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	March 2019

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.

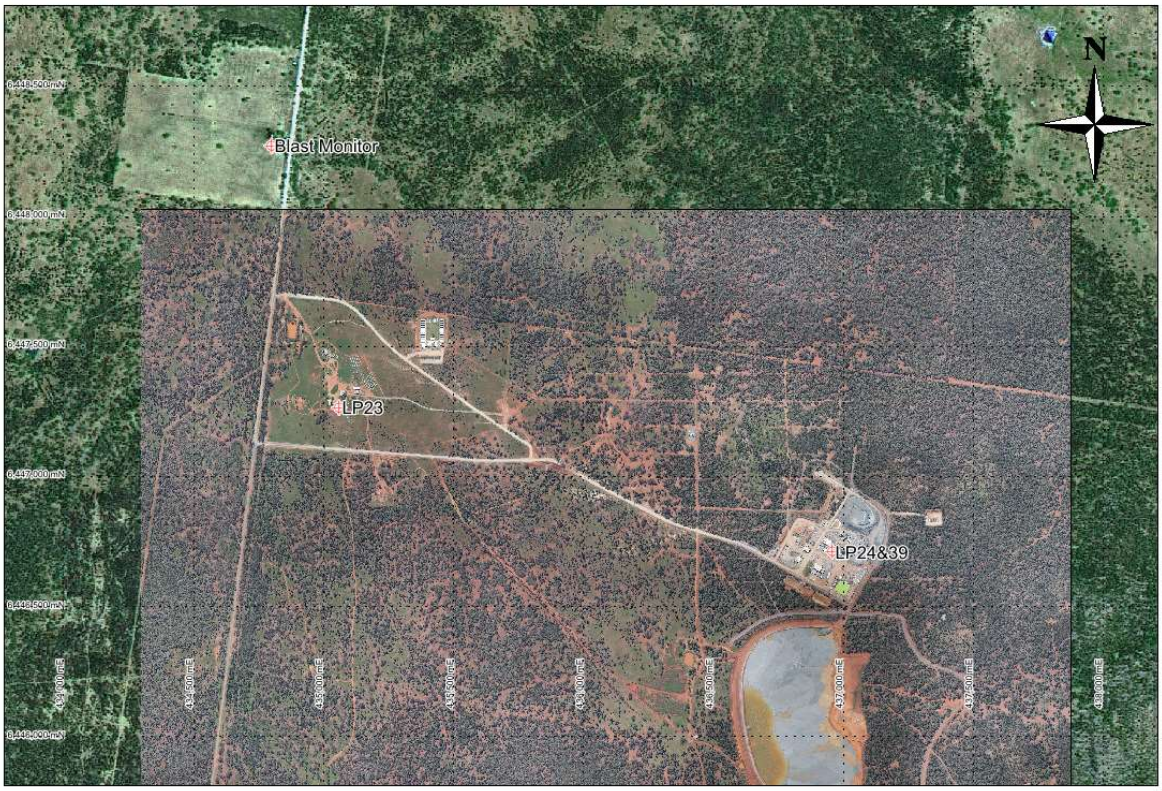


Figure 1. Location of the licence points associated with Gold Room Stack monitoring (Licence Point 24 and Licence Point 39), blast monitoring and meteorological monitoring (Licence Point 23).

Table 1. Summary of EPL 20189 conditions associated with the licensed weather station.

