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	June 2020
Date Published	31 January 2021

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), meteorological monitoring (Licence Point 23).

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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	Median value	Max. value	Total
Air Temperature (°C)	Continuous	-4.13	8.82	30.31	19.62	
Wind Speed (m/s)	Continuous	0.00	1.55	1.29	7.12	
Sigma Theta (°)	Continuous	1.62	20.61	16.28	103.22	
Rainfall (mm)	Continuous	0.00	0.01	0.00	5.60	26.20
Relative Humidity (%)	Continuous	26.51	80.08	84.86	99.89	

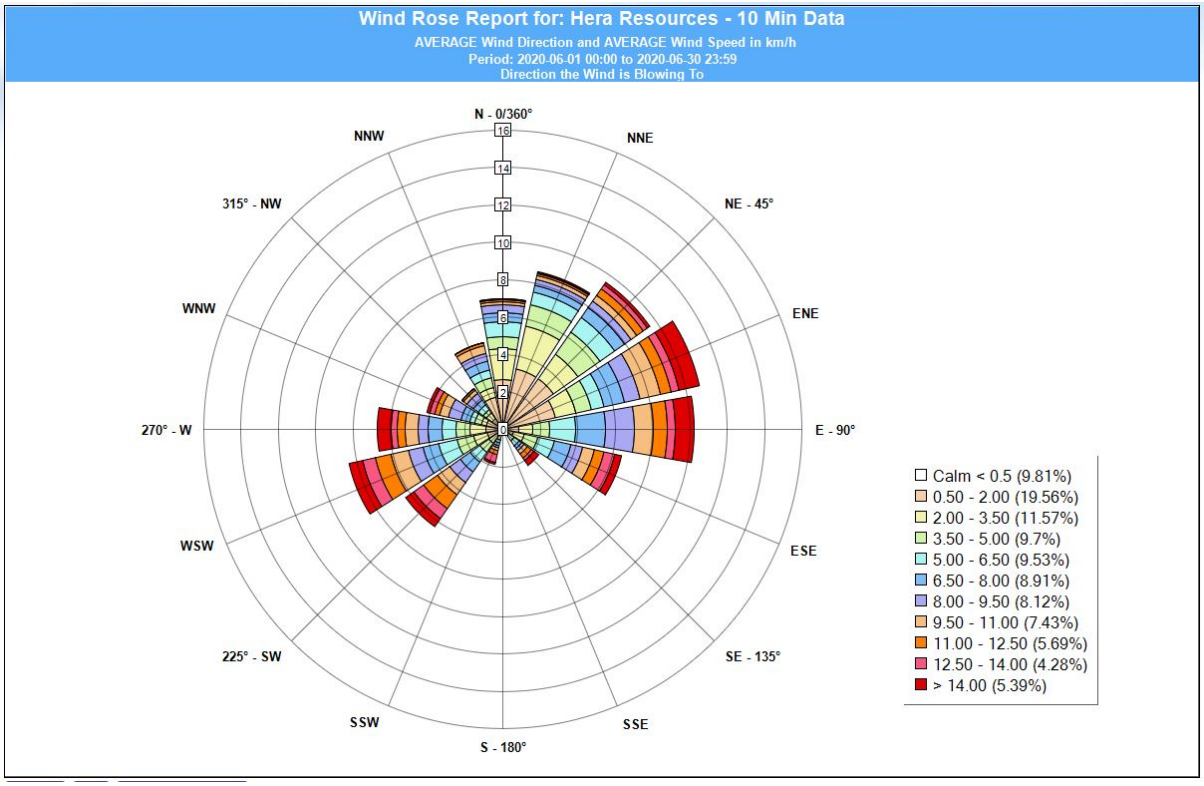

Figure 2. Wind rose for the month.

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.

