

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=20179
Project Approval	10_0191
Reporting Period	October 2017
Date Published	21 Dec 2017

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) 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 and Licence Point 39), 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 October 2017. Figure 2 is a wind rose for the month.

Table 2. Summary of meteorological data for October 2017.

Pollutant	No. of measurements for month	Min. value	Mean value	Median value	Max. value
Air Temperature (°C)	Continuous	1.68	18.56	18.64	31.59
Wind Speed (m/s)	Continuous	0.00	2.45	2.43	12.70
Sigma Theta (°)	Continuous	3.04	21.65	17.60	103.04
Rainfall (mm)	Continuous	0.00	0.02	0.00	8.20
Relative Humidity (%)	Continuous	19.21	57.15	53.85	97.95

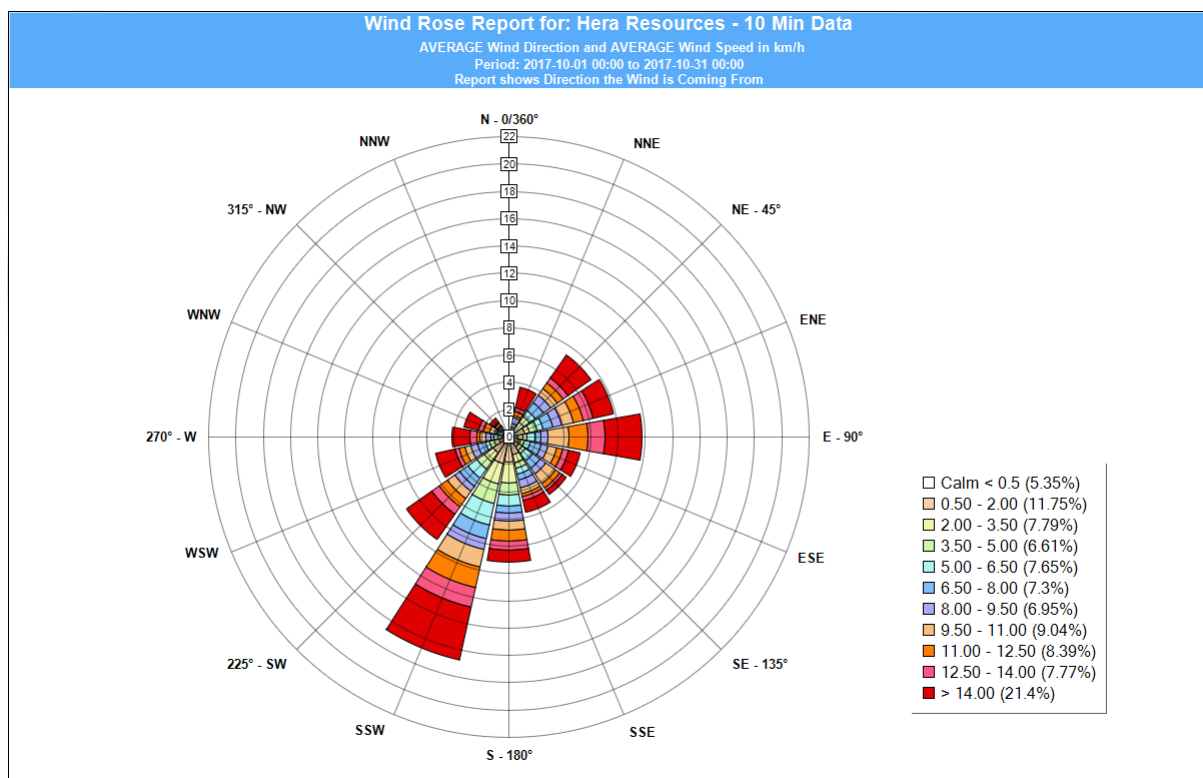


Figure 2. Wind rose October 2017.

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.