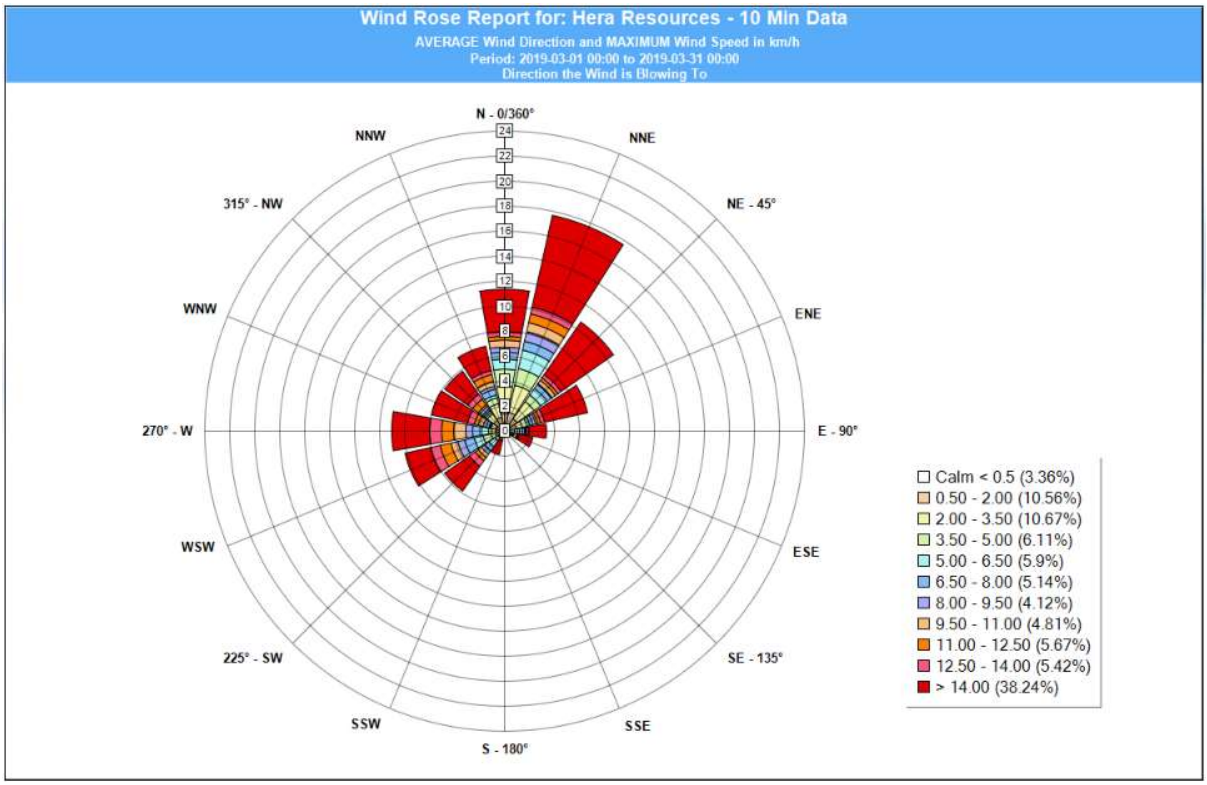
Parameter	Frequency
Air Temperature (°C)	Continuous
Wind Direction (°)	Continuous
Wind Speed (m/s)	Continuous
Sigma Theta (°)	Continuous
Rainfall (mm)	Continuous
Relative Humidity (%)	Continuous

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.

Table 2. Summary of meteorological data for the month.

Parameter	No. of measurements for month	Min. value	Mean value	Max. value	Total
Air Temperature (°C)	Continuous	3.20	23.02	36.63	
Wind Speed (km/h)	Continuous	0.00	8.10	37.98	
Rainfall (mm)	Continuous				39.80
Relative Humidity (%)	Continuous	7.99	43.48	95.83	

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.

