



Maxwell Infrastructure  
Environmental Monitoring Data  
Quarter 4 2018

## **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 of October to December 2018. Summaries of historic environmental monitoring data (prior to 2018) can be found in the Annual Environmental Management Reports located on the Malabar Coal website.

## **2. Monitoring Results**

Depositional dust monitoring results are provided in Table 1.

High volume air sampler monitoring results are provided in Table 2.

Continuous TEOM PM<sub>10</sub> monitoring results are provided in Figure 1.

Surface water quality monitoring results are provided in Table 3.

Noise monitoring results are provided in Table 4.

**Table 1: Depositional dust monitoring results for Quarter 4.**

Air Quality Monitoring – Depositional Dust					
Gauge	Insoluble Solids Result (g/m <sup>2</sup> /month)			Annual Mean (YTD) (g/m <sup>2</sup> /month)	Annual Mean Limit (g/m <sup>2</sup> /month)
	October	November	December		
2197	2.7	-	-	-	4.0
2230	1.4	3.3	2.7	2.4	4.0
2157	1.9	-	-	-	4.0
2208	1.2	-	-	-	4.0
2247	1.6	2.4	3.2	2.4	4.0
2235	1.5	2.9	3.7	2.4	4.0
2175	1.3	2.2	3.5	2.1	4.0
2130	1.0	-	-	-	4.0

**Notes:**

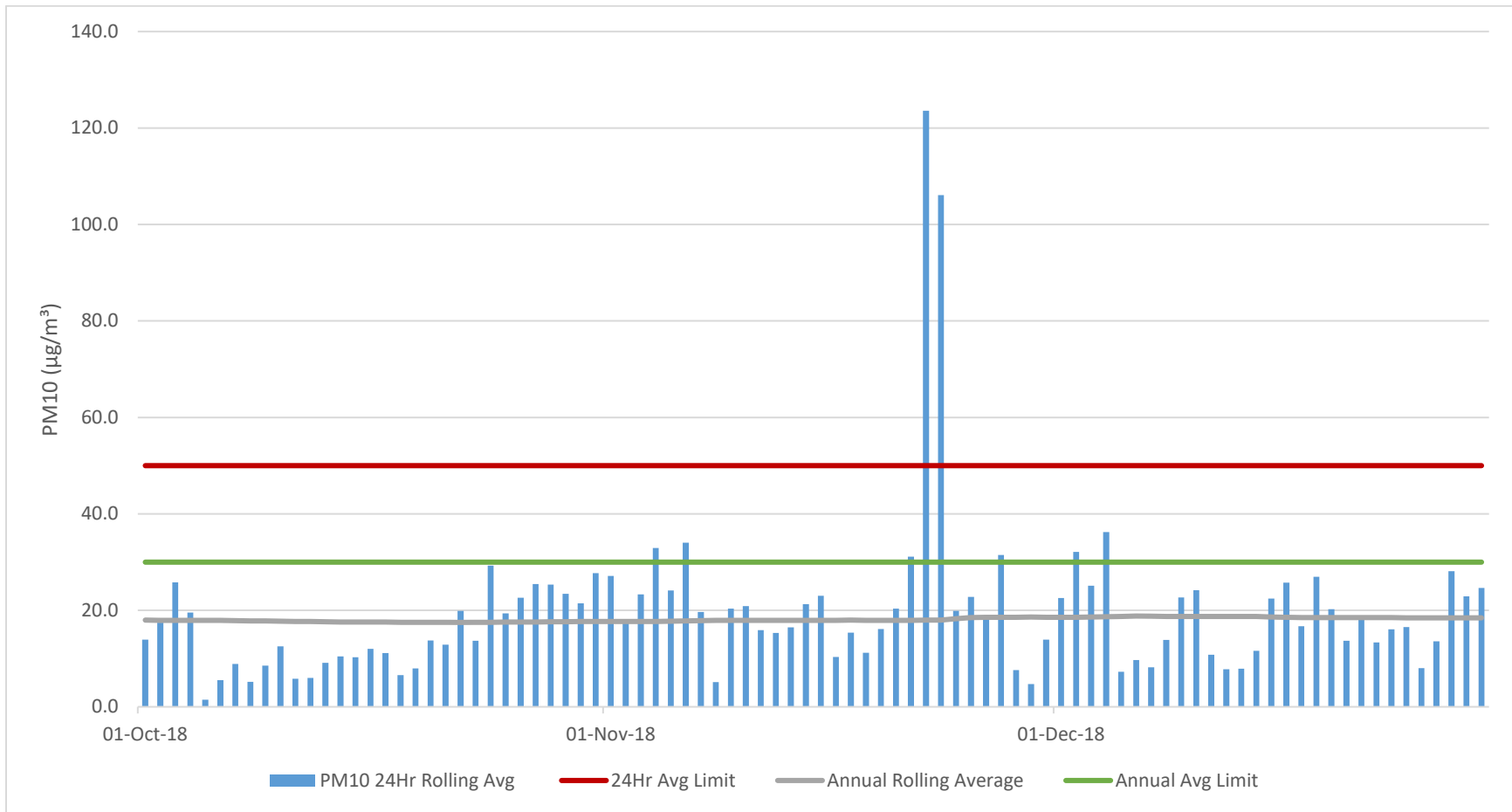
Depositional dust sites 2197, 2157, 2208 and 2130 were decommissioned following the approval and implementation of a revised Air Quality and Greenhouse Gas Management Plan on 10 October 2018.

