Maxwell Infrastructure
Environmental Monitoring Data
Quarter 2 2019

1 INTRODUCTION

Maxwell Infrastructure (formerly Drayton Mine) is owned by Malabar Coal. 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 2019. Summaries of historic environmental monitoring data (prior to 2019) can be found in the Annual Environmental Management Reports located on the Malabar Coal website.

2 MONITORING RESULTS

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

Continuous TEOM PM_{10} 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**.

Table 1: Depositional dust monitoring results for Quarter 2.

Gauge	Insoluble Solids Result (g/m^2/month)			Annual Mean (YTD) (g/m^2/month)	Annual Mean Limit (g/m^2/month)
	April	May	June		
2175	2.1	2.0	2.3	2.6	4.0
2230	1.9	1.8	1.8	2.4	4.0
2235	2.7	2.2	1.9	2.9	4.0
2247	2.3	2.0	2.1	2.3	4.0

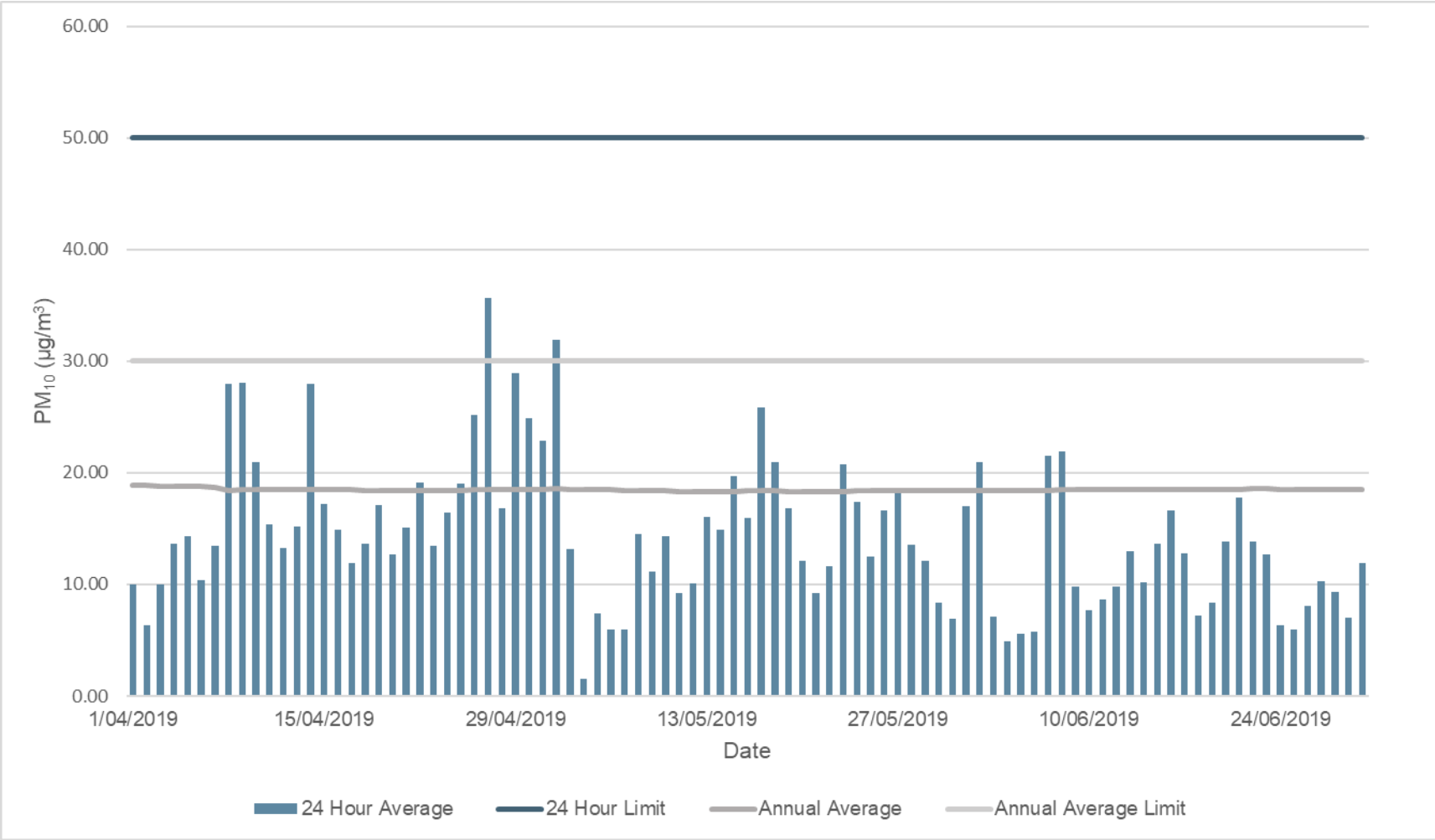

Figure 1: TEOM PM_{10} monitoring results for Quarter 2.

