□□□□□

Notes on the sediment

□□□□□□Sandy □ □d□ Stron□ S□lphide smell from the sediment□□ i□hly ano□ic□ No evidence of live fa□na in the sediment□ Some m□ssel shells present in the sediment matri□□

□□□□2□Sandy □ □d□□ i□hly ano□ic sediment□No evidence of live fa□na b□t a lot of m□ssel shell present on the sediment s□rface□

Photographic Record of Sediment Samples

□i□□□e 2□ □hoto of □rab sample from SL-□□□

□i□□□e □□ □hoto of □rab sample from SL-□□□

□□

WAC Suite

The follo in parameters ere tested as art of the S ite

arameters for nalysis

1. BS N el ate determinations in m at L S for s Ba d r total o Ni b Sb Se n l S TBT BT total dissolved solids T S phenol inde dissolved or anic carbon at o n p or p
2. p
3. cid Ne tralisation apacity N
4. Total r anic arbon T
5. Loss on nition L
6. Ben ene tol ene ethylene ylene BT compo nds
7. olychlorinated biphenyls Bs con eners
8. olyaromatic hydrocarbons s
9. ineral oil petrole m hydrocarbons -

Res lts from the s ite of parameters are presented in the follo in table etailed res lts incl din limits of detection R res lts etc are incl ded in the ap ended and cel files The determination of TBT from sediment el triate falls o tside the normal s ite and the res lts presented here altho h carried o t by the NLS are not S accredited

□□□□e □□□□ □□□ □ □□ S□ite analysis res□lts

	An□□□e	□ ni□□	□□□□□	□□□□2
	□ib□tyl Tin □□ry □ t as □ation	□□□□□	□□	□□
	Trib□tyl Tin □□ry □ t as □ation	□□□□□	□□	□□
	S□lphate□Leachable □□ry □ t as S□□	m□□□□	□□□□	□□□□
	□arbon□□ r□anic□□issolved□Leachable □□ry □ t as □	m□□□□	□□□	□□□
	Sb□Leachable □□ry □ t	m□□□□	□□□□□□	□□□□□
	□s□Leachable □□ry □ t	m□□□□	□□□□□□	□□□□□□
	Ba□Leachable □□ry □ t	m□□□□	□□□□□□	□□□□□□
	□d□Leachable □□ry □ t	m□□□□	□□□□□□□□	□□□□□□□□
	□r□Leachable □□ry □ t	m□□□□	□□□□□□□□	□□□□□□□□
	□□□Leachable □□ry □ t	m□□□□	□□□□□□	□□□□□
1	□b□Leachable □□ry □ t	m□□□□	□□□□□□□	□□□□□□□
	□ o□Leachable □□ry □ t	m□□□□	□□□□□	□□□□□
	Ni□Leachable □□ry □ t	m□□□□	□□□□□	□□□□□□
	Se□Leachable □□ry □ t	m□□□□	□□□□□□	□□□□□□
	□n□Leachable □□ry □ t	m□□□□	□□□□□□	□□□□□□
	□□ Leachable □□ry □ t	m□□□□	□□□□□□□□□	□□□□□□□□□
	Total □issolved Solids Leachable □□ry □ t	m□□□□	□□□□□□	□□□□□□
	Trib□tyl Tin as □ation Leachable	□□□L	□□□□□□□	□□□□□□
	□l□Leachable □□ry □ t	m□□□□	□□□□	□□□□
	□□Leachable □□ry □ t	m□□□□	□□□□	□□□□
	□henols□□ onohydric Leachable □□ry □ t	m□□□□	□□□□□□□	□□□□□□□
2	p□ □Solid sample	p□ □nits	□□□□	□□□□
	p□□Leachable	p□ □nits	□□□□	□□□□
3	□cid Ne□tralisation □apacity □p□ □□□□ry □ t	mol□□□	□□□□	□□□□
	□cid Ne□tralisation □apacity □p□ □□□□ry □ t	mol□□□	□□□□	□□□□
4	Total or□anic carbon	□	□□□□	□□□□
5	Loss on □□nition □ □□□□□	□	□□□□	□□□□
	Total Ben□ene Tol□ene □thylben□ene and □ylene □□ry □ t	m□□□□	□□□□□□□	□□□□□□□
	□□□-□imethylben□ene □□ry □ t □ □o-□ylene□	□□□□□	□□	□□
6	Ben□ene □□ry □ t	□□□□□	□□	□□
	□imethylben□ene □S□m of □□□- □□□-□□□ry □ t	□□□□□	□□	□□
	□thylben□ene □□ry □ t	□□□□□	□□	□□
	Tol□ene □□ry □ t □ □□ ethylben□ene□	□□□□□	□□	□□