**Table 2: Total suspended particulates – High volume air sampler (HVAS) results for Quarter 4.**

Air Quality Monitoring – Total Suspended Particulates (TSP)			
Date	TSP Result	Annual Mean (12 month Rolling Average)	Annual Mean Limit
06-Jul-18	65	71.9	90 (12 month rolling average)
12-Jul-18	66	72.5	
18-Jul-18	128	74.1	
24-Jul-18	248	77.8	
30-Jul-18	210	81.1	
05-Aug-18	164	83.3	
11-Aug-18	108	84.4	
17-Aug-18	116	85.2	
23-Aug-18	134	86.4	
29-Aug-18	72	86.5	
04-Sep-18	33	85.7	
10-Sep-18	67	86.2	
16-Sep-18	178	88.1	
22-Sep-18	136	89.1	
28-Sep-18	68	89.1	
04-Oct-18	98	89.9	

**Notes:**

The high volume air sampler was decommissioned following the approval and implementation of a revised Air Quality and Greenhouse Gas Management Plan on 10 October 2018



**Figure 1: TEOM PM<sub>10</sub> monitoring results for Quarter 4.**

**Notes:**

On 7 December 2018 an invalid 24-hour average PM<sub>10</sub> result was recorded due to an annual calibration. Valid 1-hour average results were recorded for 79% of this day. These were utilised to calculate a valid 24-hour average PM<sub>10</sub> result.

On 8 December 2018 an invalid 24-hour average PM<sub>10</sub> result was recorded due to an annual calibration. Valid 1-hour average results were recorded for 79% of this day. These were utilised to calculate a valid 24-hour average PM<sub>10</sub> result.

On 20 December 2018 an invalid 24-hour average PM<sub>10</sub> result was recorded due to an instrument malfunction. Valid 1-hour average results were recorded for 88% of this day. These were utilised to calculate a valid 24-hour average PM<sub>10</sub> result.

Elevated 24-hour average PM<sub>10</sub> results of 123.61 µg/m<sup>3</sup> and 106.06 µg/m<sup>3</sup> on Thursday 22 November 2018 and Friday 23 November 2018 respectively. This monitor is located to the north east of the operation. Wind direction during the 48-hour period was predominantly from the north west. This monitor was not located downwind of Maxwell Infrastructure's operations at any time during this period. The Upper Hunter Air Quality Monitoring Network's Muswellbrook unit also recorded elevated readings. The 24-hour average PM<sub>10</sub> results recorded at the Muswellbrook unit on 22 and 23 November 2018 were 185.9 µg/m<sup>3</sup> and 125.6 µg/m<sup>3</sup> respectively, indicating elevated PM<sub>10</sub> levels in the region.

