

Licensee	Hera Resources Pty Ltd
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=20189
Project Approval	10_0191
Reporting Period	December 2018

Weather Monitoring

Hera Resources Pty Ltd (the Company), a wholly owned subsidiary of Aurelia Metals Limited, owns and operates the Hera Mine. The Company has one licenced weather station (licence point 23) associated with the mine (Figure 1). A summary of the licence conditions (Environmental Protection Licence (EPL) 20189) 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 and Licence Point 39), blast monitoring and meteorological monitoring (Licence Point 23).

Table 1. Summary of EPL 20189 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 this month. Figure 2 is a wind rose for the month.

Pollutant	No. of measurements for month	Min. value	Mean value	Median value	Max. value
Air Temperature (°C)	Continuous	8.51	26.39	26.39	43.36
Wind Speed (m/s)	Continuous	0.00	2.91	2.86	10.04
Sigma Theta (°)	Continuous	2.89	22.63	18.92	102.34
Rainfall (mm)	Continuous	0.00	0.01	0.00	8.60
Relative Humidity (%)	Continuous	6.31	35.31	29.18	93.26

Table 2. Summary of meteorological data for the month.

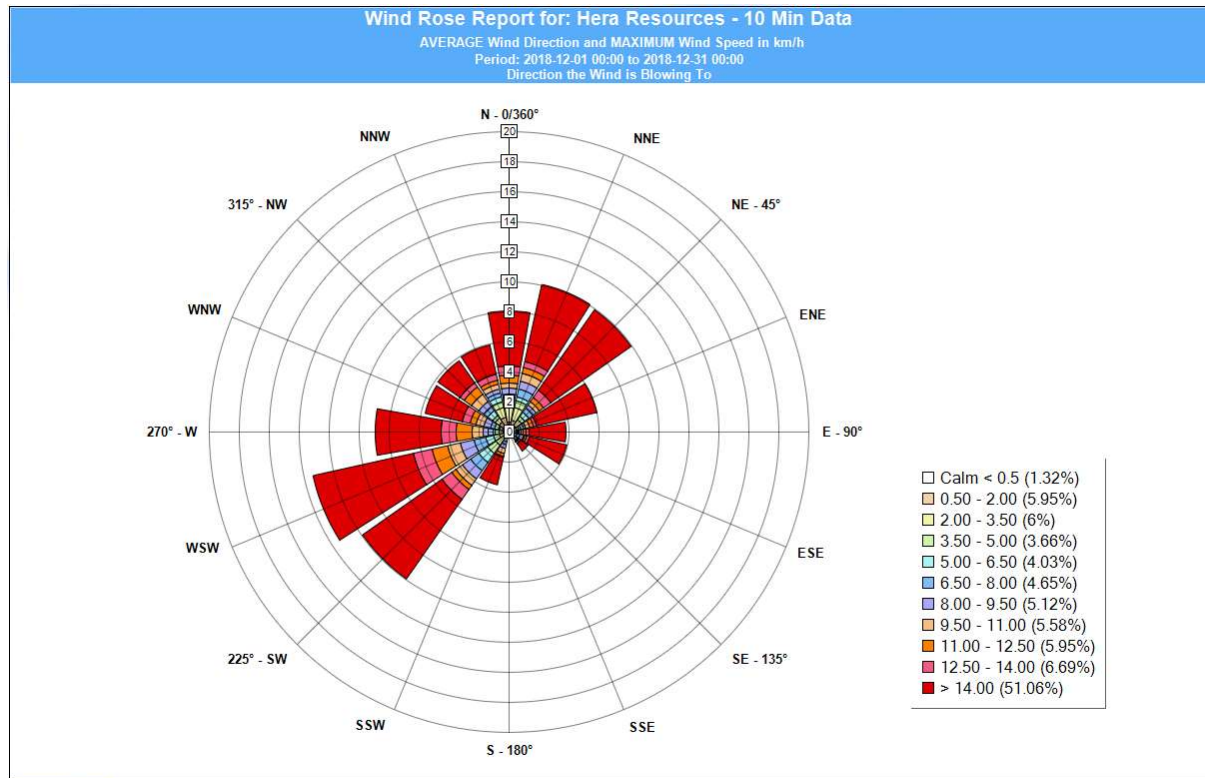


Figure 2. Wind rose for the month.