Notes:

On 20 May 2019 an invalid 24-hour average PM_{10} result was recorded due to an instrument malfunction. Valid 1-hour average results were recorded for 88 percent of this day. These were utilised to calculate a valid 24-hour average PM_{10} result.

On 5 June 2019 an invalid 24-hour average PM_{10} result was recorded due to an instrument calibration. Valid 1-hour average results were recorded for 83 percent of this day. These were utilised to calculate a valid 24-hour average PM_{10} result.

Table 2: Surface water quality monitoring results for Quarter 2.

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)
Antiene Dam (2221)	Apr	-	-	-	-	-	-	-	-	-	-	-
	May	1	205	220	3550	158	3.0	35	194	1950	13	2800
	Jun	-	-	-	-	-	-	-	-	-	-	-
	Average	**1**	**205**	**220**	**3550**	**158**	**3.0**	**35**	**194**	**1950**	**13**	**2800**
Access Rd Dam* (2081)	Apr	120	593	949	9020	711	7.8	89	860	4480	6	9050
	May	115	601	987	9750	743	7.8	94	897	4730	10	9300
	Jun	111	617	958	9630	717	8.0	95	877	4240	16	7480
	Average	**111**	**597**	**998**	**9505**	**716**	**7.9**	**93**	**876**	**4673**	**8**	**8920**
DC2 Dam* (2109)	Apr	166	105	766	4710	176	7.9	10	728	1300	8	3400
	May	252	127	938	6230	228	7.8	12	941	1760	28	4660
	Jun	224	135	951	6540	230	7.9	15	981	1540	8	3750
	Average	**222**	**153**	**1081**	**6938**	**257**	**7.7**	**13**	**1052**	**1832**	**15**	**4765**
Rail Loop Dam* (2114)	Apr	110	108	175	1670	82	8.0	9	189	479	7	1300
	May	155	108	226	2120	94	8.2	10	216	576	14	1530
	Jun	139	114	224	2260	103	8.2	11	234	591	5	1430
	Average	**128**	**120**	**227**	**2233**	**103**	**8.1**	**11**	**221**	**685**	**11**	**1632**
Far East Tip* (1895)	Apr	-	-	-	-	-	-	-	-	-	-	-
	May	-	-	-	-	-	-	-	-	-	-	-
	Jun	-	-	-	-	-	-	-	-	-	-	-
	Average	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

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)
Savoy Dam* (1609)	Apr	74	635	1530	13400	1320	8.5	188	1460	7020	10	14200
	May	154	637	1650	15700	1480	7.9	198	1570	7610	14	16300
	Jun	141	645	1740	15900	1500	8.3	203	1620	6860	19	13600
	Average	**95**	**700**	**1860**	**15320**	**1480**	**8.3**	**198**	**1572**	**7826**	**15**	**15460**
SW 13	Apr	252	550	724	7520	567	8.0	68	702	3600	13	6120
	May	214	490	720	7620	504	8.1	56	610	3650	30	6710
	Jun	-	-	-	-	-	-	-	-	-	-	-
	Average	**219**	**518**	**697**	**7533**	**526**	**8.0**	**61**	**636**	**3603**	**15**	**6535**
Industrial Dam* (1969)	Apr	60	389	704	6560	479	8.2	57	640	3070	6	6240
	May	92	390	756	7120	486	8.2	57	657	3410	16	6260
	Jun	72	394	705	7140	469	8.5	60	635	2940	5	5140
	Average	**80**	**392**	**735**	**7013**	**475**	**8.1**	**57**	**654**	**3232**	**16**	**5975**
OPC Dam*	Apr	158	587	954	9050	709	8.4	86	881	4460	16	9110
	May	121	576	956	9490	722	8.8	86	863	4540	31	8790
	Jun	127	469	770	7870	553	7.9	72	694	3370	5	5790
	Average	**139**	**524**	**886**	**8583**	**632**	**8.4**	**79**	**789**	**3882**	**20**	**7855**
V Notch*	Apr	415	568	2520	14900	694	8.0	25	2740	5710	5	13000
	May	472	578	1930	15900	706	7.9	23	2660	5760	8	14300
	Jun	314	512	1600	13100	530	8.1	24	2040	4640	5	9240
	Average	**368**	**497**	**2728**	**16500**	**723**	**8.1**	**27**	**2893**	**6102**	**7**	**13390**

Notes:

Site 2221 (Antiene Dam) was too low to sample in April and June 2019.

Site 1895 (Far East Tip) was not accessible in the reporting period.

Site SW13 was not accessible in June 2019.

Average is the year-to-date mean for 2019 (January – June 2019).

