

Licensee	Aurelia Metals Limited
Address	'The Peak, Burthong Road, Nymagee, NSW 2831
Environmental Protection Licence	20179
Link to Licence	http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=32372&SYSUID=1&LICID=20179
Project Approval	10_0191
Reporting Period	January 2016
Date Published	21/03/2016

Weather Monitoring

Aurelia Metals Limited (AMI) has one licenced weather station (licence point 23) associated with the site (**Figure 1**). A summary of the licence conditions (Environmental Protection Licence (EPL) 20179) associated with this point is presented in **Table 1**.

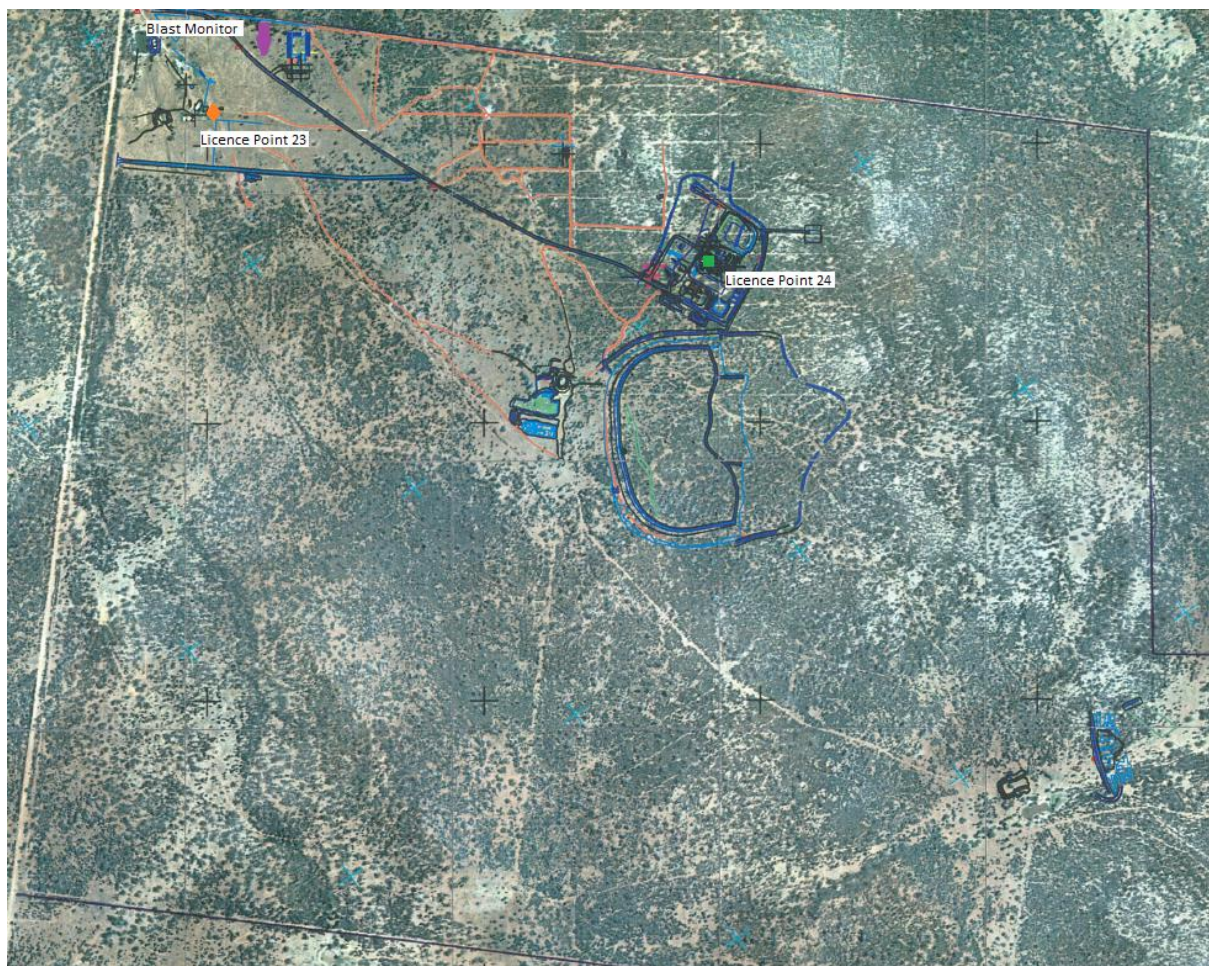


Figure 1. Location of the licence points associated with Gold Room Stack monitoring (Licence Point 24), Blast monitoring and meteorological monitoring (Licence Point 23).

