

Licence Information

Environment Protection Licence (EPL) Number	13218
License Holder	MACKA'S SAND PTY LTD
Licensee Address	Licensee: Macka's Sand Pty Ltd 2684 Nelson Bay Rd Salt Ash NSW 2318 Premises: Macka's Sand Extraction and Processing Facility Off Nelson Bay Road Salt Ash NSW 2318
Link to the full licence on the EPA website	https://apps.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=77948&SYSUID=1&LICID=13218
Anniversary Date:	30-Jun
Information Last Obtained:	20-Jul-22
Date of Publication:	11-Aug-22

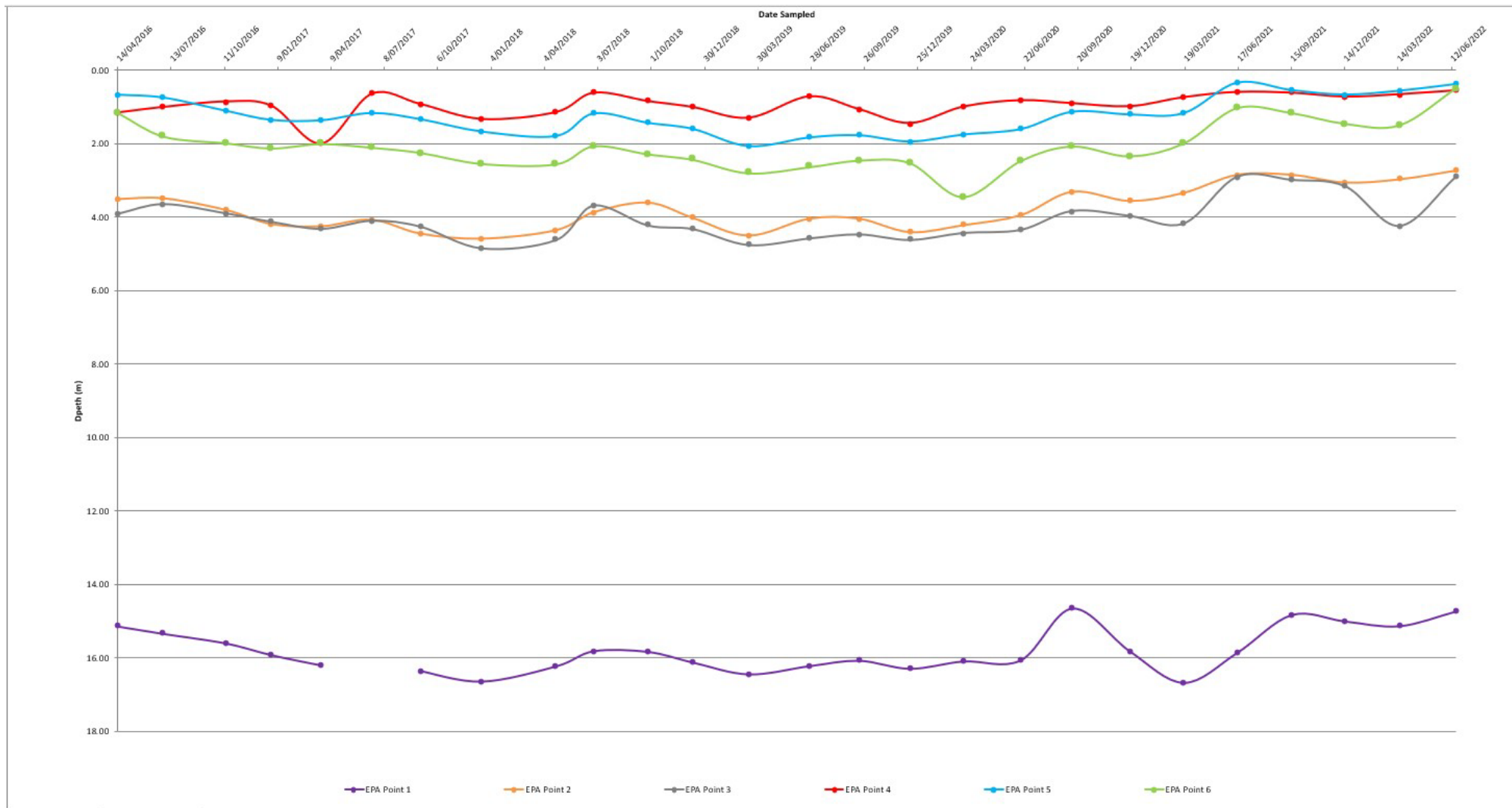


1646 - Macka's Sand - EPL 13218

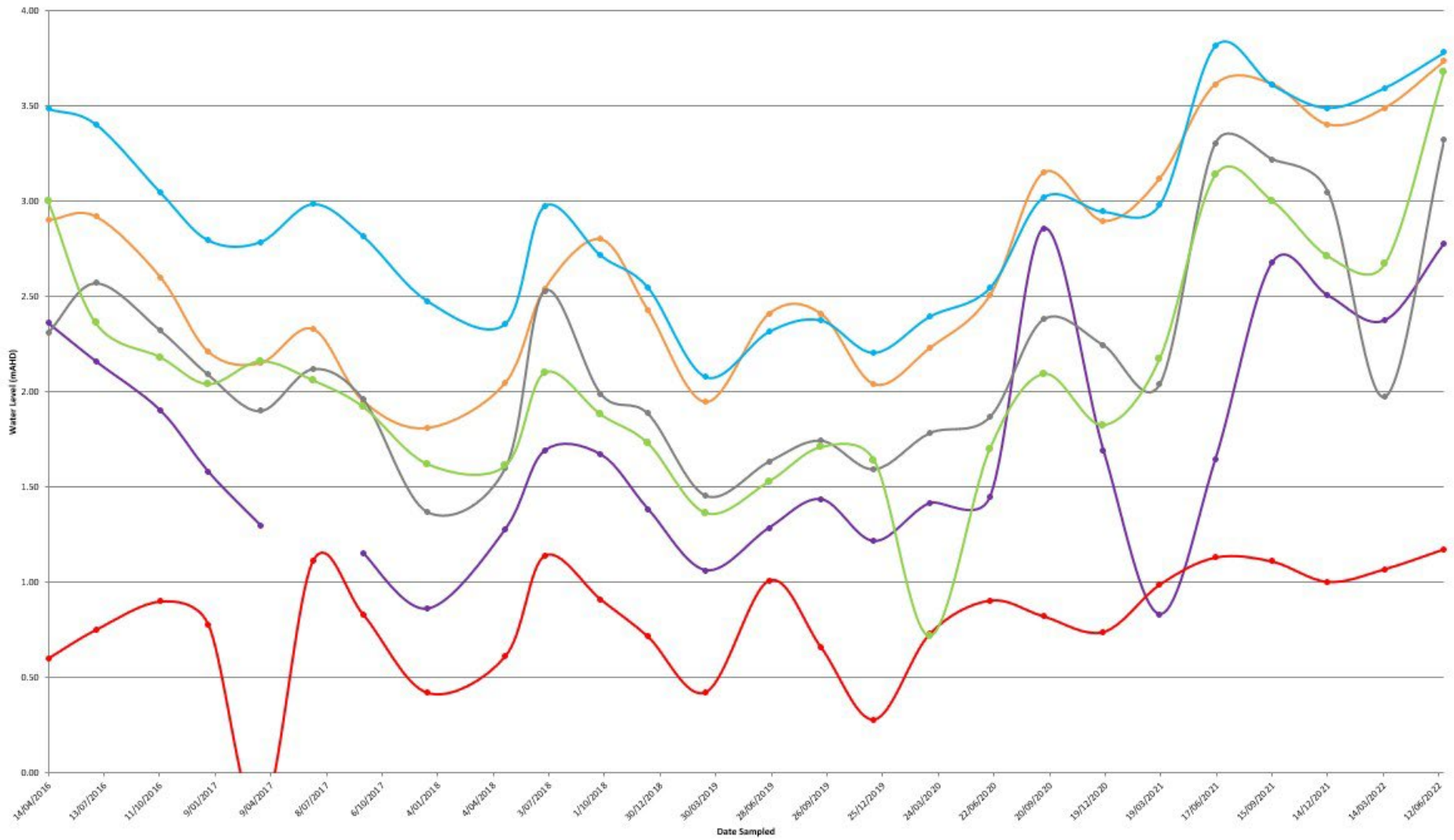
Quarterly Groundwater Monitoring

Sample Date	Depth - EPL (m)						Water Level (PA 08_0142 - SWMP Only)						Comment
	EPA Point 1 SP1	EPA Point 2 SP2	EPA Point 3 SP3	EPA Point 4 SP4	EPA Point 5 SP5	EPA Point 6 BL158	EPA Point 1	EPA Point 2	EPA Point 3	EPA Point 4	EPA Point 5	EPA Point 6	
14-Apr-16	15.14	3.50	3.90	1.15	0.66	1.16	2.36	2.90	2.31	0.60	3.49	3.00	
30-Jun-16	15.34	3.48	3.64	1.00	0.74	1.80	2.16	2.92	2.57	0.75	3.41	2.36	
13-Oct-16	15.60	3.80	3.89	0.85	1.10	1.98	1.90	2.60	2.32	0.90	3.05	2.18	
29-Dec-16	15.92	4.19	4.12	0.97	1.35	2.12	1.58	2.21	2.09	0.78	2.80	2.04	
23-Mar-17	16.20	4.25	4.31	2.00	1.36	2.00	1.30	2.15	1.90	-0.25	2.79	2.16	
16-Jun-17		4.07	4.09	0.64	1.16	2.10		2.33	2.12	1.11	2.99	2.06	Sampling error at SP1/EPA Point 1
06-Sep-17	16.35	4.45	4.25	0.92	1.33	2.24	1.15	1.95	1.96	0.83	2.82	1.92	
19-Dec-17	16.64	4.59	4.84	1.33	1.67	2.54	0.86	1.81	1.37	0.42	2.48	1.62	
23-Apr-18	16.23	4.36	4.61	1.14	1.79	2.55	1.28	2.05	1.60	0.61	2.36	1.61	
26-Jun-18	15.81	3.86	3.68	0.61	1.17	2.06	1.69	2.54	2.53	1.14	2.98	2.10	
25-Sep-18	15.83	3.60	4.22	0.84	1.43	2.28	1.67	2.80	1.99	0.91	2.72	1.88	Standpipe replaced in August 2018.
10-Dec-18	16.12	4.02	4.32	1.00	1.60	2.43	1.39	2.43	1.89	0.72	2.55	1.73	
