

Samples taken in June 2018 and reported in September 2018.

Samples taken in June 2018 and reported in September 2018.

Samples taken in June 2018 and reported in September 2018.

Field Parameters		Units	PQL	Site Criteria*
pH	-	NA	NA	
Electrical Conductivity	µS/cm	NA	NA	
Dissolved Oxygen	ppm	NA	NA	
Reduction Potential	mV	NA	NA	
Temperature	°C	NA	NA	
Salinity	ppt	NA	NA	
Turbidity	NTU	NA	NA	
Analytes				
Total Cyanide	µg/L	4	4 ^a	
Dissolved Zinc	µg/L	1	-	
TRH C ₆ - C ₉	µg/L	40	-	
TRH C ₆ - C ₉	µg/L	50	-	
TRH C ₆ - C ₁₀ less BTEX (F)	µg/L	50	-	
Benzene	µg/L	0.5	700 ^b	
Toluene	µg/L	0.5	180 ^{c,d}	
Ethylbenzene	µg/L	0.5	80 ^{d,e}	
m+p-xylene	µg/L	1	200 ^f	
o-xylene	µg/L	0.5	350 ^f	
TRH C ₁₀ - C ₁₅	µg/L	50	-	
TRH C ₁₅ - C ₂₀	µg/L	200	-	
TRH C ₂₀ - C ₂₅	µg/L	200	-	
TRH C ₂₅ - C ₃₀	µg/L	50	-	
TRH >C ₃₀ - C ₄₀	µg/L	500	-	
TRH >C ₄₀ - C ₅₀	µg/L	100	-	
Total TRH C ₆ - C ₅₀	µg/L	490	7 ^{a,f} (490 PQL)	
Naphthalene	µg/L	0.1/0.5	70 ^g	
Acenaphthylene	µg/L	0.1	-	
Acenaphthene	µg/L	0.1	-	
Fluorene	µg/L	0.1	-	
Phenanthrene	µg/L	0.1	-	
Anthracene	µg/L	0.1	0.4 ^{h,i}	
Fluoranthene	µg/L	0.1	2 ^{j,k}	
Pyrene	µg/L	0.1	-	
Benzo[a]anthracene	µg/L	0.1	-	
Chrysene	µg/L	0.1	-	
Benzo[b]fluoranthene	µg/L	0.1	-	
Benzo[a]pyrene	µg/L	0.1	-	
Indeno[1,2,3-cd]pyrene	µg/L	0.1	-	
Dibenz[a,h]anthracene	µg/L	0.1	-	
Benzo[k]fluoranthene	µg/L	0.1	-	
Benzo[e]pyrene TEQ	µg/L	5	0.4 ⁱ	
Total +ve PAH's	µg/L	1	-	
Ammonia as N in water	µg/L	10	910 ^l	
Phenol	µg/L	0.5	340 ^{m,n,o}	
2-Chlorophenol	µg/L	0.5	-	
4-Chloro-2-Methylphenol	µg/L	5	-	
3/4-Methylphenol	µg/L	1	-	
2-Nitrophenol	µg/L	0.5	2 ^{p,q}	
2,4-Dimethylphenol	µg/L	1	2 ^r	
2,4-Dichlorophenol	µg/L	0.5	-	
2,6-Dichlorophenol	µg/L	0.5	-	
2,4,6-Trichlorophenol	µg/L	0.5	3 ^{s,t,u}	
2,4,5-Trichlorophenol	µg/L	1	4 ^v	
2,4-Dinitrophenol	µg/L	2	45 ^{w,x}	
4-Nitrophenol	µg/L	1	58 ^{y,z}	
2,3,4,6-Tetrachlorophenol	µg/L	1	10 ^{aa}	
2-methyl-4,6-dinitrophenol	µg/L	10	-	
Pentachlorophenol	µg/L	0.5	22 ^{ab}	
Copper (Cu)	µg/L	1	1.3 ^{ac}	
Lead (Pb)	µg/L	1	4.4 ^{ad}	
Zinc (Zn) - filtered	µg/L	5	15 ^{ae}	
Total Chromium (Cr III)	µg/L	1	27.4 ^{af}	
Trivalent Chromium (Cr III)	µg/L	1	4.4 ^{ag}	
Hexavalent Chromium (Cr VI)	µg/L	0.1	5.5 ^{ah}	
Mercury (Hg)	µg/L	0.1	0.4 ^{ai}	
Manganese (Mn)	µg/L	1	1900 ^{aj}	