□□□□e XXIV (b): W AC S□ite analysis res□lts

	An□□□e	□ni□□	□□-0□	□□-0 2
7	PC B : Total (28, 52, 101, 118, 138, 153, 180)	mg/kg	<0 □0100	<0 □0100
	PC B - 028 : D ry w t	ug/kg	<2	<2
	PC B - 052 : D ry w t	ug/kg	<1	<1
	PC B - 101 : D ry w t	ug/kg	<2	<2
	PC B - 118 : D ry w t	ug/kg	<2	<2
	PC B - 138 : D ry w t	ug/kg	<1	<1
	PC B - 153 : D ry w t	ug/kg	<1	<1
	PC B - 180 : D ry w t	ug/kg	<1	<1
8	PAH : Total : D ry w t : { □olyn□clear □romatic □ydrocarbons}	mg/kg	<0.407	<0.417
	□cenaphthene : D ry w t	ug/kg	<15	<20
	□cenaphthylene : D ry w t	ug/kg	<20	<20
	□nthanthrene : D ry w t	ug/kg	<40	<30
	□nthracene : D ry w t	ug/kg	<20	<20
	Ben□b (b + k) fl□oranthene : D ry w t	ug/kg	59.3	70.8
	Ben□b(ɜ) ɜnthracene : D ry w t	ug/kg	21.4	<20
	Ben□b(ɜ) ɔyrene : D ry w t	□□/ □□	25.6	21.5
	Ben□b(ɔ) ˈl□oranthene : D ry w t	ug/kg	39.8	53.1
	Ben□b(ɜ) ɔyrene : D ry w t	ug/kg	24.5	25.7
	Ben□b(□hi) ɔerylene : D ry w t	ug/kg	26.3	26.7
	Ben□b(□) ˈl□oranthene : D ry w t	ug/kg	<20	<20
	□hrysene : D ry w t	ug/kg	<30	<30
	□oronene : D ry w t	ug/kg	<10	<10
	□yclopenta(ɔd) ɔyrene : D ry w t	ug/kg	<10	<10
	□iben□b(ɜh) ɜnthracene : D ry w t	ug/kg	6□4	5□43
	□l□oranthene : D ry w t	ug/kg	52 □2	53.2
	□l□orene : D ry w t	ug/kg	<10	<10
	ɜndeno(1,2,3 -cd) ɔyrene : D ry w t	ug/kg	<30	<30
	Naphthalene : D ry w t	ug/kg	10 □4	12.5
	□erylene : D ry w t	ug/kg	106	96.2
	□henanthrene : D ry w t	ug/kg	26 □1	29.5
	□yrene : D ry w t	ug/kg	43 □8	37.3
9	□ydrocarbons >C10 - C40 (⌈otal) : D ry w t	mg/kg	<100	<100
	□ond□ctivity : Solid sample	mS/ ɔm	10 □9	10.3
	□ond□ctivity at 20C, Leachable	□S/ ɔm	4800	3350
	D ry Solids @ 30°C	%	36 □7	43.7
	D ry Solids @ 105°C	%	29 □8	41.3
	□ol□me of Sta□e 1 el□ate	ml	273	279
	w et sample w ei□ht	g	193	193

MI Suite

ll results for the S ite are presented in the accompanyin e cel sheet – S Report Bantry red e ls