Surface Water Monitoring

The Company has six licence points associated with surface waters. Four of these points are located within the Mining Lease (Figure 3) and two are located on Box creek, upstream and downstream of the mining lease (Figure 4). A summary of the licence conditions associated with these licence points is presented in Table 3.



Figure 3. Licensed surface water monitoring points located onsite.

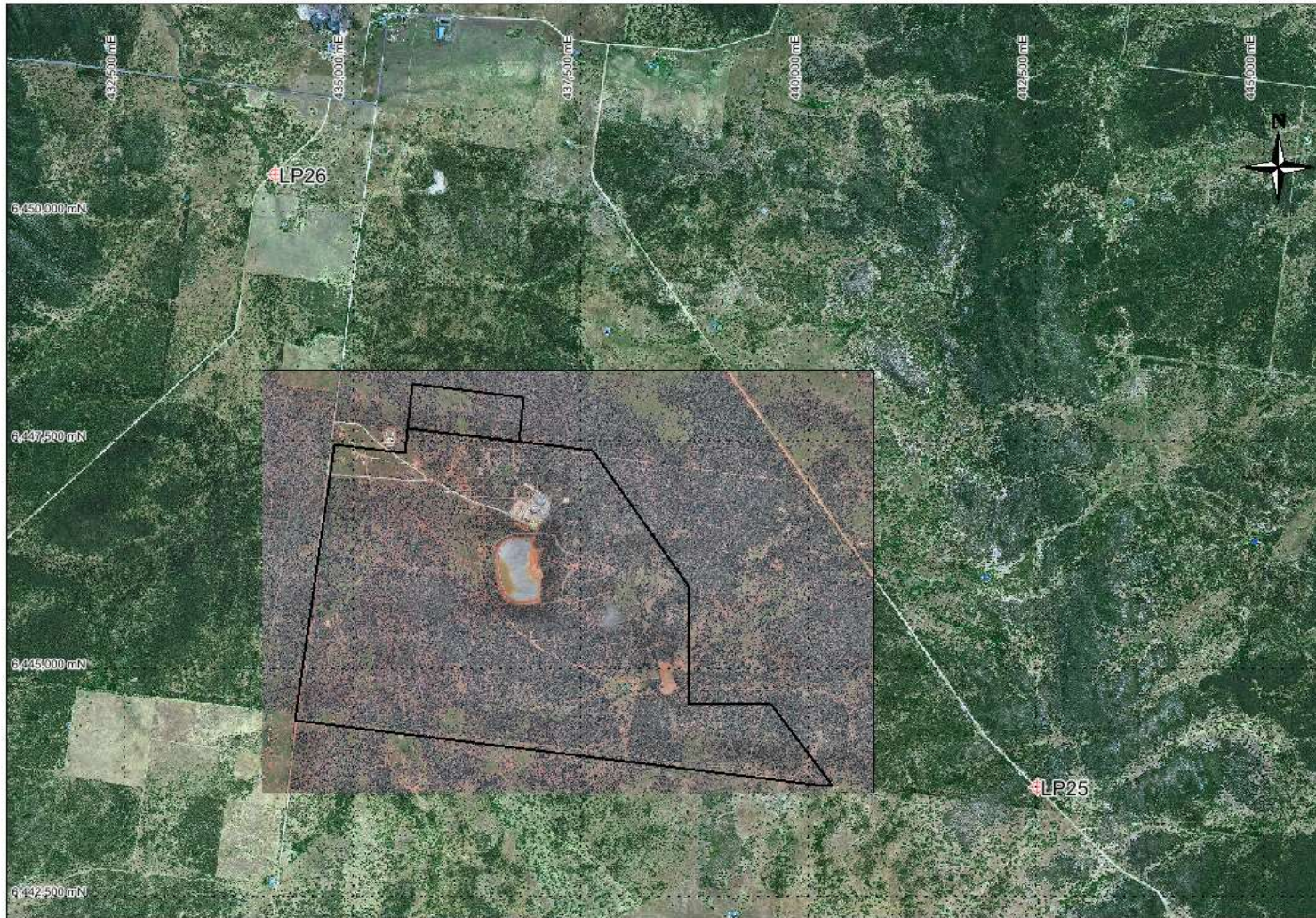


Figure 4. Licensed surface water monitoring points located offsite. The black outline represents the mining leases.

Table 3. Summary of EPL 20189 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 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. No exceedances were recorded this month.

Table 4. Summary of surface water quality results for the month.

	Analytes (mg/L)																			
	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	0.01	0	3																
2	0	0.2	0	6																
3	No flow																			
4	No flow																			
25	No flow																			
26	No flow																			

Groundwater Monitoring

The Company has 17 licence points associated with groundwater. These points are located around the Project Area (Figure 5) and are a combination of observation bores, productions bores and piezometers. A summary of the licence conditions associated with these licence points is presented in Table 5