* Australian and New Zealand Environment Conservation Council (ANZECC) 95% Marine Water Quality Guideline Value - for slightly to moderately disturbed systems

a - The ANZECC threshold criteria of $7\mu\text{g/L}$ is a low reliability trigger level for protection of aquatic ecosystems and is derived from a study on the effects of petroleum hydrocarbons on aquatic organisms. As this level is below the most sensitive detection level of the laboratory, the LOR has been adopted as the threshold criteria for STRM fractions

b = Chemical for which possible bioaccumulation and secondary poisoning effects should be considered, refer to ANZECC & ARMCANZ (2000) for further guidance

c = Figure may not protect key species from chronic toxicity, refer to ANZECC & ARMCANZ (2000) for further guidance

d = sourced from ANZECC 2000 Guideline, Marine Water, Protection Level 99% Trigger Value

e = sourced from ANZECC 2000 Guideline, Marine Water, Protection Level 95% Trigger Value

f = freshwater figure adopted for marine waters (ANZECC 2000 Guidelines).

g = sourced from NEPM 2013 Marine Waters

L = Low reliability trigger values are provided where possible as an indicative guideline (ANZECC 2000 Guidelines).

M = Moderate reliability trigger values are provided where possible as an indicative guideline (ANZECC 2000 Guidelines).

H = High reliability trigger values are provided where possible as an indicative guideline (ANZECC 2000 Guidelines).

	Detected above limit of Reporting
	Below the limit of reporting
	Not tested as per sampling requirements
BOLD	Detected above the SAC

BOLD Detected above the SAC

Samples taken in June 2018 and reported in September 2018.

Australian and New Zealand Environment Conservation Council (ANZECC) 95% Marine Water Quality Guideline Value - for slightly to moderately disturbed systems

a = The ANZECC threshold criteria of 7µg/L is a low reliability trigger level for protection of aquatic ecosystems and is derived from a study on the effects of petroleum hydrocarbons on aquatic organisms. As this level is below the most sensitive detection level of the laboratory, the LOR has been adopted as the threshold criteria for STRH fractions

b = Chemical for which possible bioaccumulation and secondary poisoning effects should be considered, refer to ANZECC & ARM/CANZ (2000) for further guidance

c = Figure may not protect key species from chronic toxicity, refer to ANZECC & ARM/CANZ (2000) for further guidance

d = sourced from ANZECC 2000 Guideline, Marine Water, Protection Level 99% Trigger Value

e = sourced from ANZECC 2000 Guideline, Marine Water, Protection Level 95% Trigger Value

f = freshwater figure adopted for marine waters (ANZECC 2000 Guidelines).

g = sourced from NEPM 2013 Marine Waters

L = Low reliability trigger values are provided where possible as an indicative guideline (ANZECC 2000 Guidelines).

M = Moderate reliability trigger values are provided where possible as an indicative guideline (ANZECC 2000 Guidelines).

H = High reliability trigger values are provided where possible as an indicative guideline (ANZECC 2000 Guidelines).

Liberty Onesteel Mayfield Site License 11149
2018 - Annual Groundwater Monitoring Summary of Results - monitoring wells situated in estuarine strata.
Samples taken in June 2018 and reported in September 2018

