

HERA MONTHLY ENVIRONMENTAL MONITORING SUMMARY
DECEMBER 2022



Table of Contents

1. INTENT 3

2. SCOPE 3

3. DEFINITIONS..... 3

4. MAPS.....4

5. MONITORING RESULTS 5

 5.1. Weather..... 5

 5.2. Water 6

 Surface Water 6

 Groundwater 6

 5.3. Noise..... 9

 5.4. Blast Monitoring..... 9

 5.5. Air Quality10

 5.6. Gold Room Stack Monitoring10

 5.7. Concentrate Transport11

 5.8. Complaints 13

Author	Mark Williams
Version	1.0
Date Created	January 2023
Review Date	2 February 2023

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 2022. 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
- Complaints

3. Definitions

Term	Definition
mm/s	The peak of the vibration in millimeters per second
Insoluble Solids	The insoluble portion of the dust deposited in dust deposition gauge
Total Lead	Including dissolved lead in the liquid portion and the lead particulates in the filter paper following laboratory analysis
g/m ² /month	Grams per square meter per month
dB (L)	Decibel (linear maximum)
dB LA _{eq} (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

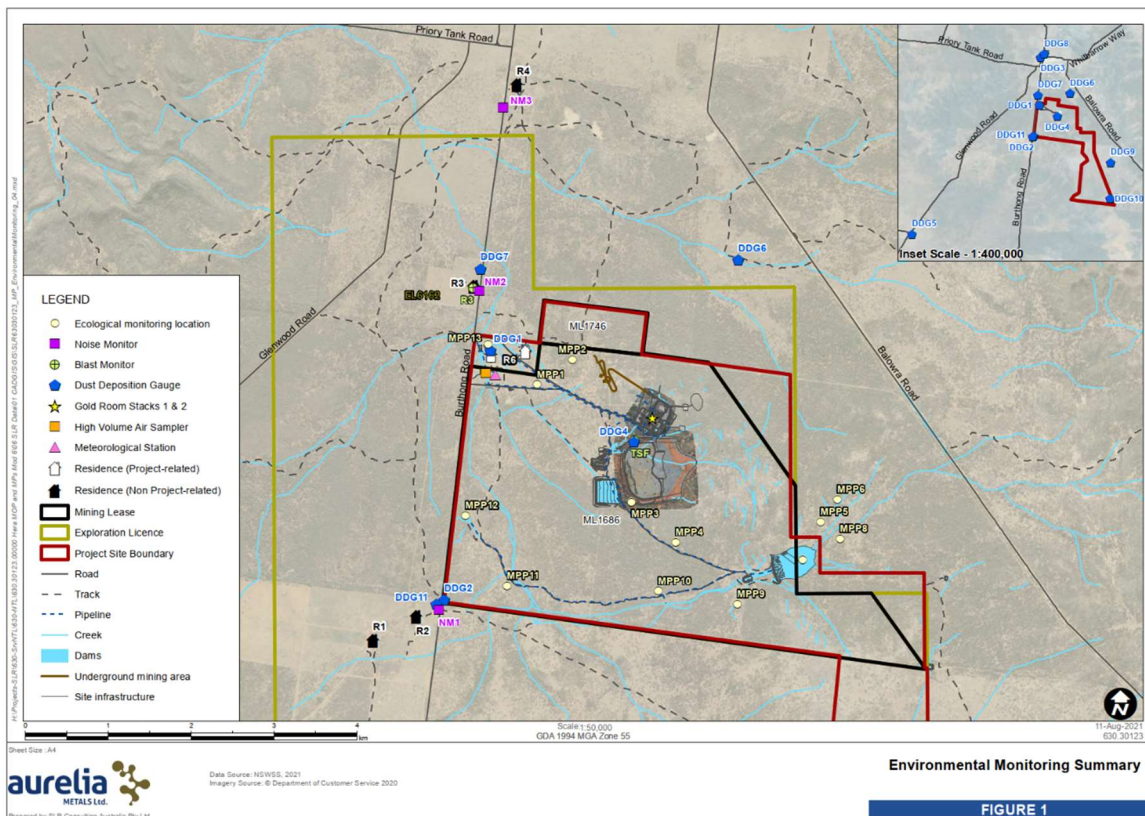


Figure 1 - Hera Environmental Monitoring Locations

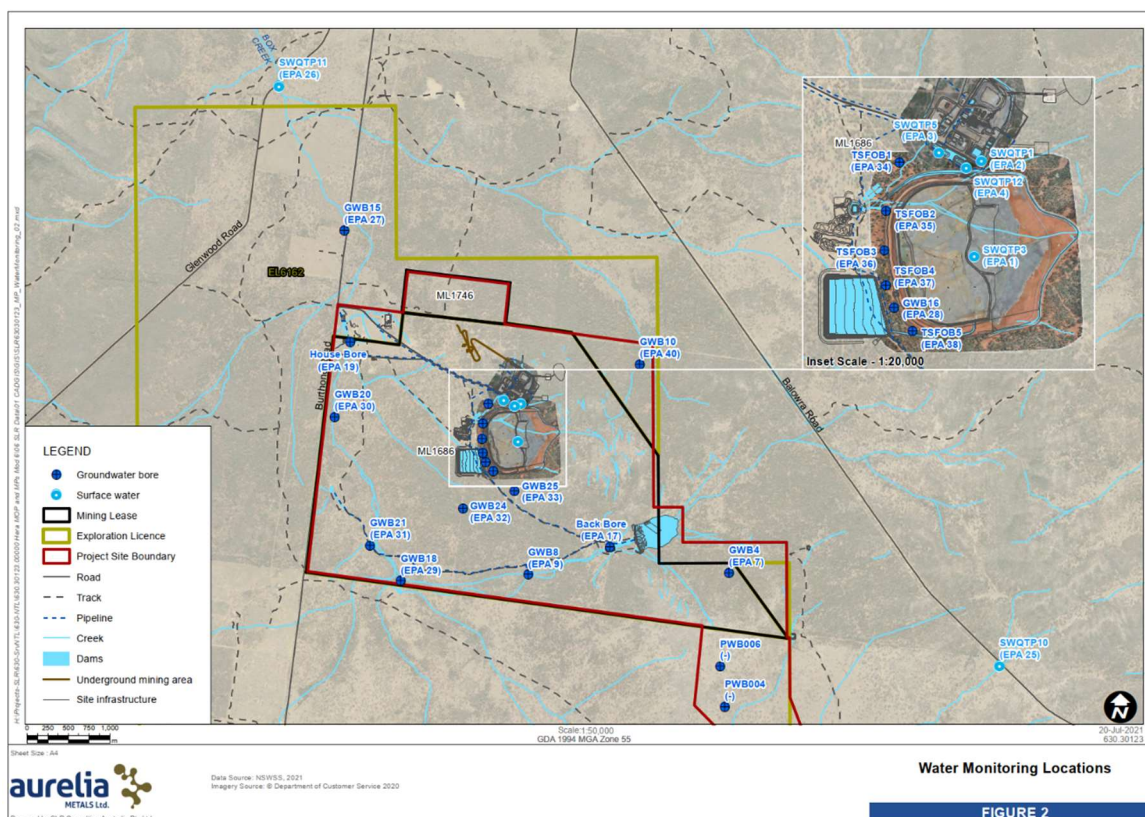


Figure 2 - Hera Water Monitoring Locations

5. Monitoring Results

5.1. Weather

The meteorology monitoring data is acquired through Hera’s weather station located on the Hera Mine site, approximately 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 December 2022

Parameter	No. of measurements for the month	Minimum Value	Mean Value	Median Value	Maximum value	Total
Air Temperature (°C)	Continuous	4.55	20.07	19.73	34.29	-
Wind Speed (m/s)	Continuous	0.00	8.03	7.73	33.98	-
Sigma Theta (°)	Continuous	2.21	22.69	18.96	98.33	-
Rainfall (mm)	Continuous	0.00	0.02	0.00	12.00	84
Relative Humidity (%)	Continuous	15.65	59.65	57.26	99.88	-