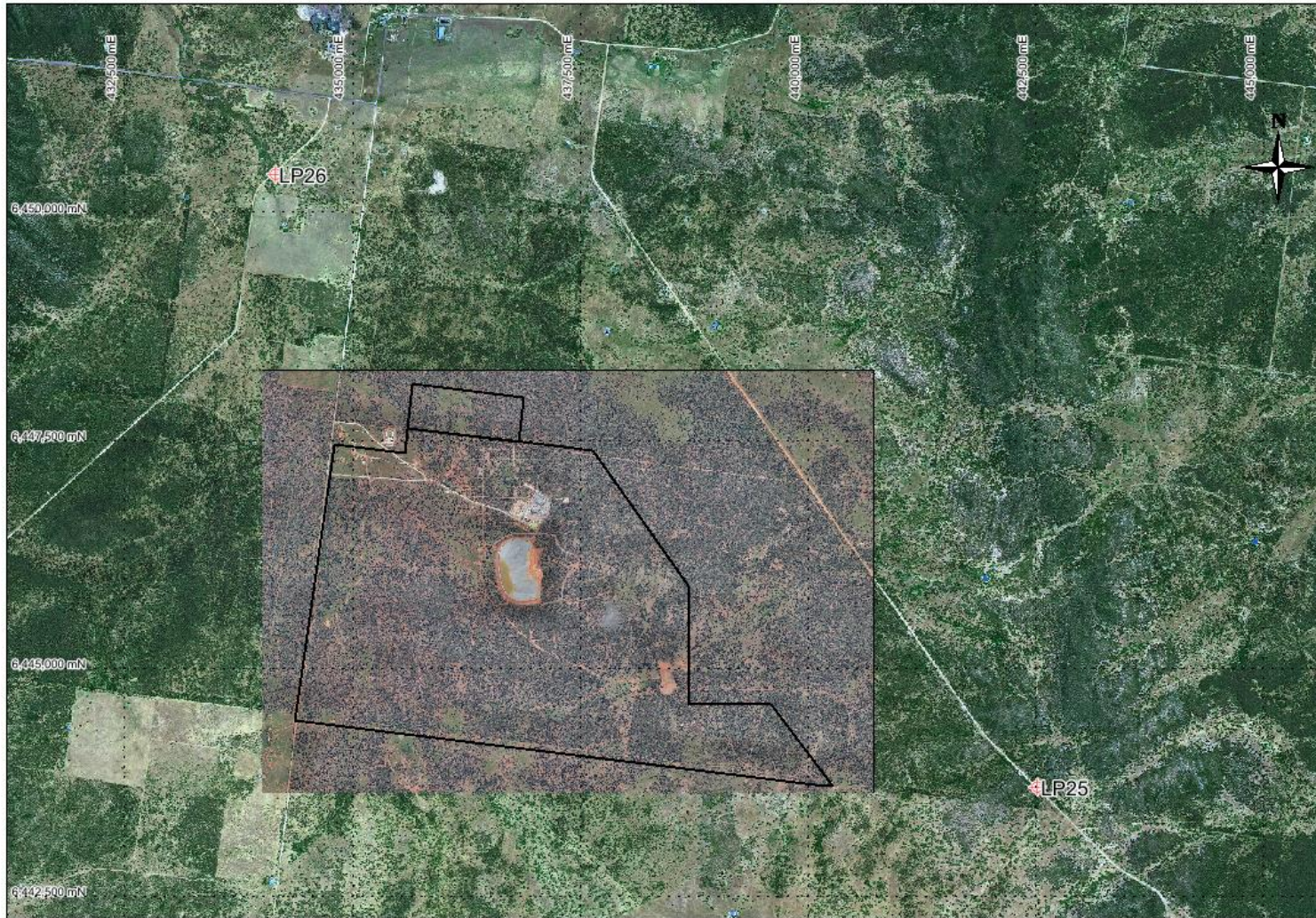


Figure 4. Licensed surface water monitoring points located offsite. The black outline represents the mining leases.