Table 1. Summary of EPL 20179 conditions associated with the licensed weather station.

Parameter	Frequency
Air Temperature (°C)	Continuous
Wind Direction (°)	Continuous
Wind Speed (m/s)	Continuous
Sigma Theta (°)	Continuous
Rainfall (mm)	Continuous
Relative Humidity (%)	Continuous

Meteorological monitoring is conducted on a continuous basis. **Table 2** is a summary of the data collected by the weather station in January 2016.

Table 2. Summary of meteorological data for January 2016.

Pollutant	No. of measurements for month	Min. value	Mean value	Median value	Max. value
Air Temperature (°C)	Continuous	11.31	25.35	25.08	40.57
Wind Direction (°)	Continuous	14.53	155.77	157.51	342.35
Wind Speed (m/s)	Continuous	0.00	2.14	2.05	7.83
Sigma Theta (°)	Continuous	3.23	21.89	16.95	100.69
Rainfall (mm)	Continuous	0.00	0.00	0.00	0.00
Relative Humidity (%)	Continuous	13.60	52.72	50.56	97.98

Surface Water Monitoring

AMI has six licence points associated with surface waters. Four of these points are located within the Mining Lease (**Figure 2**) and two are located on Box creek, upstream and downstream of the mining lease (**Figure 3**). A summary of the licence conditions associated with these licence points is presented in **Table 3**.

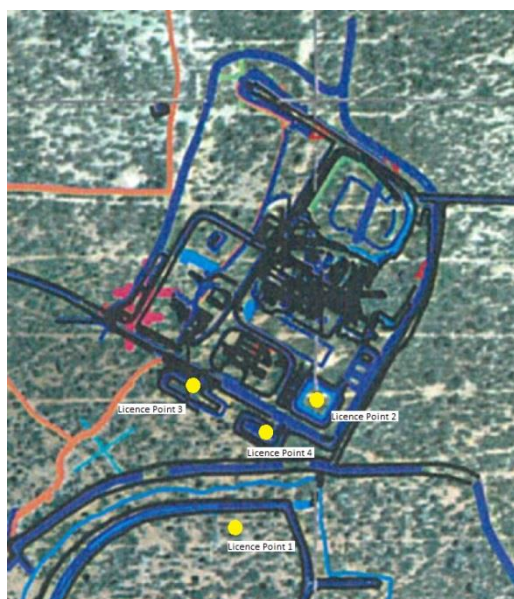


Figure 2. Licensed surface water monitoring points located onsite.

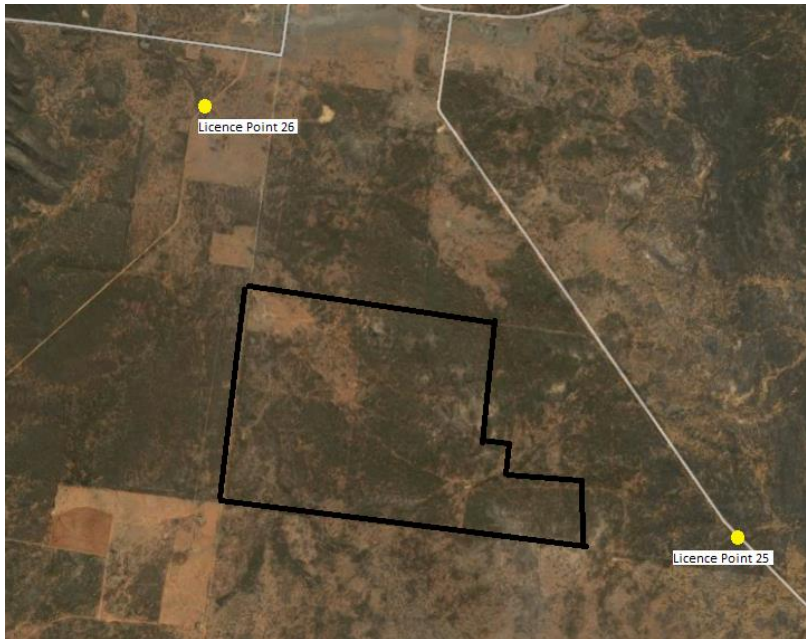


Figure 3. Licensed surface water monitoring points located offsite. The black outline represents the Mining Lease.