**Table 3: Surface water quality monitoring results for Quarter 4.**

Site	Month	pH	EC (µS/cm)	TDS (mg/L)	TSS (mg/L)	Bicarbonate (CaCO <sub>3</sub> ) (mg/L)	Sulphate (SO <sub>4</sub> ) (mg/L)	Chloride (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Sodium (mg/L)	Potassium (mg/L)
Antiene Dam (2221)	Oct	3.09	5920	4220	26	<1	2650	518	361	316	406	38
	Nov	3.28	3710	3130	167	<1	1560	288	278	211	258	33
	Dec	-	-	-	-	-	-	-	-	-	-	-
	<b>Average</b>											
Access Rd Dam* (2081)	Oct	8.05	9580	8550	<5	111	3880	1030	565	672	821	88
	Nov	8.65	8770	8380	16	60	4000	960	588	697	847	89
	Dec	8.67	9480	9750	6	41	4540	1080	532	654	817	85
	<b>Average</b>	<b>8.09</b>	<b>8478</b>	<b>7999</b>	<b>8</b>	<b>98</b>	<b>4061</b>	<b>978</b>	<b>540</b>	<b>632</b>	<b>797</b>	<b>83</b>
DC2 Dam* (2109)	Oct	7.58	7340	4830	12	150	1540	1110	160	256	1060	11
	Nov	7.37	4620	3300	29	107	1260	741	117	181	734	8
	Dec	6.97	4600	2120	10	106	998	718	96	138	585	8
	<b>Average</b>	<b>7.43</b>	<b>5948</b>	<b>3957</b>	<b>13</b>	<b>154</b>	<b>1643</b>	<b>974</b>	<b>133</b>	<b>220</b>	<b>908</b>	<b>11</b>
Rail Loop Dam* (2114)	Oct	7.99	2780	1880	10	96	843	275	131	127	244	11
	Nov	7.63	1560	1110	34	54	540	129	96	78	128	9
	Dec	8.25	1620	946	6	98	487	116	86	61	121	8
	<b>Average</b>	<b>8.01</b>	<b>2674</b>	<b>1985</b>	<b>10</b>	<b>120</b>	<b>936</b>	<b>296</b>	<b>133</b>	<b>137</b>	<b>273</b>	<b>12</b>
Far East Tip* (1895)	Oct	-	-	-	-	-	-	-	-	-	-	-
	Nov	-	-	-	-	-	-	-	-	-	-	-
	Dec	-	-	-	-	-	-	-	-	-	-	-
	<b>Average</b>											
Savoy Dam* (1609)	Oct	8.59	12600	11900	198	38	5520	1320	732	987	1070	141
	Nov	8.45	10600	10600	8	50	5050	1130	661	910	978	128
	Dec	8.72	13600	14300	<5	50	6810	1560	727	1060	1160	148
	<b>Average</b>	<b>8.77</b>	<b>11356</b>	<b>11217</b>	<b>24</b>	<b>38</b>	<b>5727</b>	<b>1278</b>	<b>763</b>	<b>941</b>	<b>1021</b>	<b>133</b>
SW 13	Oct	8.06	8030	6960	<5	270	3870	754	505	478	578	55
	Nov	8.08	8680	6810	<5	220	3560	741	516	505	613	58
	Dec	7.98	7170	6310	12	189	3960	683	478	513	612	56
	<b>Average</b>	<b>8.02</b>	<b>7391</b>	<b>6339</b>	<b>7</b>	<b>225</b>	<b>3777</b>	<b>718</b>	<b>514</b>	<b>517</b>	<b>620</b>	<b>57</b>

