

ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring Visit 10 (24th April 2012)

Screening Values - Drinking Water Standards

Aquifer type: Locally important aquifer
 Typical productivity: Moderately Productive (40-100 m3/d)

Concentration exceeds screening value
 Concentration exceeds screening value because limit of detection is greater than screening value

Determinand	Units	Screening Value (µg/l)	Source of screening value	Limit of detection	Ground type																						
					A1	A11	A3	A4	A9	C11	C2	C7	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3	
Inorganics																											
Arsenic (dissolved)	µg/l	10	SI 278/2007	0.12	19.8	3.85	31	5.2	1.8	10.6	2.67	24.3	12.7	2.99	113	10.3	19.4	11.1	7.73	1.99	8.58	15.4	1.54	3.72	45.1	3.86	
Cadmium (dissolved)	µg/l	5	SI 278/2007	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.273	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Chromium (dissolved)	µg/l	50	SI 278/2007	0.22	1.61	4.2	1.44	1	3.53	1.47	1.39	1.61	1.33	0.599	2.16	2.1	15.4	1.46	1.22	2.19	1.47	8.75	3.55	0.569	8.89	0.893	
Copper (dissolved)	µg/l	2000	SI 278/2007	0.85	1.48	1.01	11.5	5.4	1.57	<0.85	2.59	0.865	1.56	3.2	<0.85	4.48	1.48	1.16	4.72	1.04	<0.85	1.77	3.47	2.23	1.62		
Lead (dissolved)	µg/l	25	SI 278/2007	0.02	0.073	0.403	0.036	0.087	0.039	0.053	0.356	0.111	<0.02	0.76	0.106	<0.02	0.046	0.146	0.087	<0.02	0.081	0.047	0.314	0.259	<0.02		
Nickel (dissolved)	µg/l	20	SI 278/2007	0.15	6.05	2.78	5.69	4.44	1.45	3.57	6.54	5.31	5.13	2.77	29.9	5.58	4.47	9.29	5.38	14.6	5.55	2.91	5.31	9.59	8.41	4.8	
Selenium (dissolved)	µg/l	10	SI 278/2007	0.39	2.2	1.67	1.54	1.4	0.632	1.06	4.15	21	19.6	1.28	16.5	5.62	111	7.56	10.6	4.21	2.24	1.07	1.1	1.92	11.1	1.01	
Zinc (dissolved)	µg/l	5000	WHO Drinking Water Quality Guideline Value	0.41	0.862	3.71	1.9	1.98	<0.41	<0.41	3.85	0.994	0.616	1.56	32.8	0.41	3.94	2.41	14.9	3.57	0.589	<0.41	1.52	1.2	3.69	0.707	
Mercury (dissolved)	µg/l	1	SI 278/2007	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.041	<0.01	<0.01	<0.01	0.0177	<0.01	0.0157	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0287	<0.01
Ammonium	mg/l	0.3	SI 278/2007	0.3	14.1	4.71	12.6	2.58	<0.3	5.63	1.68	118	15.7	4.85	56.2	71.4	65.4	28.8	19.5	4.04	22.4	19.9	0.357	4.15	47.4	0.978	
Sulphate (soluble)	mg/l	250	SI 278/2007	2	473	38	384	254	198	77.5	216	28.8	468	2.3	328	41.7	667	661	223	902	125	153	69	662	206	528	
Phenols	mg/l	500	SI 81/1988	0.025	0.46	0.38	<0.025	<0.025	<0.025	0.75	0.11	240	<0.025	0.53	208	26.9	61.6	15.4	6.68	0.04	10.9	<0.025	<0.025	<0.025	529	<0.025	
Total Cyanide	mg/l	0.05	SI 278/2007	0.05	0.469	<0.05	0.288	0.181	0.087	0.129	0.227	0.378	0.798	<0.05	8.9	0.124	0.859	0.656	0.102	1.11	0.291	<0.05	<0.05	0.488	1.61	1.1	
pH Value	µg/l	6.5	SI 278/2007	1	7.64	7.69	7.69	7.62	8.97	7.59	7.73	8.75	7.91	7.35	8.92	7.53	7.49	7.45	7.46	7.2	7.97	7.53	7.47	7.63	8.33	7.79	
pH Value	µg/l	9.5	SI 278/2007	1	7.64	7.69	7.69	7.62	8.97	7.59	7.73	8.75	7.91	7.35	8.92	7.53	7.49	7.45	7.46	7.2	7.97	7.53	7.47	7.63	8.33	7.79	
BTX																											
Benzene	µg/l	1	SI 278/2007	7	262	10	504	7	<7	55	142	22000	747	79	6190	1350	5720	1600	2880	56	945	11	<7	<7	11500	<7	
Toluene	µg/l	700	WHO Drinking Water Quality Guideline Value	4	26	192	20	<4	<4	38	8	10500	896	104	1730	454	4280	696	3020	<4	893	12	<4	<4	4410	<4	
Ethyl benzene	µg/l	300	WHO Drinking Water Quality Guideline Value	5	75	9	162	5	<5	101	5	411	303	9	76	43	456	169	288	<5	90	<5	<5	<5	202	<5	
Xylene	µg/l	500	WHO Drinking Water Quality Guideline Value	11	153	55	83	<11	<11	329	17	4100	1840	12	880	323	2970	745	2530	19	891	<11	<11	<11	1970	<11	
Petroleum Hydrocarbons																											
GRO (C4-C12)	µg/l	10	SI 81/1988	50	1730	676	2150	91	<50	3640	403	57500	12100	303	14700	3740	23900	6290	16000	176	7350	76	<50	<50	32800	<50	
MTBE	µg/l	3		<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<6	<3	<6	<3	<3	<3	<3	<3	<3	<3	<15	<3	
Aliphatics C5-C6	µg/l	10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Aliphatics C6-C8	µg/l	10		49	<10	42	<10	<10	<10	30	<10	729	188	<10	359	53	346	101	171	<10	65	<10	<10	<10	930	<10	
Aliphatics C8-C10	µg/l	10		126	42	128	<10	<10	<10	370	32	2460	1030	10	620	175	1370	412	992	15	467	<10	<10	<10	1580	<10	
Aliphatics C10-C12	µg/l	10		571	198	671	33	<10	<10	1480	99	9350	3810	39	2660	733	4660	1370	3250	39	2210	21	14	<10	6570	<10	
Aliphatics C12-C16	µg/l	10		<10	<10	<10	<10	<10	<10	33	<10	73	401	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Aliphatics C16-C21	µg/l	10		<10	<10	<10	<10	<10	<10	13	<10	62	442	11	<10	31	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Aliphatics C21-C35	µg/l	10		<10	<10	<10	<10	<10	<10	<10	<10	80	264	11	<10	140	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Aromatics C6-C7	µg/l	10		262	10	504	<10	<10	<10	55	142	22000	747	79	6190	1350	5720	1600	2880	56	945	11	<7	<7	11500	<7	
Aromatics C7-C8	µg/l	10		26	192	20	<10	<10	<10	38	<10	10500	896	104	1730	454	4280	696	3020	<10	893	12	<4	<4	4410	<4	
Aromatics C8-C10	µg/l	10		312	92	330	13	<10	<10	677	44	6150	2330	35	1370	483	4340	1190	3480	31	1290	<10	<10	<10	3230	<10	
Aromatics C10-C12	µg/l	10		381	132	447	22	<10	<10	968	66	6230	2540	26	1770	489	3100	916	2160	26	1470	14	<10	<10	4380	<10	
Aromatics C12-C16	µg/l	10		222	177	805	71	<10	<10	712	188	13800	4920	117	8240	1910	5850	<10	4520	27	2980	52	<10	<10	20800	<10	
Aromatics C16-C21	µg/l	10		123	151	239	41	<10	<10	222	36	1540	250	20	570	49	468	194	1230	<10	670	133	<10	<10	814	<10	
Aromatics C21-C35	µg/l	10		22	534	17	<10	<10	<10	47	<10	955	1170	77	122	212	<100	54	242	23	57	336	<10	<10	<100	<10	
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	SI 81/1988	10	2100	1720	3210	204	13	4670	626	74000	21700	539	23700	6080	30200	6540	22000	226	11100	746	42	<10	54400	<10	
PAHs																											
Acenaphthene	µg/l	0.015		0.121	9.15	38.8	0.0175	0.0211	25.4	9.35	4.45	66.4	0.22	15.1	1.19	44	17.9	40	0.816	19.7	5.23	<0.015	0.0432	25.9	<0.015		
Acenaphthylene	µg/l	0.011		0.158	23	4.89	0.0719	0.213	2.06	0.56	27.1	192	1.31	83	3.34	58.2	16.7	94.3	0.857	86.9	9.57	0.119	0.0214	213	0.021		
Anthracene	µg/l	0.015		<0.03	4.21	0.402	0.0481	0.132	0.651	0.27	4.97	43.3	0.324	6.82	0.752	3.29	5.04	28.5	0.152	9.07	5.38	0.0281	0.0209	12.4	<0.015		
Benzo(a)anthracene	µg/l	0.017		<0.034	12.2	0.31	0.0526	0.734	0.355	0.119	<4.25	8.93	1.97	1.25	4.59	<0.17	1.91	10.5	0.652	0.366	28.3	0.0906	0.051	<3.4	0.0339		
Benzo(a)pyrene	µg/l	0.009	SI 278/2007	0.0261	19.1	0.145	0.0425	1.66	0.343	0.0929	<2.25	4.95	2.9	0.642	9.61	<0.09	3.19	7.93	1.09	0.139	49.6	0.41	0.0708	<1.8	0.0575		
Benzo(b)fluoranthene	µg/l	0.023		<0.046	17.8	0.0592	0.033	1.44	0.261	0.0671	<5.75	4.2	3.07	<1.15	9.07	<0.23	2.88	7.05	0.752	0.109	49.6	0.316	0.0511	<4.6	0.0593		
Benzo(g)herylene	µg/l	0.016		<0.032	13.5	0.0387	0.0192	1.35	0.206	0.0569	<4	2.13	2.17	<0.8	7.31	<0.16	2.47	4.4	0.705	0.0518	30.6	0.264	0.051	<3.2	0.0514		
Benzo(k)fluoranthene	µg/l	0.027		<																							

ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring visit 10 (24th April 2012)

Screening Values - Environmental Quality Standards

Receptor water type: Freshwater suitable for coarse fish
 Relevant EQS Hardness Band: >100-150 mg/l

- Hardness related Freshwater EQS - based on cyprinid/coarse fish
- Asterisk indicates freshwater EQS in the absence of a coastal/Estuary/Marine
- Concentration exceeds screening value
- Concentration exceeds screening value because limit of detection is greater than screening value

Determinand	Units	Coastal/ Estuary /Marine Screening Value (µg/l)	Source of screening value	Limit of Detection	Ground type																					
					Borehole																					
					A1	A11	A3	A4	A9	C11	C2	C7	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3
Depth (mbgl)	1.50-3.00	1.50	2.00	2.50	1.80-2.40	2.00	1.60-2.50	1.80-2.50	3.00-3.50	1.90	3.50	3.00	5.00	4.50	2.50-3.50	4.00	0.50-1.50	2.50	1.00	3.25	3.00	4.00-5.00				
Inorganics																										
Arsenic (dissolved)	µg/l	20	SI 272/2009 Annual Ave	0.12	19.8	3.85	31	5.2	1.8	10.6	2.67	24.3	12.7	2.99	113	10.3	19.4	11.1	7.73	1.99	8.58	15.4	1.54	3.72	45.1	3.86
Cadmium (dissolved)	µg/l	1.5	SI 272/2009 MAC	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	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (dissolved)	µg/l	32	SI 272/2009 MAC	0.22	1.61	4.2	1.44	1	3.53	1.47	1.39	1.61	1.33	0.599	2.16	2.1	15.4	1.46	1.22	2.19	1.47	8.75	3.55	0.569	8.89	0.893
Copper (dissolved)	µg/l	30	SI 272/2009 Annual Ave*	0.85	1.48	1.01	11.5	5.4	1.57	<0.85	2.59	0.865	1.56	3.2	<0.85	<0.85	4.48	1.48	1.16	4.72	1.04	<0.85	1.77	3.47	2.23	1.62
Lead (dissolved)	µg/l	7.2	SI 272/2009 Annual Ave	0.02	0.073	0.403	0.036	0.087	0.039	0.053	0.356	0.111	<0.02	0.76	0.106	<0.02	<0.02	0.046	0.146	0.087	<0.02	0.081	0.047	0.314	0.259	<0.02
Nickel (dissolved)	µg/l	20	SI 272/2009 Annual Ave	0.15	6.05	2.78	5.69	4.44	1.45	3.57	6.54	5.31	5.13	2.77	29.9	5.58	4.47	9.29	5.38	14.6	5.55	2.91	5.31	9.59	8.41	4.8
Selenium (dissolved)	µg/l	1	Canadian Water Quality Guidelines for Aquatic Life (2007)*	0.39	2.2	1.67	1.54	1.4	0.632	1.06	4.15	21	19.6	1.28	16.5	5.62	111	7.56	10.6	4.21	2.24	1.07	1.1	1.92	11.1	1.01
Zinc (dissolved)	µg/l	40	SI 272/2009 Annual Ave	0.41	0.862	3.71	1.9	1.98	<0.41	<0.41	3.85	0.994	0.616	1.56	32.8	<0.41	3.94	2.41	14.9	3.57	0.589	<0.41	1.52	1.2	3.69	0.707
Mercury (dissolved)	µg/l	0.07	SI 272/2009 Annual Ave	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.041	<0.01	<0.01	0.0177	<0.01	0.0157	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0287	<0.01
Ammoniacal Nitrogen	mg/l	1	Freshwater Fish Directive*	0.3	14.1	4.71	12.6	2.58	<0.3	5.63	1.68	118	15.7	4.85	56.2	71.4	65.4	28.8	19.5	4.04	22.4	19.9	0.357	4.15	47.4	0.978
Sulphate (soluble)	mg/l	200	EQS & IGV*	2	473	38	384	254	198	77.5	216	28.8	468	2.3	328	41.7	667	661	223	902	125	153	69	662	206	528
Phenols	mg/l	0.046	SI 272/2009 MAC	0.025	0.46	0.38	<0.025	<0.025	<0.025	0.75	0.11	240	<0.025	0.53	208	26.9	61.6	15.4	6.68	0.04	10.9	<0.025	<0.025	<0.025	529	<0.025
Free Cyanide - (total CN in lab results)	mg/l	0.01	SI 272/2009 Annual Ave	0.05	0.469	<0.05	0.288	0.161	0.087	0.129	0.227	0.576	0.788	<0.05	8.8	0.124	0.859	0.655	0.102	1.11	0.291	<0.05	<0.05	0.685	1.81	1.1
pH Value	µg/l	6.5	Interim Guideline Values	1	7.64	7.69	7.69	7.62	8.97	7.59	7.73	8.75	7.91	7.35	8.92	7.53	7.49	7.45	7.46	7.2	7.97	7.53	7.47	7.63	8.33	7.79
pH Value	µg/l	9.5	Interim Guideline Values	1	7.64	7.69	7.69	7.62	8.97	7.59	7.73	8.75	7.91	7.35	8.92	7.53	7.49	7.45	7.46	7.2	7.97	7.53	7.47	7.63	8.33	7.79
BTEX																										
Benzene	µg/l	50	SI 272/2009 MAC	7	262	10	504	7	<7	55	142	22000	747	79	6190	1350	5720	1600	2880	56	945	11	<7	<7	11500	<7
Toluene	µg/l	10	SI 272/2009 Annual Ave	4	26	192	20	<4	<4	38	8	10500	896	104	1730	454	4280	696	3020	<4	893	12	<4	<4	4410	<4
Ethyl benzene	µg/l	10	EQS & IGV	5	75	9	162	5	<5	101	5	411	303	9	76	43	456	169	288	<5	90	<5	<5	<5	202	<5
Xylene	µg/l	10	SI 272/2009 Annual Ave	11	153	55	83	<11	<11	329	17	4100	1840	12	880	323	2970	745	2530	19	891	<11	<11	<11	1970	<11
Petroleum Hydrocarbons																										
GRO (C4-C12)	µg/l			50	1730	676	2150	91	<50	3640	403	57500	12100	303	14700	3740	23900	6290	16000	176	7350	76	<50	<50	32800	<50
MTBE	µg/l	30	IGV	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<6	<3	<6	<3	<3	<3	<3	<3	<3	<3	<15	<3
Aliphatics C5-C6	µg/l	10		10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics C6-C8	µg/l	10		10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics C8-C10	µg/l	10		10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics C10-C12	µg/l	10		10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics C12-C16	µg/l	10		10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics C16-C21	µg/l	10		10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics C21-C35	µg/l	10		10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics C6-C7	µg/l	10		10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics C7-C8	µg/l	10		10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics 9-10	µg/l	10		10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics 10-12	µg/l	10		10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics 12-16	µg/l	10		10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics 16-21	µg/l	10		10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics 21-35	µg/l	10		10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	EQS & IGV	10	2100	1720	3210	204	13	4670	626	74000	21700	539	23700	6090	30200	6540	22000	226	11100	746	42	<10	54400	<10
PAHs																										
Acenaphthene	µg/l	5.8	Canadian Water Quality Guidelines for Aquatic Life (2007)*	0.015	0.121	9.15	38.8	0.0175	0.0211	25.4	9.35	4.45	66.4	0.22	15.1	1.19	44	17.9	40	0.816	19.7	5.23	<0.015	0.0432	25.9	<0.015
Acenaphthylene	µg/l	0.11		0.011	0.158	23	4.89	0.0719	0.213	20.6	0.56	27.1	192	1.31	83	3.34	58.2	16.7	94.3	0.857	86.9	9.57	0.119	0.0214	21.3	0.0121
Anthracene	µg/l	0.4	SI 272/2009 MAC	0.015	<0.03	4.21	0.402	0.0481	0.132	0.651	0.27	4.97	43.3	0.324	6.62	0.752	3.29	0.504	28.5	0.152	9.07	5.38	0.0281	0.0209	12.4	<0.015
Benzo(a)anthracene	µg/l	0.018	Canadian Water Quality Guidelines for Aquatic Life (2007)*	0.017	<0.034	12.2	0.31	0.0526	0.734	0.355	0.119	<4.25	8.93	1.97	1.25	4.59	<0.17	1.91	10.5	0.652	0.366	28.3	0.0906	0.051	<3.4	0.0339
Benzo(a)pyrene	µg/l	0.1	SI 272/2009 MAC	0.009	0.0261	19.1	0.145	0.0425	1.66	0.343	0.0929	<2.25	4.95	2.9	0.642	9.61	<0.09	3.19	7.93	1.09	0.139	49.6	0.41	0.0708	<1.8	0.0575
Benzo(b)fluoranthene	µg/l	0.5	Interim Guideline Value*	0.023	<0.046	17.8	0.0592	0.033	1.44	0.261	0.0671	<5.75	4.2	3.07	<1.15	9.07	<0.23	2.88	7.05	0.752	0.109	49.6	0.316	0.0511	<4.6	0.0593
Benzo(g,h,i)perylene	µg/l	0.05	Interim Guideline Value*	0.016	<0.032	13.5	0.0387	0.0192	1.35	0.206	0.0569	<4	2.13	2.17	<0.8	7.31	<0.16	2.47	4.4	0.705	0.0518	30.6	0.264	0.051	<3.2	0.0514
Benzo(k)fluoranthene	µg/l	0.05	Interim Guideline Value*	0.027	<0.054	16.2	0.133	0.0613	1.45	0.41	0.11	<6.75	4.75	2.69	<1.35	8.66	<0.27	2.82	6.95	1	0.183	36.8	0.325	0.0892	<5.4	0.0536
Chrysene	µg/l	0.013	0.0443	0.013	0.0443	12.7	0.267	0.067	0.763	0.362	0.145	<3.25	7.57	2.95	1.02	5.04	<0.13	2.1	9.73	0.734	0.					

ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring Visit 11 (25th July 2012)

Screening Values - Drinking Water Standards

Aquifer type: Locally important aquifer
 Typical productivity: Moderately Productive (40-100 m3/d)

 Concentration exceeds screening value
 Concentration exceeds screening value because limit of detection is greater than screening value

Determinand	Units	Screening Value (µg/l)	Source of screening value	Limit of detection	Ground type																					
					A1	A3	A4	A9	A11	C2	C7	C11	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3
Inorganics																										
Arsenic (dissolved)	µg/l	10	SI 278/2007	0.12	18.9	30.9	5.6	1.36	2.46	2.93	25.3	10.2	11.7	2.23	338	15.5	20.2	3.67	4.11	1.49	11.2	3.99	2.83	3.31	426	4.33
Cadmium (dissolved)	µg/l	5	SI 278/2007	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.164	<0.1	<0.1	<0.1	<0.1	0.505	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.365	<0.1
Chromium (dissolved)	µg/l	50	SI 278/2007	0.22	0.89	1.02	2.02	3.63	0.808	0.544	1.41	0.83	1.8	1.83	2.76	1.6	2.36	1.44	0.778	1.92	1.95	0.863	<0.22	0.303	25.1	0.534
Copper (dissolved)	µg/l	2000	SI 278/2007	0.85	4.3	4.57	11.3	2.02	5.24	6.83	1.87	<0.85	1.8	1.89	13.6	2.55	5.31	4.88	2.46	7.02	1.63	3.35	2.55	4.54	7.61	4.44
Lead (dissolved)	µg/l	25	SI 278/2007	0.02	<0.02	<0.02	0.223	<0.02	0.401	0.101	<0.02	<0.02	<0.02	0.763	0.051	<0.02	<0.02	0.149	0.995	0.051	0.043	<0.02	<0.02	0.023	0.151	<0.02
Nickel (dissolved)	µg/l	20	SI 278/2007	0.15	5.54	3.88	5.01	1.43	2.01	3.77	2.25	3.02	2.63	2.28	56.3	4.52	6.3	5.56	3.72	10.1	4.49	3.49	7.04	7.92	37	4.35
Selenium (dissolved)	µg/l	10	SI 278/2007	0.39	4.83	4.44	6.74	0.898	4.57	7.97	22.4	4.79	1.52	0.489	32.5	7.62	13.7	2.65	1.64	10.5	1.84	4.87	5.05	6.68	29.8	4.46
Zinc (dissolved)	µg/l	5000	WHO Drinking Water Quality Guideline Value	0.41	1.93	1.56	6.7	0.601	1.74	5.8	<0.41	<0.41	0.895	5.35	60.7	0.984	1.91	5.71	9.79	3.74	0.88	1.37	0.754	1.95	105	0.903
Mercury (dissolved)	µg/l	1	SI 278/2007	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0439	<0.01	<0.01	<0.01	0.0631	<0.01	<0.01	0.0108	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ammonium	mg/l	0.3	SI 278/2007	0.3	13.9	12.1	0.386	<0.3	<0.3	0.999	12.1	5.34	14.9	38.7	130	85.8	59.9	8.97	1.7	1.47	22.2	19.9	0.428	3.95	567	1.26
Sulphate (soluble)	mg/l	250	SI 278/2007	2	483	347	224	207	28.5	97.7	47.6	65.3	421	19.6	791	58.5	648	807	183	690	111	170	33.9	651	732	529
Phenols	mg/l	500	SI 81/1988	0.025	0.53	0.09	<0.025	<0.025	<0.025	0.04	19.5	1.77	0.8	3.35	165	20.8	40.9	1.08	<0.025	<0.025	9.85	<0.025	0.12	0.52	1670	<0.025
Total Cyanide	mg/l	0.05	SI 278/2007	0.05	0.78	0.268	0.211	0.247	<0.05	0.183	0.491	0.162	0.992	<0.05	29.5	0.104	1.06	2.54	0.171	1.49	0.314	<0.05	<0.05	0.494	27.8	1.85
pH Value	mg/l	<0.5	SI 278/2007	1	7.61	7.83	7.63	8	7.81	7.78	8.63	7.57	7.77	7.52	9.55	7.59	7.76	7.49	7.61	7.36	7.78	7.67	7.52	7.39	10.1	7.78
pH Value	mg/l	>9.5	SI 278/2007	1	7.61	7.83	7.63	8	7.81	7.78	8.63	7.57	7.77	7.52	9.55	7.59	7.76	7.49	7.61	7.36	7.78	7.67	7.52	7.39	10.1	7.78
BTEX																										
Benzene	µg/l	1	SI 278/2007	7	607	<7	<7	<7	<7	<7	20800	74	743	<7	15200	1330	5460	312	584	<7	704	8	<7	<7	16700	<7
Toluene	µg/l	700	WHO Drinking Water Quality Guideline Value	4	62	<4	<4	<4	<4	<4	10500	51	373	<4	4220	577	4070	31	793	<4	729	<4	<4	<4	5460	<4
Ethyl benzene	µg/l	300	WHO Drinking Water Quality Guideline Value	5	114	<5	<5	<5	<5	<5	534	47	222	<5	177	60	465	28	162	<5	75	<5	<5	<5	265	<5
Xylene	µg/l	500	WHO Drinking Water Quality Guideline Value	11	155	55	<11	<11	<11	<11	5620	311	916	18	1950	484	2910	146	1500	<11	762	<11	<11	<11	2480	<11
Petroleum Hydrocarbons																										
GRO (C4-C12)	µg/l	10	SI 81/1988	50	2240	758	<50	<50	<50	105	77700	3360	7640	74	35000	4380	22400	1170	7360	<50	5610	98	89	<50	53600	<50
MTBE	µg/l	3		<3	<3	<3	<3	<3	<3	<3	<30	<3	<3	<3	<3	<6	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Aliphatics C5-C6	µg/l	10		<10	<10	<10	<10	<10	<10	<10	<100	<10	14	<10	129	30	<10	13	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics C6-C8	µg/l	10		50	41	<10	<10	<10	<10	<10	893	24	141	<10	1310	84	368	28	92	<10	86	<10	<10	<10	2480	<10
Aliphatics C8-C10	µg/l	10		129	86	<10	<10	<10	<10	15	4750	308	628	<10	1600	252	1310	100	646	<10	460	11	12	<10	2750	<10
Aliphatics C10-C12	µg/l	10		621	308	<10	<10	<10	<10	43	18800	1400	2510	17	5670	846	4140	275	1890	11	1490	33	39	<10	12500	<10
Aliphatics C12-C16	µg/l	10		<10	<10	26	<10	<10	<10	10	3660	<10	1410	25	<10	<10	<10	78	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics C16-C20	µg/l	10		<10	<10	51	<10	<10	<10	10	3110	<10	2380	85	<10	30	<10	<10	63	<10	<10	<10	<10	<10	<10	<10
Aliphatics C21-C25	µg/l	10		<10	<10	19	<10	<10	<10	10	3590	<10	1090	447	<10	194	<10	<10	89	<10	<10	<10	<10	<10	<10	<10
Aromatics C6-C7	µg/l	10		607	<10	<10	<10	<10	<10	10	20800	74	743	<10	15200	1330	5460	312	584	<10	704	8	<10	<10	16700	<10
Aromatics C7-C8	µg/l	10		62	<10	<10	<10	<10	<10	10	10500	51	373	<10	4220	577	4070	31	793	<10	729	<10	<10	<10	5460	<10
Aromatics C8-C10	µg/l	10		356	112	<10	<10	<10	<10	10	9330	563	1560	28	3200	712	4240	241	2090	<10	1150	14	<10	<10	4580	<10
Aromatics C10-C12	µg/l	10		414	206	<10	<10	<10	<10	29	12500	936	1670	11	3780	564	2760	183	1260	<10	991	22	26	<10	8350	<10
Aromatics C12-C16	µg/l	10		430	210	11	<10	<10	<10	10	50800	739	3440	77	16900	3900	9070	80	705	34	1710	10	<10	12	50500	<10
Aromatics C16-C21	µg/l	10		290	163	24	<10	<10	<10	10	32700	266	4110	246	1430	261	824	65	612	69	518	11	<10	48	4910	<10
Aromatics C21-C25	µg/l	10		45	10	26	<10	<10	<10	10	35900	60	3880	1350	302	486	47	196	713	313	64	25	<10	181	1400	11
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	SI 81/1988	10	3010	1140	181	<10	107	105	207000	4430	23900	2310	53600	9250	32300	1510	9620	453	7900	145	89	272	110000	13
PAHs																										
Acenaphthene	µg/l	0.015		0.0193	0.0969	0.0228	<0.015	0.0303	0.0174	417	0.726	285	0.44	25	0.825	42.9	0.145	30.1	0.37	19.8	0.0628	0.179	0.714	136	<0.015	
Acenaphthylene	µg/l	0.011		0.371	0.191	0.198	0.0705	0.414	0.0198	2420	0.862	346	11.5	166	0.258	41.8	0.0915	34.9	3.64	51.9	0.214	0.294	0.62	661	0.0548	
Anthracene	µg/l	0.015		0.071	0.131	0.0912	0.0347	0.354	0.0374	1510	0.514	244	2.92	10.4	0.152	4.17	<0.03	6.11	0.689	10.8	0.111	0.0645	0.903	209	0.062	
Benzo(a)anthracene	µg/l	0.017		0.0756	0.0449	0.263	0.231	0.939	0.178	1110	0.808	156	24.5	0.903	<0.085	0.194	<0.034	1.73	6.12	1.98	0.357	0.638	7.47	96.5	0.474	
Benzo(a)pyrene	µg/l	0.009	SI 278/2007	0.009	0.118	0.081	0.524	0.349	2.01	0.143	857	1.06	109	40.9	0.422	<0.045	0.0184	<0.018	0.857	8.93	1.34	0.744	1.1	14	67.4	0.894
Benzo(b)fluoranthene	µg/l	0.023		0.118	0.043	0.497	0.333	1.94	0.113	628	1.11	95.8	43.4	0.469	<0.115	0.0473	<0.046	0.842	5.89	1.21	0.675	0.852	10.9	61.3	1.13	
Benzo(g)hperylene	µg/l	0.016		0.0613	0.0298	0.307	0.255	1.54	0.0796	413	0.568	57.6	30.8	0.222	<0.008	<0.032	<0.032	0.333	5.71	0.47	0.3					

ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring visit 11 (25th July 2012)

Screening Values - Environmental Quality Standards

Receptor water type: Freshwater suitable for coarse fish
 Relevant EQS Hardness Band: >100-150 mg/l

- Hardness related Freshwater EQS - based on cyprinid/coarse fish
- * Asterisk indicates freshwater EQS in the absence of a coastal/Estuary/Marine
- Concentration exceeds screening value
- Concentration exceeds screening value because limit of detection is greater than screening value

Determinand	Units	Coastal/ Estuary /Marine Screening Value (µg/l)	Source of screening value	Limit of Detection	Ground type																							
					Borehole																							
					A1	A3	A4	A9	A11	C2	C7	C11	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3		
					Depth (mbgl)																							
					1.50-2.50	1.50-2.50	2.00-3.00	2.00	1.00-2.00	1.00-2.00	4.00	1.00-2.00	3.00-4.00	1.75	4.00	3.50-4.50	3.00-4.00	6.00	3.50	5.00	1.00	2.00-3.00	1.50	3.00-4.00	1.00-2.00	3.00-4.00		
Inorganics																												
Arsenic (dissolved)	µg/l	20	SI 272/2009 Annual Ave	0.12	18.9	30.9	5.6	1.36	2.46	2.93	25.3	10.2	11.7	2.23	338	15.5	20.2	3.67	4.11	1.49	11.2	3.99	2.83	3.31	426	4.33		
Cadmium (dissolved)	µg/l	1.5	SI 272/2009 MAC	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.164	<0.1	<0.1	<0.1	<0.1	0.505	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.365	<0.1	
Chromium (dissolved)	µg/l	32	SI 272/2009 MAC	0.22	0.89	1.02	2.02	3.63	0.808	0.544	1.41	0.83	1.8	1.83	2.76	1.6	2.36	1.44	0.778	1.92	1.95	0.863	<0.22	0.303	25.1	0.534		
Copper (dissolved)	µg/l	30	SI 272/2009 Annual Ave*	0.85	4.3	4.57	11.3	2.02	5.24	6.83	1.87	<0.85	1.8	1.89	13.6	2.55	5.31	4.88	2.46	7.02	1.63	3.35	2.55	4.54	7.61	4.44		
Lead (dissolved)	µg/l	7.2	SI 272/2009 Annual Ave	0.02	<0.02	<0.02	0.223	<0.02	0.401	0.101	<0.02	<0.02	<0.02	0.763	0.051	<0.02	<0.02	0.149	0.995	0.051	0.043	<0.02	<0.02	0.023	0.151	<0.02		
Nickel (dissolved)	µg/l	20	SI 272/2009 Annual Ave	0.15	5.54	3.88	5.01	1.43	2.01	3.77	2.25	3.02	2.63	2.28	52.3	4.52	6.3	5.56	3.72	10.1	4.49	3.49	7.04	7.92	37	4.35		
Selenium (dissolved)	µg/l	1	Canadian Water Quality Guidelines for Aquatic Life (2007)*	0.39	4.83	4.44	6.74	0.898	4.57	7.97	22.4	4.79	1.52	0.489	32.5	7.62	11.7	2.65	1.64	10.5	1.84	4.87	5.05	6.68	29.8	4.46		
Zinc (dissolved)	µg/l	40	SI 272/2009 Annual Ave	0.41	1.93	1.56	6.7	0.601	1.74	5.8	<0.41	<0.41	0.895	5.35	60.7	0.984	1.91	5.71	9.79	3.74	0.88	1.37	0.754	1.95	105	0.903		
Mercury (dissolved)	µg/l	0.07	SI 272/2009 Annual Ave	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0439	<0.01	<0.01	<0.01	0.0631	<0.01	<0.01	0.0108	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.108	<0.01		
Ammoniacal Nitrogen	mg/l	1	Freshwater Fish Directive*	0.3	13.9	12.1	0.386	<0.3	<0.3	0.999	12.1	5.34	14.9	38.7	130	85.8	59.9	8.97	1.7	1.47	22.2	19.9	0.428	3.95	567	1.26		
Sulphate (soluble)	mg/l	200	EQS & IGV*	2	483	347	224	207	28.5	97.7	47.6	65.3	421	19.6	791	58.5	648	807	183	690	111	170	33.9	651	732	529		
Phenols	mg/l	0.046	SI 272/2009 Annual Ave	0.025	0.53	0.09	<0.025	<0.025	<0.025	0.04	19.5	1.77	0.8	3.35	165	20.8	40.9	1.08	<0.025	<0.025	9.85	<0.025	0.12	0.52	1670	<0.025		
Free Cyanide - (total CN in lab results)	mg/l	0.01	SI 272/2009 Annual Ave	0.05	0.718	0.266	0.211	0.247	<0.05	0.133	0.491	0.162	0.92	<0.05	20.5	0.104	1.06	2.54	0.171	1.49	0.314	<0.05	<0.05	0.494	27.8	1.85		
pH Value	µg/l	<6.5	Interim Guideline Values	1	7.61	7.83	7.63	8	7.81	7.78	8.63	7.57	7.77	7.52	9.55	7.59	7.76	7.49	7.61	7.36	7.78	7.67	7.52	7.39	10.1	7.78		
pH Value	µg/l	>9.5	Interim Guideline Values	1	7.61	7.83	7.63	8	7.81	7.78	8.63	7.57	7.77	7.52	9.55	7.59	7.76	7.49	7.61	7.36	7.78	7.67	7.52	7.39	10.1	7.78		
BTEX																												
Benzene	µg/l	50	SI 272/2009 MAC	7	607	<7	<7	<7	<7	<7	20800	74	743	<7	15200	1330	5460	312	584	<7	704	8	<7	<7	16700	<7		
Toluene	µg/l	10	SI 272/2009 Annual Ave	4	62	<4	<4	<4	<4	<4	10500	51	373	<4	4220	577	4070	31	793	<4	729	<4	<4	<4	5460	<4		
