

A18.2

Baseline Surface Water – Laboratory
Summary December 2018

Sample ID	Details - SURFACE WATER						SW01	SW02	SW03	SW04	SW05	SW06	SW07	SW08	SW09	SW10	SW11	SW14	SW15	SW16	SW17
Laboratory	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova		
Report Ref.	18-20357 b1	18-20357 b1	18-20357 b1	18-20357 b1	18-20357 b1	18-20357 b1	18-20378 b1	18-20378 b1	18-20378 b1	18-20378 b1	18-20378 b1	18-20378 b1	18-20378 b1	18-20378 b1	18-20280 b1	18-20280 b1	18-20280 b1	18-20280 b1			
Sample Type	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary		
Overall sampling period	10/12/2018 - 14/12/2018																				
Parameters	Units	MDL	SWTV (AA-EQS)	SWTV (MAC-EQS)	SWTV (AA-EQS)	SWTV (MAC-EQS)	SW01	SW02	SW03	SW04	SW05	SW06	SW07	SW08	SW09	SW10	SW11	SW14	SW15	SW16	SW17
Aluminium	mg/l	0.02	nv	nv	nv	nv	0.196	0.055	0.085	0.023	-	-	-	-	-	-	-	-	-	0.054	
Antimony	mg/l	0.002	nv	nv	nv	nv	-	-	-	-	-	0.007	0.007	-	0.005	-	-	0.003	-	-	
Arsenic	mg/l	0.0025	0.025	nv	0.020	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Banum	mg/l	0.003	nv	nv	nv	nv	0.013	0.016	0.034	0.031	0.039	0.038	0.036	0.039	0.04	0.083	0.068	0.052	0.053	0.062	0.045
Beryllium	mg/l	0.0005	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Boron	mg/l	0.012	nv	nv	nv	nv	0.018	0.112	0.018	0.047	0.025	0.025	0.026	0.032	0.026	0.025	0.03	0.028	0.028	0.024	0.02
Cadmium	mg/l	0.0005	0.00008	0.00045	0.0002	0.00045	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Calcium	mg/l	0.2	nv	nv	nv	nv	46.8	57.2	75.5	71.9	131	131.5	143.2	132.5	124.7	145.4	131.9	118.1	123.6	117.8	64.2
Chromium	mg/l	0.0015	0.0034 ¹ /0.0047 ²	nv ¹ /0.0032 ²	0.0006 ¹ /nv ²	0.0032 ¹ /nv ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cobalt	mg/l	0.002	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Copper	mg/l	0.007	0.005/0.03 ³	nv	0.005	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Iron	mg/l	0.02	nv	nv	nv	nv	0.119	0.092	0.06	0.055	0.024	0.022	-	0.023	0.029	0.02	-	0.025	-	-	0.04
Lead	mg/l	0.005	0.0012	0.014	0.0013	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Magnesium	mg/l	0.1	nv	nv	nv	nv	3.8	28.4	5.6	12.5	8	8	18.6	15.6	7.7	7.1	8.1	8.1	9	6.8	3.7
Manganese	mg/l	0.002	nv	nv	nv	nv	0.022	0.018	0.016	0.013	0.024	0.021	0.024	0.035	0.035	0.017	0.023	0.039	0.041	0.01	0.099
Mercury	mg/l	0.001	0.00005	0.00007	0.00005	0.00007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Molybdenum	mg/l	0.002	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	0.005	
Nickel	mg/l	0.002	0.004	0.034	0.0086	0.034	-	-	-	-	0.002	0.002	0.006	0.005	0.002	-	-	-	-	-	
Phosphorus	mg/l	0.005	nv	nv	nv	nv	0.026	0.033	0.041	0.041	0.071	0.069	0.025	0.03	0.066	1.102	0.037	0.021	0.047	0.022	0.037
Potassium	mg/l	0.1	nv	nv	nv	nv	1.7	9.3	2	4.2	3	3.2	3.6	2.9	2.9	3.8	3.7	2.9	4.5	8.1	10
Selenium	mg/l	0.003	nv	nv	nv	nv	-	-	-	-	0.008	0.009	-	-	0.004	0.01	0.004	0.004	0.004	0.005	
Sodium	mg/l	0.1	nv	nv	nv	nv	12.1	320.3	14.1	74.5	21.5	21.4	24.1	24.2	21.8	20	27	31.2	29.4	22.3	13.7
Thallium	mg/l	0.003	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Vanadium	mg/l	0.0015	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	0.0016	0.0016	
Zinc	mg/l	0.003	0.008/0.05/0.1 ⁴	nv	0.04	nv	0.007	0.004	0.004	-	0.014	0.007	0.01	0.015	0.014	0.007	0.015	0.011	0.026	0.016	0.016