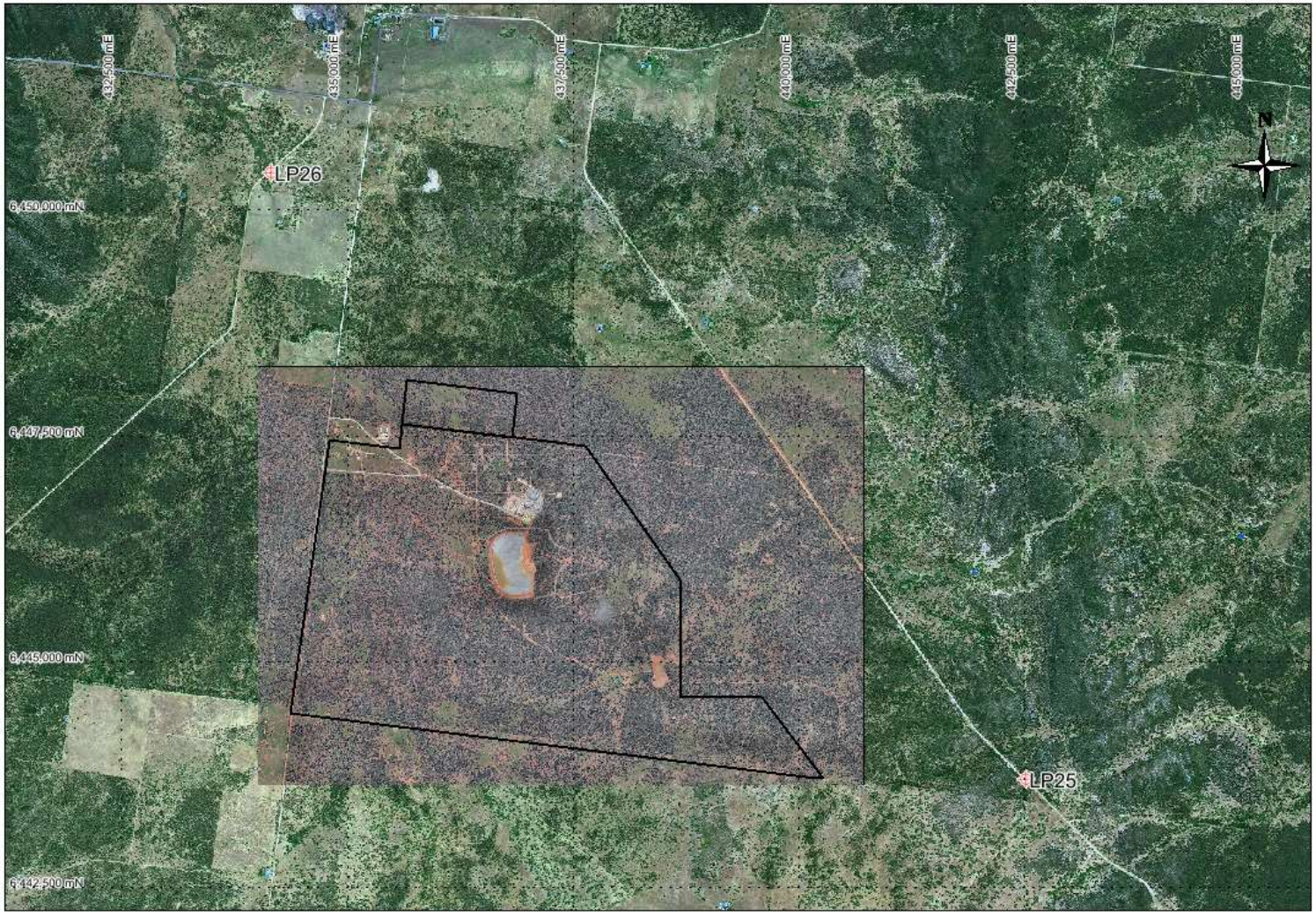


Figure 4. Licensed surface water monitoring points located offsite. The black outline represents the mining leases.

Table 3. Summary of EPL 20189 conditions associated with licensed surface water monitoring points.

EPA ID No.	Monitoring Frequency	
1, 2	Daily during discharge	
3, 4, 25, 26	During discharge	
	Pollutant	**Limit**
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	0.81	0	6																
2	0	1.48	0	20																
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 February.

