

Hera Mine
MONTHLY ENVIRONMENTAL MONITORING SUMMARY
REPORT

EPL 20179
"The Peak"
Burthong Rd,Nymagee
NSW 2831

December 2021

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1. INTENT

This monthly environmental monitoring report is a requirement under section 66(6) of the NSW Protection of the Environment Operations Act 1997 (POEO Act), in which holders of an environment protection licence make their pollution monitoring data publicly available. This report is intended to keep the community, stakeholders, and regulators informed of the Hera mine's environmental performance and to maintain a transparent and accountable reporting system.

2. SCOPE

This report covers all of Hera's environmental monitoring conditions for December 2021. These conditions, where applicable, are measured against Hera's Environmental Protection Licence (EPL), development consent conditions and Australian Standards to determine Hera's compliance.

These conditions include;

- Weather Conditions
- Surface Water Monitoring results
- Ground Water Monitoring results
- Noise Monitoring results
- Blasting monitoring results
- Air Quality Monitoring results
- Gold Room Stack Monitoring
- Concentrate Transport

3. DEFINITIONS

mm/s – the peak of the vibration in millimetres per second

Insoluble Solids – the insoluble portion of the dust deposition

Total Lead – Including dissolved lead in the liquid portion and the lead particulates in the filter paper following laboratory analysis

g/m²/month – grams per square meter per month

dB (L) – decibel (linear maximum)

dB LAeq (15 minute) – Decibel (linear weighted average over 15 minutes)

CN Free – Free Cyanide (hydrogen cyanide and cyanide ions in solution)

CN WAD – Weak Acid Dissociable Cyanide (includes cyanide species liberated at moderate pH of 4.5)