Table 3. Summary of EPL 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 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. An elevated WAD cyanide result was recorded at Licence Point 2 on 15 Oct 2017. A daily sample of Licence Point 1 was not taken on 28 Oct 2017. The non-compliances were reported to the Environment Protection Authority 1 Nov 2017.

Table 4. Summary of surface water quality results for October 2017.

	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	0.44	0	10																
2	0	4.39	0	50																
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

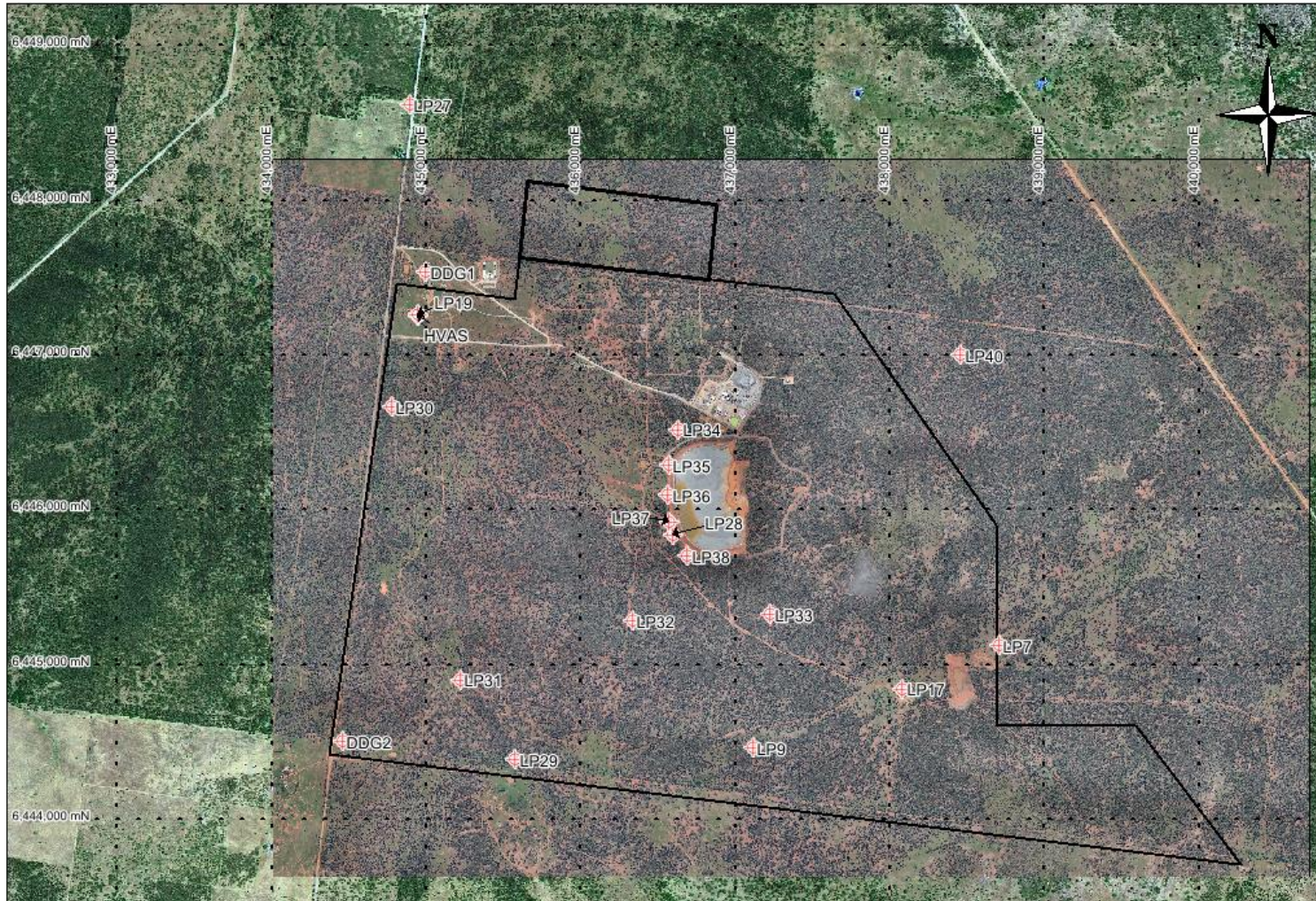


Figure 5. Licensed groundwater and air quality monitoring points.