Table 3. Summary of EPL 20179 conditions associated with licensed surface water monitoring points.

EPA ID No.	Monitoring Frequency	Limit
1, 2	Daily during discharge	
3, 4, 25, 26	During discharge	
	Pollutant	
1	Cyanide (weak acid dissociable (WAD))	10 mg/L
2	Cyanide (WAD)	20 mg/L (90 percentile limit)
		30 mg/L (max. limit)
3, 4, 25, 26 (Please note: Limits apply only to Licence Points 3 and 4.)	Aluminium	0.055 mg/L
	Arsenic	0.024 mg/L
	Boron	0.370 mg/L
	Cadmium	0.0002 mg/L
	Copper	0.0014 mg/L
	Cyanide (WAD)	0.007 mg/L
	Electrical Conductivity	1000 (µS/cm)
	Lead	0.0034 mg/L
	Manganese	1.90 mg/L
	Nickel	0.011 mg/L
	Nitrogen (total)	0.5 mg/L
	Oil and Grease	10 mg/L
	pH	6.5-8.5
	Phosphorus (total)	0.025 mg/L
	Silver	0.00005 mg/L
Total suspended solids	50 mg/L	
Zinc	0.008 mg/L	

Table 4 is a summary of the surface water quality results. The table has also been colour coordinated by the licence limit that applies to each licence point. Licence Point 3, 4, 25 and 26 did not discharge for the month.

Table 4. Summary of surface water quality results for January 2016.

	WAD Cyanide				Al	As	B	Cd	Cu	EC (µS/cm)	Pb	Mn	Ni	N	Oil & Grease	pH	Ag	P	TSS	Zn	
	Min.	Mean	Median	Max.																	
Licence Limits	10				0.055	0.024	0.37	0.0002	0.0014	1000	0.0034	1.9	0.011	0.5	10	6.5-8.5	0.00005	0.025	50	0.008	
	20 (90 Percentile)																				
	30 (max.)																				
	0.007																				
Licence Points																					
1	0	0	0	0																	
2	0	1.94	0	20																	
3	No discharge																				
4	No discharge																				
25	No discharge																				
26	No discharge																				

Groundwater Monitoring

AMI has 13 licence points associated with groundwater. These points are located within the Mining Lease (**Figure 4**) and are a combination of observation bores and productions bores. A summary of the licence conditions associated with these licence points is presented in **Table 5**.