Appendix - National Laboratory Services Report for Sediment hemistry and Site

National Laboratory Service

Analytical Report

Final Report

Report ID - 20078634 - 1

Batch description: Marine sediment

UKAS TESTING 0754

Reported on: 24-Jun-2015

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

National Laboratory Service

Analytical Report

Final Report

Report ID - 20078634 - 1

Batch description: Marine sediment

UKAS TESTING 0754

Reported on: 24-Jun-2015

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
		ELEVATED_MRV : Dry weight calculation					
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
		ELEVATED_MRV : Dry weight calculation					
Dibutyl Tin : Dry Wt as Cation	<8	ug/kg		3	UKAS	LE	897
		ELEVATED_MRV : Dry weight calculation					
Tributyl Tin : Dry Wt as Cation	<8	ug/kg		3	UKAS	LE	897
		ELEVATED_MRV : Dry weight calculation					
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
		ELEVATED_MRV : Matrix interference					
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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Starcross
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EX6 8FD

Environment Agency

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	DB, DC	1	UKAS	LE	928
		ELEVATED_MRV : Dry weight calculation					
Benzene : Dry Wt	<3	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}	<8	ug/kg	DB, DC	3	UKAS	LE	928
		ELEVATED_MRV : Dry weight calculation					
Sulphate, Leachable : Dry Wt as SO4	7610	mg/kg	DC	50	UKAS	LE	1493
Conductivity at 20C, Leachable	4800	uS/cm	DC	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	DB, DC	100	UKAS	LE	531
Fluoride, Leachable : Dry Wt	10.5	mg/kg	DB, DC	0.5	UKAS	LE	531
pH, Leachable	8.31	pH Units	DC	0.5	UKAS	LE	549
Phenols, Monohydric Leachable : Dry Wt	<0.457	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

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

National Laboratory Service

Analytical Report

Final Report

Report ID - 20078634 - 1

Batch description: Marine sediment

UKAS TESTING 0754

Reported on: 24-Jun-2015

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

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

National Laboratory Service

Analytical Report

Final Report

Report ID - 20078634 - 1

Batch description: Marine sediment

UKAS TESTING 0754

Reported on: 24-Jun-2015

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 ELEVATED_MRV : Dry weight calculation	*3*	UKAS	LE	897
Tributyl Tin : Dry Wt as Cation	<7	ug/kg ELEVATED_MRV : Dry weight calculation	*3*	UKAS	LE	897
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.
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	2.80	%	*0.1*	UKAS	SC	535

National Laboratory Service

Analytical Report

Final Report

Report ID - 20078634 - 1

Batch description: Marine sediment

UKAS TESTING 0754

Reported on: 24-Jun-2015

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 ELEVATED_MRV : Dry weight calculation	*3*	UKAS	LE	897
Tributyl Tin : Dry Wt as Cation	<6	ug/kg ELEVATED_MRV : Dry weight calculation	*3*	UKAS	LE	897
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

National Laboratory Service

Analytical Report

Final Report

Report ID - 20078634 - 1

Batch description: Marine sediment

UKAS TESTING 0754

Reported on: 24-Jun-2015

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

National Laboratory Service

Analytical Report

Final Report

Report ID - 20078634 - 1

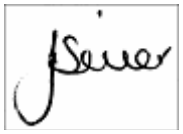
Batch description: Marine sediment

UKAS TESTING 0754

Reported on: 24-Jun-2015

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 <30ºC 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

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

National Laboratory Service

Analytical Report

Final Report

Report ID - 20078960 - 1

Batch description: Marine sediment prepared leachate

Reported on:
04-Jun-2015

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

National Laboratory Service

Analytical Report

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

Analyte	Result	Units	Flag	MRV	Accred	Lab ID	Testcode
Tributyl Tin as Cation	<0.003	ug/l	DB, DC	0.0005	None	SX	59

ELEVATED_MRV : Matrix interference

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National Laboratory Service

Analytical Report

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

Analyte	Result	Units	Flag	MRV	Accred	Lab ID	Testcode
Tributyl Tin as Cation	<0.003	ug/l	DB, DC	0.0005	None	SX	59