Table 5. Summary of EPL 20179 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 ($\mu\text{S}/\text{cm}$)
	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)
	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 ($\mu\text{S}/\text{cm}$)
	pH

Quarterly groundwater results for September 2017 are reported in Table 6.

Table 6: Summary of September 2017 groundwater quality results.

Licence Point	Analyte (mg/L)													EC (mS/cm)
	Sb	As	HCO3-	B	Cd	Ca	CO3-2	Cl	Cr	Cu	CN- (Free)	CN- (Total)	CN- (WAD)	
7	<0.001	<0.001	711	0.43	<0.0001	188	<1	922	<0.001	<0.001	<0.004	<0.004	<0.004	4730
9	0.002	<0.001	669	0.68	<0.0001	186	<1	850	<0.001	<0.001	<0.004	<0.004	<0.004	5420
17	<0.001	0.001	336	0.33	0.0001	50	<1	269	<0.001	0.001	<0.004	<0.004	<0.004	1540
19	<0.001	<0.001	314	0.66	<0.0001	37	<1	546	<0.001	0.007	<0.004	<0.004	<0.004	2770
27	<0.001	<0.001	536	1.28	<0.0001	66	<1	1050	<0.001	<0.001	<0.004	<0.004	<0.004	5540
28	0.003	<0.001	738	0.69	<0.0001	193	<1	864	<0.001	<0.001	<0.004	<0.004	<0.004	5340
29	0.012	0.015	387	0.48	<0.0001	63	<1	387	<0.001	<0.001	<0.004	<0.004	<0.004	2520
30	<0.001	0.002	669	1.93	<0.0001	68	<1	1280	<0.001	<0.001	<0.004	<0.004	<0.004	7440
31	0.002	0.001	399	0.9	<0.0001	95	<1	1130	<0.001	0.006	<0.004	<0.004	<0.004	5780
32	<0.001	0.001	764	0.92	<0.0001	225	<1	836	<0.001	<0.001	<0.004	<0.004	<0.004	6330
33	<0.001	0.007	526	0.37	<0.0001	152	<1	556	<0.001	<0.001	<0.004	<0.004	<0.004	3720
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	701	0.48	<0.0001	184	<1	1010	<0.001	<0.001	<0.004	<0.004	<0.004	5130
	Analyte (mg/L)													SWL (m)
	Fe	Pb	Mg	Hg	Mo	Ni	pH	K	Ag	Na	Sn	TDS	Zn	
7	0.1	<0.001	185	<0.0001	<0.001	<0.001	7.25	16	<0.001	600	<0.001	2380	<0.005	56.24
9	1.66	<0.001	244	<0.0001	<0.001	<0.001	7.48	27	<0.001	709	<0.001	2710	0.008	
17	<0.05	<0.001	55	<0.0001	<0.001	0.002	7.23	11	<0.001	182	<0.001	794	0.013	
19	<0.05	<0.001	62	<0.0001	<0.001	<0.001	8.05	19	<0.001	439	<0.001	1470	0.064	
27	0.32	0.006	138	<0.0001	0.002	<0.001	7.46	33	<0.001	899	<0.001	2760	0.024	
28	1.62	<0.001	222	<0.0001	<0.001	<0.001	7.25	26	<0.001	610	<0.001	3390	0.017	83.33
29	3.94	<0.001	74	<0.0001	0.001	0.002	7.51	16	<0.001	342	<0.001	1260	0.01	62.75
30	0.64	<0.001	108	<0.0001	0.001	0.004	7.57	32	<0.001	1400	<0.001	4080	<0.005	59.8
31	0.09	<0.001	140	<0.0001	<0.001	0.002	7.92	31	<0.001	902	<0.001	2980	0.027	
32	1.97	<0.001	270	<0.0001	<0.001	0.003	7.31	30	<0.001	959	<0.001	3170	<0.005	
33	3.89	<0.001	171	<0.0001	<0.001	0.008	7	19	<0.001	418	<0.001	2420	0.073	
34											DRY			
35											DRY			
36											DRY			
37											DRY			
38											DRY			
40	<0.05	<0.001	197	<0.0001	<0.001	<0.001	7.49	15	<0.001	648	<0.001	2620	<0.005	53.81