Site	Month	pH	EC ( $\mu$ S/cm)	TDS (mg/L)	TSS (mg/L)	Bicarbonate (CaCO <sub>3</sub> ) (mg/L)	Sulphate (SO <sub>4</sub> ) (mg/L)	Chloride (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Sodium (mg/L)	Potassium (mg/L)
Industrial Dam* (1969)	Oct	8.26	7520	5980	8	111	2620	797	402	460	646	56
	Nov	8.19	6480	6290	6	122	2920	742	373	485	697	57
	Dec	8.38	7230	5050	<5	106	3070	751	365	415	593	50
	<b>Average</b>	<b>8.24</b>	<b>6537</b>	<b>5550</b>	<b>13</b>	<b>119</b>	<b>2976</b>	<b>756</b>	<b>377</b>	<b>444</b>	<b>627</b>	<b>53</b>
OPC Dam*	Oct	8.72	7110	5770	32	180	2480	716	428	464	591	58
	Nov	7.49	2010	1490	8	58	739	176	135	117	154	14
	Dec	8.33	8220	5640	<5	154	3560	857	448	522	666	62
	<b>Average</b>	<b>8.21</b>	<b>5987</b>	<b>5140</b>	<b>21</b>	<b>131</b>	<b>2673</b>	<b>671</b>	<b>367</b>	<b>424</b>	<b>539</b>	<b>52</b>
V Notch*	Oct	8.04	15100	12000	13	446	4580	2340	554	587	2340	22
	Nov	8.02	11900	9740	<5	255	4300	1530	438	496	1980	32
	Dec	7.82	12800	10400	<5	410	4420	1850	442	458	1860	21
	<b>Average</b>	<b>7.95</b>	<b>12732</b>	<b>10586</b>	<b>6</b>	<b>349</b>	<b>4678</b>	<b>1986</b>	<b>492</b>	<b>531</b>	<b>2076</b>	<b>24</b>

Notes:

Site 2221 (Antiene Dam) was too low to sample in December 2018

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

Maxwell Infrastructure is a closed water management system with all water maintained on-site for use in dust suppression and mining activities.

Average is the mean result for 2018 (Jan – Dec 2018).

\* indicates mine water storage.



**Table 4. Noise monitoring results for October 2018.**

Noise Monitoring									
Sampling point	Period	LAeq (15 min)				LA1 (1 min)		Exceedance (yes/no)	Observations
		Evening Criteria	Noise Level	Night Criteria	Noise Level	Night Criteria	Noise Level#		
12	15 mins	35	IA	39	IA	47	IA	No	
13	15 mins	35	IA	36	IA	45	IA	No	
14	15 mins	35	IA	37	IA	47	IA	No	
16*	15 mins	35	IA	38	IA	47	IA	No	
17	15 mins	35	IA	38	IA	47	IA	No	
18	15 mins	35	IA	40	IA	47	IA	No	
19	15 mins	35	IA	41	IA	47	IA	No	
20	15 mins	35	IA	41	IA	45	IA	No	
21	15 mins	36	IA	41	IA	45	IA	No	
22	15 mins	36	IA	42	IA	45	IA	No	
23	15 mins	37	IA	40	IA	47	IA	No	
25*	15 mins	37	IA	41	IA	47	IA	No	
26	15 mins	36	IA	35	IA	47	IA	No	
27	15 mins	36	IA	36	IA	47	IA	No	
28	15 mins	37	IA	37	IA	47	IA	No	
29	15 mins	37	IA	38	IA	47	IA	No	
31	15 mins	37	IA	39	IA	47	IA	No	
32	15 mins	37	IA	42	IA	47	IA	No	
33	15 mins	38	IA	36	IA	45	IA	No	
34	15 mins	38	IA	38	IA	45	IA	No	
35*	15 mins	38	IA	38	IA	45	IA	No	
37	15 mins	39	IA	38	IA	45	IA	No	
42*	15 mins	40	IA	39	IA	45	IA	No	
61*	15 mins	40	IA	39	IA	45	IA	No	
69	15 mins	39	IA	39	IA	47	IA	No	

70	15 mins	40	IA	39	IA	47	IA	No	
71	15 mins	41	IA	39	IA	47	IA	No	
72*	15 mins	35	IA	35	IA	47	IA	No	
75*	15 mins	35	IA	35	IA	47	IA	No	
76*	15 mins	35	IA	35	IA	47	IA	No	
86	15 mins	35	IA	35	IA	45	IA	No	
All Other Privately- Owned Land	15 mins	35	IA	35	IA	45	IA	No	
Additional Information									
Date of Final Report	25 October 2018								
Date Sampled	31 October 2018								
Weather Conditions	Calm								
Notes	IA – Inaudible *Residences where attended noise monitoring is undertaken. The noise levels at all other locations are determined by noise modelling or extrapolation. # LA1 (1 min) is approximated as measured L <sub>max</sub>								

Notes:

Attended noise monitoring is now conducted on a six-monthly basis in accordance with the revised Noise Management Plan implemented on 16 October 2018.