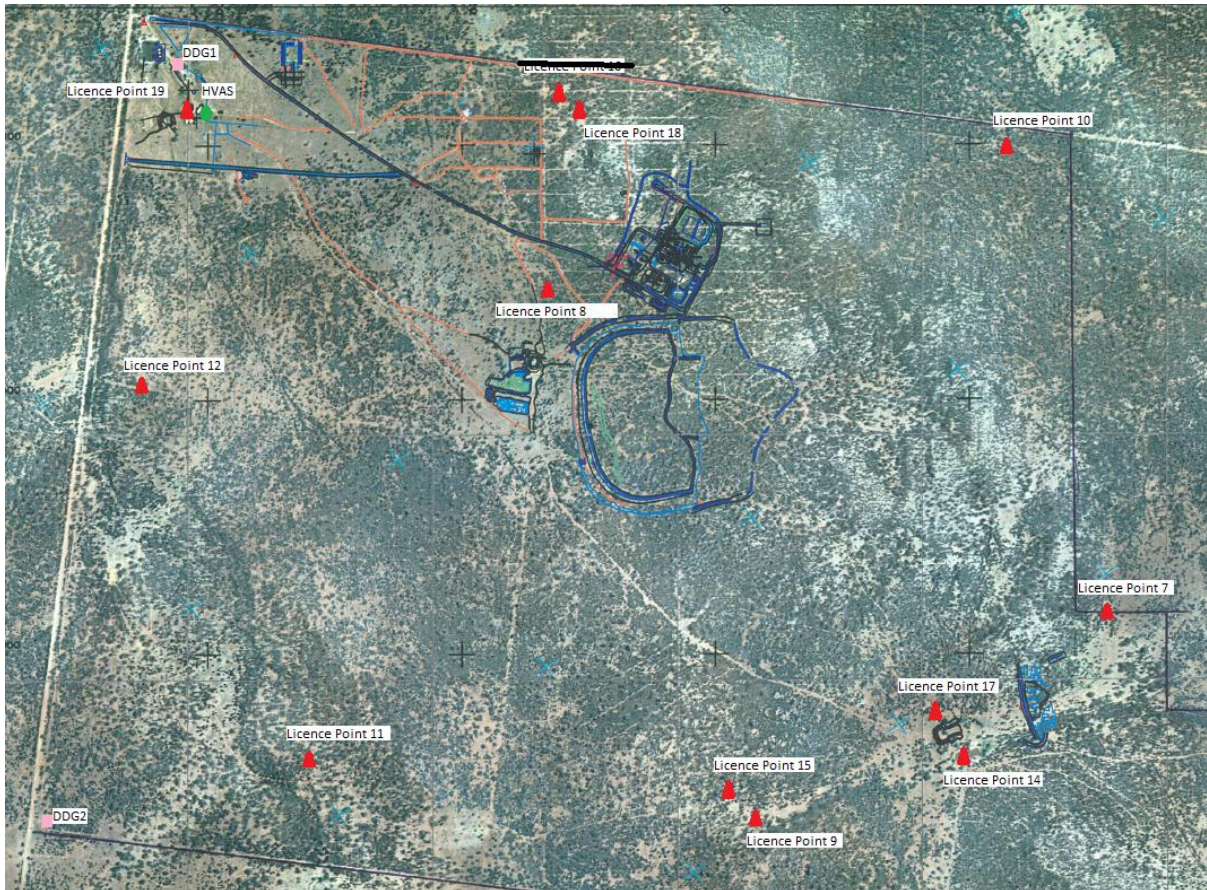


Figure 4. Licensed groundwater and air quality monitoring points.

Table 5. Summary of EPL 20179 conditions associated with licensed groundwater monitoring points.

EPA ID No.	Monitoring Frequency
	Quarterly
	Pollutant
7, 8, 9, 10, 11, 14, 15, 17, 18, 19	Antimony (mg/L)
	Arsenic (mg/L)
	Bicarbonate (mg/L)
	Boron (mg/L)
	Cadmium (mg/L)
	Calcium (mg/L)
	Carbonate (mg/L)
	Chloride (mg/L)
	Chromium (mg/L)
	Copper (mg/L)
	Cyanide (free) (mg/L)
	Cyanide (total) (mg/L)
	Cyanide (WAD) (mg/L)
	Electrical Conductivity ($\mu\text{S}/\text{cm}$)
	Iron (mg/L)
	Lead (mg/L)
	Magnesium (mg/L)
	Mercury (mg/L)
	Molybdenum (mg/L)
	Nickel (mg/L)
	pH
	Potassium (mg/L)
	Silver (mg/L)
	Sodium (mg/L)
7, 8, 10, 12, 14, 15, 17, 18	Standing Water Level (m)

Quarterly groundwater results are summarised in **Table 6**.