TPH CWG																					
Aliphatics																					
>C10-C12	mg/l	0.005	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C12-C16	mg/l	0.01	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
>C16-C21	mg/l	0.01	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
>C21-C35	mg/l	0.01	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total aliphatics >C10-35	mg/l	0.01	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Aromatics																					
>EC10-EC12	mg/l	0.005	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
>EC12-EC16	mg/l	0.01	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
>EC16-EC21	mg/l	0.01	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
>EC21-EC35	mg/l	0.01	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total aromatics >C10-35	mg/l	0.01	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total aliphatics and aromatics >C10-35	mg/l	0.01	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MTBE	mg/l	0.005	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Benzene	mg/l	0.005	0.01	0.05	0.008	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Toluene	mg/l	0.005	0.01	nv	0.01	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ethylbenzene	mg/l	0.005	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
m/p-Xylene	mg/l	0.005	0.01	nv	0.01	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
o-Xylene	mg/l	0.005	0.01	0.01	0.01	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Fluoride	mg/l	0.3	0.5	nv	1.5	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Sulphate as SO4	mg/l	0.5	nv	nv	nv	nv	20.1	78.6	37.2	50.6	98.6	92.8	221.7	167.5	84.6	75.3	94.2	97.2	98.8	68	42.1
Chloride	mg/l	0.3	nv	nv	nv	nv	21.8	418.6	21.9	139.1	43.9	44.6	41.7	41.7	42.7	56.3	57.7	47.3	54.8	46.7	20.2
Ortho Phosphate as P	mg/l	0.03	0.075 ⁵	0.075 ⁵	nv	nv	-	-	-	-	0.08	0.07	-	-	-	-	-	-	-	-	
Total Ammonia as N	mg/l	0.03	nv	nv	nv	nv	0.05	0.06	0.09	0.07	0.05	0.05	0.05	0.14	0.07	0.03	0.05	0.04	0.09	-	0.15
Total Alkalinity as CaCO3	mg/l	1	nv	nv	nv	nv	132	136	180	170	254	258	208	214	246	260	216	228	214	220	142
BOD (Settled)	mg/l	1	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	14	
COD (Settled)	mg/l	7	nv	nv	nv	nv	26	33	23	23	30	23	19	25	37	7	10	13	16	11	31
Kjeldahl Nitrogen	mg/l	0.5	nv	nv	nv	nv	1.3	1.3	1.3	1.3	2.2	2.7	1.6	1.8	1.1	1.2	1.8	1.5	1.7	1.3	1.4
Total Suspended Solids	mg/l	10	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	105	-	13	
Key																					
Inland waters	Value exceeds the MAC-EQS Surface Water Threshold Value (SWTV used - Surface Water Regs SI No. 272 of 2009; Surface Water Amendment Regs SI No. 386 of 2015) for Inland Waters; <u>Underlined</u> exceeds the AA-EQS for same SWTVs, where available																				
Other surface waters	Value exceeds the MAC-EQS Surface Water Threshold Value (SWTV used - Surface Water Regs SI No. 272 of 2009; Surface Water Amendment Regs SI No. 386 of 2015) for Other Surface Waters; <u>Underlined</u> exceeds the AA-EQS for same SWTVs, where available																				
Notes	SWTV (MAC-EQS) means that for each representative monitoring point within the waterbody, the arithmetic mean of the concentrations measured over a twelve month monitoring period does not exceed the standard.																				