TSS – Total Suspended Solids

4. MAPS

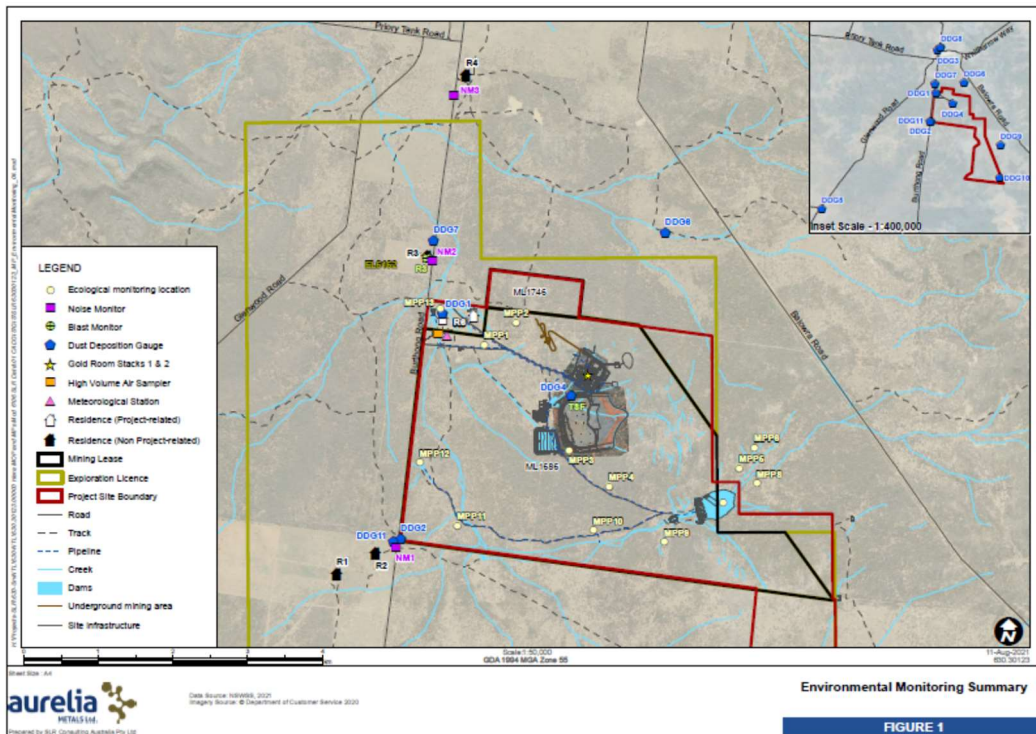


Figure 1 Hera Monitoring Locations

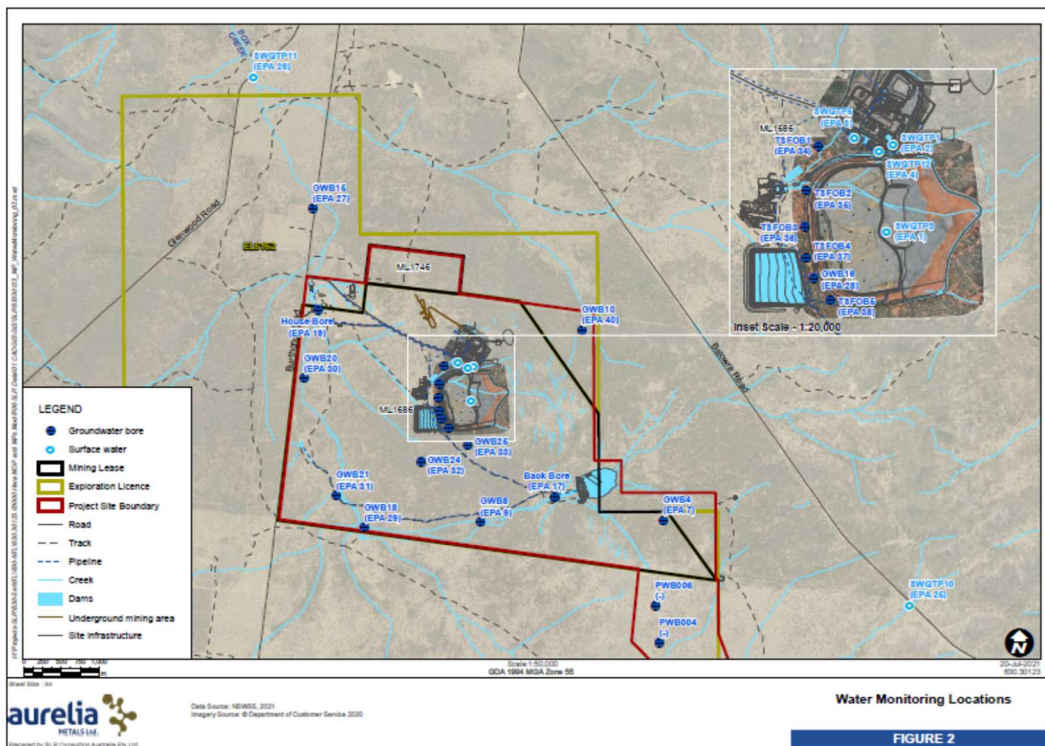


Figure 2 Hera Water Monitoring Locations

5. MONITORING RESULTS

5.1. WEATHER

The meteorology monitoring data is acquired through Hera’s weather station located on the Hera Mine site, approx. 4km south of the town of Nymagee, NSW, Refer **Figure 1**.

Meteorological monitoring is conducted on a continuous basis. **Table 1** shows a summary of the data collected by the weather station this month. **Figure 3** is the wind rose for the month of December.

Table 1. Summary of meteorological data for the month.