ELEVATED_MRV : Matrix interference

NLS Leeds
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National Laboratory Service

Analytical Report

Final Report

Report ID - 20078960 - 1

Batch description: Marine sediment prepared leachate

Reported on: 04-Jun-2015

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

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

END OF TEST REPORT

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Starcross
Exeter
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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 < 63um
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
<63um	Grain size % < 63mm
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 Flouresence 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,

Sample ID code	Company Name	Location	Sampling date (dd/mm/yyyy)	Sampling Location ID	Position Latitude (dd mm.mmm)	Position Longitude (dd mm.mmm)	Sampling depth m	Lab Report ID	Sample appearance (e.g. colour, texture, signs of life)	% Moisture
DP-01A	*<example> Dublin Port Co.*	*Dublin Port*	*23/08/2010*	*DP-01*	*53d 20.833m*	*06d 13.167m*	*0.2*	*20024124-1*	*Grey-black silty mud, no visible signs of life*	*56.95*
Bantry SL-01	Bantry Harbour	Bantry Bay	07/05/2015	Site 1	51d 41.5213333	9d 27.514483333	7	3082330	Sandy Mud. Strong Sulphide smell from the sediment. Highly anoxic. No evidence of live fauna in the sediment. Some mussel shells present in the sediment matrix.	67.5
Bantry SL-02	Bantry Harbour	Bantry Bay	07/05/2015	Site 2	51d 41.381983333	9d 28.310016667	9.1	3082331	Sandy Mud. Highly anoxic sediment. No evidence of live fauna but a lot of mussel shell present on the sediment surface.	60.1
<insert more rows as necessary>										

Sample ID code	Particle size >2mm %	Particle size <2mm >63um %	Particle size <63um %	OC %	TEH g kg^{-1}	Cu mg kg^{-1}	Zn mg kg^{-1}	Cd mg kg^{-1}	Hg mg kg^{-1}	Pb mg kg^{-1}	As mg kg^{-1}	Cr mg kg^{-1}	Mn mg kg^{-1}	Ni mg kg^{-1}	Li mg kg^{-1}	Al mg kg^{-1}
DP-01A	*24.8*	*12.7*	*62.5*	*1.23*	*0.0653*	*62.5*	*167*	*0.307*	*0.104*	*43*	*16.5*	*47.4*	*322*	*18.9*	*37.7*	*27000*
Bantry SL-01	12.6	49.1	38.3	2.8	0.162	28	108	0.328	0.0757	28.6	12.9	69.8		31.6	49.2	59900
Bantry SL-02	2	48.7	49.3	2.3	0.0965	24.7	110	0.265	0.0511	32.6	13.3	75.5		33.3	59	64200
<insert more rows as necessary>																

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}	PCB Σ7 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	0.263	0.464	0.325	0.123	<1.488	2.3	<1	5.36
<insert more rows as necessary>														

Sample ID code	PAH Benzo (a) anthracene ug kg^{-1}	PAH Benzo (a) pyrene ug kg^{-1}	PAH Benzo (b) fluoranthene ug kg^{-1}	PAH Benzo (ghi) perylene ug kg^{-1}	PAH Benzo (k) fluoranthene ug kg^{-1}	PAH Chrysene ug kg^{-1}	PAH Dibenz (a,h) anthracene ug kg^{-1}	PAH Flourene ug kg^{-1}	PAH Fluoranthene ug kg^{-1}	PAH Indeno (1,2,3–cd) pyrene ug kg^{-1}
DP-01A	*167*	*185*	*245*	*186*	*99.3*	*203*	*38.4*	*121*	*274*	*209*
Bantry SL-01	21.4	25.9	33	26.4	13.8	18.6	2.92	6.32	52.3	24.7
Bantry SL-02	20.2	23.7	41.9	28.2	16.4	18.5	3.06	7.1	54.6	30.1
<insert more rows as necessary>										