	Note 1 - Chromium VI																				

Sample ID	Details - SURFACE WATER					SW18	SW19	SW20	SW22	SW23	SW24	SW25	SW26	SW27	SW28	SW30	SW31	SW32	SW33	SW34	SW35	SW36	SW38	SW39	SW40	
Laboratory						Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	Exova	
Report Ref.	18-20280 b1	18-20280 b1	18-20280 b1	18-20280 b1	18-20178 b1	18-20178 b1	18-20178 b1	18-20178 b1	18-20178 b1	18-20178 b1	18-20178 b1	18-20178 b1	18-20178 b1	18-20178 b1	18-20178 b1	18-20178 b1	18-20178 b1	18-20178 b1	18-20178 b1	18-20178 b1	18-20178 b1	18-20178 b1	18-20178 b1	18-20178 b1		
Sample Type	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	
Overall sampling period	10/12/2018 - 14/12/2018																									
Parameters	Units	MDL	SWTV (AA-EQS)	SWTV (MAC-EQS)	SWTV (AA-EQS)	SWTV (MAC-EQS)	SW18	SW19	SW20	SW22	SW23	SW24	SW25	SW26	SW27	SW28	SW30	SW31	SW32	SW33	SW34	SW35	SW36	SW38	SW39	SW40
Aluminum	mg/l	0.02	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Antimony	mg/l	0.002	nv	nv	nv	nv	-	-	-	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	
Arsenic	mg/l	0.025	0.025	0.025	0.020	0.020	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Barium	mg/l	0.003	nv	nv	nv	nv	0.06	0.07	0.06	0.072	0.058	0.048	0.078	0.072	0.06	0.058	0.06	0.05	0.016	0.065	0.063	0.087	0.083	0.054	0.055	0.039
Beryllium	mg/l	0.0005	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Boron	mg/l	0.012	nv	nv	nv	nv	0.029	0.033	0.04	0.042	-	0.014	0.021	0.016	0.024	0.023	0.037	0.081	2.684	0.03	0.028	0.053	0.043	0.02	0.018	0.076
Cadmium	mg/l	0.0005	0.00008	0.00045	0.00002	0.00045	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Calcium	mg/l	0.2	nv	nv	nv	nv	96.2	141.8	110.1	141.1	102	125.3	133.8	134.4	152.2	148.5	126.8	140.6	421.9	139	140.4	157.7	150.3	119.1	118.9	76.2
Chromium	mg/l	0.015	0.0034	0.0047 ²	0.0032 ²	0.0006 ¹ /nv ²	0.0032 ¹ /nv ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cobalt	mg/l	0.002	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Copper	mg/l	0.007	0.005	0.003 ³	0.005	0.005	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Iron	mg/l	0.02	nv	nv	nv	nv	0.045	0.027	-	0.02	-	0.05	-	0.021	-	-	-	-	-	-	-	-	-	-	-	
Lead	mg/l	0.005	0.0012	0.014	0.013	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Magnesium	mg/l	0.1	nv	nv	nv	nv	6.2	6.9	5.8	7.9	8.5	14.7	7.6	7.9	8.2	7.9	11.3	21.5	824.3	6.8	7.2	9.7	10.3	9.5	9.5	19.1
Manganese	mg/l	0.002	nv	nv	nv	nv	0.0126	-	0.021	0.047	0.045	0.019	0.023	0.019	0.009	0.008	0.03	0.008	0.004	0.007	0.008	0.01	0.016	0.004	-	0.121
Mercury	mg/l	0.001	0.00005	0.00007	0.00005	0.00007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Moibdenium	mg/l	0.002	nv	nv	nv	nv	0.009	-	0.004	0.003	-	-	-	-	-	-	-	-	0.004	-	-	-	-	-	-	
Nickel	mg/l	0.002	0.004	0.034	0.0086	0.034	0.002	0.004	-	-	0.005	-	-	-	-	-	-	-	-	0.008	0.005	0.002	-	-	-	
Phosphorus	mg/l	0.005	nv	nv	nv	nv	0.0039	0.118	0.07	0.107	0.048	0.086	0.022	0.19	0.184	0.525	0.323	0.071	0.321	0.06	0.064	0.168	0.17	0.008	0.007	0.15
Potassium	mg/l	0.1	nv	nv	nv	nv	10.2	8.5	3.7	4.1	2.4	3.8	1.8	3.1	3.8	5.7	4.6	7.9	345.6	2.9	3.2	7.2	5.9	4.7	5	5.4