14-Mar-19	16.44	4.50	4.75	1.30	2.07	2.80	1.06	1.95	1.46	0.42	2.08	1.36	SP4 Casing broken. Indicative water level based off previously surveyed standpipe height. SP1 & SP5 monitoring undertaken on 15/3/19 due to access restrictions on 14/3/2019.
24-Jun-19	16.22	4.04	4.57	0.71	1.83	2.63	1.29	2.41	1.64	1.01	2.32	1.53	SP4 Casing broken (repaired and broken again). Indicative water level based off previously surveyed standpipe height.
16-Sep-19	16.07	4.04	4.46	1.06	1.77	2.45	1.44	2.41	1.75	0.66	2.38	1.71	SP5 Monitoring undertaken on 17/9/19
11-Dec-19	16.29	4.41	4.61	1.44	1.94	2.52	1.22	2.04	1.60	0.28	2.21	1.64	
10-Mar-20	16.09	4.22	4.42	0.99	1.75	3.44	1.42	2.23	1.79	0.73	2.40	0.72	
15-Jun-20	16.06	3.95	4.34	0.82	1.60	2.46	1.45	2.51	1.87	0.91	2.54	1.70	SP4 well casing broken. SP3, SP5 and BL158 sampling conducted on 16/06/20.
10-Sep-20	14.65	3.30	3.82	0.90	1.13	2.07	2.86	3.15	2.38	0.82	3.02	2.09	
16-Dec-20	15.82	3.55	3.96	0.98	1.20	2.34	1.69	2.90	2.25	0.74	2.95	1.83	SP2, SP3 and SP5 sampling conducted on 17/12/2020
17-Mar-21	16.67	3.33	4.16	0.73	1.16	1.99	0.83	3.12	2.04	0.99	2.98	2.18	
15-Jun-21	15.86	2.84	2.90	0.59	0.33	1.02	1.65	3.62	3.31	1.13	3.82	3.14	
15-Sep-21	14.83	2.84	2.99	0.61	0.54	1.16	2.68	3.62	3.22	1.11	3.61	3.00	SP2, SP3, SP4 and SP5 sampling conducted on 20/09/2021
14-Dec-21	15.00	3.05	3.16	0.72	0.66	1.45	2.51	3.40	3.05	1.00	3.49	2.71	
16-Mar-22	15.13	2.96	4.23	0.65	0.55	1.49	2.38	3.49	1.98	1.07	3.60	2.67	
20-Jun-22	14.73	2.72	2.88	0.55	0.37	0.48	2.78	3.73	3.32	1.18	3.78	3.68	

FY 21/22 Statistics	EPA Point 1	EPA Point 2	EPA Point 3	EPA Point 4	EPA Point 5	EPA Point 6	SP1	SP2	SP3	SP4	SP5	BL158	Comment
Count	4	4	4	4	4	4	4	4	4	4	4	4	
Min	14.73	2.72	2.88	0.55	0.37	0.48	2.38	3.40	1.98	1.00	3.49	2.67	
Average	14.92	2.89	3.31	0.63	0.53	1.15	2.58	3.56	2.89	1.09	3.62	3.02	
Max	15.13	3.05	4.23	0.72	0.66	1.49	2.78	3.73	3.32	1.18	3.78	3.68	



Groundwater Levels (mAHD)



