



Maxwell Infrastructure
Environmental Monitoring Data
Quarter 1 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 January to 31 March 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 1.

Gauge	Insoluble Solids Result (g/m ² /month)			Annual Mean Limit (g/m ² /month)	Annual Mean to end of March (g/m ² /month)
	January	February	March		
2175	1.9	2.1	1.9	4	2.0
2230	2.5	1.5	1.9	4	1.9
2235	1.7	1.6	2.2	4	1.8
2247	1.4	1.2	1.4	4	1.6

Comments: Deposited dust results in Q1 were well below the annual mean limit. The year-to-date mean of results recorded at all gauges remain significantly below the annual mean limit.

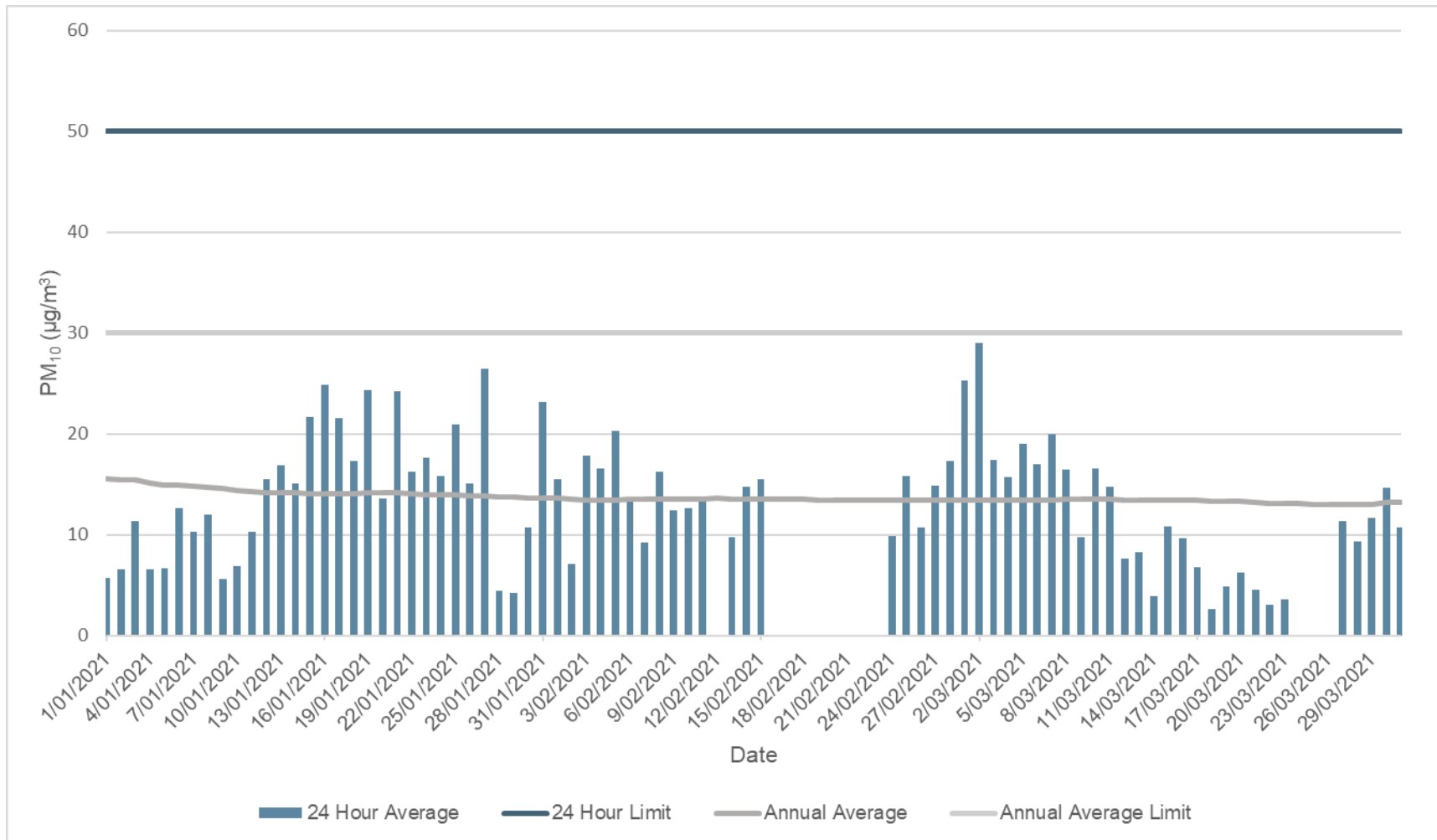


Figure 1: TEOM PM₁₀ monitoring results for Quarter 1.

Notes:

- All 24-hour averages during Quarter 1 were below the 24-Hour Limit. The results of the investigations into any exceedances are provided in Maxwell Infrastructure's Annual Environmental Management Report.
- The rolling annual average trended downwards from early 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 12 February and 24–26 March 2021 power failures to the monitoring site 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 amperage fuse on 16 April, and the issue is now deemed resolved.
- From 16–23 February the equipment was taken offline to enable swapping with the TEOM located at the Spur Hill monitoring site (near Denman). This enables the measurement of PM_{2.5} in addition to PM₁₀ as required by the Development Consent for the Maxwell Underground Project.