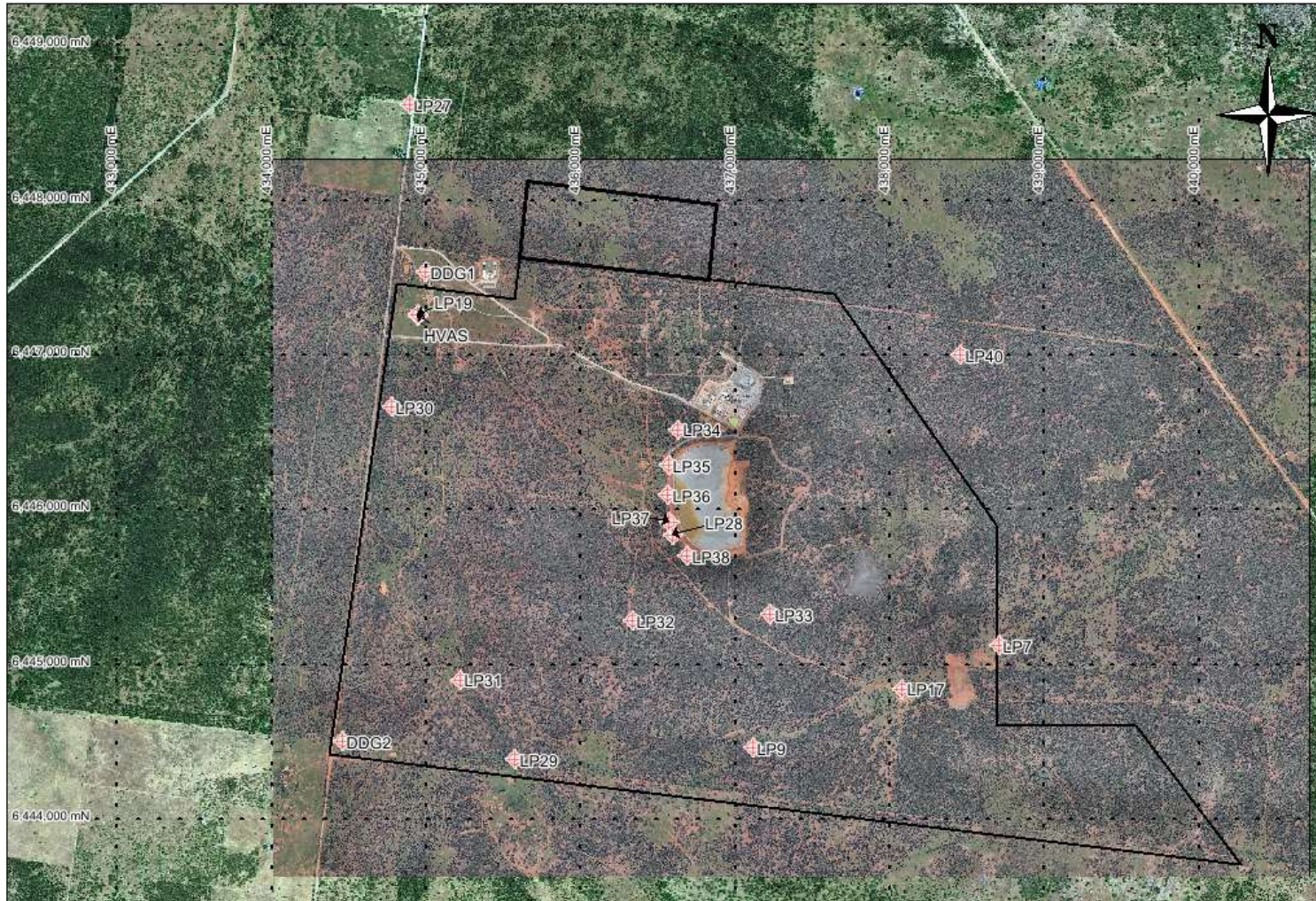


Figure 5. Licensed groundwater and air quality monitoring points.

Table 5. Summary of EPL 20189 conditions associated with licensed groundwater monitoring points.

EPA ID No.	Monitoring Frequency
	Quarterly
	Pollutant
7, 9, 17, 19, 27, 28, 29, 30, 31, 32, 33, 40	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 (µS/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)
	Tin (mg/L)
	Total dissolved solids (mg/L)
	Zinc (mg/L)
7, 27, 28, 29, 30, 34, 35, 36, 37, 38, 40	Standing Water Level (m)
EPA ID No.	Monitoring Frequency
	When water present
	Pollutant
34, 35, 36, 37, 38	Cyanide (free) (mg/L)
	Cyanide (total) (mg/L)
	Cyanide (WAD) (mg/L)
	Electrical Conductivity (µS/cm)
	pH

Quarterly groundwater results are presented in

Table 6.

Table 6. Ground Water Monitoring December.