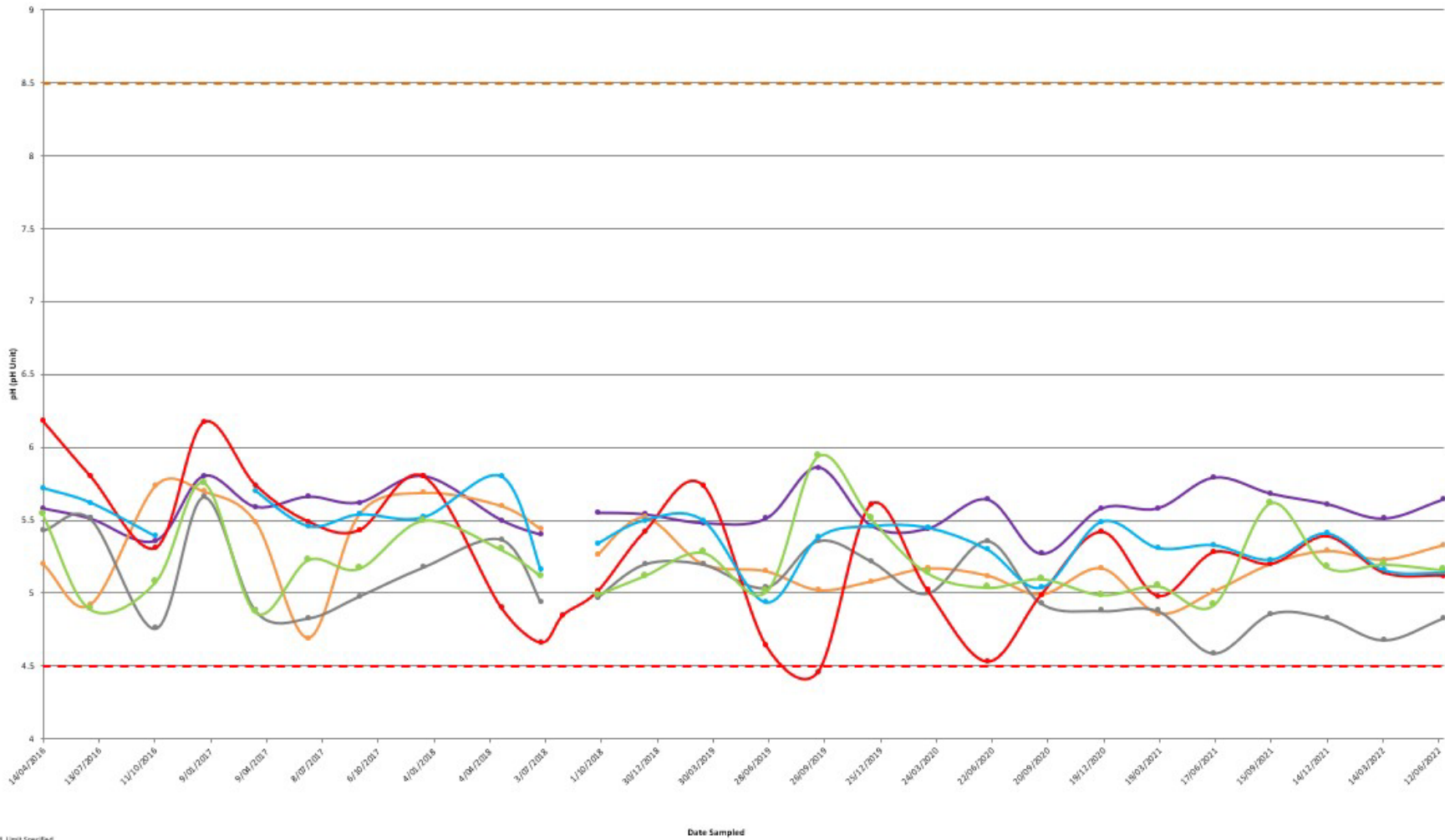
1646 - Macka's Sand

Quarterly Groundwater Monitoring

Sample Date	Lower SWMP Trigger	Upper SWMP Trigger	EPL Limit	pH						Comment
				EPA Point 1	EPA Point 2	EPA Point 3	EPA Point 4	EPA Point 5	EPA Point 6	
				SP1	SP2	SP3	SP4	SP5	BL158	
14-Apr-16	4.5	8.5	non-specified	5.58	5.2	5.43	6.18	5.72	5.54	
30-Jun-16	4.5	8.5	non-specified	5.51	4.92	5.51	5.8	5.62	4.89	
13-Oct-16	4.5	8.5	non-specified	5.36	5.74	4.76	5.31	5.39	5.08	
29-Dec-16	4.5	8.5	non-specified	5.8	5.7	5.66	6.17		5.76	Sampling error at SP5
23-Mar-17	4.5	8.5	non-specified	5.59	5.49	4.88	5.74	5.7	4.87	
16-Jun-17	4.5	8.5	non-specified	5.66	4.69	4.83	5.49	5.46	5.23	
06-Sep-17	4.5	8.5	non-specified	5.62	5.54	4.98	5.43	5.54	5.17	
19-Dec-17	4.5	8.5	non-specified	5.80	5.69	5.18	5.80	5.52	5.50	
23-Apr-18	4.5	8.5	non-specified	5.50	5.60	5.37	4.90	5.80	5.30	
26-Jun-18	4.5	8.5	non-specified	5.40	5.44	4.94	4.66	5.16	5.12	
01-Aug-18	4.5	8.5	non-specified				4.85			Additional SP4 monitoring event due to standpipe replacement
25-Sep-18	4.5	8.5	non-specified	5.55	5.26	4.97	5.01	5.34	4.99	
10-Dec-18	4.5	8.5	non-specified	5.54	5.52	5.20	5.42	5.50	5.12	
14-Mar-19	4.5	8.5	non-specified	5.48	5.20	5.20	5.74	5.50	5.28	SP1 & SP5 monitoring undertaken on 15/3/19 due to access restrictions on 14/3/2019.
24-Jun-19	4.5	8.5	non-specified	5.51	5.15	5.04	4.64	4.94	5.01	
16-Sep-19	4.5	8.5	non-specified	5.86	5.02	5.36	4.46	5.38	5.94	SP5 Monitoring undertaken on 16/9/19
11-Dec-19	4.5	8.5	non-specified	5.46	5.08	5.22	5.61	5.46	5.51	
10-Mar-20	4.5	8.5	non-specified	5.44	5.17	5.00	5.02	5.45	5.14	
15-Jun-20	4.5	8.5	non-specified	5.64	5.12	5.36	4.53	5.3	5.04	SP3, SP5 and BL158 sampling conducted on 16/06/20.
10-Sep-20	4.5	8.5	non-specified	5.27	4.99	4.93	4.99	5.04	5.1	
16-Dec-20	4.5	8.5	non-specified	5.58	5.17	4.88	5.42	5.49	4.99	SP2, SP3 and SP5 sampling conducted on 17/12/2020
17-Mar-21	4.5	8.5	non-specified	5.58	4.86	4.88	4.98	5.31	5.05	
15-Jun-21	4.5	8.5	non-specified	5.79	5.01	4.59	5.28	5.33	4.92	
15-Sep-21	4.5	8.5	non-specified	5.68	5.2	4.86	5.2	5.23	5.62	SP2, SP3, SP4 and SP5 sampling conducted on 20/09/2021
14-Dec-21	4.5	8.5	non-specified	5.61	5.29	4.83	5.39	5.41	5.18	
16-Mar-22	4.5	8.5	non-specified	5.51	5.23	4.68	5.14	5.16	5.2	
20-Jun-22	4.5	8.5	non-specified	5.64	5.33	4.83	5.12	5.14	5.16	
Above nominated SWMP trigger level										