Selenium	mg/l	0.003	nv	nv	nv	nv	0.004	0.009	0.005	0.005	-	-	-	0.014	0.012	0.006	-	-	0.016	0.015	0.02	0.013	-	-	-	
Sodium	mg/l	0.1	nv	nv	nv	nv	24.3	19.1	20.6	40.9	38.2	85	27	31.9	18.6	46.6	137.7	7965	14.4	16.8	19.2	30	17.5	20.5	-	-
Thallium	mg/l	0.003	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Vanadium	mg/l	0.015	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.1	
Zinc	mg/l	0.003	0.008/ ⁴ 0.05/ ⁴ 0.1 ⁴	nv	0.04	nv	0.039	0.006	0.012	0.007	0.018	0.028	-	0.007	0.005	0.006	0.014	0.003	0.006	-	0.003	0.015	0.018	-	-	0.003
TPH CWG																										
Alliphatics																										
>C10-C12	mg/l	0.005	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
>C12-C16	mg/l	0.01	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
>C16-C21	mg/l	0.01	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
>C21-C26	mg/l	0.01	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total aliphatics >C10-35	mg/l	0.01	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Aromatics																										
>EC10-EC12	mg/l	0.005	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
>EC12-EC16	mg/l	0.01	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
>EC16-EC21	mg/l	0.01	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
>EC21-EC35	mg/l	0.01	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total aromatics >C10-35	mg/l	0.01	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total aromatics <C10-35	mg/l	0.01	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MTBE	mg/l	0.005	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Benzene	mg/l	0.005	0.01	0.05	0.008	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Toluene	mg/l	0.005	0.01	nv	0.01	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ethylbenzene	mg/l	0.005	nv	nv	nv	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
m/p-Xylene	mg/l	0.005	0.01	nv	0.01	nv	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
o-Xylene	mg/l	0.005	0.01	0.01	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Fluoride	mg/l	0.3	0.5	nv	nv	1.5	nv	-	-	-	-	-	0.5	-	-	-	-	-	1	-	-	-	-	-	-	-
Sulfate as SO ₄	mg/l	0.5	nv	nv	nv	nv	67.6	57	51.2	84.8	103	181.6	59.1	65.2	86.3	82.9	188	93.6	1952	75.8	79.9	92.7	90.5	76.8	79.7	70.9
Chloride	mg/l	0.3	nv	nv	nv	nv	46.1	39.4	41.9	73.8	58.3	136.1	47	51.3	51.7	53.3	108	269	15295.9	45.3	49	62.2	75.1	32.1	28.3	-
Ortho Phosphate as P	mg/l	0.03	0.075 ⁵	0.075 ⁵	nv	nv	-	0.08	-	0.06	-	-	-	0.05	0.05	-	0.04	-	0.04	0.04	0.12	0.08	-	-	0.21	-
Total Ammonia as N	mg/l	0.03	nv	nv	nv	nv	0.09	-	0.05	0.24	0.16	0.08	0.03	0.03	0.04	0.07	0.05	0.03	0.03	0.03	0.11	0.08	0.05	0.05	0.02	
Total Alkalinity as CaCO ₃	mg/l	1	nv	nv	nv	nv	178	240	224	264	182	280	284	266	256	278	252	160	254	252	292	276	288	272	232	
BOD (Settled)	mg/l	1	nv	nv	nv	nv	3	-	-	4	-	4	-	-	-	-	-	-	-	-	-	-	-	-	5	
COD (Settled)	mg/l	7	nv	nv	nv	nv	16	-	-	14	28	14	8	19	22	14	24	474	20	21	17	19	27	21	57	
Kjeldahl Nitrogen	mg/l	0.5	nv	nv	nv	nv	1.4	1.3	1.5	1.5	1.3	1.7	1.3	1.6	1.4	1.4	1.9	1.5	1.5	1.2	1.5	1	1.2	5		
Total Suspended Solids	mg/l	10	nv	nv	nv	nv	-	-	44	42	-	27	-	-	-	-	-	82	58	-	-	-	-	-	39	
Key																										