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	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	3.46	
9	0.002	<0.001	660	0.88	<0.0001	214	<1	1080	<0.001	<0.001	<0.004	<0.004	<0.004	4.98	
17	<0.001	0.002	263	0.31	0.0002	51	<1	290	<0.001	0.005	<0.004	<0.004	<0.004	1.22	
19	<0.001	0.002	469	1.17	<0.0001	85	<1	1200	0.001	<0.001	<0.004	<0.004	<0.004	4.37	
27	0.001	0.001	500	1.57	<0.0001	64	<1	1470	<0.001	0.002	<0.004	<0.004	<0.004	4.67	
28	0.003	<0.001	634	0.74	<0.0001	206	<1	1040	<0.001	0.001	<0.004	<0.004	<0.004	0.75	
29	0.013	<0.001	315	0.5	<0.0001	49	<1	378	<0.001	0.002	<0.004	<0.004	<0.004	1.9	
30	0.001	0.002	591	2.1	<0.0001	74	<1	1570	<0.001	<0.001	<0.004	<0.004	<0.004	5.85	
31	0.001	<0.001	346	1.01	<0.0001	100	<1	1400	<0.001	<0.001	<0.004	<0.004	<0.004	5.18	
32	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	
33	0.003	<0.001	587	0.68	<0.0001	196	<1	810	<0.001	0.001	<0.004	<0.004	<0.004	3.78	
34											DRY	DRY	DRY	DRY	
35											DRY	DRY	DRY	DRY	
36											DRY	DRY	DRY	DRY	
37											DRY	DRY	DRY	DRY	
38											DRY	DRY	DRY	DRY	
40	<0.001	<0.001	600	0.53	<0.0001	205	<1	1210	<0.001	<0.001	<0.004	<0.004	<0.004	4.08	
	Analyte (mg/L)														
	Fe	Pb	Mg	Hg	Mo	Ni	pH	K	Ag	Na	Sn	TDS	Zn	SWL (m)	
7	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	
9	<0.05	<0.001	229	<0.0001	<0.001	0.022	6.91	30	<0.001	731	<0.001	4000	<0.005		
17	<0.05	<0.001	50	<0.0001	<0.001	0.003	6.75	12	<0.001	155	<0.001	812	0.045		
19	<0.05	<0.001	130	<0.0001	<0.001	0.002	7.56	37	<0.001	825	<0.001	3180	0.032		
27	<0.05	<0.001	152	<0.0001	<0.001	0.003	7.22	44	<0.001	1040	<0.001	3500	0.08	55.64	
28	<0.05	<0.001	236	<0.0001	<0.001	0.002	6.95	30	<0.001	664	<0.001	3610	0.042	92.03	
29	<0.05	<0.001	60	<0.0001	0.002	0.002	7.33	16	<0.001	306	<0.001	1350	0.056	68.14	
30	<0.05	<0.001	108	<0.0001	0.001	0.001	7.27	39	<0.001	1450	<0.001	4540	0.013	60.67	
31	<0.05	<0.001	138	<0.0001	<0.001	<0.001	7.85	34	<0.001	909	<0.001	3410	0.005		
32	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY		
33	<0.05	<0.001	205	<0.0001	<0.001	0.009	6.7	23	<0.001	538	<0.001	3090	0.179		
34															DRY
35															DRY
36															DRY
37															DRY
38															DRY
40	<0.05	<0.001	203	<0.0001	<0.001	<0.001	7.26	18	<0.001	678	<0.001	2980	<0.005	54.65	

Noise Monitoring

The Company has four licenced monitoring points (R1, R2, R3 and R4) located along the Burthong Road (Figure 6). The locations are strategically placed near the Hera Mine'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.