Table 2. Surface water quality monitoring results for Quarter 1 (year to date average shown)

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)	Mar	76	404	707	6580	492	8.1	60	608	2770	6.0	5980
	Average	88	526	1019	8448	662	8.5	81	814	3883	5.3	8338
DC2 Dam (2109)	Mar	39	33	170	1130	39	6.9	6.0	144	282	30	714
	Average	49	74	532	3125	113	6.7	6.3	439	836	41	2269
Rail Loop Dam (2114)	Mar	98	80	102	1250	62	7.8	6.0	106	420	9.0	846
	Average	102	89	140	1503	67	7.7	6.3	131	495	14	1068
Industrial Dam (1969)	Mar	72	159	332	3110	191	8.8	30	259	928	10	2440
	Average	97	280	604	4925	335	8.3	42	454	2197	9.0	4393
OPC Dam	Mar	138	83	76	1160	63	8.7	5.0	85	377	5.0	819
	Average	99	72	66	1057	52	8.4	5.8	71	361	6.3	771
V Notch	Mar	324	372	939	7220	305	7.6	11	1030	2520	9.0	5790
	Average	337	427	1260	8605	381	7.9	16	1403	3990	5.3	7735
ES Void	Mar	226	555	742	7390	574	8.0	72	624	3260	5.0	6970
	Average	241	535	817	7250	551	7.9	72	605	3373	9.8	7020

Notes:

As previously reported the February 2020 revision of the Water Management Plan (approved 19 February 2020) included a reduction in the frequency of surface water monitoring from monthly to quarterly.

March 2021 was the scheduled month for sampling, however the values presented for Q1 2021 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.

The year-to-date value consists of quarterly samples taken from 1 April 2020 as per the revised 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 1 (year to date average shown). See notes for further details.

Site	Arsenic	Barium	Beryllium	Bicarbonate Alkalinity as CaCO ₃	Boron	Cadmium	Calcium	Chloride	Chromium	Cobalt	Copper	Electrical conductivity	Lead	Magnesium	Manganese	Nickel	pH value
DS1	0.0020	0.018	0.0010	305	0.085	0.00020	519	839	0.0015	0.0070	0.0015	7630	0.0015	332	1.5	0.021	6.5
Average	0.0015	0.017	0.0010	303	0.073	0.00020	508	847	0.0015	0.0075	0.0015	7476	0.0013	316	1.7	0.022	6.5
R4241	0.0030	0.048	0.0010	641	0.20	0.00010	226	964	0.0010	0.012	0.0040	5490	0.0090	342	0.55	0.018	7.1
Average	0.0025	0.055	0.0010	669	0.17	0.00010	194	880	0.0035	0.0060	0.0088	4950	0.015	286	0.26	0.018	7.0
F1162	Too low to sample																
F1164	Too low to sample																
GW01D	0.0010	0.062	0.0010	612	0.35	0.00010	428	1180	0.0020	0.0070	0.0020	5540	0.0010	170	0.28	0.014	7.0
Average	0.0015	0.071	0.0010	575	0.33	0.00010	415	1238	0.0018	0.0073	0.0028	5418	0.0013	168	0.28	0.018	6.9
GW01S	0.0110	0.78	0.0060	257	0.15	0.00070	172	1860	0.095	0.098	0.087	7100	0.044	170	0.52	0.31	7.0
Average	0.0110	0.78	0.0060	257	0.15	0.00070	172	1860	0.095	0.098	0.087	7100	0.044	170	0.52	0.31	7.0
GW02D	0.019	0.37	0.0020	2430	0.28	0.00020	37	968	0.020	0.014	0.040	10300	0.024	10	0.51	0.040	7.5
Average	0.018	0.30	0.0015	1570	0.25	0.00020	127	902	0.016	0.014	0.030	9215	0.021	119	0.76	0.037	7.2
GW02S	0.0050	0.16	0.0010	939	0.14	0.00030	405	852	0.015	0.0050	0.024	7410	0.015	391	1.1	0.026	6.8
Average	0.0030	0.064	0.0010	1143	0.15	0.00015	309	927	0.0050	0.0048	0.0073	8168	0.0048	341	0.84	0.018	6.9

