



Maxwell Infrastructure
Environmental Monitoring Data
Quarter 2 2021

1 INTRODUCTION

Maxwell Infrastructure (formerly Drayton Mine) is owned by Malabar Resources. This report has been compiled to present environmental monitoring data for Maxwell Infrastructure in accordance with Schedule 5, Condition 11 (b) and (c) of Project Approval 06_0202.

This report covers the reporting period 1 April to 30 June 2021. Summaries of historic environmental monitoring data (prior to this report) can be found in the Annual Environmental Management Reports located on the Malabar Resources website.

2 MONITORING RESULTS

Deposited dust monitoring results are provided in **Table 1**.

Continuous TEOM PM₁₀ monitoring results are provided in **Figure 1**.

Surface water quality monitoring results are provided in **Table 2**.

Groundwater quality results are provided in **Table 3**.

Groundwater level results are provided in **Table 4**.

Noise monitoring results are provided in **Table 5**.

Locations of monitoring sites are shown in **Appendix 1 to 4**.

Table 1: Deposited dust monitoring results for Quarter 2.

Gauge	Insoluble Solids Result (g/m ² /month)			Annual Mean Limit (g/m ² /month)	Rolling Annual Average to end of June (g/m ² /month)
	April	May	June		
2175	1.5	1.6	1.5	4	2.0
2230	1.0	2.8	1.3	4	1.9
2235	0.9	1.9	1.5	4	1.8
2247	0.9	1.2	1.3	4	1.5

Comments: Deposited dust results in Q2 were significantly below the annual mean limit. The rolling annual average to the end of the reporting period recorded at all gauges remain significantly below the annual mean limit.