Ethyl benzene	µg/l	10	EQS & IGV	5	114	<5	<5	<5	<5	<5	534	47	222	<5	177	60	465	28	162	<5	75	<5	<5	<5	265	<5		
Xylene (sum of detected Xylenes)	µg/l	10	SI 272/2009 Annual Ave	11	155	55	<11	<11	<11	<11	5620	311	916	18	1950	484	2910	146	1500	<11	762	<11	<11	<11	2480	<11		
Petroleum Hydrocarbons																												
GRO (C5-C12)	µg/l			50	2240	758	<50	<50	<50	105	77700	3360	7640	74	35000	4380	22400	1170	7360	<50	5610	98	89	<50	53600	<50		
MTBE	µg/l	30	IGV	3	<3	<3	<3	<3	<3	<3	<30	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3		
Aliphatics C5-C6	µg/l	10		10	<10	<10	<10	<10	<10	<10	<100	<10	14	<10	129	<10	30	<10	13	<10	<10	<10	<10	<10	<10	721	<10	
Aliphatics C6-C8	µg/l	10		10	<10	<10	<10	<10	<10	<10	893	24	141	<10	1310	84	368	28	92	<10	86	<10	<10	<10	<10	2480	<10	
Aliphatics C8-C10	µg/l	10		10	129	86	<10	<10	<10	<10	15	4750	308	628	<10	1600	252	1310	100	646	<10	460	11	12	<10	2750	<10	
Aliphatics C10-C12	µg/l	10		10	621	308	<10	<10	<10	43	18800	1400	2510	17	5670	846	4140	275	1890	11	1490	33	39	<10	12500	<10		
Aliphatics C12-C16	µg/l	10		10	<10	<10	26	<10	<10	<10	3660	<10	1410	25	<10	<10	<10	<10	78	<10	<10	<10	<10	<10	<10	<250	<10	
Aliphatics C16-C21	µg/l	10		10	<10	<10	51	<10	<10	<10	3110	<10	2380	85	<10	30	<10	<10	<10	63	<10	<10	<10	<10	<10	17	<250	<10
Aliphatics C21-C35	µg/l	10		10	<10	<10	19	<10	<10	<10	3590	<10	1090	447	<10	194	<10	<10	89	<10	<10	<10	<10	<10	<10	14	<250	<10
Aromatics C5-C7	µg/l	10		10	607	<10	<10	<10	<10	<10	20800	74	743	<10	15200	1330	5460	312	584	<10	704	<10	<10	<10	<10	16700	<10	
Aromatics C7-C8	µg/l	10		10	62	<10	<10	<10	<10	<10	10500	51	373	<10	4220	577	4070	31	793	<10	729	<10	<10	<10	<10	5460	<10	
Aromatics C8-C10	µg/l	10		10	356	112	<10	<10	<10	<10	9320	563	1560	28	3200	712	4240	241	2090	<10	1150	14	<10	<10	<10	4580	<10	
Aromatics C10-C12	µg/l	10		10	414	206	<10	<10	<10	<10	29	12500	936	1670	11	3780	564	2760	183	1260	<10	991	22	26	<10	8350	<10	
Aromatics C12-C16	µg/l	10		10	430	210	11	<10	<10	<10	50800	739	3440	77	16800	3900	9070	80	705	34	1710	10	<10	12	50500	<10		
Aromatics C16-C21	µg/l	10		10	290	163	24	<10	<10	<10	32700	266	4110	246	1430	261	824	65	612	69	518	11	<10	48	4910	<10		
Aromatics C21-C35	µg/l	10		10	45	10	26	<10	106	<10	35900	60	3880	1350	302	486	47	196	713	313	64	25	<10	181	1400	11		
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	EQS & IGV	10	3010	1140	181	<10	107	105	207000	4430	23900	2310	53600	9250	32300	1510	9620	453	7900	145	89	272	110000	13		
PAHs																												
Acenaphthene	µg/l	5.8	Canadian Water Quality Guidelines for Aquatic Life (2007)*	0.015	0.0193	0.0969	0.0228	<0.015	0.0303	0.0174	417	0.726	285	0.44	25	0.825	42.9	0.145	30.1	0.37	19.8	0.0628	0.179	0.714	136	<0.015		
Acenaphthylene	µg/l	0.11		0.011	0.371	0.191	0.198	0.0705	0.414	0.0198	2420	0.862	346	11.5	166	0.258	41.8	0.0915	34.9	3.64	51.9	0.214	0.294	0.62	661	0.0548		
Anthracene	µg/l	0.4	SI 272/2009 MAC	0.015	0.071	0.131	0.0912	0.0347	0.354	0.0374	1510	0.514	244	2.92	10.4	0.152	4.17	<0.03	6.11	0.689	10.8	0.111	0.0645	0.903	209	0.062		
Benzo(a)anthracene	µg/l	0.018	Canadian Water Quality Guidelines for Aquatic Life (2007)*	0.017	0.0756	0.0449	0.263	0.231	0.939	0.178	1110	0.808	156	24.5	0.903	<0.085	0.194	<0.034	1.73	6.12	1.98	0.357	0.638	7.47	96.5	0.474		
Benzo(a)pyrene	µg/l	0.1	SI 272/2009 MAC	0.009	0.118	0.081	0.524	0.349	2.01	0.143	857	1.05	109	40.9	0.422	<0.045	0.0184	<0.018	0.857	8.93	1.34	0.744	1.1	14	67.4	0.894		
Benzo(b)fluoranthene	µg/l	0.5	Interim Guideline Value*	0.023	0.118	0.043	0.497	0.333	1.94	0.113	628	1.11	95.8	43.4	0.469	<0.115	0.0473	<0.046	0.842	5.89	1.21	0.675	0.852	10.9	61.3	1.13		
Benzo(g)hijperylene	µg/l	0.05	Interim Guideline Value*	0.016	0.0613	0.0298	0.307	0.255	1.54	0.0796	413	0.568	57.6	30.8	0.222	<0.08	<0.032	<0.032	0.333	5.71	0.47	0.397	0.579	11.6	27.5	0.87		
Benzo(k)fluoranthene	µg/l	0.05	Interim Guideline Value*	0.027	0.123	0.0548	0.442	0.363	1.74	0.141	642	0.933	87.1	41.4	0.467	<0.135	<0.054	<0.054	0.811	8.06	1.							

ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring Visit 12 (24th October 2012)

Screening Values - Drinking Water Standards

Aquifer type: Locally important aquifer
 Typical productivity: Moderately Productive (40-100 m3/d)

Concentration exceeds screening value
 Concentration exceeds screening value because limit of detection is greater than screening value

Determinand	Units	Screening Value	Source of screening value	Limit of detection	Ground type Borehole																						
					Natural A1	Natural A3	Natural A4	M.G. A9	Natural A11	M.G. C2	Natural C7	M.G. C11	Natural D1	M.G. D5	M.G. E8	Natural F11	Natural G2	M.G. G3	Natural G4	M.G. G5	Natural G8	Natural H12	Natural J10	M.G. K1	M.G. K5	Natural M3	
Inorganics																											
Arsenic (dissolved)	µg/l	10	SI 278/2007	0.12	11.4	34.2	10.6	0.892	13.4	1.34	22.6	8.72	10.2	5.15	104	14.9	30.7	4.95	1.72	1.35	4.59	3.28	1.69	2.95	27.8	3.15	
Cadmium (dissolved)	µg/l	5	SI 278/2007	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.111	<0.1	<0.1	<0.1	<0.1	0.169	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Chromium (dissolved)	µg/l	50	SI 278/2007	0.22	3.46	3.23	2.5	5.11	2.25	2.96	4.83	2.85	3.92	2.7	3.11	6.46	2.87	1.56	5.71	2.13	3.35	3.37	2.2	4.57	1.06		
Copper (dissolved)	µg/l	2000	SI 278/2007	0.85	2.78	1	2.21	1.88	2.12	1.04	5.07	1.88	3.46	1.37	4.57	<0.85	1.45	5.2	7.2	5.6	2.02	1.22	3.42	3.29	1.45	5.94	
Lead (dissolved)	µg/l	25	SI 278/2007	0.02	0.179	0.084	0.107	0.028	0.586	0.195	0.116	0.134	0.041	0.159	0.219	0.205	0.077	0.235	0.228	0.063	0.122	0.461	0.083	0.556	0.256	0.101	
Nickel (dissolved)	µg/l	20	SI 278/2007	0.15	4.17	3.32	3.06	1.12	3.64	3.5	3.25	2.99	3.16	2.04	22.5	2.27	2.5	7.63	6.84	10.4	3.46	2.35	5.7	6.21	6.83	3.25	
Selenium (dissolved)	µg/l	10	SI 278/2007	0.39	1.29	0.676	0.765	1.02	0.422	1.77	16.7	0.783	2.01	1.63	10.5	0.804	4.12	3.63	2.37	11.7	0.988	0.802	1.38	6.13	9.39	0.892	
Zinc (dissolved)	µg/l	5000	WHO Drinking Water Quality Guideline Value	0.41	2.7	2.87	1.83	1.15	2.46	6.84	1.31	1.3	2.09	1.6	15.5	1.3	3.98	3.34	5.76	3.12	1.87	5.16	1.68	4.11	2.47	2.22	
Mercury (dissolved)	µg/l	1	SI 278/2007	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0345	<0.01	<0.01	<0.01	0.0102	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Ammonium	mg/l	0.3	SI 278/2007	0.3	13	11.6	258	<0.3	2.01	0.973	109	7.65	15	26.5	44.2	34.8	83.7	11.1	22.9	1.02	2.93	20.8	0.428	2.52	26.1	1.36	
Sulphate (soluble)	mg/l	250	SI 278/2007	2	485	300	203	207	<2	55.3	41.7	117	421	23.2	257	<2	119	918	127	628	87.1	153	32.3	669	131	852	
Phenols	mg/l	500	SI 81/1988	0.025	1.08	0.06	0.04	<0.025	0.23	<0.025	231	2.46	<0.025	2.87	104	5.9	6.44	1.97	0.12	<0.025	0.18	<0.025	<0.025	0.21	447	0.15	
Total Cyanide	mg/l	0.05	SI 278/2007	0.05	0.885	0.267	0.228	<0.05	<0.05	0.108	0.536	0.094	1.06	<0.05	4.67	0.054	0.163	3.85	0.172	2.77	0.091	<0.05	<0.05	1.44	0.496	1.22	
pH Value		<6.5	SI 278/2007	1	8.03	7.97	8.19	8.22	7.09	7.44	8.69	7.3	7.83	7.54	8.37	7.06	7.38	7.75	7.7	7.7	8	7.9	7.61	7.58	7.4	7.73	
pH Value		>9.5	SI 278/2007	1	8.03	7.97	8.19	8.22	7.09	7.44	8.69	7.3	7.83	7.54	8.37	7.06	7.38	7.75	7.67	7.7	8	7.9	7.61	7.58	7.4	7.73	
BTEX																											
Benzene	µg/l	1	SI 278/2007	7	<7	<7	445	<7	<7	<7	24200	78	502	678	4300	530	157	712	295	<7	<7	<7	<7	<7	<7	16200	<7
Toluene	µg/l	700	WHO Drinking Water Quality Guideline Value	4	<4	<4	53	<4	32	<4	12700	62	269	116	1240	392	85	72	252	<4	<4	<4	<4	<4	<4	6240	<4
Ethyl benzene	µg/l	300	WHO Drinking Water Quality Guideline Value	5	<5	<5	112	<5	<5	<5	750	75	181	49	56	29	15	81	<5	<5	<5	<5	<5	<5	<5	319	<5
Xylene	µg/l	500	WHO Drinking Water Quality Guideline Value	11	26	<11	172	<11	20	<11	7920	362	824	157	635	181	84	286	974	<11	<11	<11	<11	<11	<11	2980	<11
Petroleum Hydrocarbons																											
GRO (C4-C12)	µg/l	10	SI 81/1988	50	829	59	2640	<50	263	148	113000	4760	8000	1990	11400	2170	774	2410	3780	<50	<50	68	<50	<50	50100	<50	
MTBE	µg/l	3		<3	<3	<3	<3	<3	<3	<15	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<15	<3
Aliphatics C5-C6	µg/l	10		<10	<10	<10	<10	<10	<10	<10	218	<10	14	<10	43	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics C6-C8	µg/l	10		55	12	68	<10	<10	<10	<10	3350	44	182	26	321	36	18	68	76	<10	<10	<10	<10	<10	<10	1490	<10
Aliphatics C8-C10	µg/l	10		97	<10	201	<10	25	19	9800	457	752	106	589	124	55	196	394	<10	<10	<10	<10	<10	<10	<10	2740	<10
Aliphatics C10-C12	µg/l	10		345	15	870	<10	92	66	28500	2020	2870	410	2300	471	192	515	905	<10	<10	<10	23	<10	<10	<10	10900	<10
Aliphatics C12-C16	µg/l	10		<10	<10	22	<10	10	58	9630	168	233	19	<10	11	<10	<10	29	<10	<10	<10	<10	<10	<10	<10	335	<10
Aliphatics C16-C21	µg/l	10		<10	<10	37	<10	53	45	7130	99	363	94	<10	29	<10	<10	37	<10	<10	<10	<10	<10	<10	<10	281	<10
Aliphatics C21-C35	µg/l	10		<10	<10	<10	<10	343	<10	7770	27	182	463	<10	976	<10	<10	50	<10	<10	<10	<10	<10	<10	<10	339	<10
Aromatics C6-C7	µg/l	10		<10	<10	445	<10	<10	<10	24200	78	502	678	4300	530	157	712	295	<10	<10	<10	<10	<10	<10	<10	16200	<10
Aromatics C7-C8	µg/l	10		<10	<10	53	<10	32	<10	12700	62	269	116	1240	392	85	72	252	<10	<10	<10	<10	<10	<10	<10	6240	<10
Aromatics C8-C10	µg/l	10		91	<10	418	<10	39	13	15200	742	1510	276	1080	293	136	497	1240	<10	<10	<10	<10	<10	<10	<10	5130	<10
Aromatics C10-C12	µg/l	10		230	10	580	<10	62	44	19000	1350	1910	273	1530	314	128	343	603	<10	<10	<10	15	<10	<10	<10	7280	<10
Aromatics C12-C16	µg/l	10		253	219	23	<10	24	18	64700	208	2310	73	3700	1150	276	70	238	<10	<10	<10	<10	<10	<10	<10	21400	<10
Aromatics C16-C21	µg/l	10		219	173	21	<10	126	79	77000	235	1590	291	321	110	49	77	324	<10	<10	<10	<10	<10	<10	<10	2790	<10
Aromatics C21-C35	µg/l	10		112	33	12	<10	922	183	84900	354	851	1420	67	1760	<10	230	744	52	14	<10	<10	<10	<10	<10	1800	<10
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	SI 81/1988	10	1410	483	2760	<10	1740	532	364000	5850	13500	4260	15500	6200	1100	2790	5200	53	16	68	20	59	77100	<10	
PAHs																											
Acenaphthene	µg/l	0.015		<0.03	0.0311	0.0228	<0.015	0.44	0.154	982	0.259	235	1.53	11.7	1.77	0.0476	0.493	4.48	0.0282	0.0307	0.0408	<0.015	0.0669	83.9	<0.015		
Acenaphthylene	µg/l	0.011		0.256	0.111	0.254	0.0711	3.92	0.198	4900	1.57	278	18.8	77.6	4.96	0.142	1.66	1.9	0.921	0.321	0.194	0.346	0.223	478	0.031		
Anthracene	µg/l	0.015		0.146	0.075	0.103	0.0468	1.55	0.504	5710	0.389	108	6.6	8.02	1.1	0.199	0.767	1.23	0.168	0.433	0.0851	0.0757	0.357	149	0.0286		
Benzo(a)anthracene	µg/l	0.017		0.0609	<0.034	0.28	0.284	11.4	3.73	4290	1.44	46.2	35.9	1.29	2.92	0.162	5.78	0.564	1.5	0.576	0.321	0.833	2.19	71	0.198		
Benzo(a)pyrene	µg/l	0.009	SI 278/2007	0.0307	<0.018	0.873	0.458	22.8	4.54	3240	3.38	25.9	56.6	1.12	4.87	0.181	9.39	0.77	2.67	0.904	0.929	1.66	4.21	59.6	0.307		
Benzo(b)fluoranthene	µg/l	0.023		<0.046	<0.046	0.873	0.502	20.7	4.75	3190	3.12	22.6	56.1	0.918	4.06	0.135	8.23	0.692	2.08	0.592	0.967	1.24	3.45	68.4	0.4		
Benzo(g)herylene	µg/l	0.016		<0.032	<0.032	0.566	0.346	17.7	2.78	1540	2.81																

ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring Visit 9 (1st February 2012)

Screening Values - Drinking Water Standards

Aquifer type: Locally important aquifer
 Typical productivity: Moderately Productive (40-100 m3/d)

 Concentration exceeds screening value
 Concentration exceeds screening value because limit of detection is greater than screening value