Table 6. Summary of January 2016 groundwater quality results

Licence Point	Analyte (mg/L)													
	Sb	As	HCO3-	B	Cd	Ca	CO3-2	Cl	Cr	Cu	CN- (Free)	CN- (Total)	CN- (WAD)	EC (mS/cm)
7	<0.001	<0.001	693	0.39	<0.0001	201	<1	1020	<0.001	<0.001	<0.004	<0.004	<0.004	4975
8	0.003	<0.001	428	0.36	<0.0001	172	<1	777	<0.001	<0.001	<0.004	<0.004	<0.004	4975
9	<0.001	<0.001	628	0.7	<0.0001	165	<1	906	<0.001	<0.001	<0.004	<0.004	<0.004	5276
10	<0.001	<0.001	645	0.43	<0.0001	193	<1	1060	<0.001	0.004	<0.004	<0.004	<0.004	5129
11	<0.001	<0.001	370	1.02	<0.0001	84	<1	1260	<0.001	<0.001	<0.004	<0.004	<0.004	5881
12														
14	0.019	0.002	561	0.45	0.0002	95	<1	610	<0.001	0.005	<0.004	<0.004	<0.004	3323
15	0.002	0.001	766	0.75	<0.0001	151	<1	881	<0.001	<0.001	<0.004	<0.004	<0.004	5495
17	<0.001	<0.001	574	0.37	0.0004	164	<1	908	<0.001	0.006	<0.004	<0.004	<0.004	4638
18	<0.001	0.003	355	0.4	<0.0001	217	<1	985	<0.001	<0.001	<0.004	<0.004	<0.004	5373
19	<0.001	0.002	448	1.1	<0.0001	63	<1	982	<0.001	0.008	<0.004	<0.004	<0.004	6106
Licence Point	Analyte (mg/L)													
	Fe	Pb	Mg	Hg	Mo	Ni	pH	K	Ag	Na	Sn	TDS	Zn	SWL (m)
7	0.05	0.002	190	<0.0001	<0.001	<0.001	6.89	18	<0.001	581	<0.001	3090	0.02	52.77
8	<0.05	0.001	198	<0.0001	0.002	0.034	6.89	23	<0.001	468	<0.001	2910	0.453	88.32
9	1.46	<0.001	241	<0.0001	<0.001	<0.001	7.23	24	<0.001	700	<0.001	2730	<0.005	
10	<0.05	0.002	193	<0.0001	<0.001	<0.001	7.16	16	<0.001	621	<0.001	3220	0.015	53.72
11	0.2	0.002	139	<0.0001	<0.001	<0.001	7.5	29	<0.001	945	<0.001	2940	0.016	
12														
14	0.11	0.003	112	<0.0001	0.002	0.006	6.93	19	<0.001	403	<0.001	1620	0.292	75.83
15	1.76	0.002	219	<0.0001	<0.001	0.003	7.02	28	<0.001	709	<0.001	2830	0.015	77.49
17	0.05	0.002	179	<0.0001	<0.001	0.001	6.7	16	<0.001	502	<0.001	2750	0.032	77.075
18	8.5	0.002	252	<0.0001	<0.001	0.008	6.67	27	<0.001	581	<0.001	3660	0.022	95.21
19	0.49	<0.001	115	<0.0001	<0.001	0.002	7.04	28	<0.001	755	<0.001	2500	0.03	

Noise Monitoring

AMI has four licenced monitoring points (R1, R2, R3 and R4) located along the Burthong Road (**Figure 5**). The locations are strategically placed near AMI's nearest neighbours. R1 and R2 are measured from the same point as both neighbours are located in very close proximity to each other. A summary of the EPL and Project Approval (PA) conditions associated with these licenced points is presented in **Table 7**.

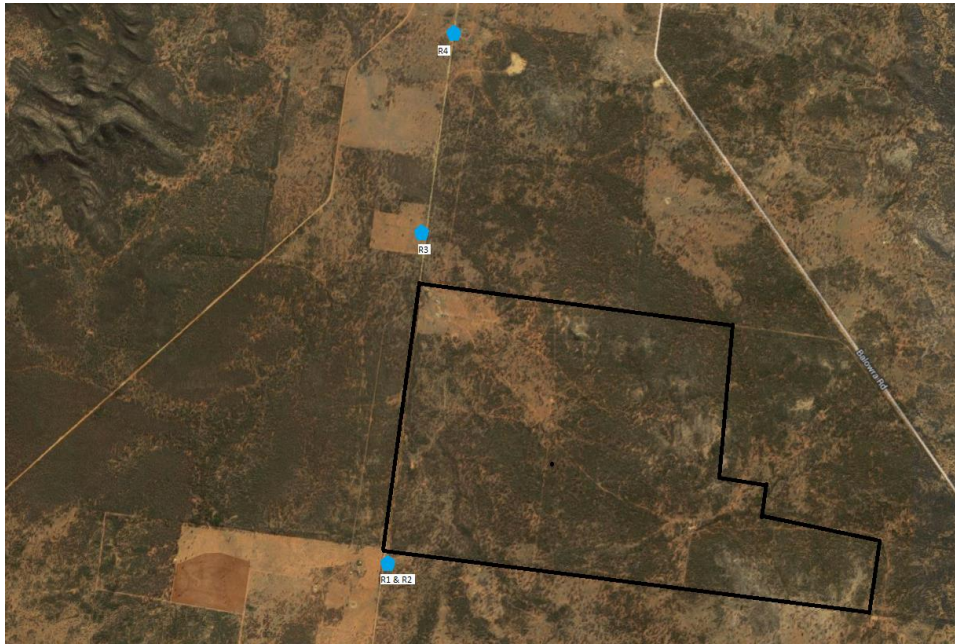


Figure 5. Licenced noise monitoring locations. The black outline represents the Mining Lease.