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

* Indicates mine water storage.

Table 3: Groundwater quality monitoring results for Quarter 2.

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)	TDS (mg/L)	TSS (mg/L)
DS1	Apr	244	525	856	7510	311	6.93	22	1030	3460	6780	296
	May	278	521	793	8030	320	6.75	22	1060	3630	6720	471
	Jun	262	515	873	8060	318	6.92	22	1060	3310	5960	385
	Average	**261.3**	**520.3**	**840.7**	**7866.7**	**316.3**	**6.93**	**22**	**1050**	**3466.7**	**6486.7**	**384**
DS2	-	-	-	-	-	-	-	-	-	-	-	-
DS3	-	-	-	-	-	-	-	-	-	-	-	-
R4241	-	-	-	-	-	-	-	-	-	-	-	-
F1162	-	-	-	-	-	-	-	-	-	-	-	-
F1167	-	-	-	-	-	-	-	-	-	-	-	-
F1024	-	-	-	-	-	-	-	-	-	-	-	-
F1164	-	-	-	-	-	-	-	-	-	-	-	-
F1163	-	-	-	-	-	-	-	-	-	-	-	-
F1168	-	-	-	-	-	-	-	-	-	-	-	-
W1102	-	-	-	-	-	-	-	-	-	-	-	-

Table 4. Reduced standing groundwater levels (mAHD)

Site	Apr	May	Jun	Average (YTD)
DS1	223.54	223.63	223.48	223.47
DS2	238.6	238.86	239	238.64
DS3	234.94	235.55	235.64	235.64
R4241	174.93	174.97	175.02	174.80
F1162	121.28	121.28	121.3	121.29
F1167	-	-	-	
F1024	-	-	-	
F1164	119.27	119.26	119.26	119.27
F1163	-	-	-	-
F1168	-	-	-	-
W1102	-	-	-	-

Notes:

Water quality is analysed monthly at DS1 and twice annually at other monitoring sites.

Sites W1102 and F1163 were not accessible in the reporting period.

Site F1168 was unable to be sampled in the reporting period as it was blocked.

Sites F1167 and F1024 were dry in the reporting period.

Sites F1162 and F1164 had insufficient water to collect a sample for water quality analysis in the reporting period.

Average is the year-to-date mean for 2019 (January – June 2019).

Table 5. Noise monitoring results for Quarter 2

Sampling point	Period	$L_{Aeq\ (15\ min)}$				$L_{A1\ (1\ min)}$		Exceedance (yes/no)	Observations
		Evening Criteria	Noise Level	Night Criteria	Noise Level	Night Criteria	Noise Level[#]		
R12	15 mins	35	-	39	-	47	-	-	
R13	15 mins	35	-	36	-	45	-	-	
R14	15 mins	35	-	37	-	47	-	-	
R16*	15 mins	35	-	38	-	47	-	-	
R17	15 mins	35	-	38	-	47	-	-	
R18	15 mins	35	-	40	-	47	-	-	
R19	15 mins	35	-	41	-	47	-	-	
R20	15 mins	35	-	41	-	45	-	-	
R21	15 mins	36	-	41	-	45	-	-	
R22	15 mins	36	-	42	-	45	-	-	
R23	15 mins	37	-	40	-	47	-	-	
R25	15 mins	37	-	41	-	47	-	-	
R26	15 mins	36	-	35	-	47	-	-	
R27	15 mins	36	-	36	-	47	-	-	
R28	15 mins	37	-	37	-	47	-	-	
R29	15 mins	37	-	38	-	47	-	-	
R31	15 mins	37	-	39	-	47	-	-	
R32	15 mins	37	-	42	-	47	-	-	
R33	15 mins	38	-	36	-	45	-	-	
R34	15 mins	38	-	38	-	45	-	-	

R35	15 mins	38	-	38	-	45	-	-	
R37	15 mins	39	-	38	-	45	-	-	
R42	15 mins	40	-	39	-	45	-	-	
R61*	15 mins	40	-	39	-	45	-	-	
R69	15 mins	39	-	39	-	47	-	-	
R70	15 mins	40	-	39	-	47	-	-	
R71	15 mins	41	-	39	-	47	-	-	
R72*	15 mins	35	-	35	-	47	-	-	
R75*	15 mins	35	-	35	-	47	-	-	
R76*	15 mins	35	-	35	-	47	-	-	
R86	15 mins	35	-	35	-	45	-	-	
All Other Privately-Owned Land	15 mins	35	-	35	-	45	-	-	

Additional Information	
Date of Final Report	N/A
Date Sampled	N/A
Weather Conditions	N/A
Notes	Noise monitoring is conducted 6-monthly in March and September; therefore, no results are provided for Quarter 2 2019. * 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.

APPENDIX 1 – MONITORING LOCATIONS