FY 21/22 Statistics	EPA Point 1	EPA Point 2	EPA Point 3	EPA Point 4	EPA Point 5	EPA Point 6
Count	4	4	4	4	4	4
Min	5.51	5.20	4.68	5.12	5.14	5.16
Average	5.61	5.26	4.80	5.21	5.24	5.29
Max	5.68	5.33	4.86	5.39	5.41	5.62

Groundwater - pH



Note: No EPA Limit Specified

Lower SWMP Trigger Upper SWMP Trigger EPA Point 1 EPA Point 2 EPA Point 3 EPA Point 4 EPA Point 5 EPA Point 6

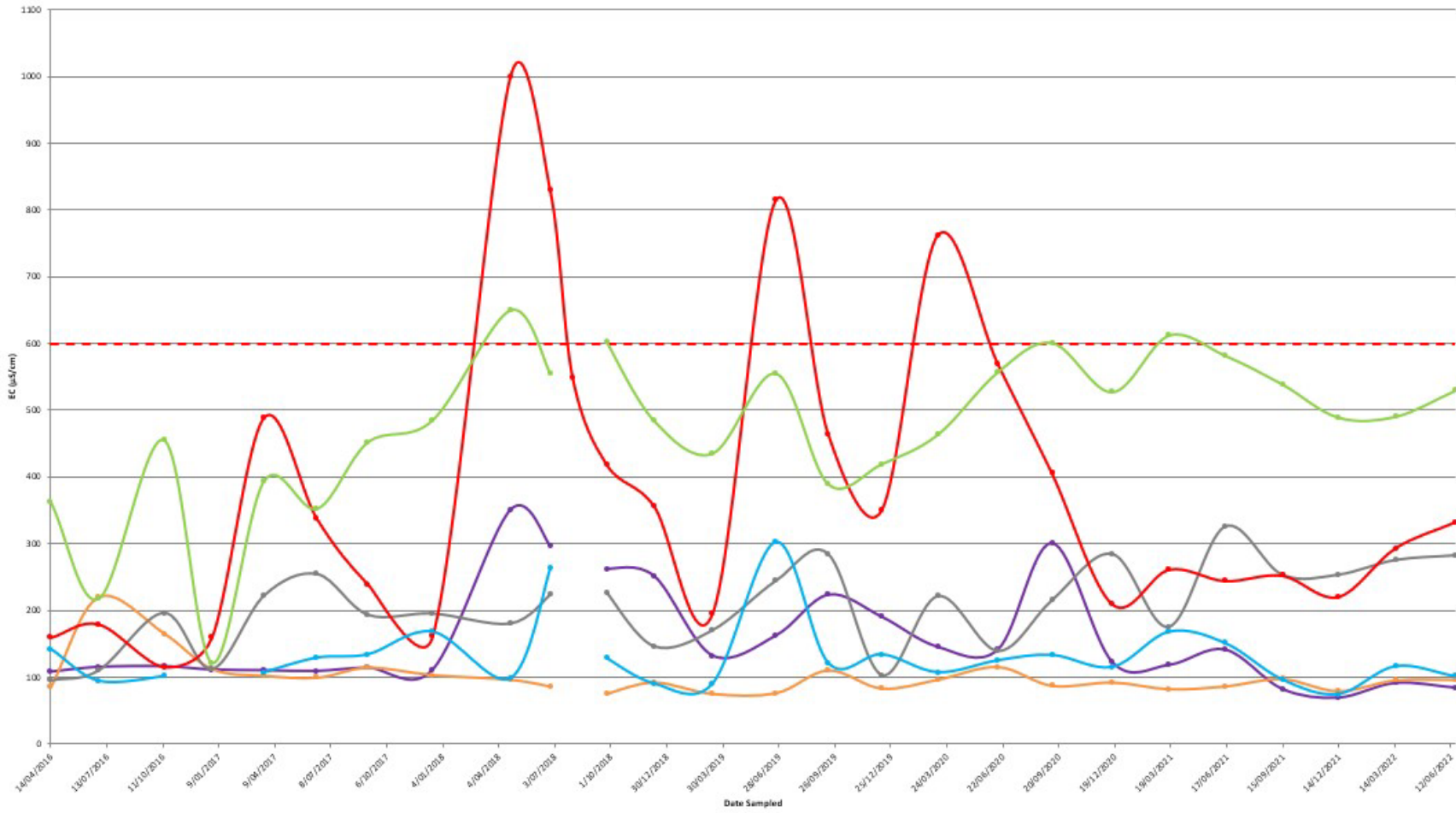
1646 - Macka's Sand

Quarterly Groundwater Monitoring

Electrical Conductivity ($\mu\text{S}/\text{cm}$)									
Sample Date	SWMP Trigger	EPL Limit	EPA Point 1	EPA Point 2	EPA Point 3	EPA Point 4	EPA Point 5	EPA Point 6	Comment
			SP1	SP2	SP3	SP4	SP5	BL158	
14-Apr-16	600	non-specified	108	85	95	159	142	362	
30-Jun-16	600	non-specified	115	219	110	179	94	217	
13-Oct-16	600	non-specified	116	165	196	115	101	455	
29-Dec-16	600	non-specified	111	112	112	159		121	Sampling Error at SP5
23-Mar-17	600	non-specified	110	102	222	489	107	394	
16-Jun-17	600	non-specified	109	99	254	337	129	352	
06-Sep-17	600	non-specified	114	114	193	239	134	452	
19-Dec-17	600	non-specified	111	103	195	161	168	485	
23-Apr-18	600	non-specified	350	96	180	1000	98	650	
26-Jun-18	600	non-specified	296	86	223	829	263	555	
01-Aug-18	600	non-specified				549			Additional SP4 monitoring event due to standpipe replacement
25-Sep-18	600	non-specified	262	75	226	418	128	602	
10-Dec-18	600	non-specified	251	92	146	356	90	484	
14-Mar-19	600	non-specified	132	75	170	195	90	435	SP1 & SP5 monitoring undertaken on 15/3/19 due to access restrictions on 14/3/2019.
24-Jun-19	600	non-specified	162	76	244	815	303	555	
16-Sep-19	600	non-specified	223	110	284	464	121	389	SP5 monitoring undertaken on 17/9/19
11-Dec-19	600	non-specified	190	83	103	350	134	419	
10-Mar-20	600	non-specified	145	96	221	762	107	463	
15-Jun-20	600	non-specified	141	115	139	569	125	557	SP3, SP5 and BL158 sampling conducted on 16/06/20.
10-Sep-20	600	non-specified	300	87	215	405	133	601	
16-Dec-20	600	non-specified	122	92	284	209	115	527	SP2, SP3 and SP5 sampling conducted on 17/12/2020
17-Mar-21	600	non-specified	118	82	175	261	168	612	
15-Jun-21	600	non-specified	141	86	325	244	151	582	
15-Sep-21	600	non-specified	82	97	253	252	96	539	SP2, SP3, SP4 and SP5 sampling conducted on 20/09/2021
14-Dec-21	600	non-specified	69	79	253	220	74	489	
16-Mar-22	600	non-specified	91	95	275	293	116	490	
20-Jun-22	600	non-specified	84	96	282	332	101	529	
Above nominated SWMP trigger level									