Table 7. Summary of EPL 20179 conditions associated with noise monitoring.

Location	Pollutant - Noise	Limits
R1, R2, R3, R4	Monday to Friday - 0700 hours (hrs) to 1800 hrs	LAeq (15 minute) 35 decibels (dB)
	Monday to Friday - 1800 hrs to 2200 hrs	LAeq (15 minute) 35 dB
	All other times	LAeq (15 minute) 35 dB
		LA1 (1 minute) 45 dB

Table 8 is a summary of the noise results for the month. Two LA1 results were recorded above licence conditions. However, the only noise audible from the mine during the recording period was the vent fan which is a constant noise that does not fluctuate. The elevated LA1 results are likely due to background noise sources such as bird calls.

Table 8. Summary of noise monitoring results for January 2016.

Date	Time	Site	Period of day	Wind speed (m/s)	LA1 (dB)	LAeq (dB)	Mine Audible?	Noise heard
5/01/2016	6:33	R1/R2	Night	0.73	44.8	24.64	Yes	Birds, hum from bees in nearby tree, low drone from mine direction (Barely audible)
5/01/2016	6:07	R3	Night	0.77	50.7	29.10	Yes	Birds, vent fan
5/01/2016	5:42	R4	Night	0.81	48.2	20.18	Yes	Birds, frogs, crickets, vent fan (barely audible)
5/01/2016	7:02	R1/R2	Day	1.39	n/a	26.31	Yes	Birds, hum from bees in nearby tree, low drone from mine direction (Barely audible)
5/01/2016	7:25	R3	Day	1.64	n/a	25.89	Yes	Winds, birds, vent fan, Rock breaker (0738)
5/01/2016	7:47	R4	Day	2.27	n/a	27.07	No	Wind, birds, car in distance
5/01/2016	20:42	R1/R2	Evening	2.33	n/a	26.88	No	Wind, birds, crickets, car in distance, thunder
5/01/2016	20:19	R3	Evening	2.46	n/a	29.17	Yes	Crickets, frogs, birds, wind, vent fan
5/01/2016	19:57	R4	Evening	3.00	n/a	26.04	Yes	Wind, birds, vent fan (barely audible)

Blast Monitoring

AMI is required to monitor blasting. The monitor is located to the east of the personnel accommodation (**Figure 1**). A summary of the EPL and PA conditions associated with this licenced point are presented in **Table 9**.

Table 9. Summary of EPL 20179 and PA 10_0191 conditions associated with blast monitoring.

Location	Pollutant	Time Period	Limits
Blast monitoring	Ground vibration <i>(monitor for every blast)</i>	All times	10 mm/s (max.)
		Day	5 mm/s (95% of total blasts)
		Evening	2 mm/s (95% of total blasts)
		Night and all day on Sundays and Public Holidays)	1 mm/s (max.)
	Airblast overpressure <i>(monitor for every blast)</i>	All times	120 dB (max.)
		All times	115 dB (95% of total blasts)

AMI conducted a total of 35 blasts in January 2016. The characteristics of each blast are presented in **Table 10**. No exceedances were recorded for the month.

Table 10. Summary of blast monitoring results for January 2016.