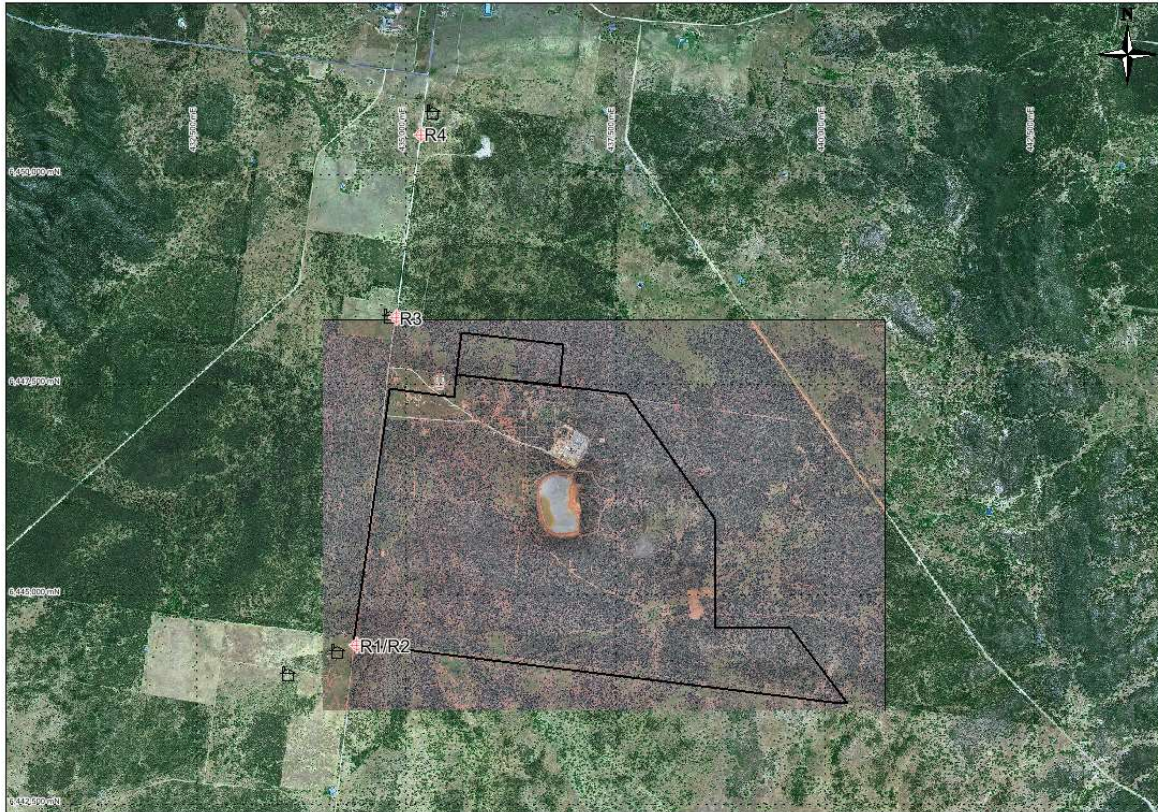


Figure 6. Licenced noise monitoring locations. The black outline represents the Mining Lease areas.

Table 7. Summary of EPL 20189 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

A noise assessment was carried out in September 2018. The site was found to be fully compliant.

Blast Monitoring

The blast monitor is located adjacent to the dwelling on the nearest neighbour's property (Figure 1). A summary of the EPL and PA conditions associated with this licenced point are presented in Table 8.

Table 8. Summary of EPL 20189 and PA 10_0191 conditions associated with blast monitoring.

Location	Pollutant	Time Period	Limits
Blast monitoring	Ground vibration	All times	10 mm/s (max.)
	<i>(monitor for every blast)</i>	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	All times	120 dB (max.)
	<i>(monitor for every blast)</i>	All times	115 dB (95% of total blasts)

The Company conducted a total of 56 blasts this month. The characteristics of each blast are presented in Table 9. No exceedances were recorded for the month.

Table 9. Summary of blast monitoring results for the month.

Date	Time	Time period	Vibration (mm/s)	Overpressure (dB)
Saturday, 1 December 2018	6:50	Night	<0.35	