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.

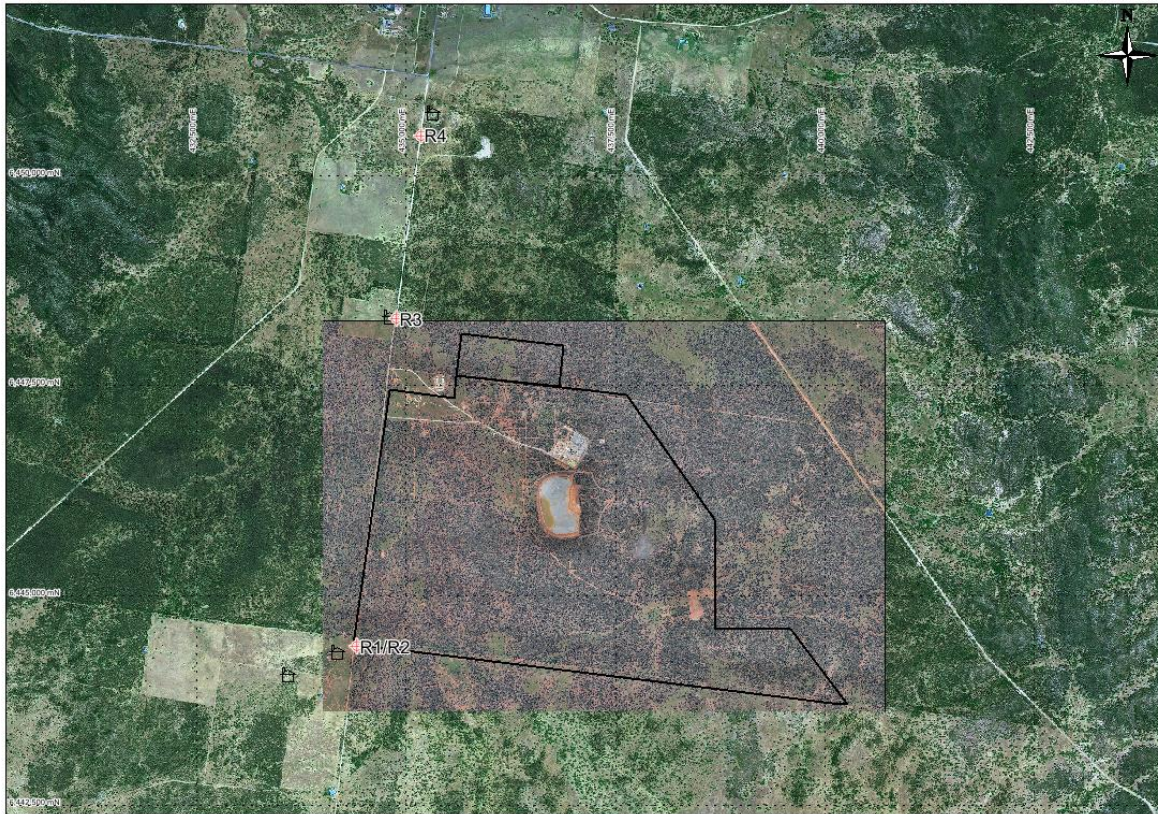


Figure 6. Licensed noise monitoring locations. The black outline represents the approximate project area.