FY 21/22 Statistics	EPA Point 1	EPA Point 2	EPA Point 3	EPA Point 4	EPA Point 5	EPA Point 6
Count	4	4	4	4	4	4
Min	69	79	253	220	74	489
Average	82	92	266	274	97	512
Max	91	97	282	332	116	539

Groundwater - Electrical Conductivity (EC)



Note: No EPL Limit Specified

SWMP Trigger EPA Point 1 EPA Point 2 EPA Point 3 EPA Point 4 EPA Point 5 EPA Point 6

1646 - Macka's Sand

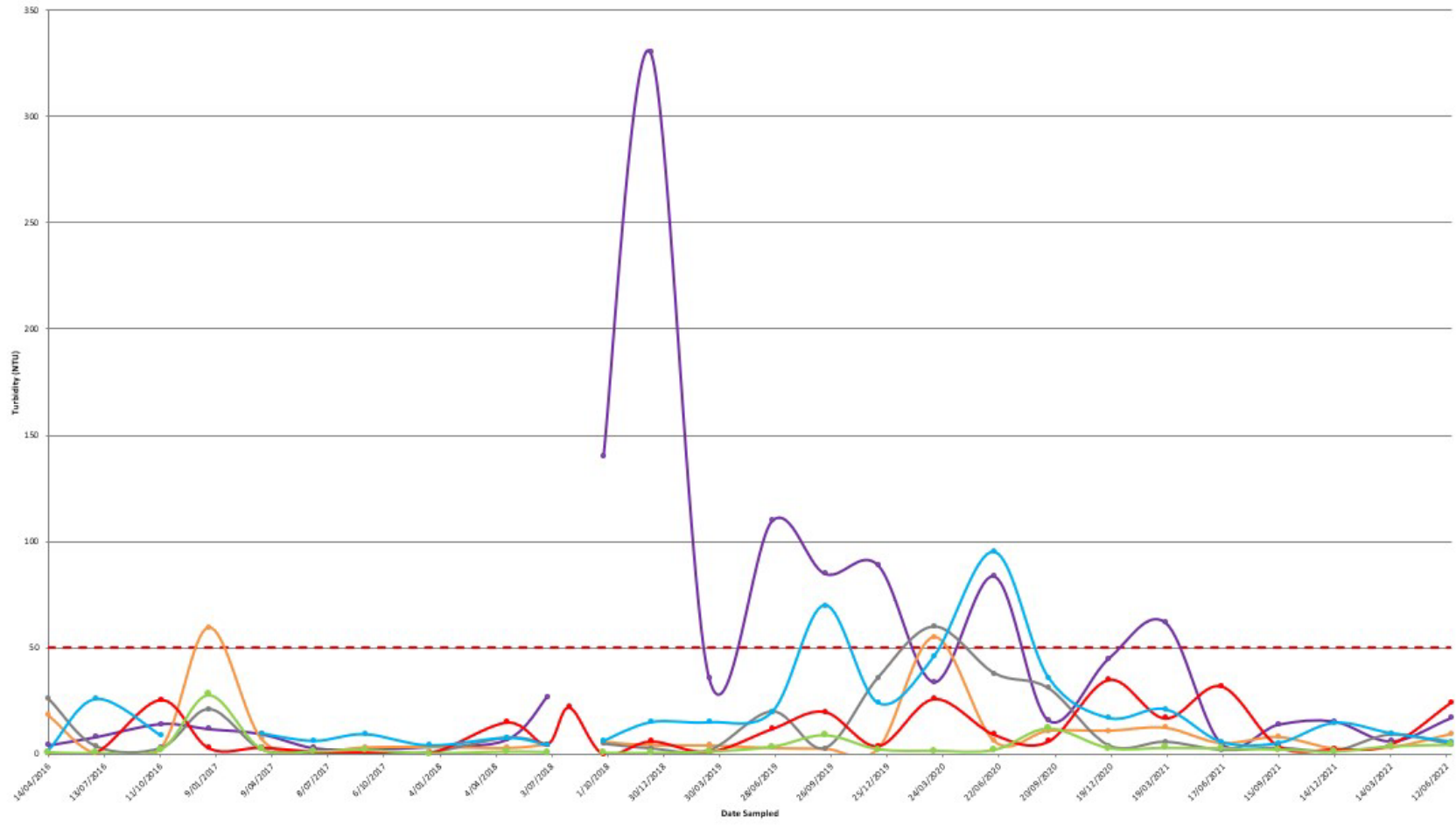
Quarterly Groundwater Monitoring

Sample Date	SWMP Trigger	EPL Limit	Turbidity (NTU)						Comment
			EPA Point 1 SP1	EPA Point 2 SP2	EPA Point 3 SP3	EPA Point 4 SP4	EPA Point 5 SP5	EPA Point 6 BL158	
14-Apr-16	50	non-specified	4.2	18.4	26.3	0.8	1.5	0.6	
30-Jun-16	50	non-specified	8.1	0.3	3.6	0.7	25.9	0.3	
13-Oct-16	50	non-specified	14.3	3.1	2.8	25.6	8.7	2.0	
29-Dec-16	50	non-specified	11.9	59.5	21.1	2.9		27.8	Sampling Error at SP5
23-Mar-17	50	non-specified	9.6	7.4	2.2	3.2	9.8	2.3	
16-Jun-17	50	non-specified	2.9	1.3	0.6	1.3	6.2	1.1	
06-Sep-17	50	non-specified	2.5	3.2	0.5	1.0	9.4	1.8	
19-Dec-17	50	non-specified	3.5	3.4	0.7	0.4	4.1	0.2	
23-Apr-18	50	non-specified	6.9	2.9	7.6	15.0	7.7	1.0	
26-Jun-18	50	non-specified	27.0	4.6	4.6	4.6	4.2	0.8	
01-Aug-18	50	non-specified				22.0			Additional SP4 monitoring event due to standpipe replacement
25-Sep-18	50	non-specified	140.0	5.8	4.8	0.1	6.2	0.4	
10-Dec-18	50	non-specified	330.0	4.2	2.6	6.1	15.0	0.3	
14-Mar-19	50	non-specified	36.0	4.1	1.7	1.2	15.0	1.0	SP1 & SP5 monitoring undertaken on 15/3/19 due to access restrictions on 14/3/2019.
24-Jun-19	50	non-specified	110.0	2.9	20.0	12.0	20.0	3.3	
16-Sep-19	50	non-specified	85.0	2.6	2.7	20.0	70.0	8.8	SP5 monitoring undertaken on 17/9/19
11-Dec-19	50	non-specified	89.0	2.6	36.0	3.9	24.0	2.1	
10-Mar-20	50	non-specified	34.0	55.0	60.0	26.0	46.0	1.4	
15-Jun-20	50	non-specified	83.7	6.1	38.0	9.2	95.0	1.8	SP3, SP5 and BL158 sampling conducted on 16/06/20.
10-Sep-20	50	non-specified	16.0	11.0	31.0	6.0	36.0	12.0	
16-Dec-20	50	non-specified	45.0	11.0	4.0	35.0	17.0	2.7	SP2, SP3 and SP5 sampling conducted on 17/12/2020
17-Mar-21	50	non-specified	62.1	12.4	5.7	16.9	21.1	2.8	
15-Jun-21	50	non-specified	5.2	5.2	1.9	32.0	5.8	2.5	
15-Sep-21	50	non-specified	14.0	8.1	2.9	3.9	5.2	2.0	SP2, SP3, SP4 and SP5 sampling conducted on 20/09/2021
14-Dec-21	50	non-specified	15.5	2.7	1.4	2.4	14.7	1.0	
16-Mar-22	50	non-specified	6.1	3.3	9.2	4.7	9.8	3.5	
20-Jun-22	50	non-specified	17.1	9.5	4.6	24.3	5.9	4.2	