Saturday, 1 December 2018	19:00	Evening	<0.35	
Saturday, 1 December 2018	19:00	Evening	<0.35	
Sunday, 2 December 2018	6:50	Sunday	<0.35	
Sunday, 2 December 2018	6:50	Sunday	<0.35	
Sunday, 2 December 2018	6:50	Sunday	<0.35	
Monday, 3 December 2018	6:50	Night	<0.35	
Monday, 3 December 2018	6:50	Night	<0.35	
Monday, 3 December 2018	6:50	Night	<0.35	
Tuesday, 4 December 2018	6:50	Night	<0.35	
Tuesday, 4 December 2018	6:50	Night	<0.35	
Tuesday, 4 December 2018	6:50	Night	<0.35	
Tuesday, 4 December 2018	6:50	Night	<0.35	
Tuesday, 4 December 2018	19:30	Evening	<0.35	
Wednesday, 5 December 2018	6:00	Night	<0.35	
Wednesday, 5 December 2018	6:00	Night	<0.35	
Wednesday, 5 December 2018	6:00	Night	<0.35	
Wednesday, 5 December 2018	19:00	Evening	<0.35	
Thursday, 6 December 2018	18:55	Evening	<0.35	
Thursday, 6 December 2018	18:55	Evening	<0.35	
Friday, 7 December 2018	7:00	Day	<0.35	
Friday, 7 December 2018	19:00	Evening	<0.35	
Saturday, 8 December 2018	18:50	Evening	<0.35	
Saturday, 8 December 2018	18:50	Evening	<0.35	
Saturday, 8 December 2018	18:50	Evening	<0.35	
Sunday, 9 December 2018	19:15	Sunday	<0.35	
Sunday, 9 December 2018	19:15	Sunday	<0.35	
Sunday, 9 December 2018	19:15	Sunday	<0.35	
Monday, 10 December 2018	19:45	Evening	<0.35	