Location				E5	M1/2S	E13	E6	M2/1W	M8/1EE	W3E	W6E	W7E	W8E	W9E	E7	E12	E2A	E3A	E4
EPA Identifier				22	34	9	8	29	26	3	4	5	6	31	23	27	19	20	21
Field Parameters		Units	PQL	Site Criteria*															
pH	-	NA	NA	6.94	7.31	7.79	7.28	7.57	7.86	7.69	7.49	7.77	8.04	6.57	7.23	9.24	7.13	7.24	7.11
Electrical Conductivity	µs/cm	NA	NA		1342	7.32	2265	3.97	478	1041	4103.6	5850	1713	262	1755	0.8	1639	218.6	879
Dissolved Oxygen	ppm	NA	NA	4.05	1.9	2.94	3.05	2.66	3.29	3.18	1.04	2.87	1.79	2.81	2.69	8.59	2.59	3.7	2
Reduction Potential	mV	NA	NA	-58.1	6	-135	-62	-73	-58	-71	-43.3	-64	-18	-7	-73	87	-72	109	-2
Temperature	°C	NA	NA	18.21	18.4	13.9	20.2	20.3	15.5	16.9	20.46	16.9	19.2	19.7	19.2	18.8	17.3	18.2	18.2
Salinity	ppt	NA	NA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Turbidity	NTU	NA	NA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Analytes																			
Total Cyanide	µg/L	4	4 ^e	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Zinc	µg/L	1	-	<5	25	12	15	11	14	32	<5	14	32	660	8	24	6	<5	21
TRH C ₆ - C ₉	µg/L	40	-	<40	<40	<40	<40	--	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40
TRH C ₆ - C ₁₀	µg/L	50	-	<50	<50	<50	<50	--	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
TRH C ₆ - C ₁₀ less BTEX (F1)	µg/L	50	-	<50	<50	<50	<50	--	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Benzene	µg/L	0.5	700 ^e	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5	180 ^{e,L}	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5	80 ^{e,L}	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
m+p-xylene	µg/L	1	200 ^e	<1	<1	<1	<1	--	<1	<1	<0	<1	<1	<1	<1	<1	<1	<1	<1
o-xylene	µg/L	0.5	350 ^e	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TRH C ₁₀ - C ₁₄	µg/L	50	-	<50	<50	<50	<50	--	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	µg/L	200	-	<200	<200	<200	<200	--	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
TRH C ₂₉ - C ₃₆	µg/L	200	-	<200	<200	<200	<200	--	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
TRH >C ₁₀ - C ₁₆	µg/L	50	-	<60	<60	<60	<60	--	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	µg/L	60	-	<60	<60	<60	<60	--	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
TRH >C ₁₆ - C ₃₄	µg/L	500	-	<500	<500	<500	<500	--	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
TRH >C ₃₄ - C ₆₀	µg/L	100	-	<500	<500	<500	<500	--	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
Total TRH C ₆ - C ₃₆	µg/L	490	7 ^{a,d}	<490	<490	<490	<490	--	<490	<490	<490	<490	<490	<490	<490	<490	<490	<490	<490
Naphthalene	µg/L	0.1/0.5	70 ^e	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	µg/L	0.1	-	--	--	--	--	<0.1	--	--	<0.1	--	--	--	--	<0.1	--	--	--
Acenaphthene	µg/L	0.1	-	--	--	--	--	<0.1	--	--	<0.1	--	--	--	--	0.1	--	--	--
Fluorene	µg/L	0.1	-	--	--	--	--	<0.1	--	--	<0.1	--	--	--	--	0.3	--	--	--
Phenanthrene	µg/L	0.1	-	--	--	--	--	<0.1	--	--	<0.1	--	--	--	--	<0.1	--	--	--
Anthracene	µg/L	0.1	0.4 ^{e,L}	--	--	--	--	<0.1	--	--	<0.1	--	--	--	--	<0.1	--	--	--
Fluoranthene	µg/L	0.1	2 ^{e,L}	--	--	--	--	<0.1	--	--	<0.1	--	--	--	--	0.3	--	--	--
Pyrene	µg/L	0.1	-	--	--	--	--	<0.1	--	--	<0.1	--	--	--	--	0.2	--	--	--
Benzo(a)anthracene	µg/L	0.1	-	--	--	--	--	<0.1	--	--	<0.1	--	--	--	--	<0.1	--	--	--
Chrysene	µg/L	0.1	-	--	--	--	--	<0.1	--	--	<0.1	--	--	--	--	<0.1	--	--	--
Benzo(b+k)fluoranthene	µg/L	0.1	-	--	--	--	--	<0.1	--	--	<0.1	--	--	--	--	<0.1	--	--	--
Benzo(a)pyrene	µg/L	0.1	-	--	--	--	--	<0.1	--	--	<0.1	--	--	--	--	<0.1	--	--	--
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	-	--	--	--	--	<0.1	--	--	<0.1	--	--	--	--	<0.1	--	--	--
Dibenzo(a,h)anthracene	µg/L	0.1	-	--	--	--	--	<0.1	--	--	<0.1	--	--	--	--	<0.1	--	--	--
Benzo(g,h,i)perylene	µg/L	0.1	-	--	--	--	--	<0.1	--	--	<0.1	--	--	--	--	<0.1	--	--	--
Benzo(a)pyrene TEQ	µg/L	5	0.4 ^L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total +ve PAH's	µg/L	1	-	--	--	--	--	<1	--	--	<1	--	--	--	--	1	--	--	--
Ammonia as N in water	µg/L	10	910 ^e	8300	--	5600	--	--	--	--	--	3200	3200	--	--	--	--	--	--
Phenol	µg/L	0.5	340 ^{M,f,d}	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Chlorophenol	µg/L	0.5	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Chloro-3-Methylphenol	µg/L	5	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylphenol	µg/L	0.5	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3/4-Methylphenol	µg/L	1	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Nitrophenol	µg/L	0.5	2 ^{lf}	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,4-Dimethylphenol	µg/L	1	2 ^{lf}	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,4-Dichlorophenol	µg/L	0.5	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,6-Dichlorophenol	µg/L	0.5	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,4,6-Trichlorophenol	µg/L	0.5	3 ^{M,f,d}	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,4,5-Trichlorophenol	µg/L	1	4 ^L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,4-Dinitrophenol	µg/L	2	45 ^{e,L}	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Nitrophenol	µg/L	1	58 ^{lf}	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,3,4,6-Tetrachlorophenol	µg/L	1	10 ^{L-f,d}	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-methyl-4,6-dinitrophenol	µg/L	10	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pentachlorophenol	µg/L	0.5	22 ^e	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper (Cu)	µg/L	1	1.3 ^e	4	68	4	5	10	6	6	<1	4	6	7	3	5	5	23	4
Lead (Pb)	µg/L	1	4.4 ^e	<1	<1	<1	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Zinc (Zn) - filtered	µg/L	5	15 ^e	<5	25	12	15	11	14	32	<5	14	32	660	8	24	6	<5	21
Total Chromium (Cr)	µg/L	1	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trivalent Chromium (Cr III)	µg/L	1	27.4 ^e	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium (Cr VI)	µg/L	4	4.4 ^e	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Cadmium (Cd)	µg/L	0.1	5.5 ^{e,H}	<0.1	0.2	0.2	<0.1	0.2	0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	1.1	<0.1	0.1	<0.1
Mercury (Hg)	µg/L	0.1	0.4 ^e	<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
Manganese (Mn)	µg/L	1	1900 ^{e,f}	670	1400	85	500	100	<1	330	230	170	330	63	210	180	2700	5	430