Above nominated SWMP trigger level

FY 21/22 Statistics	EPA Point 1	EPA Point 2	EPA Point 3	EPA Point 4	EPA Point 5	EPA Point 6
Count	4	4	4	4	4	4
Min	6.1	2.7	1.4	2.4	5.2	1.0
Average	13.2	5.9	4.5	8.8	8.9	2.7
Max	17.1	9.5	9.2	24.3	14.7	4.2

Groundwater - Turbidity (NTU)



Note: No GFL Limit Specified

--- SWMP Trigger ● EPA Point 1 ● EPA Point 2 ● EPA Point 3 ● EPA Point 4 ● EPA Point 5 ● EPA Point 6

1646 - Macka's Sand

Quarterly Groundwater Monitoring

Sample Date	SWMP Trigger	EPL Limit	Arsenic (mg/L)						Comment
			EPA Point 1	EPA Point 2	EPA Point 3	EPA Point 4	EPA Point 5	EPA Point 6	
			SP1	SP2	SP3	SP4	SP5	BL158	
14-Apr-16	0.01	non-specified	0.001	0.001	0.001	0.001	0.002	0.001	
30-Jun-16	0.01	non-specified	0.001	0.001	0.001	0.001	0.002	0.001	
13-Oct-16	0.01	non-specified	0.001	0.001	0.001	0.001	0.001	0.001	
29-Dec-16	0.01	non-specified	0.001	0.001	0.002	0.001	0.003	0.001	
23-Mar-17	0.01	non-specified	0.001	0.001	0.001	0.001	0.002	0.001	
16-Jun-17	0.01	non-specified	0.001	0.001	0.002	0.002	0.002	0.001	
06-Sep-17	0.01	non-specified	0.001	0.001	0.001	0.001	0.001	0.001	
19-Dec-17	0.01	non-specified	0.001	0.001	0.001	0.001	0.001	0.001	
23-Apr-18	0.01	non-specified	0.001	0.001	0.001	0.001	0.001	0.001	
26-Jun-18	0.01	non-specified	0.001	0.001	0.001	0.001	0.003	0.001	
01-Aug-18	0.01	non-specified				0.001			Additional SP4 monitoring event due to standpipe replacement
25-Sep-18	0.01	non-specified	0.001	0.001	0.001	0.001	0.001	0.001	
10-Dec-18	0.01	non-specified	0.001	0.001	0.001	0.001	0.002	0.001	
14-Mar-19	0.01	non-specified	0.001	0.001	0.001	0.001	0.002	0.001	SP1 & SP5 monitoring undertaken on 15/3/19 due to access restrictions on 14/3/2019.
24-Jun-19	0.01	non-specified	0.001	0.001	0.001	0.002	0.003	0.001	
16-Sep-19	0.01	non-specified	0.001	0.001	0.001	0.009	0.001	0.001	SP5 Monitoring undertaken on 16/9/19
11-Dec-19	0.01	non-specified	0.001	0.001	0.001	0.001	0.001	0.001	
10-Mar-20	0.01	non-specified	0.001	0.001	0.001	0.009	0.001	0.001	
15-Jun-20	0.01	non-specified	0.001	0.001	0.001	0.003	0.001	0.001	SP3, SP5 and BL158 sampling conducted on 16/06/20.
10-Sep-20	0.01	non-specified	0.001	0.001	0.002	0.001	0.001	0.001	
16-Dec-20	0.01	non-specified	0.001	0.001	0.001	0.015	0.001	0.001	SP2, SP3 and SP5 sampling conducted on 17/12/2020
17-Mar-21	0.01	non-specified	0.001	0.001	0.001	0.003	0.001	0.001	
15-Jun-21	0.01	non-specified	0.001	0.001	0.001	0.002	0.001	0.001	
15-Sep-21	0.01	non-specified	0.001	0.001	0.001	0.002	0.007	0.001	SP2, SP3, SP4 and SP5 sampling conducted on 20/09/2021
14-Dec-21	0.01	non-specified	0.001	0.001	0.001	0.001	0.002	0.001	
16-Mar-22	0.01	non-specified	0.001	0.001	0.001	0.001	0.006	0.001	
20-Jun-22	0.01	non-specified	0.001	0.001	0.001	0.002	0.014	0.001	

Note: Shaded cells indicate values less than 0.001 (i.e. limit of detection). '<' removed to populate graph

Above nominated SWMP trigger level

FY 21/22 Statistics	EPA Point 1	EPA Point 2	EPA Point 3	EPA Point 4	EPA Point 5	EPA Point 6
Count	4	4	4	4	4	4
Min	0.001	0.001	0.001	0.001	0.002	0.001
Average	0.001	0.001	0.001	0.002	0.007	0.001
Max	0.001	0.001	0.001	0.002	0.014	0.001