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

An independent consultant (EMM Consultants) was engaged to conduct a noise assessment in July 2017. The results were reported in the July 2017 Environment Report.

Blast Monitoring

The blast monitor is located adjacent to the house 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 20179 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 82 blasts in October 2017. 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 October 2017.

Date	Time	Time period	Vibration (mm/s)	Overpressure (dB)
Sunday, 1 October 2017	7:00	Sunday	<0.35	
Sunday, 1 October 2017	7:00	Sunday	<0.35	
Sunday, 1 October 2017	19:05	Sunday	<0.35	
Monday, 2 October 2017	6:45	PH	<0.35	
Monday, 2 October 2017	18:45	PH	<0.35	
Tuesday, 3 October 2017	6:44	Night	<0.35	
Tuesday, 3 October 2017	6:44	Night	<0.35	
Wednesday, 4 October 2017	6:30	Night	<0.35	
Wednesday, 4 October 2017	6:30	Night	<0.35	
Wednesday, 4 October 2017	7:00	Day	<0.35	
Thursday, 5 October 2017	8:00	Day	<0.35	
Thursday, 5 October 2017	8:00	Day	<0.35	
Thursday, 5 October 2017	8:00	Day	<0.35	
Thursday, 5 October 2017	8:00	Day	<0.35	
Friday, 6 October 2017	6:50	Night	<0.35	
Friday, 6 October 2017	6:50	Night	<0.35	
Friday, 6 October 2017	6:50	Night	<0.35	
Friday, 6 October 2017	6:50	Night	<0.35	
Friday, 6 October 2017	6:50	Night	<0.35	
Friday, 6 October 2017	20:00	Evening	<0.35	
Saturday, 7 October 2017	6:50	Night	<0.35	
Saturday, 7 October 2017	19:00	Evening	<0.35	
Saturday, 7 October 2017	19:00	Evening	<0.35	
Sunday, 8 October 2017	6:15	Sunday	<0.35	
Sunday, 8 October 2017	6:15	Sunday	<0.35	
Sunday, 8 October 2017	18:50	Sunday	<0.35	
Sunday, 8 October 2017	18:50	Sunday	<0.35	
Monday, 9 October 2017	7:10	Day	<0.35	
Monday, 9 October 2017	7:10	Day	<0.35	
Tuesday, 10 October 2017	6:45	Night	<0.35	
Tuesday, 10 October 2017	19:00	Evening	<0.35	
Wednesday, 11 October 2017	7:00	Day	<0.35	
Wednesday, 11 October 2017	7:00	Day	<0.35	
Wednesday, 11 October 2017	18:45	Evening	<0.35	
Thursday, 12 October 2017	7:05	Day	<0.35	
Thursday, 12 October 2017	18:45	Evening	<0.35	
Friday, 13 October 2017	6:30	Night	<0.35	
Friday, 13 October 2017	6:30	Night	<0.35	
Friday, 13 October 2017	18:45	Evening	<0.35	
Saturday, 14 October 2017	6:45	Night	<0.35	
Saturday, 14 October 2017	18:43	Evening	<0.35	
Sunday, 15 October 2017	6:45	Sunday	<0.35	
Sunday, 15 October 2017	18:45	Sunday	<0.35	
Tuesday, 17 October 2017	7:00	Day	<0.35	