	Analyte (mg/L)													
Licence Point	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	726	0.4	<0.0001	192	<1	975	<0.001	<0.001	<0.004	<0.004	<0.004	5110
9	<0.001	<0.001	698	0.73	<0.0001	199	<1	987	<0.001	<0.001	<0.004	<0.004	<0.004	6380
17	<0.001	0.002	532	0.28	0.0003	56	<1	267	0.001	0.008	<0.004	<0.004	<0.004	1615
19	<0.001	0.002	278	1.08	<0.0001	74	<1	949	<0.001	<0.001	<0.004	<0.004	<0.004	5280
27	<0.001	0.002	513	1.48	<0.0001	66	<1	1340	<0.001	<0.001	<0.004	<0.004	<0.004	7200
28	<0.001	<0.001	710	0.65	<0.0001	203	<1	940	<0.001	0.002	<0.004	<0.004	<0.004	6110
29	0.014	<0.001	354	0.43	<0.0001	50	<1	347	<0.001	0.003	<0.004	<0.004	<0.004	1910
30	<0.001	0.002	639	1.92	<0.0001	73	<1	1390	<0.001	<0.001	<0.004	<0.004	<0.004	5890
31	0.001	<0.001	406	0.84	<0.0001	102	<1	1210	<0.001	0.002	<0.004	<0.004	<0.004	5360
32														
33	<0.001	0.003	645	0.46	<0.0001	184	<1	728	<0.001	<0.001	<0.004	<0.004	<0.004	4660
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	513	0.047	<0.0001	191	<1	1080	<0.001	<0.001	<0.004	<0.004	<0.004	4150

	Analyte (mg/L)													
	Fe	Pb	Mg	Hg	Mo	Ni	pH	K	Ag	Na	Sn	TDS	Zn	SWL (m)
7	0.2	<0.001	0.295	<0.0001	<0.001	<0.001	6.99	16	<0.001	550	<0.001	2830	0.01	53.48
9	1.39	<0.001	0.167	<0.0001	<0.001	0.005	7.28	26	<0.001	722	<0.001	3920	<0.005	
17	<0.05	<0.001	0.004	0.0005	<0.001	0.003	6.87	12	<0.001	159	<0.001	922	0.051	
19	<0.05	<0.001	<0.001	<0.0001	<0.001	0.001	7.4	31	<0.001	732	<0.001	2640	<0.005	
27	0.25	<0.001	0.169	<0.0001	0.002	0.012	7.21	43	<0.001	1040	<0.001	3770	0.018	56.06
28	1.26	<0.001	0.342	0.0006	<0.001	0.001	6.81	34	<0.001	640	<0.001	3590	0.026	94.52
29	<0.05	0.001	0.002	0.0023	0.002	0.003	7.41	16	<0.001	311	<0.001	1330	0.001	70.25
30	0.26	<0.001	0.283	<0.0001	0.001	<0.001	7.15	32	<0.001	1310	<0.001	4440	<0.005	60.69
31	<0.05	<0.001	0.114	<0.0001	0.001	0.001	7.35	30	<0.001	864	<0.001	3520	0.036	
32	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	
33	2.32	<0.001	0.329	0.0002	<0.001	0.006	6.75	21	<0.001	512	<0.001	2810	0.018	
34														dry
35														dry
36														dry
37														dry
38														dry
40	0.21	0.004	0.12	<0.0001	<0.001	<0.001	7.34	15	<0.001	626	<0.001	5400	<0.005	54.58

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.