Parameter	No. of measurements for month	Min. value	Mean value	Median value	Max. value	Total
Air Temperature (°C)	Continuous	7.98	23.23	23.01	37.93	
Wind Speed (m/s)	Continuous	0.00	8.58	7.89	29.79	
Sigma Theta (°)	Continuous	2.07	23.12	18.41	102.73	
Rainfall (mm)	Continuous	0.00	0.01	0.00	4.20	36.20
Relative Humidity (%)	Continuous	17.00	53.82	50.45	99.84	

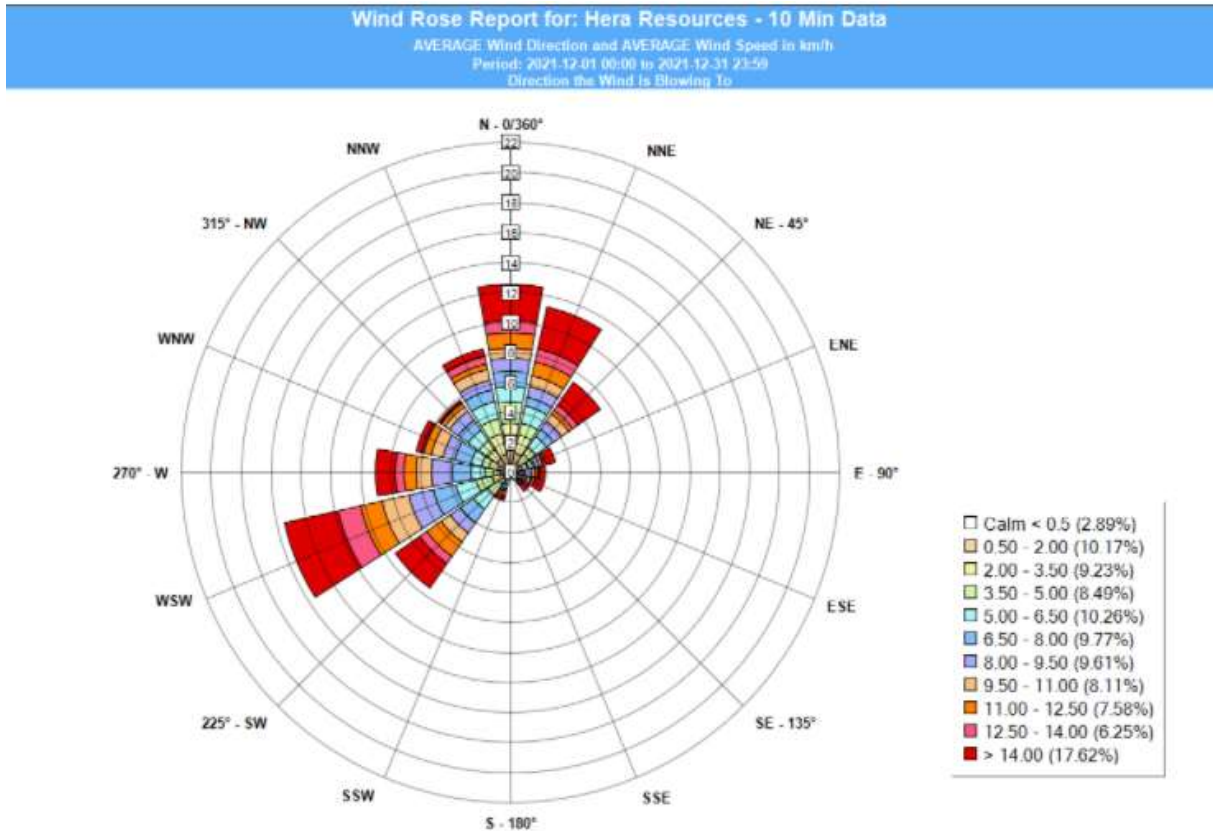


Figure 3 –Wind Rose Hera December 2021

5.2. WATER

Water monitoring involves collecting water samples from several locations around site. The water samples are submitted to a NATA accredited laboratory for physical and chemical analysis. Analysis of pH and electrical conductivity are obtained in the field using a handheld monitor.

Surface Water Monitoring

Hera has 6 licence points associated with surface water. Four of these points are located within the mining lease and two are located off the mining lease, with one upstream and another downstream of the lease, refer **Figure 2**.