Determinand	Units	Screening Value (µg/l)	Source of screening value	Ground type Borehole Depth (mbgl)																					
				A1	A11	A3	A4	A9	C11	C2	C7	D1	D5	E9	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3
Inorganics																									
Arsenic (dissolved)	µg/l	10	SI 278/2007	16.2	0.993	24.4	5.61	1.97	5.32	2.95	20.8	10.3	1.7	186	11.6	17.3	1.34	4.45	1.35	8.06	2.58	1.88	1.9	109	3.09
Cadmium (dissolved)	µg/l	5	SI 278/2007	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.195	<0.1	<0.1	<0.1	0.337	<0.1	<0.1	0.189	<0.1	<0.1	0.13	0.154	<0.1	0.195	<0.1	
Chromium (dissolved)	µg/l	50	SI 278/2007	<0.22	<0.22	<0.22	<0.22	2.04	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	
Copper (dissolved)	µg/l	3000	SI 278/2007	1.04	<0.85	0.958	1.24	0.853	1.69	3.2	<0.85	3.73	1	6.62	<0.85	9.83	5.49	<0.85	5.16	1.29	<0.85	2.28	2.66	4.16	3.47
Lead (dissolved)	µg/l	25	SI 278/2007	0.089	0.248	0.067	0.217	0.032	0.039	1.22	0.124	<0.02	0.32	0.077	<0.02	0.198	0.763	0.056	<0.02	0.132	0.156	0.226	1.55	0.294	
Nickel (dissolved)	µg/l	30	SI 278/2007	5.06	2.34	3.14	2.62	0.525	3.37	3.09	2.37	3.62	1.31	45.5	3.83	5.18	9.53	2.4	10.1	7.6	3.15	4.17	4.81	20.9	2.57
Selenium (dissolved)	µg/l	10	SI 278/2007	1.52	<0.39	1.08	1.02	0.913	0.715	4.35	18.5	2.04	2.06	23.7	1.7	11.7	5.37	2.45	11.5	3.59	1.28	1.18	1.48	13.9	0.713
Zinc (dissolved)	µg/l	5000	WHO Drinking Water Quality Guideline Value	1.27	1.91	7.73	2.23	<0.41	1.02	4.61	0.74	1.16	1.44	55.5	<0.41	3.56	5.63	8.35	5.07	<0.41	1.23	1.32	2.2	13.5	0.579
Mercury (dissolved)	µg/l	1	SI 278/2007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0412	<0.01	<0.01	0.0406	<0.01	0.0148	0.0129	0.0101	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.127	<0.01
Ammonium	µg/l	300	SI 278/2007	13000	964	11600	1850	<300	4270	726	99900	15700	2800	91300	29200	49200	854	3660	971	24400	20300	330	1580	135000	1350
Sulphate (soluble)	µg/l	250000	SI 278/2007	493000	24200	379000	252000	154000	169000	169000	39600	480000	12300	562000	18300	720000	1380000	82800	784000	97100	174000	34200	679000	258000	636000
Phenols	µg/l	0.5	SI 81/1988	730	<25	<25	<25	<25	90	60	105000	320	360	211000	2390	22600	<25	3200	<25	12600	<25	<25	<25	67000	<25
Total Cyanide	µg/l	50	SI 278/2007	287	<50	289	193	<50	255	261	382	738	<50	9100	<50	1120	9960	369	2440	117	<50	<50	563	5890	1380
pH Value	µg/l	6.5	SI 278/2007	7.73	7.72	7.95	7.99	10.2	7.47	7.97	8.47	7.48	7.41	9.22	7.27	7.54	7.65	8.2	7.53	7.72	7.61	7.97	7.68	9.32	7.95
pH Value	µg/l	9.5	SI 278/2007	7.73	7.72	7.95	7.99	10.2	7.47	7.97	8.47	7.48	7.41	9.22	7.27	7.54	7.65	8.2	7.53	7.72	7.61	7.97	7.68	9.32	7.95
BTEX																									
Benzene	µg/l	1	SI 278/2007	504	<7	245	<7	<7	39	<7	15800	739	55	9900	<7	4060	<7	1330	<7	814	<7	<7	<7	<7	<7
Toluene	µg/l	700	WHO Drinking Water Quality Guideline Value	20	12	9	<4	<4	29	<4	7520	370	18	2820	23	2650	<4	1750	<4	726	<4	<4	<4	4280	<4
Ethyl benzene	µg/l	300	WHO Drinking Water Quality Guideline Value	78	<5	52	<5	<5	80	<5	298	248	<5	129	<5	372	<5	184	<5	75	<5	<5	<5	214	<5
Xylene	µg/l	500	WHO Drinking Water Quality Guideline Value	114	22	75	<11	<11	315	<11	2970	1020	<11	1420	28	2250	<11	1910	<11	740	<11	<11	<11	1920	<11
Petroleum Hydrocarbons																									
GRO (C4-C12)	µg/l	10	SI 81/1988	1800	173	1510	154	<50	3550	109	40500	9540	117	22900	202	16000	<50	9930	<50	5930	<50	<50	<50	32100	<50
MTBE	µg/l			<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<15	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Aliphatics C5-C6	µg/l			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics C6-C8	µg/l			55	<10	55	13	<10	24	<10	492	291	<10	540	15	259	<10	145	<10	63	<10	<10	<10	14100	<10
Aliphatics C8-C10	µg/l			142	12	126	19	<10	369	17	1640	1130	<10	1000	22	936	<10	723	<10	373	<10	<10	<10	1530	<10
Aliphatics C10-C12	µg/l			470	64	513	55	<10	1470	38	6390	2980	<10	3830	52	2900	<10	2040	<10	1730	<10	<10	<10	5290	<10
Aliphatics C12-C16	µg/l			<10	56	<10	<10	<10	172	<10	<10	2470	<10	11	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics C16-C21	µg/l			<10	207	<10	<10	<10	63	<10	<10	4860	55	23	30	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics C21-C35	µg/l			<10	863	<10	<10	<10	<10	<10	<10	2540	320	18	157	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics C6-C7	µg/l			504	<10	245	<10	<10	39	<10	15800	739	55	9900	<10	4060	<10	1330	<10	814	<10	<10	<10	<10	<10
Aromatics C7-C8	µg/l			20	12	<10	<10	<10	29	<10	7520	370	18	2820	23	2650	<10	1750	<10	726	<10	<10	<10	4280	<10
Aromatics C8-C10	µg/l			287	34	211	25	<10	641	14	4360	2020	16	2210	47	3250	<10	2580	<10	1060	<10	<10	<10	3150	<10
Aromatics C10-C12	µg/l			313	43	342	36	<10	978	25	4260	1990	<10	2550	34	1930	<10	1360	<10	1150	<10	<10	<10	3530	<10
Aromatics C12-C16	µg/l			771	89	421	59	<10	611	226	14500	5300	57	7760	203	6490	<10	1890	<10	2700	69	<10	<10	16300	<10
Aromatics C16-C21	µg/l			331	268	157	23	<10	265	60	1190	6460	120	690	50	634	<10	552	<10	780	32	<10	<10	1310	<10
Aromatics C21-C35	µg/l			115	1430	13	<10	<10	124	<10	172	4770	617	310	301	70	<10	121	<10	307	<10	<10	34	303	<10
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	SI 81/1988	3020	3090	2100	236	<10	4780	395	56400	35900	1290	31700	943	23200	<10	12500	<10	9740	108	<10	34	50000	<10
PAHs																									
Acenaphthene	µg/l			23.8	5.83	76.6	0.114	0.243	41.5	4.24	17	489	0.494	23.4	0.505	63	<0.015	4.03	0.44	29.5	5.29	0.0854	0.851	42.1	0.282
Acenaphthylene	µg/l			43	8.31	114.6	0.0969	1.94	6.34	1.04	162	807	5.71	155	2.39	74.6	0.0594	14	0.452	165	9.17	0.183	0.23	281	0.0335
Anthracene	µg/l			1.79	5.88	0.585	0.101	1.52	1.4	0.215	27.3	435	1.94	27.8	0.94	2.98	0.0186	2.05	0.0337	37.1	0.577	0.1	0.317	38.1	0.0335
Benzo(a)anthracene	µg/l			2.07	40.9	0.0885	0.103	8.47	1.68	0.125	13.6	252	10.9	34	6.08	<1.7	0.0428	1.01	0.103	12	0.232	0.409	2.18	8.78	0.205
Benzo(a)pyrene	µg/l	0.01	SI 278/2007	1.37	79.5	0.0197	0.0671	23.2	3.22	0.111	11.7	254	19	28	15.8	<0.9	0.0561	1.12	0.232	6.81	0.0983	0.564	3.69	4.18	0.168
Benzo(b)fluoranthene	µg/l			0.875	64.8	<0.023	0.0495	19.1	2.66	0.0869	9.25	223	18.8	14.9	15.5	<2.3	0.043	0.935	0.185	4.06	0.0896	0.419	3.54	3.39	0.153
Benzo(g)herylene	µg/l			0.627	47.3	<0.016	0.0359	17.4	2.06	0.0674	5.85	88.1	12.4	14.1	10.9	<1.6	0.0464	0.583	0.148	2.48	0.0423	0.222	3.2	2.07	0.122
Benzo(k)fluoranthene	µg/l			1.35	68.2	<0.027	0.0713	19.9	2.63	0.11	11.1	202	17.6	32.7	15.4	<2.7	0.0569	1.08	0.182	8.29	0.11	0.479	3.46	4.6	0.2
Chrysene	µg/l			1.9	44.6	0.0708	0.095	9.08	1.56	0.134	12.8	207													

ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring visit 9 (1st February 2012)

Screening Values - Environmental Quality Standards

Receptor water type: Freshwater suitable for coarse fish
 Relevant EQS Hardness Band: >100-150 mg/l

- Hardness related Freshwater EQS - based on cyprinid/coarse fish
- * Asterix indicates freshwater EQS in the absence of a coastal/Estuary/Marine
- Concentration exceeds screening value
- Concentration exceeds screening value because limit of detection is greater than screening value