Date	Time	Vibration (mm/s)	Overpressure (dB)	Comments
2/01/2016	18:40	Evening	0.794	91.48
6/01/2016	18:30	Evening	<0.350	
8/01/2016	18:30	Evening	<0.350	
9/01/2016	18:30	Evening	0.515	91.48
10/01/2016	18:30	Evening	0.739	91.48
11/01/2016	18:30	Evening	0.899	93.98
13/01/2016	18:45	Evening	1.094	95.92
15/01/2016	18:45	Evening	0.900	101.90
17/01/2016	19:00	Evening	<0.350	
20/01/2016	18:30	Evening	0.648	91.48
21/01/2016	18:45	Evening	0.964	106.50
21/01/2016	18:45	Evening	0.964	106.50
23/01/2016	6:50	Night	0.891	91.48
22/01/2016	18:50	Evening	0.891	91.48
22/01/2016	18:50	Evening	<0.350	
23/01/2016	18:30	Evening	1.336	102.80
23/01/2016	18:30	Evening	1.336	102.80
24/01/2016	1:00	Night	1.336	102.80
23/01/2016	18:40	Evening	<0.350	
24/01/2016	18:30	Evening	0.815	98.84
24/01/2016	18:30	Evening	0.815	98.84
25/01/2016	18:30	Evening	1.096	106.00
25/01/2016	18:45	Evening	1.096	106.00
26/01/2016	19:00	Evening	<0.350	
26/01/2016	19:00	Evening	<0.350	
27/01/2016	7:00	Day	<0.350	
27/01/2016	19:00	Evening	<0.350	
28/01/2016	19:00	Evening	<0.350	
28/01/2016	19:00	Evening	<0.350	
29/01/2016	18:35	Evening	1.259	101.90
29/01/2016	18:35	Evening	1.259	101.90
30/01/2016	19:00	Evening	<0.350	
30/01/2016	19:00	Evening	<0.350	
31/01/2016	18:30	Evening	1.173	97.50
31/01/2016	19:00	Evening	<0.350	

Air Quality Monitoring

AMI has two High Volume Air Samplers (HVAS), each designed to sampled either Particulate matter < 10 µm (PM₁₀) or Total Suspended Particulate (TSP) matter. AMI has two Dust Deposition Gauges (DDG). Refer to **Figure 4** for location of the sampling points. A summary of the Project Approval conditions associated with these monitoring points is presented in **Table 11**.

Table 11. Summary of Project Approval conditions associated with dust monitoring.

Pollutant	Averaging Period	Limits
TSP	Annual	90 $\mu\text{g}/\text{m}^3$
PM ₁₀	Annual	30 $\mu\text{g}/\text{m}^3$
PM ₁₀	24 Hour	50 $\mu\text{g}/\text{m}^3$
Deposited Dust	Annual	2 $\text{g}/\text{m}^2/\text{month}$ (Max. increase)
	Annual	4 $\text{g}/\text{m}^2/\text{month}$ (Max. total)

Results for air quality monitoring conducted in January 2016 have been summarised in **Table 12**. An exceedance was recorded on 12 January 2016 (highlighted in red). An incident report was provided to the Department of Planning and Environment and the NSW Environment Protection Authority. The exceedance was most likely caused by background dust conditions as local dust storms were recorded in the area between 10 and 13 January 2016.

Table 12. Summary of air quality monitoring results for January 2016.

Pollutant	Unit	Limit	Averaging Period	Result
TSP	$\mu\text{g}/\text{m}^3$	90	Annual	35.80
PM-10 ($\mu\text{g}/\text{m}^3$)	$\mu\text{g}/\text{m}^3$	30	Annual	16.64
	$\mu\text{g}/\text{m}^3$	50	6/01/2016	10.00
	$\mu\text{g}/\text{m}^3$	50	12/01/2016	68.00
	$\mu\text{g}/\text{m}^3$	50	18/01/2016	17.00
	$\mu\text{g}/\text{m}^3$	50	24/01/2016	12.00
	$\mu\text{g}/\text{m}^3$	50	30/01/2016	14.00
Deposited Dust (DDG1)	$\text{g}/\text{m}^2/\text{month}$	4	Annual	2.88
Deposited Dust (DDG2)	$\text{g}/\text{m}^2/\text{month}$	4	Annual	1.87

Gold Room Stack Monitoring

AMI has one licenced gold room stack monitoring (**Figure 1**). A summary of the licence conditions associated with this Licence Point is presented in **Table 13**.

Table 13. Summary of EPL 20179 conditions associated with gold room stack monitoring monitoring.

EPA ID No.	Monitoring Frequency
24	Yearly
	Pollutant
	Nitric Oxide (mg/m^3)

Gold Room stack monitoring is conducted on an annual basis. **Table 14** is a summary of the annual monitoring which was conducted on 20 January 2016.

Table 14. Summary of Gold Room Stack monitoring results for January 2016.

EPA ID No.	Nitric Oxide (mg/m ³)
24	<4

Complaints

No complaints were received in January 2016.