Table 2 shows a summary of the surface water quality results for December 2021 for licence points 1 and 2. Licence points 3, 4, 25 and 26 did not discharge during December. No exceedances were recorded for the month.

Table 2 Surface Water Monitoring Results

Monitoring point	WAD Cyanide (mg/L)			
	Minimum	Average	Maximum	EPL 90 th percentile concentration criteria
TSF Thickener discharge (EPA Point 1)	0.0	0.00	0	20
Process Water Dam (EPA Point 2)	0.0	0.03	1	20

Groundwater Monitoring

Hera has 17 licence points associated with groundwater. These points are located around the Project Area, (refer **Figure 2**) and are a combination of observation bores, productions bores and piezometers. Monitoring is conducted quarterly and was completed in December. Groundwater monitoring results are presented in **Table 3**.

Table 3 Quarterly Groundwater Monitoring Results.

Licence Point	Analyte (mg/L)													EC (mS/cm)	
	Sb	As	HCO ₃ ⁻	B	Cd	Ca	CO ₃ ⁻²	Cl	Cr	Cu	CN- (free)	CN- (Total)	CN- (WAD)		
7	<0.001	0.001	555	0.41	<0.0001	237	<1	1290	<0.001	<0.001	<0.004	<0.004	<0.004	5.74	
9	0.002	<0.001	320	0.66	<0.0001	212	<1	1080	<0.001	<0.001	<0.004	<0.004	<0.004	5.76	
17	<0.001	<0.001	432	0.4	0.0004	173	<1	961	<0.001	<0.001	<0.004	<0.004	<0.004	4.43	
19	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	
27	<0.001	<0.001	466	1.39	<0.0001	68	<1	1410	<0.001	<0.001	<0.004	<0.004	<0.004	6.43	
28	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	
29	0.007	<0.001	296	0.45	<0.0001	39	<1	291	<0.001	<0.001	<0.004	<0.004	<0.004	1.74	
30	0.002	0.003	470	1.76	<0.0001	78	<1	1480	<0.001	0.003	<0.004	<0.004	<0.004	7.42	
31	0.002	<0.001	409	0.78	<0.0001	110	<1	1070	<0.001	<0.001	<0.004	<0.004	<0.004	5.81	
32	0.001	<0.001	604	0.88	<0.0001	229	<1	1020	<0.001	<0.001	<0.004	<0.004	<0.004	6.29	
33	<0.001	0.01	233	0.46	<0.0001	341	<1	963	<0.001	<0.001	<0.004	<0.004	<0.004	5.92	
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	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	
Licence Point	Analyte (mg/L)													SWL (m)	
	Fe	Pb	Mg	Hg	Mo	Ni	pH	K	Ag	Na	Sn*	TDS	Zn		
7	0.18	<0.001	233	<0.0001	<0.001	0.002	6.96	22	<0.001	672	<0.001	3750	<0.005	6.20	
9	<0.05	<0.001	254	<0.0001	<0.001	0.11	7.3	29	<0.001	740	<0.001	4040	0.024	7.29	
17	0.14	<0.001	182	<0.0001	<0.001	0.002	6.86	17	<0.001	530	<0.001	2800	0.017	Manual update required	
19	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	
27	0.26	<0.001	163	<0.0001	<0.001	<0.001	7.1	45	<0.001	1040	<0.001	3830	0.005	6.50	
28	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	
29	<0.05	<0.001	48	0.001	0.002	<0.001	7.29	16	<0.001	266	<0.001	1060	<0.005	0.00	
30	0.14	0.009	109	<0.0001	<0.001	0.007	7.20	37	<0.001	1400	<0.001	4500	0.02	0.00	
31	0.12	<0.001	148	<0.0001	<0.001	0.003	7.8	34	<0.001	904	<0.001	3970	<0.005	0.00	
32	2.6	<0.001	241	<0.0001	<0.001	0.084	7.27	33	<0.001	892	<0.001	4330	0.056	0.00	
33	41	0.001	332	<0.0001	<0.001	1.21	6.28	26	<0.001	602	<0.001	4760	0.779	0.00	
34															Dry
35															Dry
36															Dry
37															Dry
38															Dry
40	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	Out of Service	6.83	

5.3. NOISE

The Company has four licenced monitoring points (R1, R2, R3 and R4) located along the Burthong Road (**Figure 1**). 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 in very close proximity to each other.