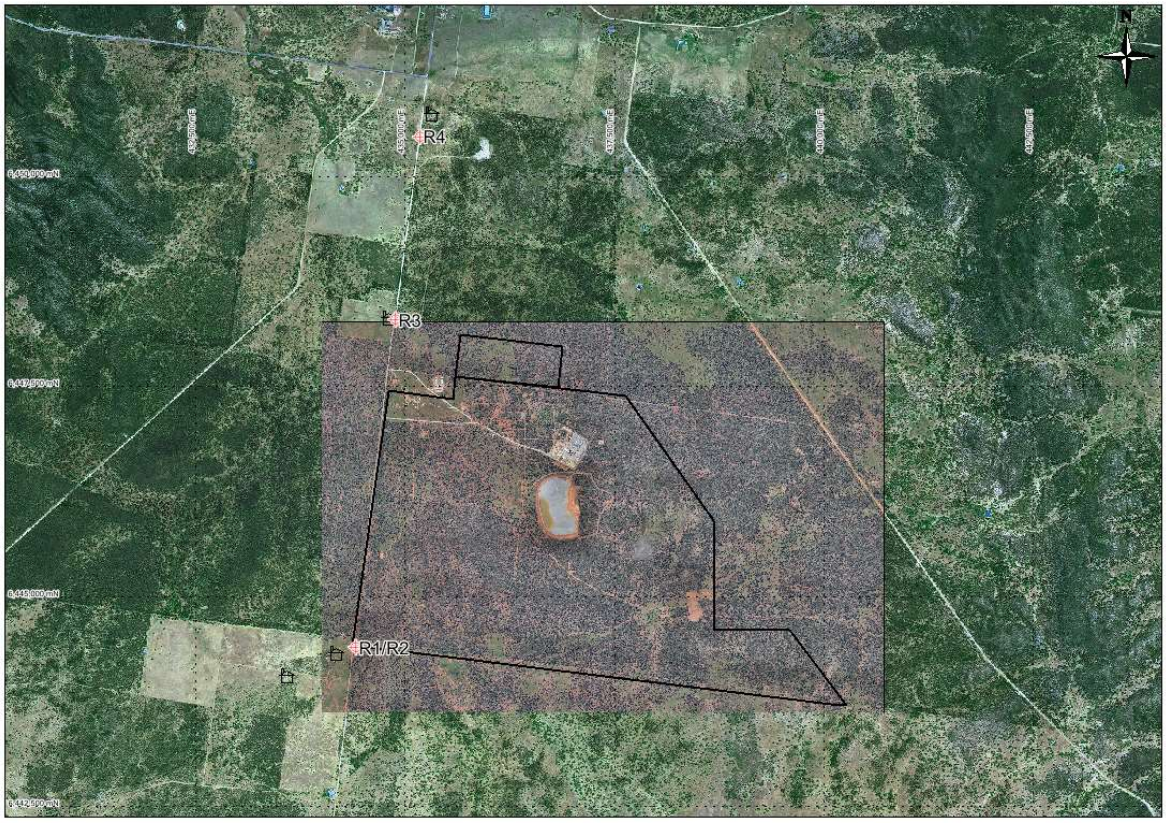


Figure 6. Licensed noise monitoring locations. The black outline represents the Mining Lease areas.

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.)
	(monitor for every blast)	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.)
	(monitor for every blast)	All times	115 dB (95% of total blasts)

The Company conducted a total of 42 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)
Friday, 1 March 2019	18:40:00	Evening	<0.35	<88
Saturday, 2 March 2019	18:40:00	Evening	<0.35	<88
Saturday, 2 March 2019	18:40:00	Evening	<0.35	<88
Monday, 4 March 2019	18:45:00	Evening	<0.35	<88
Monday, 4 March 2019	18:45:00	Evening	<0.35	<88
Tuesday, 5 March 2019	06:40:00	Night	<0.35	<88
Tuesday, 5 March 2019	18:50:00	Evening	<0.35	<88
Thursday, 7 March 2019	13:00:00	Day	<0.35	<88
Friday, 8 March 2019	07:00:00	Day	<0.35	<88
Saturday, 9 March 2019	07:00:00	Day	<0.35	<88
Saturday, 9 March 2019	07:00:00	Day	<0.35	<88
Sunday, 10 March 2019	07:00:00	Night	<0.35	<88
Sunday, 10 March 2019	07:00:00	Night	<0.35	<88
Sunday, 10 March 2019	19:00:00	Night	<0.35	<88
Monday, 11 March 2019	07:00:00	Day	<0.35	<88
Monday, 11 March 2019	07:00:00	Day	<0.35	<88
Tuesday, 12 March 2019	06:45:00	Night	<0.35	<88
Tuesday, 12 March 2019	18:45:00	Evening	<0.35	<88
Wednesday, 13 March 2019	06:45:00	Night	<0.35	<88
Saturday, 16 March 2019	13:00:00	day	<0.35	<88
Sunday, 17 March 2019	13:05:00	Night	<0.35	<88
Sunday, 17 March 2019	13:05:00	Night	<0.35	<88
Tuesday, 19 March 2019	13:15:00	day	<0.35	<88
Friday, 22 March 2019	07:30:00	day	<0.35	<88
Saturday, 23 March 2019	06:50:00	night	<0.35	<88
Saturday, 23 March 2019	19:05:00	Evening	<0.35	<88
Monday, 25 March 2019	06:50:00	Night	<0.35	<88
Tuesday, 26 March 2019	06:55:00	Night	<0.35	<88
Tuesday, 26 March 2019	06:55:00	Night	<0.35	<88