Tuesday, 17 October 2017	7:00	Day	<0.35	
Tuesday, 17 October 2017	18:56	Evening	<0.35	
Tuesday, 17 October 2017	18:56	Evening	<0.35	
Wednesday, 18 October 2017	6:40	Night	<0.35	
Wednesday, 18 October 2017	18:45	Evening	<0.35	
Thursday, 19 October 2017	18:55	Evening	<0.35	
Thursday, 19 October 2017	18:55	Evening	<0.35	
Thursday, 19 October 2017	18:55	Evening	<0.35	
Friday, 20 October 2017	18:50	Evening	<0.35	
Saturday, 21 October 2017	7:45	Day	<0.35	
Saturday, 21 October 2017	7:45	Day	<0.35	
Saturday, 21 October 2017	18:30	Evening	<0.35	
Sunday, 22 October 2017	6:45	Sunday	<0.35	
Sunday, 22 October 2017	18:40	Sunday	<0.35	
Sunday, 22 October 2017	18:40	Sunday	<0.35	
Sunday, 22 October 2017	18:40	Sunday	<0.35	
Monday, 23 October 2017	18:50	Evening	<0.35	
Tuesday, 24 October 2017	18:55	Evening	<0.35	
Tuesday, 24 October 2017	18:55	Evening	<0.35	
Wednesday, 25 October 2017	7:04	Day	<0.35	
Wednesday, 25 October 2017	18:45	Evening	<0.35	
Thursday, 26 October 2017	18:40	Evening	<0.35	
Thursday, 26 October 2017	18:40	Evening	<0.35	
Friday, 27 October 2017	7:00	Day	<0.35	
Friday, 27 October 2017	7:00	Day	<0.35	
Friday, 27 October 2017	7:00	Day	<0.35	
Saturday, 28 October 2017	6:45	Night	<0.35	
Saturday, 28 October 2017	6:45	Night	<0.35	
Sunday, 29 October 2017	7:43	Sunday	<0.35	
Sunday, 29 October 2017	7:43	Sunday	<0.35	
Sunday, 29 October 2017	11:51	Sunday	<0.35	
Monday, 30 October 2017	18:45	Evening	<0.35	
Monday, 30 October 2017	18:45	Evening	<0.35	
Tuesday, 31 October 2017	6:40	Night	<0.35	
Tuesday, 31 October 2017	6:40	Night	<0.35	
Tuesday, 31 October 2017	18:50	Evening	<0.35	
Tuesday, 31 October 2017	18:50	Evening	<0.35	
Tuesday, 31 October 2017	18:50	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 in October 2017 have been summarised in Table 11. All results were within licence conditions.

Table 11. Summary of air quality monitoring results for October 2017.

Pollutant	Unit	Limit	Averaging Period	Result
TSP	µg/m ³	90	Annual	37.67
PM-10 (µg/m ³)	µg/m ³	30	Annual	18.47
	µg/m ³	50	3/10/2017	24.00
	µg/m ³	50	9/10/2017	7.00
	µg/m ³	50	15/10/2017	12.00
	µg/m ³	50	21/10/2017	10.00
	µg/m ³	50	27/10/2017	11.00
Deposited Dust (DDG1)	g/m ² /month	4	Annual	1.97
Deposited Dust (DDG2)	g/m ² /month	4	Annual	1.98

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 20179 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. The results from this monitoring were reported in August 2017.

Concentrate Transport

The Company is licenced to transport 50,000 tpa of lead/zinc concentrate during daylight hours. The company is limited to eight truck movements per day (entering and leaving the site) averaged over a calendar month (Table 13).

Table 13. Summary of the concentrate truck movements from the Hera Mine to Hermidale rail siding for the month.