A noise assessment was carried out on the 11th and 12th of May 2021. Results were reported in the June Monthly report. The next annual noise monitoring is due to be undertaken in May 2022. Hera holds a Noise and Blast agreement with the Landholder of R3. The agreement has been provided to the EPA and the Department of Planning, Industry and Environment (DPIE).

5.4. BLAST MONITORING

The blast monitor is located adjacent to the dwelling on the nearest neighbour’s property (**Figure 1**).

Hera conducted a total of 38 blasts during December. During November a new blast monitoring system was implemented which does not trigger monitoring for every blast. One blast event triggered monitoring at R3 during December (Refer to **Table 4**). No exceedances were recorded for the month.

Hera holds a Noise and Blast agreement with the Landholder of R3. The agreement has been provided to the EPA and DPIE.

Table 4. Summary of blast monitoring results for December at R3.

Date	Time	Time Period	Vibration(mm/s)	Overpressure (dB)
10/12/2021	7:01	Day	0.17	0.91

5.5. AIR QUALITY

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 1** for location of the sampling points.

Results for air quality monitoring conducted in December have been summarised in **Table 5**. No exceedances were recorded.

Table 5. Summary of air quality monitoring results for December.

Pollutant	Unit	Limit	Averaging Period	Result
TSP	µg/m ³	90	Annual	37.58
PM-10 (µg/m ³)	µg/m ³	25	Annual	13.57
5/12/2021	µg/m ³	50	24 hour	19.7
11/12/2021	µg/m ³	50	24 hour	14.8
17/12/2021	µg/m ³	50	24 hour	17.3
23/12/2021	µg/m ³	50	24 hour	12.2
29/12/2021	µg/m ³	50	24 hour	6.8
Deposited Dust (DDG1)	g/m ² /month	4	Annual	2.17
Deposited Dust (DDG2)	g/m ² /month	4	Annual	2.45

5.6. GOLD ROOM STACK MONITORING

Hera has two licenced gold room stack monitoring points (Error! Reference source not found.).

Gold Room stack monitoring is conducted on an annual basis. Annual monitoring was conducted on 1 September 2020 and was included in the September 2020 monthly report. Due to Covid-19 restrictions 2021 stack monitoring has not been completed. The next annual monitoring is due to be completed in January 2022.

5.7. CONCENTRATE TRANSPORT

The Company is licenced to transport 60,000 tonnes of lead/zinc concentrate from site during daylight hours only. Hera is limited to eight truck movements per day averaged over a calendar month (two truck movements is defined as entering and leaving the site). A summary of concentrate haulage operations is presented in **Table 6**.

Table 6. Summary of the concentrate truck movements from the Hera Mine to Hermidale rail siding for December