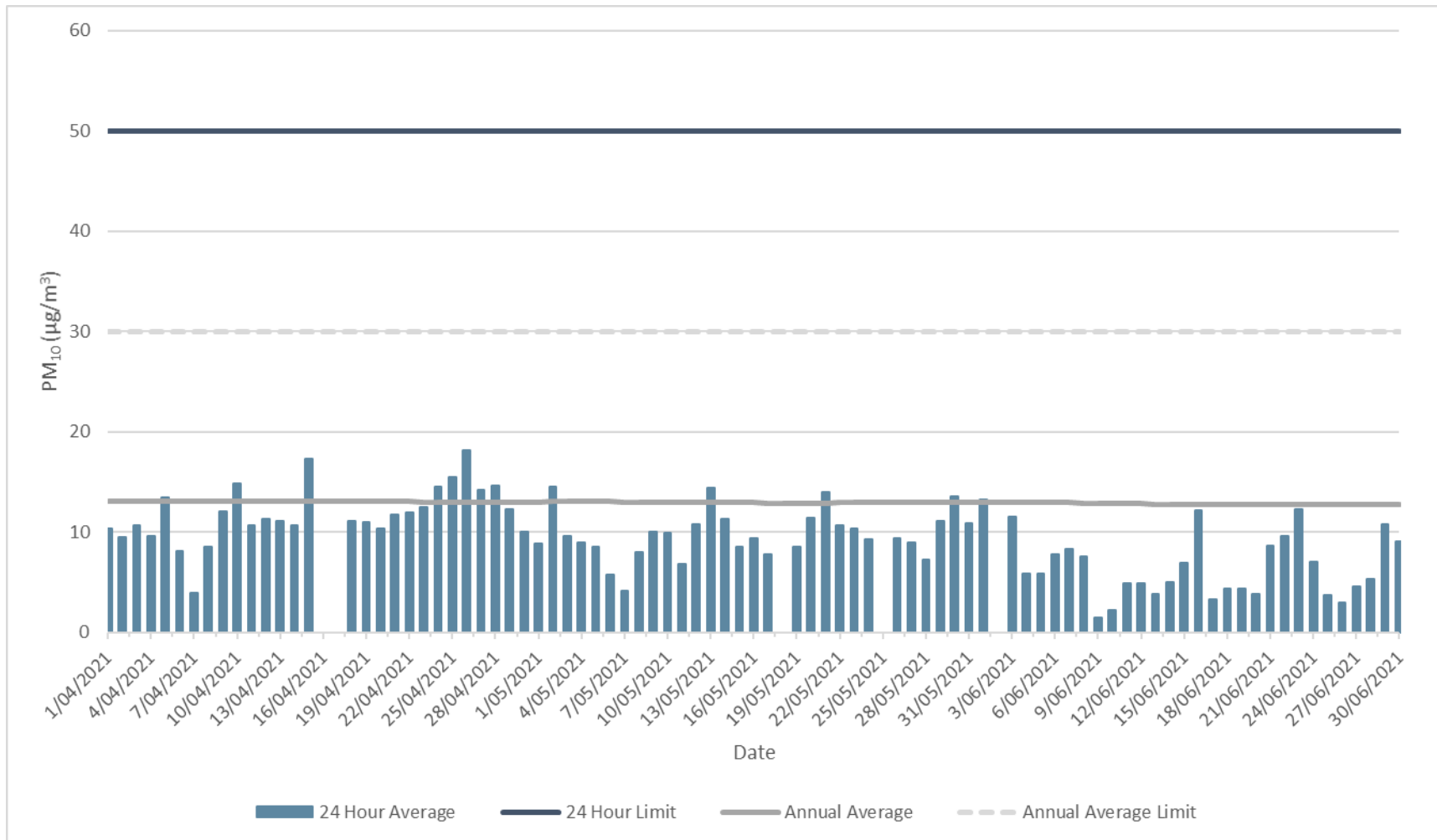


Figure 1: TEOM PM₁₀ monitoring results for Quarter 2.

Notes:

- From early March 2021, the monitoring equipment is a 1405-DF TEOM, which measures PM_{2.5} in addition to PM₁₀ (as required by the Development Consent for the Maxwell Underground Project).
- All 24-hour averages during Quarter 2 were below the 24-Hour Limit for PM₁₀. The results of the investigations into any exceedances are provided in the Maxwell Infrastructure Annual Environmental Management Report.
- The rolling annual average remained very low during 2021, which reflects lower recorded concentrations following the significant rainfall from December 2020 to March 2021. Levels are much lower than those experienced in 2019 and early 2020, which were predominantly due to regional dust storms and bush fires.
- On 16 & 17 April 2021 site-specific power failure to the monitoring equipment resulted in <75% valid data to calculate a 24-hour average. The issue was diagnosed as being likely due to an overload of the fuse at the connection with the power network. An electrician installed a higher amp fuse on 16 April, and the issue was deemed resolved.
- On 25 May 2021 a local power failure occurred as a result of works on the rail line by a third party. This resulted in <75% valid data to calculate a 24-hour average.
- On 18 May, the scheduled 6-monthly calibration of the TEOM resulted in <75% valid data to calculate a 24-hour average.
- On 2 June 2021, a suspected power outage occurred. This resulted in <75% valid data to calculate a 24-hour average.

Table 2. Surface water quality monitoring results for Quarter 2 (year to date average shown). See notes for further details.

Site	Month	Bicarbonate (CaCO ₃) (mg/L)	Calcium (mg/L)	Chloride (mg/L)	EC (µS/cm)	Magnesium (mg/L)	pH	Potassium (mg/L)	Sodium (mg/L)	Sulphate (SO ₄) (mg/L)	TSS (mg/L)	TDS (mg/L)
Access Rd Dam (2081)	Jun	131	538	924	8000	636	8.0	86.0	828	4500	5.0	8350
	Average	96	506	955	8355	623	8.3	78	786	3728	5.3	8105
DC2 Dam (2109)	Jun	52	49	229	1500	48	7.0	5.0	194	382	22.0	952
	Average	53	72	488	2948	105	6.8	6.0	407	775	45.3	2109
Rail Loop Dam (2114)	Jun	89	100	172	1640	76	7.8	7.0	170	550	5.0	850
	Average	102	94	154	1585	72	7.7	7.0	145	515	13.8	1057
Industrial Dam (1969)	Jun	123	248	442	4100	266	8.2	35.0	390	1890	16.0	3720
	Average	101	252	522	4538	287	8.3	38	402	1910	11.5	3930
OPC Dam	Jun	155	66	54	800	36	8.9	6.0	54	212	14.0	500
	Average	114	69	60	974	47	8.5	5.3	65	312	8.5	686
V Notch	Jun	399	442	1180	8680	380	7.7	14.0	1460	3760	5.0	7830
	Average	349	422	1296	9363	391	7.8	13	1458	3153	6.9	7339
ES Void	Jun	259	554	742	7010	547	8.0	75.0	629	3990	10.0	7270
	Average	245	539	793	7398	548	7.9	71.8	611	3423	11.0	7078

Notes:

The year-to-date value consists of the quarterly sample for the current quarter plus the three previous quarters, as per the Water Management Plan. The exception is for the V Notch dam, where samples are taken monthly as is required by the EPL.

Maxwell Infrastructure is a closed water management system with all water maintained on-site for use in operational activities.

Table 3: Groundwater quality monitoring results for Quarter 2 (year to date average shown). See notes for further details.