* Australian and New Zealand Environment Conservation Council (ANZECC) 95% Marine Water Quality Guideline Value - for slightly to moderately disturbed systems

a = The ANZECC threshold criteria of 7µg/L is a low reliability trigger level for protection of aquatic ecosystems and is derived from a study on the effects of petroleum hydrocarbons on aquatic organisms. As this level is below the most sensitive detection level of the laboratory, the LOR has been adopted as the threshold criteria for sTRH fractions

b = Chemical for which possible bioaccumulation and secondary poisoning effects should be considered, refer to ANZECC & ARMCANZ (2000) for further guidance

c = Figure may not protect key species from chronic toxicity, refer to ANZECC & ARMCANZ (2000) for further guidance

d = sourced from ANZECC 2000 Guideline, Marine Water, Protection Level 99%Trigger Value

e = sourced from ANZECC 2000 Guideline, Marine Water, Protection Level 95%Trigger Value

f = freshwater figure adopted for marine waters (ANZECC 2000 Guidelines).

g = sourced from NEPM 2013 Marine Waters

L = Low reliability trigger values are provided where possible as an indicative guideline (ANZECC 2000 Guidelines).

M = Moderate reliability trigger values are provided where possible as an indicative guideline (ANZECC 2000 Guidelines).

H = High reliability trigger values are provided where possible as an indicative guideline (ANZECC 2000 Guidelines).