1646 - Macka's Sand

Quarterly Groundwater Monitoring

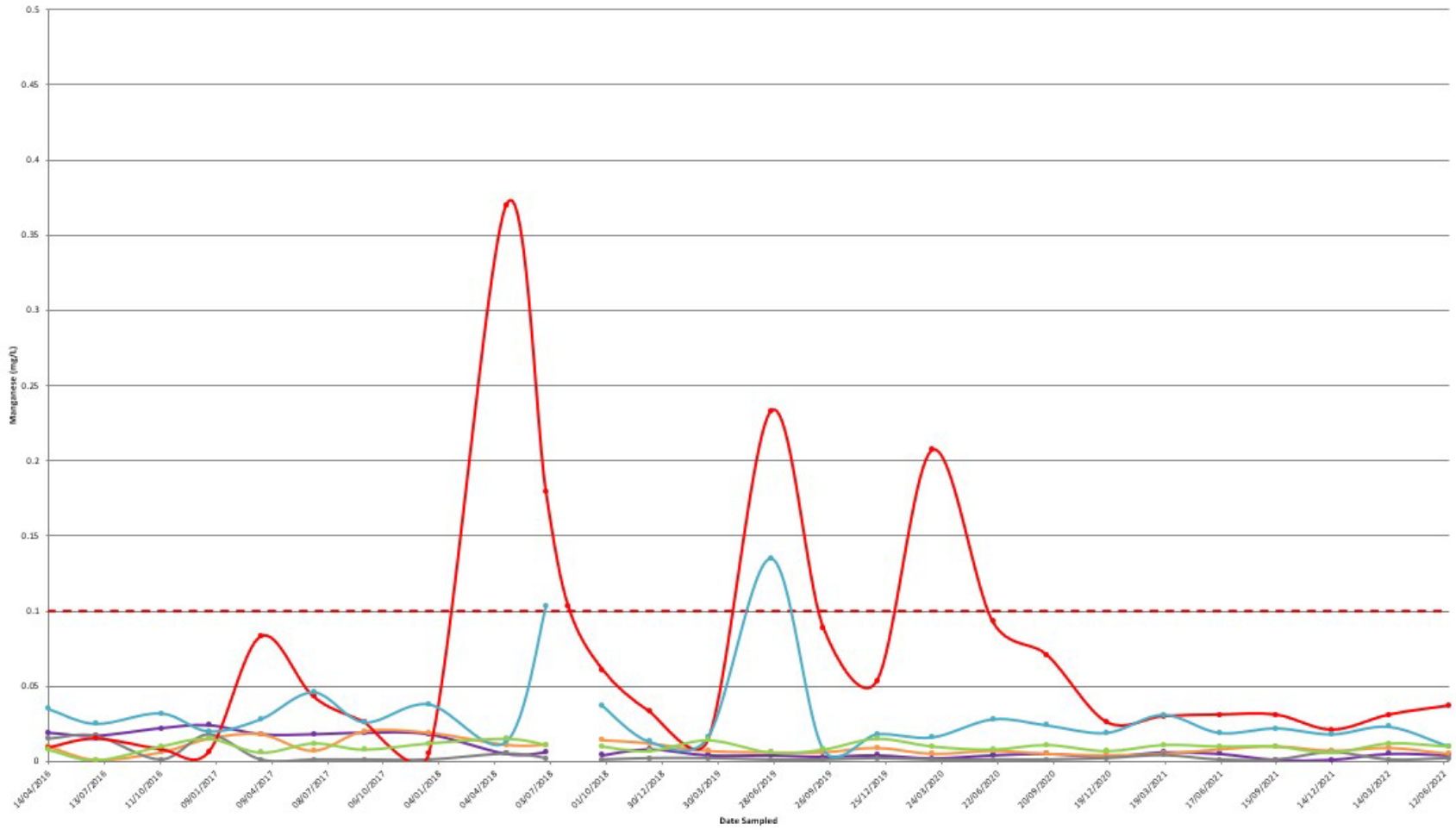
Manganese (mg/L)									
Sample Date	SWMP Trigger	EPL Limit	EPA Point 1	EPA Point 2	EPA Point 3	EPA Point 4	EPA Point 5	EPA Point 6	Comment
			SP1	SP2	SP3	SP4	SP5	BL158	
14-Apr-16	0.1	non-specified	0.019	0.010	0.015	0.009	0.035	0.008	
30-Jun-16	0.1	non-specified	0.017	0.001	0.017	0.015	0.025	0.001	
13-Oct-16	0.1	non-specified	0.022	0.006	0.001	0.008	0.032	0.010	
29-Dec-16	0.1	non-specified	0.024	0.015	0.018	0.006	0.020	0.015	
23-Mar-17	0.1	non-specified	0.018	0.018	0.001	0.083	0.028	0.006	
16-Jun-17	0.1	non-specified	0.018	0.007	0.001	0.043	0.046	0.012	
06-Sep-17	0.1	non-specified	0.019	0.020	0.001	0.026	0.026	0.008	
19-Dec-17	0.1	non-specified	0.018	0.019	0.001	0.005	0.038	0.012	
23-Apr-18	0.1	non-specified	0.005	0.011	0.005	0.37	0.013	0.015	
26-Jun-18	0.1	non-specified	0.006	0.011	0.002	0.179	0.103	0.011	
01-Aug-18	0.1	non-specified				0.103			Additional SP4 monitoring event due to standpipe replacement
25-Sep-18	0.1	non-specified	0.004	0.014	0.001	0.061	0.037	0.010	
10-Dec-18	0.1	non-specified	0.008	0.012	0.002	0.033	0.013	0.007	
14-Mar-19	0.1	non-specified	0.004	0.007	0.002	0.014	0.016	0.014	SP1 & SP5 monitoring undertaken on 15/3/19 due to access restrictions on 14/3/2019.
24-Jun-19	0.1	non-specified	0.004	0.006	0.001	0.233	0.135	0.006	
16-Sep-19	0.1	non-specified	0.003	0.006	0.001	0.089	0.008	0.008	
11-Dec-19	0.1	non-specified	0.004	0.009	0.002	0.053	0.018	0.015	
10-Mar-20	0.1	non-specified	0.002	0.005	0.001	0.207	0.016	0.010	
15-Jun-20	0.1	non-specified	0.004	0.007	0.001	0.093	0.028	0.008	SP3, SP5 and BL158 sampling conducted on 16/06/20.
10-Sep-20	0.1	non-specified	0.005	0.005	0.001	0.071	0.024	0.011	
16-Dec-20	0.1	non-specified	0.003	0.004	0.002	0.026	0.019	0.007	SP2, SP3 and SP5 sampling conducted on 17/12/2020
17-Mar-21	0.1	non-specified	0.006	0.005	0.004	0.03	0.031	0.011	
15-Jun-21	0.1	non-specified	0.005	0.008	0.001	0.031	0.019	0.010	
15-Sep-21	0.1	non-specified	0.001	0.01	0.001	0.031	0.022	0.010	SP2, SP3, SP4 and SP5 sampling conducted on 20/09/2021
14-Dec-21	0.1	non-specified	0.001	0.007	0.006	0.021	0.018	0.006	
16-Mar-22	0.1	non-specified	0.005	0.009	0.001	0.031	0.023	0.012	
20-Jun-22	0.1	non-specified	0.004	0.005	0.002	0.037	0.010	0.010	

Note: Shaded cells indicate values less than 0.001 (i.e. limit of detection). '<' removed to populate graph

Above nominated SWMP trigger level

FY 21/22 Statistics	EPA Point 1	EPA Point 2	EPA Point 3	EPA Point 4	EPA Point 5	EPA Point 6
Count	4	4	4	4	4	4
Min	0.001	0.005	0.001	0.021	0.010	0.006
Average	0.003	0.008	0.003	0.030	0.018	0.010
Max	0.005	0.010	0.006	0.037	0.023	0.012

Groundwater - Manganese (mg/L)



Note: No DFL Limit Specified

SWMP Trigger EPA Point 1 EPA Point 2 EPA Point 3 EPA Point 4 EPA Point 5 EPA Point 6