Date	Time	Time period	Vibration (mm/s)	Overpressure (dB)
Tuesday, 11 December 2018	6:50	Night	<0.35	
Tuesday, 11 December 2018	19:00	Evening	<0.35	
Tuesday, 11 December 2018	19:00	Evening	<0.35	
Wednesday, 12 December 2018	7:00	Day	<0.35	
Wednesday, 12 December 2018	18:00	Evening	<0.35	
Wednesday, 12 December 2018	18:00	Evening	<0.35	
Thursday, 13 December 2018	7:00	Day	<0.35	
Thursday, 13 December 2018	18:45	Evening	<0.35	
Friday, 14 December 2018	6:45	Night	<0.35	
Friday, 14 December 2018	19:10	Evening	<0.35	
Saturday, 15 December 2018	6:45	Night	<0.35	
Saturday, 15 December 2018	19:00	Evening	0.417	91.50
Saturday, 15 December 2018	19:00	Evening	0.417	91.50
Sunday, 16 December 2018	6:40	Sunday	<0.35	
Sunday, 16 December 2018	19:00	Sunday	<0.35	
Sunday, 16 December 2018	19:00	Sunday	<0.35	
Monday, 17 December 2018	7:00	Day	<0.35	
Monday, 17 December 2018	19:00	Evening	<0.35	
Tuesday, 18 December 2018	6:48	Night	<0.35	
Wednesday, 19 December 2018	7:00	Day	<0.35	
Wednesday, 19 December 2018	7:00	Day	<0.35	
Wednesday, 19 December 2018	19:00	Evening	<0.35	
Friday, 21 December 2018	21:30	Evening	<0.35	
Saturday, 22 December 2018	15:00	Day	0.589	110.60
Sunday, 23 December 2018	13:05	Sunday	0.482	95.90
Friday, 28 December 2018	18:30	Evening	0.417	101.90
Monday, 31 December 2018	18:45	Evening	<0.35	

Air Quality Monitoring

The Company has two High Volume Air Samplers (HVAS), designed to sample Particulate matter less than 10 µm (PM₁₀) or Total Suspended Particulate (TSP) matter and two Dust Deposition Gauges (DDG). Refer to Figure 5 for location of the sampling points. A summary of the PA conditions associated with these monitoring points is presented in Table 10.

Table 10. Summary of Project Approval conditions associated with dust monitoring.

Pollutant	Averaging Period	Limits
TSP	Annual	90 µg/m ³
PM ₁₀	Annual	30 µg/m ³
PM ₁₀	24 Hour	50 µg/m ³
Deposited Dust	Annual	2 g/m ² /month (Max. increase)
	Annual	4 g/m ² /month (Max. total)

Results for air quality monitoring conducted this month have been summarised in Table 11.

No exceedances were recorded this month.

Table 11. Summary of air quality monitoring results for the month.

Pollutant	Unit	Limit	Averaging Period	Result
TSP	µg/m ³	90	Annual	52.35
PM-10 (µg/m ³)	µg/m ³	30	Annual	26.33
	µg/m ³	50	3/12/2018	37.00
	µg/m ³	50	9/12/2018	34.00
	µg/m ³	50	15/12/2018	NR
	µg/m ³	50	21/12/2018	39.00
	µg/m ³	39	27/12/2018	47.00
Deposited Dust (DDG1)	g/m ² /month	4	Annual	3.95
Deposited Dust (DDG2)	g/m ² /month	4	Annual	3.50

Gold Room Stack Monitoring

The Company has two licenced gold room stack monitoring points (Figure 1). A summary of the licence conditions associated with this licence point is presented in Table 12.

Table 12. Summary of EPL 20189 conditions associated with gold room stack monitoring.