Table 3 continued

Site	Potassium	Selenium	Sodium	Sulfate as SO4 - 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	23	0.010	1003	2995	49	6395	0.010	0.032	0.010	0.030	0.00010	0.060	0.10	0.10	0.040	0.010
Average	22	0.010	989	3165	86	6215	0.010	0.030	0.010	0.020	0.00010	0.063	0.13	0.13	0.045	0.013
R4241	14	0.010	598	896	40	3900	0.010	0.078	0.010	0.020	0.00010	1.0	1.0	1.0	0.060	0.010
Average	14	0.010	522	972	75	3503	0.010	0.12	0.015	0.30	0.00010	0.87	1.3	1.6	0.16	0.010
F1162	Too low to sample															
F1164	Too low to sample															
GW01D	33	0.010	556	580	13	3560	0.010	0.061	0.010	0.42	0.00010	0.88	0.90	1.3	0.090	0.010
Average	25	0.010	560	605	52	3745	0.010	0.080	0.010	0.31	0.00010	0.61	0.78	1.1	0.060	0.010
GW01S	25	0.29	1100	463	6100	4280	0.12	0.58	0.010	2.6	0.00090	0.17	15	18	3.1	0.010
Average	25	0.29	1100	463	6100	4280	0.12	0.58	0.010	2.6	0.00090	0.17	15	18	3.1	0.010
GW02D	20	0.010	2630	2320	439	7540	0.040	0.15	0.010	0.080	0.00010	4.0	5.0	5.1	1.1	0.010
Average	21	0.010	2125	2638	709	6973	0.028	0.12	0.043	0.065	0.00010	3.1	4.5	4.6	1.1	0.010
GW02S	20	0.010	1000	2470	289	6040	0.030	0.14	0.010	0.010	0.00010	0.28	1.0	1.0	0.46	0.010
Average	24	0.010	1353	2783	889	6705	0.015	0.050	0.010	0.043	0.00013	0.92	1.7	1.7	0.43	0.010

Notes:

Note for the year-to-date average: Due to electrical storms in December and heavy rain in January, 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.

Averages shown are for the year-to-date to 1 April 2021, however given that monitoring only commenced in June 2020, this is an average of samples taken from June onwards. The exception is for DS1 for which monthly samples are taken as per the EPL, and hence the average presented is the average of all samples taken during each month of 2020.

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

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 1 compared to the year-to-date average

Site	March 2021	Year to date average
DS1	223.30	223.26
R4241	176.01	175.13
F1162	132.63	131.46
F1164	120.80 ⁽¹⁾	125.03
GW01D	199.93	198.91
GW01S	198.52	197.50
GW02D	136.44	138.95
GW02S	191.03	189.43

1. The sampling sheet recorded a depth to water value of ">100m", 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 will be excluded in the next quarter from the year-to-date average.

Table 5. Noise monitoring results for Quarter 1

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	<20	36	<20	36	<20	47	<20	No	
R13	36	<20	36	<20	35	<20	45	<20	No	
R14	40	<20	39	<20	38	<20	47	<20	No	
R16*	41	<20	41	<20	39	<20	47	<20	No	
R17	37	<20	38	<20	36	<20	47	<20	No	
R18	38	<20	39	<20	38	<20	47	<20	No	
R19	40	<20	40	<20	39	<20	47	<20	No	
R20	39	<20	40	<20	39	<20	45	<20	No	
R21	38	<20	38	<20	38	<20	45	<20	No	
R22	38	<20	38	<20	38	<20	45	<20	No	
R23	35	<20	35	<20	35	<20	47	<20	No	
R25	36	<20	37	<20	37	<20	47	<20	No	
R26	36	<20	37	<20	38	<20	47	<20	No	
R27	36	<20	37	<20	39	<20	47	<20	No	
R28	35	<20	37	<20	40	<20	47	<20	No	
R29	35	<20	35	<20	36	<20	47	<20	No	
R31	35	<20	35	<20	37	<20	47	<20	No	
R32	35	<20	35	<20	40	<20	47	<20	No	
R33	35	<20	35	<20	38	<20	45	<20	No	
R34	35	<20	35	<20	36	<20	45	<20	No	
R35	35	<20	35	<20	35	<20	45	<20	No	

R37	35	<20	35	<20	35	<20	45	<20	No	
R42	35	<20	35	<20	35	<20	45	<20	No	
R61*	39	<20	40	<20	39	<20	45	<20	No	
R69	35	<20	37	<20	41	<20	47	<20	No	
R70	35	<20	36	<20	41	<20	47	<20	No	
R71	35	<20	35	<20	41	<20	47	<20	No	
R72*	36	<20	37	<20	42	<20	47	<20	No	
R75*	35	<20	35	<20	41	<20	47	<20	No	
R76*	35	<20	36	<20	42	<20	47	<20	No	
R86	35	<20	35	<20	38	<20	45	<20	No	
All Other Privately-Owned Land	35	<20	35	<20	35	<20	45	<20	No	
Additional Information										
Date of Final Report	7 April 2021									
Date Sampled	30 March 2021									
Weather Conditions	Night: wind 2.4 m/s, 115–146 degrees from north; 0.2mm rain at 14:05 hrs									
Notes	<p>Attended noise monitoring is conducted 6-monthly in March and September.</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 2 – BLAST MONITORING LOCATIONS



APPENDIX 3 – SURFACE & GROUNDWATER MONITORING LOCATIONS



APPENDIX 4 – NOISE MONITORING LOCATIONS