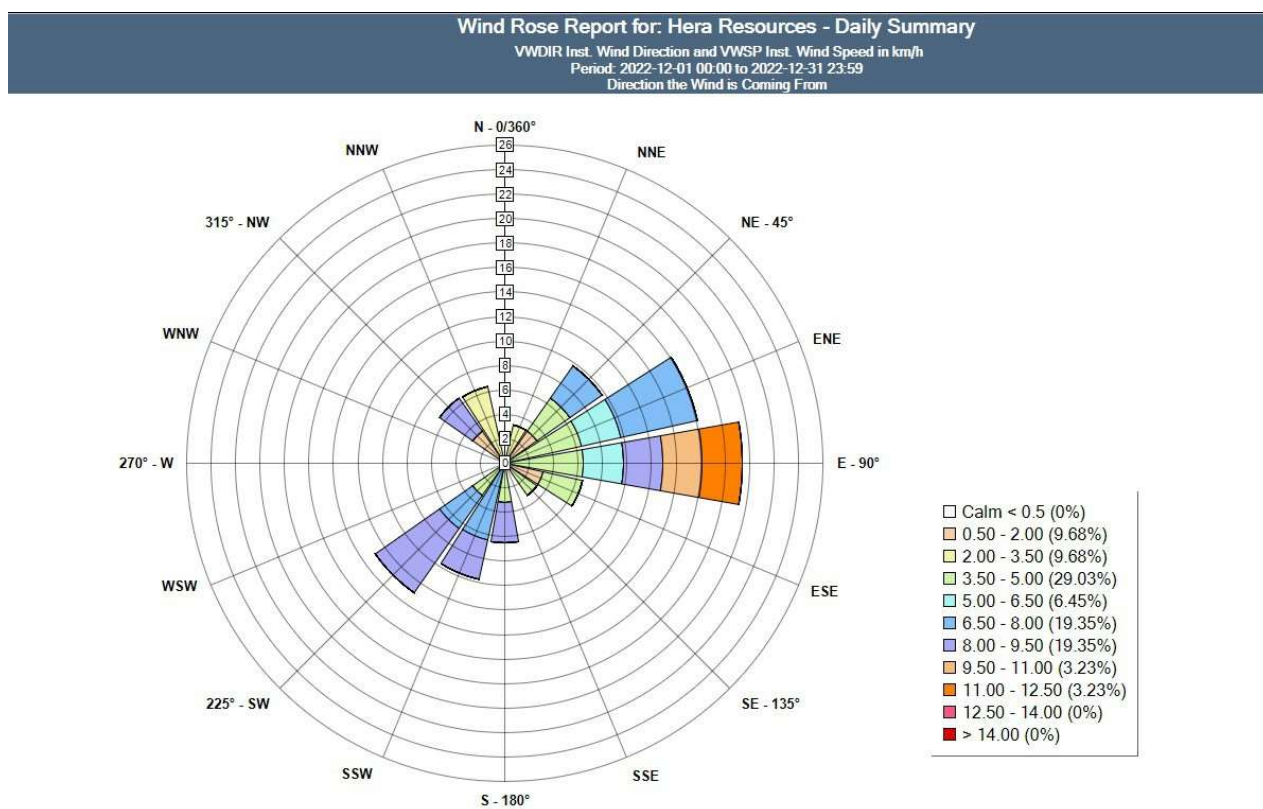


Figure 3 - Wind Rose for December 2022

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

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 2022 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)			EPL 90 th percentile concentration criteria
	Minimum	Average	Maximum	
TSF Thickener Discharge (EPA Point 1)	0	0.00	0	20
Proces Water Dam (EPA Point 2)	0	0.00	0	20

Groundwater

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. Results are presented in **Table 3** and **Table 4**.

TABLE 3: Groundwater Monitoring - December 2022

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	No access													
9	<0.001	<0.001	568	0.8	<0.0001	196	<1	1100	<0.001	0.002	<0.004	<0.004	<0.004	5.46
17	<0.001	<0.001	448	0.47	0.0003	122	<1	746	<0.001	<0.001	<0.004	<0.004	<0.004	3.23
19	Pump fault													
27	<0.001	0.001	463	1.34	0.0002	70	<1	1320	<0.001	<0.001	<0.004	<0.004	<0.004	5.66
28	<0.001	0.005	664	0.71	<0.0001	214	<1	1080	<0.001	<0.001	<0.004	<0.004	<0.004	5.46
29	0.006	<0.001	308	0.43	<0.0001	36	<1	286	<0.001	<0.001	<0.004	<0.004	<0.004	1.68
30	0.002	0.004	596	1.96	<0.0001	72	<1	1550	<0.001	0.004	<0.004	<0.004	<0.004	7.04
31	0.002	<0.001	357	0.93	<0.0001	103	<1	1350	<0.001	<0.001	<0.004	<0.004	<0.004	5.5
32	0.002	<0.001	555	0.96	<0.0001	218	<1	1040	<0.001	<0.001	<0.004	<0.004	<0.004	6
33	<0.001													
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	0.002	526	0.48	<0.0001	165	<1	1260	<0.001	<0.001	<0.004	<0.004	<0.004	5.13