EPA ID No.	Monitoring Frequency
24	Yearly
39	
Pollutant	
Nitric Oxide (mg/m ³)	

Gold Room stack monitoring is conducted on an annual basis. Table 13 is a summary of the annual monitoring which was conducted on 20 Sep 2018. No exceedances were recorded.

Table 13 Summary of gold room stack monitoring conducted in Sep 2018.

EPA ID No.	Nitric Oxide (mg/m ³)
24	<4
39	5.8

Concentrate Transport

The Company is licenced to transport 50,000 tpa of lead/zinc concentrate between 0700 and 2200. The company is limited to eight truck movements per day (entering and leaving the site) averaged over a calendar month. A summary of concentrate haulage operations is presented in Table 14.

Table 14. Summary of the concentrate truck movements from the Hera Mine to Hermidale rail siding for the month.

Date	Time	Truck Dry Tonnes
1/12/2018	07:00:00	48.60
1/12/2018	07:05:00	49.15
1/12/2018	11:00:00	48.60
1/12/2018	14:00:00	48.60
3/12/2018	08:30:00	48.60
3/12/2018	17:00:00	48.60
4/12/2018	09:05:00	51.32
4/12/2018	10:00:00	48.89
4/12/2018	11:00:00	48.60
4/12/2018	11:30:00	48.60
5/12/2018	15:30:00	45.73
6/12/2018	15:30:00	48.60
6/12/2018	17:50:00	48.33
7/12/2018	07:15:00	48.60
7/12/2018	07:30:00	48.60
7/12/2018	09:40:00	48.64
7/12/2018	10:00:00	48.71
7/12/2018	10:40:00	48.60
7/12/2018	17:15:00	48.60
8/12/2018	07:15:00	48.60
8/12/2018	07:20:00	48.60
8/12/2018	10:10:00	48.60
8/12/2018	13:15:00	48.60
8/12/2018	16:45:00	48.55
9/12/2018	09:18:00	48.60
9/12/2018	10:00:00	48.24
9/12/2018	10:15:00	48.60
9/12/2018	12:34:00	48.60
9/12/2018	14:45:00	48.60
9/12/2018	15:17:00	48.60
10/12/2018	11:15:00	43.20
10/12/2018	11:30:00	48.60
10/12/2018	14:20:00	43.20
10/12/2018	14:45:00	43.20

Date	Time	Truck Dry Tonnes
10/12/2018	14:55:00	43.20
11/12/2018	08:30:00	43.20
11/12/2018	13:30:00	43.14
15/12/2018	10:25:00	48.88
15/12/2018	13:45:00	48.60
15/12/2018	13:55:00	48.60
16/12/2018	09:30:00	48.60
16/12/2018	12:30:00	48.60
16/12/2018	15:30:00	48.60
17/12/2018	10:30:00	48.60
17/12/2018	10:40:00	48.60
17/12/2018	11:30:00	48.30
17/12/2018	13:15:00	48.60
17/12/2018	15:00:00	49.27
18/12/2018	12:00:00	48.69
18/12/2018	13:00:00	48.60
18/12/2018	15:00:00	48.62
18/12/2018	15:50:00	48.60
19/12/2018	07:30:00	48.71
19/12/2018	11:55:00	48.60
19/12/2018	15:00:00	48.60
20/12/2018	11:03:00	46.80
20/12/2018	12:00:00	43.37
20/12/2018	13:30:00	46.85
20/12/2018	13:51:00	43.20
20/12/2018	14:40:00	36.07
20/12/2018	16:30:00	36.99
20/12/2018	16:45:00	36.14
21/12/2018	07:15:00	43.20
21/12/2018	09:42:00	48.82
29/12/2018	13:50:00	51.15
29/12/2018	14:00:00	48.55
29/12/2018	16:45:00	48.60
29/12/2018	17:30:00	48.60
Average Truck Movements per day		2.19
Total Tonnes		3,220

Complaints

No complaints were received this month.