Date	Load Time	Truck Dry Tonnes
01-Dec-21	09:00:00	48.62
01-Dec-21	12:00:00	48.41
01-Dec-21	13:00:00	48.73
01-Dec-21	15:20:00	49.12
01-Dec-21	18:25:00	49.05
02-Dec-21	06:30:00	48.67
03-Dec-21	06:30:00	49.00
05-Dec-21	10:30:00	48.80
06-Dec-21	06:00:00	49.05
06-Dec-21	09:00:00	48.85
06-Dec-21	12:30:00	49.01
06-Dec-21	15:30:00	48.74
07-Dec-21	06:20:00	48.69
07-Dec-21	09:45:00	48.71
07-Dec-21	12:45:00	48.87
07-Dec-21	15:45:00	48.80
07-Dec-21	18:50:00	48.85
08-Dec-21	06:45:00	49.19
08-Dec-21	09:40:00	48.96
08-Dec-21	12:40:00	48.69
08-Dec-21	14:15:00	48.98
08-Dec-21	17:10:00	49.05
09-Dec-21	06:00:00	48.92
09-Dec-21	06:20:00	48.60
09-Dec-21	09:20:00	49.09
09-Dec-21	09:40:00	48.64
09-Dec-21	12:20:00	48.98
09-Dec-21	14:10:00	48.65
09-Dec-21	15:40:00	48.80
09-Dec-21	18:40:00	49.01
10-Dec-21	06:35:00	48.76
10-Dec-21	09:40:00	48.91
10-Dec-21	10:30:00	48.96
10-Dec-21	15:25:00	49.18
12-Dec-21	11:00:00	48.62
12-Dec-21	14:00:00	48.74
12-Dec-21	16:55:00	48.89

Date	Load Time	Truck Dry Tonnes
13-Dec-21	10:05:00	49.09
13-Dec-21	11:45:00	48.76
13-Dec-21	14:05:00	49.05
13-Dec-21	16:00:00	48.80
13-Dec-21	19:10:00	48.87
14-Dec-21	09:30:00	48.92
14-Dec-21	13:00:00	48.74
14-Dec-21	16:45:00	48.46
14-Dec-21	18:25:00	49.23
15-Dec-21	06:35:00	48.98
15-Dec-21	09:20:00	48.91
15-Dec-21	09:40:00	48.74
15-Dec-21	12:50:00	48.74
15-Dec-21	13:30:00	48.94
15-Dec-21	16:00:00	49.52
15-Dec-21	17:00:00	48.80
16-Dec-21	11:30:00	48.96
16-Dec-21	13:30:00	48.69
16-Dec-21	15:00:00	48.89
16-Dec-21	18:00:00	49.10
17-Dec-21	07:00:00	49.64
17-Dec-21	10:20:00	48.85
17-Dec-21	10:30:00	48.91
17-Dec-21	13:25:00	49.36
18-Dec-21	10:30:00	48.78
18-Dec-21	14:30:00	48.74
18-Dec-21	18:15:00	48.78
19-Dec-21	09:00:00	49.05
19-Dec-21	10:30:00	48.73
19-Dec-21	14:00:00	48.73
19-Dec-21	18:00:00	48.74
20-Dec-21	07:45:00	48.74
20-Dec-21	15:15:00	48.69
21-Dec-21	06:25:00	48.80
21-Dec-21	09:25:00	48.94
21-Dec-21	10:00:00	48.65
21-Dec-21	12:30:00	48.94
21-Dec-21	13:45:00	49.00
21-Dec-21	18:00:00	49.34
22-Dec-21	10:00:00	24.42

Date	Load Time	Truck Dry Tonnes
25-Dec-21	10:00:00	48.80
25-Dec-21	15:15:00	48.69
26-Dec-21	11:00:00	48.83
29-Dec-21	10:30:00	48.76
29-Dec-21	14:15:00	48.92
30-Dec-21	08:40:00	49.27
30-Dec-21	09:15:00	48.60
30-Dec-21	11:55:00	48.98
30-Dec-21	12:35:00	48.85
30-Dec-21	15:05:00	48.89
30-Dec-21	16:45:00	49.05
30-Dec-21	18:30:00	48.80
31-Dec-21	06:40:00	49.07
31-Dec-21	07:00:00	48.87
31-Dec-21	10:00:00	48.74
31-Dec-21	10:05:00	49.68
31-Dec-21	11:00:00	48.91
31-Dec-21	15:00:00	24.34
Total Tonnes		4595.64
Average Truck Movements per day		6.33

5.8. COMPLAINTS

No complaints were received this month, presented in **Table 7**. Summary of the complaints received this month

Table 7. Summary of the complaints received this month

Date	Complaint category
	Nil