TABLE 4: Groundwater Monitoring - December 2022

Licence Point	Analyte (mg/L)													
	Fe	Pb	Mg	Hg	Mo	Ni	pH	K	Ag	Na	Sn*	TDS	Zn	SWL (m)
7	No access													
9	<0.05	<0.001	230	<0.0001	<0.001	0.029	7.08	28	<0.001	721	<0.001	3790	0.014	Tap
17	<0.05	<0.001	130	<0.0001	0.002	0.021	6.99	14	<0.001	400	<0.001	2430	0.012	Tap
19	Pump fault													
27	0.18	<0.001	140	<0.0001	0.001	0.001	7.18	39	<0.001	946	<0.001	3420	0.021	57.78
28	2.84	<0.001	235	<0.0001	<0.001	0.013	7.02	30	<0.001	685	<0.001	3790	0.008	99.15
29	<0.05	<0.001	46	<0.0001	0.002	<0.001	7.4	13	<0.001	263	<0.001	996	<0.005	71.04
30	<0.05	0.006	98	<0.0001	0.001	0.007	7.18	35	<0.001	1330	<0.001	4350	0.015	67.58
31	<0.05	<0.001	136	<0.0001	<0.001	<0.001	7.61	32	<0.001	880	<0.001	3420	<0.005	Tap
32	<0.05	<0.001	231	<0.0001	<0.001	0.112	7.04	30	<0.001	858	<0.001	4330	0.091	Tap
33	17.8													<0.001
34														Dry
35														Dry
36														Dry
37														Dry
38														Dry
40	0.14	<0.001	192	<0.0001	<0.001	0.001	7.2	16	<0.001	632	<0.001	3340	0.011	61.78

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 20th September 2022 and results reported in the September website report. The next annual noise monitoring is due to be undertaken in August/September 2023. 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 and Environment (DPIE).

5.4. Blast Monitoring

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

During November 2021 a new blast monitoring system was implemented which does not trigger monitoring for every blast. There were 35 blasts during December, of which 32 triggered monitoring at R3 (Refer to **Table 5**). 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 DPE.

TABLE 5: Summary of blast monitoring results for December at R3

Date	Time	Time Period	Vibration (mm/s)	Overpressure (dB)
1/12/2022	6:45	Night	0.02	73.3
2/12/2022	6:45	Night	0.02	83
2/12/2022	18:45	Evening	0.03	86.4
3/12/2022	18:45	Evening	0.03	75.1
5/12/2022	23:00	Night	0.01	89.5
6/12/2022	18:45	Evening	0.19	77.8
7/12/2022	6:45	Night	0.02	71
8/12/2022	6:00	Night	0.02	102.6
9/12/2022	14:00	Day	0.01	83.5
10/12/2022	18:45	Evening	0.02	83
11/12/2022	14:00	Sunday	0.03	93.3
11/12/2022	23:00	Sunday	0.01	75.1
12/12/2022	14:00	Day	0.43	106.2
12/12/2022	23:00	Night	0.13	73.3
13/12/2022	18:45	Evening	0.02	71.8
14/12/2022	18:45	Evening	0.02	90.6
15/12/2022	18:45	Evening	0.24	84.6
16/12/2022	6:45	Night	0.03	80.8
16/12/2022	18:45	Evening	0.02	95.5
17/12/2022	18:45	Evening	0.02	90.5
18/12/2022	6:45	Sunday	0.02	88.9
18/12/2022	18:45	Sunday	0.61	91.5

Date	Time	Time Period	Vibration (mm/s)	Overpressure (dB)
19/12/2022	18:45	Evening	0.02	93.7
20/12/2022	18:45	Evening	0.02	83.7
21/12/2022	18:45	Evening	0.03	71.8
22/12/2022	18:45	Evening	0.03	92.6
23/12/2022	18:45	Evening	0.03	80.8
25/12/2022	6:45	Night	0.25	74.5
25/12/2022	18:45	Evening	0.18	87.6
26/12/2022	18:45	Evening	0.08	81.6
29/12/2022	13:00	Day	0.14	73.3
30/12/2022	6:45	Night	0.2	82.4

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 6**. No exceedances were recorded.