Date	Time	Company ID	Truck Dry Tonnes
3/10/2017	09:00:00	49.95	3/10/2017
3/10/2017	10:30:00	46.34	3/10/2017
3/10/2017	11:00:00	43.94	3/10/2017
3/10/2017	11:30:00	53.82	3/10/2017
3/10/2017	12:00:00	46.80	3/10/2017
3/10/2017	12:30:00	46.58	3/10/2017
3/10/2017	12:30:00	52.76	3/10/2017
3/10/2017	12:45:00	52.00	3/10/2017
3/10/2017	16:00:00	44.65	3/10/2017
3/10/2017	17:30:00	48.06	3/10/2017
5/10/2017	12:00:00	52.92	5/10/2017
5/10/2017	14:30:00	48.66	5/10/2017
6/10/2017	08:00:00	48.25	6/10/2017
6/10/2017	12:30:00	48.52	6/10/2017
6/10/2017	17:00:00	48.94	6/10/2017
10/10/2017	08:00:00	49.34	10/10/2017
10/10/2017	09:30:00	47.50	10/10/2017
10/10/2017	17:00:00	49.29	10/10/2017
11/10/2017	12:00:00	49.03	11/10/2017
11/10/2017	13:00:00	48.64	11/10/2017
16/10/2017	11:00:00	49.41	16/10/2017
16/10/2017	13:45:00	48.86	16/10/2017
16/10/2017	15:30:00	49.29	16/10/2017
16/10/2017	16:00:00	49.93	16/10/2017
16/10/2017	16:30:00	48.96	16/10/2017
16/10/2017	17:00:00	49.07	16/10/2017
19/10/2017	08:30:00	50.91	19/10/2017
22/10/2017	10:00:00	49.14	22/10/2017
22/10/2017	13:00:00	50.11	22/10/2017
23/10/2017	07:30:00	49.25	23/10/2017
23/10/2017	11:20:00	49.97	23/10/2017
23/10/2017	11:50:00	49.56	23/10/2017
23/10/2017	12:53:00	48.78	23/10/2017
23/10/2017	14:30:00	50.30	23/10/2017
23/10/2017	15:10:00	49.43	23/10/2017
23/10/2017	16:40:00	49.08	23/10/2017
24/10/2017	07:00:00	49.85	24/10/2017

24/10/2017	07:20:00	48.70	24/10/2017
24/10/2017	08:00:00	48.61	24/10/2017
24/10/2017	08:30:00	48.53	24/10/2017
24/10/2017	10:05:00	49.79	24/10/2017
24/10/2017	10:35:00	49.92	24/10/2017
24/10/2017	11:30:00	46.21	24/10/2017
24/10/2017	12:30:00	48.52	24/10/2017
24/10/2017	13:00:00	50.14	24/10/2017
24/10/2017	13:45:00	48.96	24/10/2017
24/10/2017	15:00:00	49.34	24/10/2017
24/10/2017	16:00:00	50.30	24/10/2017
24/10/2017	16:15:00	50.31	24/10/2017
24/10/2017	16:47:00	48.75	24/10/2017
24/10/2017	17:05:00	48.97	24/10/2017
24/10/2017	18:30:00	48.88	24/10/2017
25/10/2017	07:30:00	49.64	25/10/2017
25/10/2017	07:50:00	49.83	25/10/2017
25/10/2017	08:45:00	49.97	25/10/2017
25/10/2017	09:00:00	50.94	25/10/2017
25/10/2017	10:45:00	49.25	25/10/2017
25/10/2017	12:00:00	51.18	25/10/2017
25/10/2017	16:00:00	51.32	25/10/2017
26/10/2017	10:00:00	49.79	26/10/2017
26/10/2017	14:00:00	49.76	26/10/2017
27/10/2017	07:00:00	49.08	27/10/2017
27/10/2017	07:00:00	49.94	27/10/2017
27/10/2017	07:45:00	49.62	27/10/2017
27/10/2017	09:30:00	49.29	27/10/2017
27/10/2017	11:00:00	48.82	27/10/2017
27/10/2017	11:15:00	50.21	27/10/2017
27/10/2017	11:35:00	50.20	27/10/2017
27/10/2017	16:00:00	48.88	27/10/2017
30/10/2017	13:00:00	49.68	30/10/2017
30/10/2017	16:45:00	49.68	30/10/2017
31/10/2017	07:00:00	49.57	31/10/2017
Average Truck Movements per day		2.32	
Total Tonnes			3,550

Complaints

No complaints were received this month.