Site	Arsenic	Barium	Beryllium	Bicarbonate Alkalinity as	Boron	Cadmium	Calcium	Chloride	Chromium	Cobalt	Copper	Electrical conductivity	Lead	Magnesium	Manganese	Nickel	pH value
DS1	0.0010	0.012	0.0010	326	0.060	0.00020	492	820	0.0010	0.0060	0.0010	7160	0.0010	331	1.3	0.022	6.5
Average	0.0015	0.018	0.0010	309	0.073	0.00020	505	845	0.0013	0.0073	0.0015	7507	0.0013	322	1.6	0.022	6.5
R4241	0.0030	0.074	0.0010	678	0.16	0.00010	233	790	0.0040	0.014	0.015	4740	0.025	291	0.32	0.033	7.4
Average	0.0028	0.062	0.0010	650	0.18	0.00010	209	880	0.0033	0.0080	0.012	5080	0.020	296	0.31	0.020	7.1
F1162	Too low to sample																
F1164	0.0030	0.068	0.0010	677	0.14	0.00010	138	707	0.0030	0.0030	0.0050	4320	0.064	185	0.75	0.0060	6.9
Average	0.0030	0.068	0.0010	677	0.14	0.00010	138	707	0.0030	0.0030	0.0050	4320	0.064	185	0.75	0.0060	6.9
GW01D	0.0010	0.06	0.0010	590	0.31	0.00010	396	1150	0.0010	0.0070	0.0040	5270	0.0010	162	0.26	0.016	7.0
Average	0.0015	0.071	0.0010	580	0.33	0.00010	411	1210	0.0018	0.0073	0.0035	5523	0.0013	167	0.28	0.018	6.9
GW01S	0.025	1.4	0.011	356	0.21	0.0012	248	2580	0.20	0.14	0.22	8340	0.12	251	0.68	0.58	7.0
Average	0.018	1.1	0.0085	307	0.18	0.00095	210	2220	0.15	0.12	0.15	7720	0.081	211	0.60	0.44	7.0
GW02D	0.058	1.1	0.0060	1960	0.28	0.0011	68	969	0.072	0.057	0.17	10400	0.11	16	1.8	0.14	7.5
Average	0.031	0.52	0.0028	1678	0.26	0.00045	133	958	0.033	0.027	0.070	9930	0.047	120	1.2	0.068	7.3
GW02S	0.0010	0.033	0.0010	929	0.11	0.00010	392	879	0.0030	0.0020	0.0060	7140	0.0030	377	1.0	0.013	6.8
Average	0.0030	0.063	0.0010	1151	0.14	0.00015	301	887	0.0053	0.0038	0.0085	8038	0.0053	306	0.94	0.017	6.9

Table 3 continued

Site	Potassium	Selenium	Sodium	Sulfate as SO ₄ - Turbidimetric	Suspended Solids (SS)	Total Dissolved Solids @180°C	Vanadium	Zinc	Nitrite as N	Nitrate as N	Mercury	Ammonia as N	Total Kjeldahl Nitrogen as N	Total Nitrogen as N	Total Phosphorus as P	Reactive Phosphorus as P
DS1	22	0.010	984	3440	28	6570	0.010	0.026	0.010	0.010	0.00010	0.080	0.10	0.10	0.030	0.010
Average	22	0.010	990	3193	53	6228	0.010	0.030	0.010	0.020	0.00010	0.053	0.10	0.10	0.035	0.010
R4241	14	15	0.010	543	928	94	3510	0.010	0.18	0.030	0.020	0.00010	1.1	1.3	1.4	0.090
Average	14	14	0.010	540	972	88	3618	0.010	0.14	0.020	0.093	0.00010	0.94	1.3	1.4	0.13
F1162	Too low to sample															
F1164	24	0.010	612	685	90	2900	0.010	0.042	0.010	0.10	0.00010	33	37	37	1.5	0.010
Average	24	0.010	612	685	90	2900	0.010	0.042	0.010	0.10	0.00010	33	37	37	1.5	0.010
GW01D	33	0.010	554	610	80	3850	0.010	0.055	0.010	0.73	0.00010	0.56	0.60	1.3	0.040	0.010
Average	28	0.010	562	605	59	3760	0.010	0.078	0.010	0.44	0.00010	0.60	0.78	1.2	0.068	0.010
GW01S	25	0.37	1350	576	10100	6550	0.24	1.2	0.010	1.7	0.0011	0.24	18	19	4.3	0.010
Average	25	0.330	1225	520	8100	5415	0.18	0.87	0.010	2.1	0.0010	0.21	16	19	3.7	0.010
GW02D	21	0.020	2680	2920	4980	9010	0.13	0.56	0.020	0.040	0.00040	4.2	17	17	7.4	0.010
Average	22	0.013	2263	2800	1594	7773	0.058	0.25	0.023	0.045	0.00018	3.1	6.6	6.6	2.2	0.010
GW02S	20	0.010	988	2690	252	6420	0.010	0.029	0.010	0.020	0.00010	0.18	0.30	0.30	0.030	0.010
Average	20	0.010	1310	2578	728	6405	0.015	0.053	0.010	0.043	0.00010	0.95	1.7	1.7	0.43	0.010

Notes:

Q2 2021 year to date average includes samples taken on: 24/9/20, 1/2/21, 1/4/21 and 24/6/21. The exception is for DS1 for which monthly samples are taken as per the EPL for EC, pH and TDS, and hence the average presented is the average of all samples taken during each of the past 12 months for those variables.