TABLE 6: Summary of Air Quality monitoring results for December

Pollutant	Unit	Limit	Averaging Period	Result
TSP	µg/m ³	90	Annual	34.48
PM-10	µg/m ³	25	Annual	11.26
High Volume Air Samplers (PM₁₀)				
6/12/2022	µg/m ³	50	24 Hour	4.8
12/12/2022	µg/m ³	50	24 Hour	8.6
18/12/2022	µg/m ³	50	24 Hour	12.7
24/12/2022	µg/m ³	50	24 Hour	7.0
30/12/2022	µg/m ³	50	24 Hour	12.8
Dust Deposition Gauges				
Deposited Dust (DDG 1)	g/m ² /month	4	Annual	1.67
Deposited Dust (DDG2)	g/m ² /month	4	Annual	2.48

5.6. Gold Room Stack Monitoring

Hera has two licenced gold room stack monitoring points (Refer to Figure 1).

Gold Room stack monitoring is conducted on an annual basis. Annual monitoring was conducted and reported on in January 2022.

5.7. Concentrate Transport

The Company is licenced to transport 60,000 tonnes of lead/zinc concentrate from the Hera site to Hermidale rail siding during daylight hours only. Hera is limited to eight truck movements per day averaged over a calendar month (two truck movements to Hermidale rail is defined as entering and leaving the site). A summary of concentrate haulage operations is presented in **Table 7**.

TABLE 7: Summary of concentrate truck movements for December

Date	Load Time	Truck Dry Tonnes
1/12/2022	12:00	48.53
1/12/2022	15:00	47.42
2/12/2022	7:45	46.61
2/12/2022	11:00	48.21
2/12/2022	11:45	47.97
2/12/2022	15:00	48.26
3/12/2022	15:40	48.55
3/12/2022	11:45	47.28
4/12/2022	15:00	47.32
6/12/2022	10:00	44.23
6/12/2022	12:55	48.22
6/12/2022	13:30	47.73
6/12/2022	16:50	47.80
7/12/2022	6:30	48.43
7/12/2022	10:15	47.71
7/12/2022	11:00	48.31
8/12/2022	6:30	48.28
9/12/2022	6:00	48.26
9/12/2022	9:30	48.17
9/12/2022	12:30	48.05
9/12/2022	13:55	48.68
9/12/2022	15:30	48.27
10/12/2022	13:30	48.31
11/12/2022	12:00	47.88
12/12/2022	15:30	49.21
12/12/2022	6:30	49.50
12/12/2022	10:00	49.51
13/12/2022	14:00	49.79
12/12/2022	6:30	48.57
13/12/2022	7:30	48.98
13/12/2022	9:30	49.34
13/12/2022	10:30	49.54
13/12/2022	13:25	49.38

Date	Load Time	Truck Dry Tonnes
14/12/2022	5:30	54.31
14/12/2022	7:30	49.84
14/12/2022	9:00	48.61
14/12/2022	14:20	48.53
14/12/2022	17:15	48.61
15/12/2022	6:00	48.31
15/12/2022	15:00	48.37
15/12/2022	18:00	49.27
16/12/2022	7:30	48.94
16/12/2022	10:45	48.10
16/12/2022	13:55	48.59
16/12/2022	17:00	48.07
17/12/2022	7:15	48.17
17/12/2022	10:30	48.47
23/12/2022	5:30	47.75
23/12/2022	9:00	47.99
23/12/2022	12:20	48.02
23/12/2022	15:30	48.03
24/12/2022	6:00	47.95
24/12/2022	10:00	47.95
24/12/2022	12:50	47.94
24/12/2022	16:00	48.20
25/12/2022	9:40	48.51
25/12/2022	12:30	48.68
25/12/2022	15:40	49.25
26/12/2022	5:40	49.20
26/12/2022	9:00	49.23
26/12/2022	12:00	47.86
28/12/2022	8:30	45.52
28/12/2022	11:00	51.07
29/12/2022	7:30	49.71
Total Tonnes		3101.34
Average truck movements per day		4.27

5.8. Complaints

Nil complaints were received this month as presented in **Table 8**.

TABLE 8: Summary of complaints received In December

Date	Complaint Category
-	-