Determinand	Units	Screening Value (µg/l) Coastal/ Estuary /Marine	Source of screening value	Ground type																						
				Borehole																						
				A1	A11	A3	A4	A9	C11	C2	C7	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3	
Depth (mbgl)	2.50-3.50	2.00-2.50	1.50-2.00	3.00-4.00	2.00-2.40	1.50-2.40	2.00-2.50	5.50-6.50	3.00-4.00	1.50-1.90	1.00-2.00	4.00-4.80	3.00-4.00	1.50-2.40	1.10-2.00	0.00-1.00	2.00-3.00	1.00-2.00	2.70-3.70							
Inorganics																										
Arsenic (dissolved)	µg/l	20	SI 272/2009 Annual Ave	16.2	0.993	24.4	5.61	1.97	5.32	2.95	20.8	10.3	1.7	186	11.6	17.3	1.34	4.45	1.35	8.06	2.58	1.88	1.9	109	3.09	
Cadmium (dissolved)	µg/l	1.5	SI272/2009 MAC	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.195	<0.1	<0.1	<0.1	0.337	<0.1	<0.1	0.189	<0.1	<0.1	<0.1	<0.1	0.13	0.154	<0.1	0.195	<0.1
Chromium (dissolved)	µg/l	32	SI272/2009 MAC	<0.22	<0.22	<0.22	<0.22	2.04	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	
Copper (dissolved)	µg/l	30*	SI 272/2009 Annual Ave	1.04	<0.85	0.958	1.24	0.853	1.69	3.2	<0.85	3.73	1	6.62	<0.85	9.83	5.49	<0.85	5.16	1.29	<0.85	2.28	2.66	4.16	3.47	
Lead (dissolved)	µg/l	7.2	SI 272/2009 Annual Ave	0.089	0.248	0.067	0.217	0.032	0.039	1.22	0.124	<0.02	0.32	0.077	<0.02	<0.02	0.198	0.763	0.056	<0.02	0.132	0.156	0.226	1.55	0.294	
Nickel (dissolved)	µg/l	20	SI 272/2009 Annual Ave	5.06	2.34	3.14	2.62	0.525	3.37	3.09	2.37	3.62	1.31	45.5	3.83	5.18	9.53	2.4	10.1	7.6	3.15	4.17	4.81	20.9	2.57	
Selenium (dissolved)	µg/l	1*	Guidelines for Aquatic Life (2007)	1.52	<0.39	1.08	1.02	0.913	0.715	4.35	18.5	2.04	2.06	23.7	1.7	11.7	5.37	2.45	11.5	3.59	1.28	1.18	1.48	13.9	0.713	
Zinc (dissolved)	µg/l	40	SI 272/2009 Annual Ave	1.27	1.91	7.73	2.23	<0.41	1.02	4.61	0.74	1.16	1.44	55.5	<0.41	3.56	5.63	8.35	5.07	<0.41	1.23	1.32	2.2	13.5	0.579	
Mercury (dissolved)	µg/l	0.07	SI272/2009 MAC	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0412	<0.01	<0.01	0.0406	<0.01	0.0148	0.0129	0.0101	<0.01	<0.01	<0.01	<0.01	<0.01	0.127	<0.01	
Ammoniacal Nitrogen	µg/l	1000*	Freshwater Fish Directive	13000	964	11600	1850	<300	4270	726	99900	15700	2800	91300	29200	49200	854	3660	971	24400	20300	330	1580	135000	1350	
Sulphate (soluble)	µg/l	200000*	EQS & IGV	493000	24200	379000	252000	154000	169000	169000	39600	480000	12300	562000	18300	720000	1380000	82800	784000	97100	174000	34200	679000	258000	636000	
Phenols	µg/l	46	SI272/2009 MAC	730	<25	<25	<25	90	60	105000	320	360	211000	2390	22600	<25	3200	<25	12600	<25	<25	<25	<25	673000	<25	
Free Cyanide - (total CN in lab results)	µg/l	10	SI 272/2009 Annual Ave	287	<50	209	197	<50	255	261	382	738	<50	9100	<50	1120	6960	369	2440	117	<50	<50	523	5880	1380	
pH Value	µg/l	6.5	Interim Guideline Values	7.73	7.72	7.95	7.99	10.2	7.47	7.97	8.47	7.48	7.41	9.22	7.27	7.54	7.65	8.2	7.53	7.72	7.61	7.97	7.68	9.32	7.95	
pH Value	µg/l	9.5	Interim Guideline Values	7.73	7.72	7.95	7.99	10.2	7.47	7.97	8.47	7.48	7.41	9.22	7.27	7.54	7.65	8.2	7.53	7.72	7.61	7.97	7.68	9.32	7.95	
BTEX																										
Benzene	µg/l	50	SI272/2009 MAC	504	<7	245	<7	<7	39	<7	15800	739	55	9900	<7	4060	<7	1330	<7	814	<7	<7	<7	<7	<7	
Toluene	µg/l	10	SI 272/2009 Annual Ave	20	12	9	<4	<4	28	<4	7520	370	18	2820	28	2660	<4	1750	<4	726	<4	<4	<4	4280	<4	
Ethyl benzene	µg/l	10	EQS & IGV	76	<5	52	<5	<5	60	<5	289	248	<5	129	<5	372	<5	184	<5	75	<5	<5	<5	214	<5	
Xylene	µg/l	10	SI 272/2009 Annual Ave	114	22	75	<11	<11	315	<11	2970	1020	<11	1420	28	2250	<11	1910	<11	740	<11	<11	<11	1920	<11	
Petroleum Hydrocarbons																										
GRO (C4-C12)	µg/l			1800	173	1510	154	<50	3550	109	40500	9540	117	22900	202	16000	<50	9930	<50	5930	<50	<50	<50	32100	<50	
MTBE	µg/l	30	IGV	<3	<3	<3	<3	<3	<3	<3	<30	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	
Aliphatics C5-C6	µg/l			<10	<10	<10	<10	<10	<10	<10	<100	22	<10	75	<10	28	<10	17	<10	<10	<10	<10	<10	224	<10	
Aliphatics C6-C8	µg/l			55	<10	55	13	<10	24	<10	492	291	<10	540	15	259	<10	145	<10	63	<10	<10	<10	14100	<10	
Aliphatics C8-C10	µg/l			142	12	126	19	<10	369	17	1640	1130	<10	1000	22	936	<10	723	<10	373	<10	<10	<10	1530	<10	
Aliphatics C10-C12	µg/l			470	64	513	55	<10	1470	38	6390	2980	10	3830	52	2900	<10	2040	<10	1730	<10	<10	<10	5290	<10	
Aliphatics C12-C16	µg/l			<10	56	<10	<10	<10	<10	<10	2470	<10	11	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Aliphatics C16-C21	µg/l			<10	207	<10	<10	<10	63	<10	4860	55	23	30	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Aliphatics C21-C35	µg/l			<10	863	<10	<10	<10	<10	<10	<10	2540	320	18	157	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Aromatics C6-C7	µg/l			504	<10	245	<10	<10	39	<10	15800	739	55	9900	<10	4060	<10	1330	<10	814	<10	<10	<10	<10	<10	
Aromatics C7-C8	µg/l			20	12	<10	<10	<10	29	<10	7520	370	18	2820	28	2660	<10	1750	<10	726	<10	<10	<10	4280	<10	
Aromatics 8-10	µg/l			287	34	211	25	<10	641	14	4360	2020	16	2210	47	3250	<10	2580	<10	1060	<10	<10	<10	3150	<10	
Aromatics 10-12	µg/l			313	43	342	36	<10	978	25	4260	1990	<10	2550	34	1930	<10	1360	<10	1150	<10	<10	<10	3530	<10	
Aromatics 12-16	µg/l			771	89	421	59	<10	611	226	14500	5300	57	7760	203	6490	<10	1890	<10	2700	69	<10	<10	16300	<10	
Aromatics 16-21	µg/l			331	268	157	23	<10	265	60	1190	6460	120	690	50	834	<10	552	<10	780	32	<10	<10	1310	<10	
Aromatics 21-35	µg/l			115	1430	13	<10	<10	124	<10	172	4770	617	310	301	70	<10	121	<10	307	<10	<10	34	303	<10	
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	EQS & IGV	3020	3090	2100	236	<10	4780	396	56400	35900	1290	31700	943	23200	<10	12500	<10	6740	108	<10	34	50000	<10	
PAHs																										
Acenaphthene	µg/l	5.8*	Canadian Water Quality Guidelines for Aquatic Life (2007)	23.8	5.83	76.6	0.114	0.243	41.5	4.24	17	489	0.494	23.4	0.505	63	<0.015	4.03	0.44	29.5	5.29	0.0854	0.851	42.1	0.282	
Acenaphthylene	µg/l			43	8.31	14.6	0.0969	1.94	6.34	1.04	162	907	5.71	155	2.39	74.6	0.0594	14	0.452	165	9.17	0.183	0.23	281	0.0335	
Anthracene	µg/l	0.4	SI272/2009 MAC	1.79	5.88	0.565	0.101	1.52	1.4	0.215	27.3	435	1.94	27.8	0.94	2.98	0.0186	2.05	0.0337	37.1	0.577	0.1	0.317	38.1	0.0335	
Benzo(a)anthracene	µg/l	0.018*	Guidelines for Aquatic Life (2007)	2.07	40.9	0.0885	0.103	8.47	1.68	0.125	13.6	252	10.9	34	6.08	<1.7	0.0428	1.01	0.103	12	0.232	0.409	2.18	8.78	0.205	
Benzo(a)pyrene	µg/l	0.1	SI272/2009 MAC	1.37	79.5	0.0197	0.0671	23.2	3.22	0.111	11.7	254	13	28	15.8	<0.9	0.0561	1.12	0.232	6.81	0.0983	0.564	3.69	4.18	0.168	
Benzo(b)fluoranthene	µg/l	0.5*	Interim Guideline Value	0.875	64.8	<0.023	0.0495	19.1	2.66	0.0869	9.25	223	18.8	14.9	15.5	<2.3	0.043	0.935	0.185	4.06	0.0896	0.419	3.54	3.39	0.153	
Benzo(g)hperylene	µg/l	0.05*	Interim Guideline Value	0.627	47.3	<0.016	0.0359	17.4	2.06	0.0674	5.85	88.1	12.4	14.1	10.9	<1.6	0.0464	0.583	0.148	2.48	0.0423	0.222	3.2	2.07	0.122	
Benzo(k)fluoranthene	µg/l	0.05*	Interim Guideline Value	1.35	68.2	<0.027	0.0713	19.9	2.63	0.11	11.1	202	17.6	32.7	15.4	<2.7	0.0569	1.08	0.182	8.29	0.11	0.479	3.46	4.6	0.2	
Chrysene	µg/l			1.9	44.6	0.0708	0.095	9.08	1.56	0.134	12.8	267	15.2	28.6	7.96	<1.3	0.0503	0.873	0.12	11.9	0.209	0.343	2.17	7.63	0.18	
Dibenzo(a,h)anthracene	µg/l			0.13	12.8	<0.016	<0.016	3.96	0.532	0.0201	1.73	27.2	3.38	3.65	2.7	<1.6	<0.016	0.144	0.0296	<1.6	<0.016	0.0676	0.724	0.563		