Tuesday, 26 March 2019	18:45:00	Evening	<0.35	<88
Wednesday, 27 March 2019	06:50:00	Night	<0.35	<88
Wednesday, 27 March 2019	06:50:00	Night	<0.35	<88
Thursday, 28 March 2019	07:05:00	Day	<0.35	<88
Thursday, 28 March 2019	07:05:00	Day	<0.35	<88
Friday, 29 March 2019	06:35:00	Night	<0.35	<88
Friday, 29 March 2019	06:35:00	Night	<0.35	<88
Saturday, 30 March 2019	07:00:00	Day	<0.35	<88
Saturday, 30 March 2019	07:00:00	Day	<0.35	<88
Saturday, 30 March 2019	19:15:00	Evening	<0.35	<88
Saturday, 30 March 2019	19:15:00	Evening	<0.35	<88
Sunday, 31 March 2019	07:50:00	Night	<0.35	<88
Sunday, 31 March 2019	18:50:00	Evening	<0.35	<88

Air Quality Monitoring

The Company has two High Volume Air Samplers (HVAS), designed to sample Particulate matter less than 10 µm (PM_{10}) 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.

Several exceedances were recorded this month; however, these were as a result of the ongoing drought conditions rather than mining operations.

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

Pollutant	Unit	Limit	Averaging Period	Result
TSP	µg/m³	90	Annual	59.07
PM-10 (µg/m³)	µg/m³	30	Annual	28.79
	µg/m³	50	3/03/2019	48.00
	µg/m³	50	9/03/2019	37.00
	µg/m³	50	15/03/2019	53.00
	µg/m³	50	21/03/2019	63.00
	µg/m³	50	27/03/2019	45.00
Deposited Dust (DDG1)	g/m²/month	4	Annual	4.26
Deposited Dust (DDG2)	g/m²/month	4	Annual	4.68

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	Load Time	Truck Dry Tonnes
1/03/2019	8:36:00	48.67
1/03/2019	11:45:00	48.62
1/03/2019	12:50:00	48.60
2/03/2019	7:05:00	48.60
4/03/2019	10:00:00	48.64
4/03/2019	13:35:00	48.60
4/03/2019	14:30:00	48.60
9/03/2019	9:02:00	48.60
9/03/2019	11:15:00	48.60
9/03/2019	12:00:00	47.70
9/03/2019	23:00:00	42.30
9/03/2019	15:00:00	44.77
11/03/2019	14:30:00	48.60

11/03/2019	17:30:00	48.60
12/03/2019	7:15:00	47.20
14/03/2019	8:30:00	48.60
14/03/2019	12:49:00	48.60
14/03/2019	12:45:00	48.80
20/03/2019	13:25:00	48.78
20/03/2019	14:00:00	48.69
20/03/2019	16:50:00	48.60
20/03/2019	16:58:00	48.60
21/03/2019	7:30:00	48.60
21/03/2019	11:15:00	48.60
21/03/2019	14:30:00	48.64
24/03/2019	7:40:00	48.64
24/03/2019	11:00:00	48.73
24/03/2019	13:52:00	48.69
24/03/2019	16:35:00	48.65
25/03/2019	8:00:00	48.74
25/03/2019	8:10:00	48.82
27/03/2019	8:15:00	48.37
27/03/2019	12:00:00	48.13
27/03/2019	15:45:00	48.60
28/03/2019	13:30:00	48.60
28/03/2019	16:45:00	48.60
29/03/2019	7:10:00	48.60
31/03/2019	12:00:00	48.51
31/03/2019	15:30:00	48.46
Total Tonnes		**1,883.35**
Average Truck Movements per day		**1.26**

Complaints

No complaints were received this month.