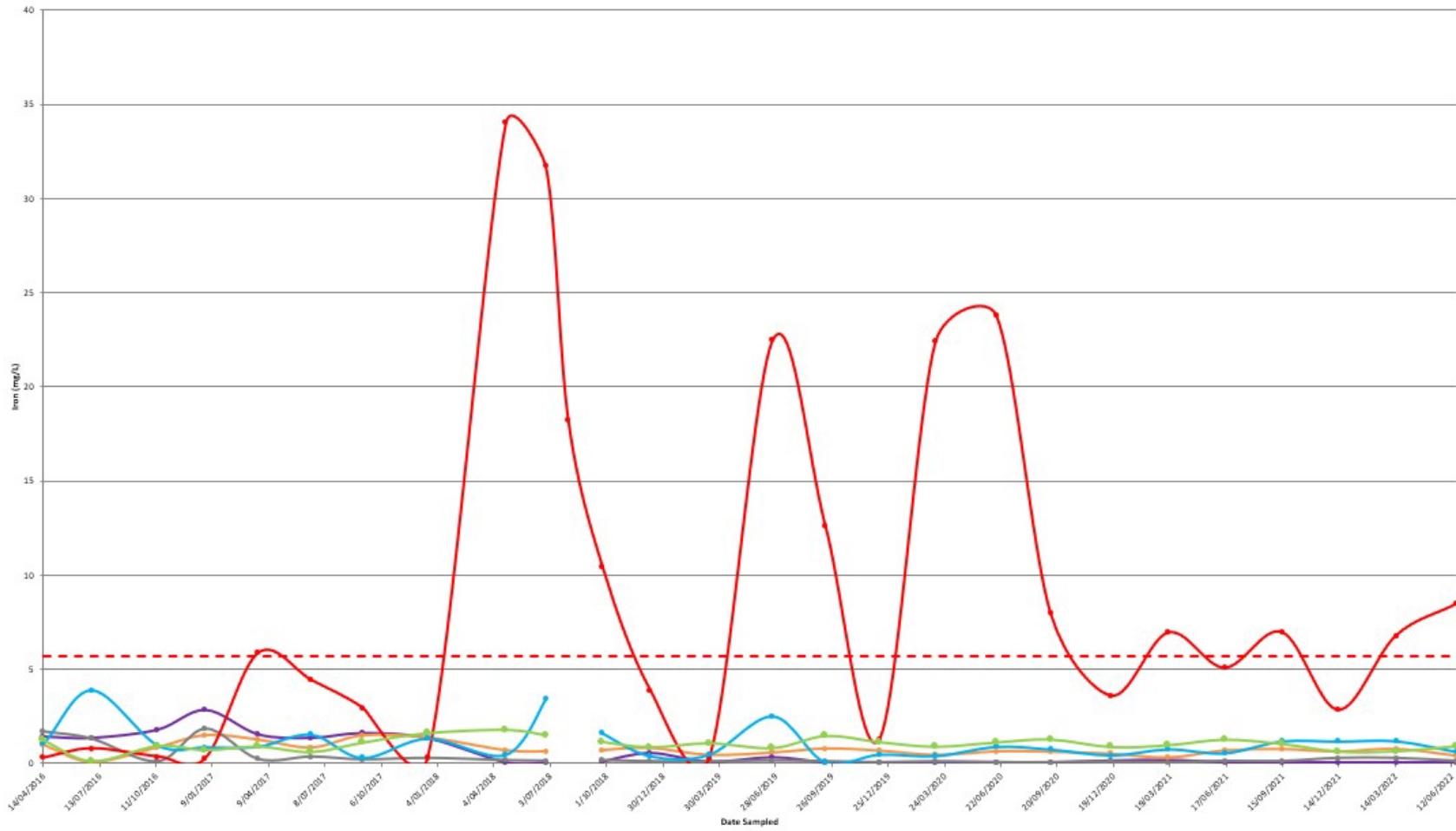
1646 - Macka's Sand

Quarterly Groundwater Monitoring

Sample Date	SWMP Trigger	EPL Limit	Iron (mg/L)						Comment
			EPA Point 1	EPA Point 2	EPA Point 3	EPA Point 4	EPA Point 5	EPA Point 6	
			SP1	SP2	SP3	SP4	SP5	BL158	
14-Apr-16	5.7	non-specified	1.43	0.98	1.71	0.29	1.03	1.23	
30-Jun-16	5.7	non-specified	1.36	0.10	1.32	0.79	3.89	0.11	
13-Oct-16	5.7	non-specified	1.80	0.85	0.09	0.36	0.97	0.93	
29-Dec-16	5.7	non-specified	2.86	1.49	1.86	0.28	0.86	0.71	
23-Mar-17	5.7	non-specified	1.55	1.25	0.22	5.86	0.89	0.90	
16-Jun-17	5.7	non-specified	1.36	0.84	0.35	4.42	1.53	0.60	
06-Sep-17	5.7	non-specified	1.62	1.47	0.20	2.95	0.29	1.11	
19-Dec-17	5.7	non-specified	1.35	1.36	0.28	0.29	1.32	1.62	
23-Apr-18	5.7	non-specified	0.05	0.70	0.16	34	0.46	1.80	
26-Jun-18	5.7	non-specified	0.05	0.64	0.13	31.7	3.40	1.51	
01-Aug-18	5.7	non-specified				18.2			Additional SP4 monitoring event due to standpipe replacement
25-Sep-18	5.7	non-specified	0.09	0.71	0.16	10.4	1.59	1.15	
10-Dec-18	5.7	non-specified	0.55	0.82	0.10	3.88	0.38	0.86	
14-Mar-19	5.7	non-specified	0.08	0.46	0.09	0.27	0.46	1.08	SP1 & SP5 monitoring undertaken on 15/3/19 due to access restrictions on 14/3/2019.
24-Jun-19	5.7	non-specified	0.32	0.58	0.14	22.5	2.50	0.82	
16-Sep-19	5.7	non-specified	0.05	0.79	0.10	12.6	0.05	1.47	
11-Dec-19	5.7	non-specified	0.05	0.68	0.05	1.26	0.47	1.14	
10-Mar-20	5.7	non-specified	0.07	0.46	0.09	22.4	0.39	0.89	
15-Jun-20	5.7	non-specified	0.06	0.64	0.05	23.8	0.88	1.12	SP3, SP5 and BL158 sampling conducted on 16/06/20.
10-Sep-20	5.7	non-specified	0.05	0.62	0.05	7.95	0.74	1.28	
16-Dec-20	5.7	non-specified	0.14	0.52	0.09	3.58	0.43	0.87	SP2, SP3 and SP5 sampling conducted on 17/12/2020
17-Mar-21	5.7	non-specified	0.18	0.32	0.05	6.94	0.75	0.97	
15-Jun-21	5.7	non-specified	0.05	0.69	0.12	5.07	0.54	1.27	
15-Sep-21	5.7	non-specified	0.05	0.76	0.11	6.96	1.17	1.04	SP2, SP3, SP4 and SP5 sampling conducted on 20/09/2021
14-Dec-21	5.7	non-specified	0.05	0.63	0.28	2.83	1.16	0.63	
16-Mar-22	5.7	non-specified	0.05	0.77	0.28	6.78	1.18	0.64	
20-Jun-22	5.7	non-specified	0.05	0.42	0.12	8.46	0.62	0.92	
Above nominated SWMP trigger level									

FY 21/22 Statistics	EPA Point 1	EPA Point 2	EPA Point 3	EPA Point 4	EPA Point 5	EPA Point 6
Count	3	3	3	3	3	3
Min	0.05	0.63	0.11	2.83	1.16	0.63
Average	0.05	0.72	0.22	5.52	1.17	0.77
Max	0.05	0.77	0.28	6.96	1.18	1.04

Groundwater - Iron (mg/L)



Note: No DFL Limit Specified

--- SWAMP Trigger — EPA Point 1 — EPA Point 2 — EPA Point 3 — EPA Point 4 — EPA Point 5 — EPA Point 6