Note for the year-to-date average: Due to electrical storms in December 2020 and heavy rain in January 2021, both of which presented a safety risk, the sampling scheduled for December was postponed and conducted in early February.

March 2021 was the scheduled month for Q1 2021 sampling, however the values presented are for samples taken on 1 April 2021, due to delays in sampling as a result of the heavy rainfall in March 2021 which resulted in safety restrictions to sampling sites.

F1164 was too low to sample until the Q2 2021 sampling date (24 June 2021) hence the year-to-date average is an average of one sample.

GW01S was too low to sample until the Q1 2021 sampling date (1 April 2021) hence the year-to-date average to Q2 2021 is an average of two samples.

All results are in mg/L except Conductivity ($\mu\text{S}/\text{cm}$) and pH (in pH units).

Table 4. Reduced standing groundwater levels (mAHD) for Quarter 2 compared to the year-to-date average

Site	June 2021	Year to date average
DS1	223.56	223.31
R4241	175.16	175.31
F1162	133.59	131.53
F1164	131.89	130.57
GW01D	200.10	199.36
GW01S	197.45	197.60
GW02D	136.28	136.48
GW02S	190.15	190.00

1. The sampling sheet for March 2021 recorded a depth to water value of ">100m" for bore F1164, which whilst not incorrect, is of insufficient precision to be included in the year-to-date average. The reason was that a 100m measuring tape was used by the sampling contractor which was of insufficient length for a bore of >100m. This measurement has been excluded from the year-to-date average.

Table 5. Noise monitoring results for Quarter 2

Sampling point	Day (LA eq (15 minute))		Evening (LA eq (15 minute))		Night (LA eq (15 minute))		Night (LA1 (1 minute))		Exceedance (yes/no)	Observations
	Criteria	Noise Level	Criteria	Noise Level	Criteria	Noise Level	Criteria	Noise Level		
R12	36	-	36	-	36	-	47	-	No	
R13	36	-	36	-	35	-	45	-	No	
R14	40	-	39	-	38	-	47	-	No	
R16*	41	-	41	-	39	-	47	-	No	
R17	37	-	38	-	36	-	47	-	No	
R18	38	-	39	-	38	-	47	-	No	
R19	40	-	40	-	39	-	47	-	No	
R20	39	-	40	-	39	-	45	-	No	
R21	38	-	38	-	38	-	45	-	No	
R22	38	-	38	-	38	-	45	-	No	
R23	35	-	35	-	35	-	47	-	No	
R25	36	-	37	-	37	-	47	-	No	
R26	36	-	37	-	38	-	47	-	No	
R27	36	-	37	-	39	-	47	-	No	
R28	35	-	37	-	40	-	47	-	No	
R29	35	-	35	-	36	-	47	-	No	
R31	35	-	35	-	37	-	47	-	No	
R32	35	-	35	-	40	-	47	-	No	
R33	35	-	35	-	38	-	45	-	No	
R34	35	-	35	-	36	-	45	-	No	
R35	35	-	35	-	35	-	45	-	No	

R37	35	-	35	-	35	-	45	-	No	
R42	35	-	35	-	35	-	45	-	No	
R61*	39	-	40	-	39	-	45	-	No	
R69	35	-	37	-	41	-	47	-	No	
R70	35	-	36	-	41	-	47	-	No	
R71	35	-	35	-	41	-	47	-	No	
R72*	36	-	37	-	42	-	47	-	No	
R75*	35	-	35	-	41	-	47	-	No	
R76*	35	-	36	-	42	-	47	-	No	
R86	35	-	35	-	38	-	45	-	No	
All Other Privately-Owned Land	35	-	35	-	35	-	45	-	No	
Additional Information										
Date of Final Report	n/a									
Date Sampled	n/a									
Weather Conditions	n/a									
Notes	<p>Attended noise monitoring is conducted 6-monthly in March and September, therefore no results are available for Quarter 2 2020.</p> <p>* Measured: R16 (Doherty), R35 (Wilson), R61 (Skinner), R72 (Robertson), R75 (Shaman), and R76 (Holder). The noise levels at all other locations are determined by noise modelling or extrapolation.</p>									

APPENDIX 1 – AIR QUALITY MONITORING LOCATIONS



APPENDIX 2 – BLAST MONITORING LOCATIONS



APPENDIX 3 – SURFACE & GROUNDWATER MONITORING LOCATIONS



APPENDIX 4 – NOISE MONITORING LOCATIONS