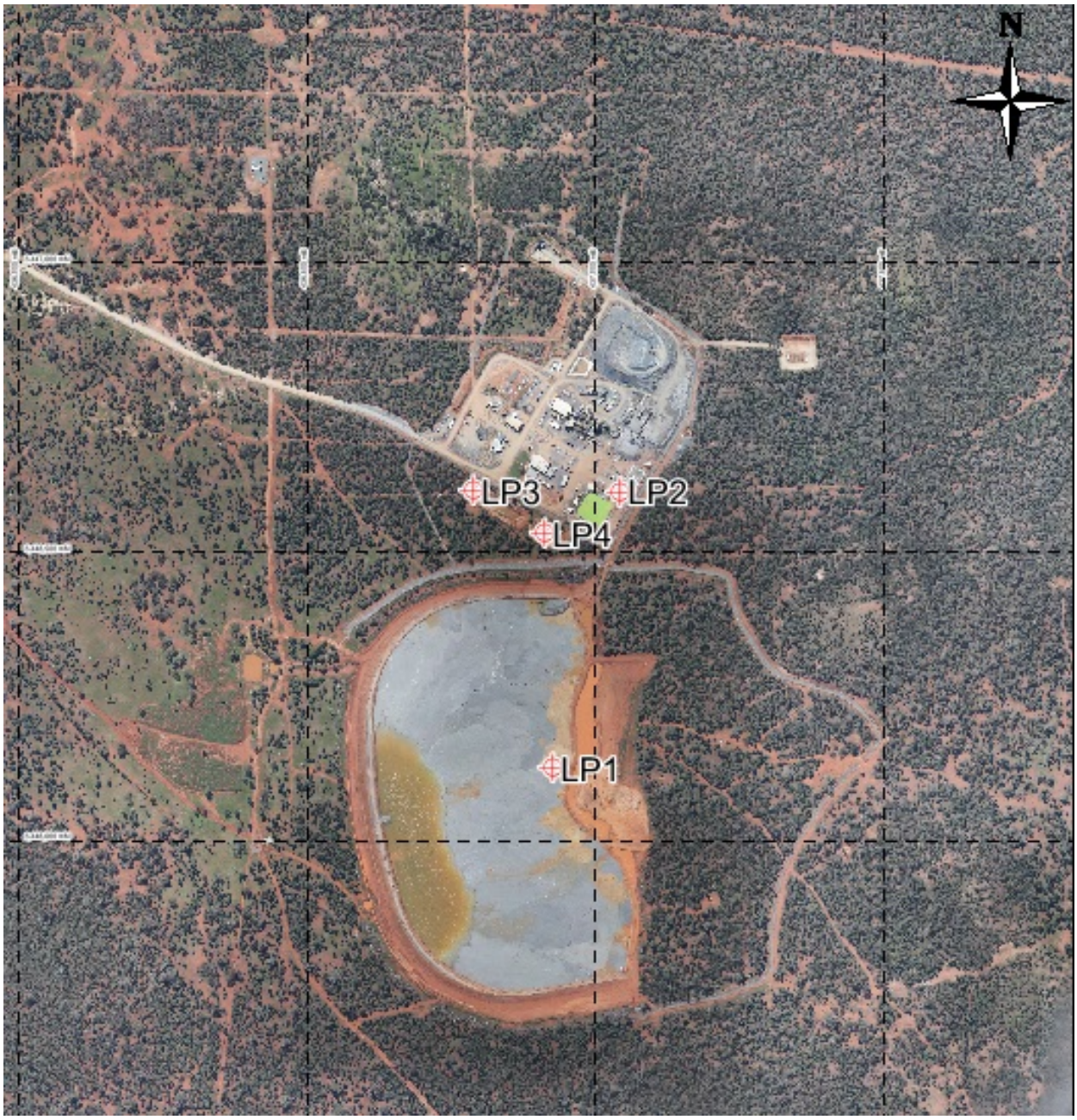

Figure 3. Licensed surface water monitoring points located onsite.

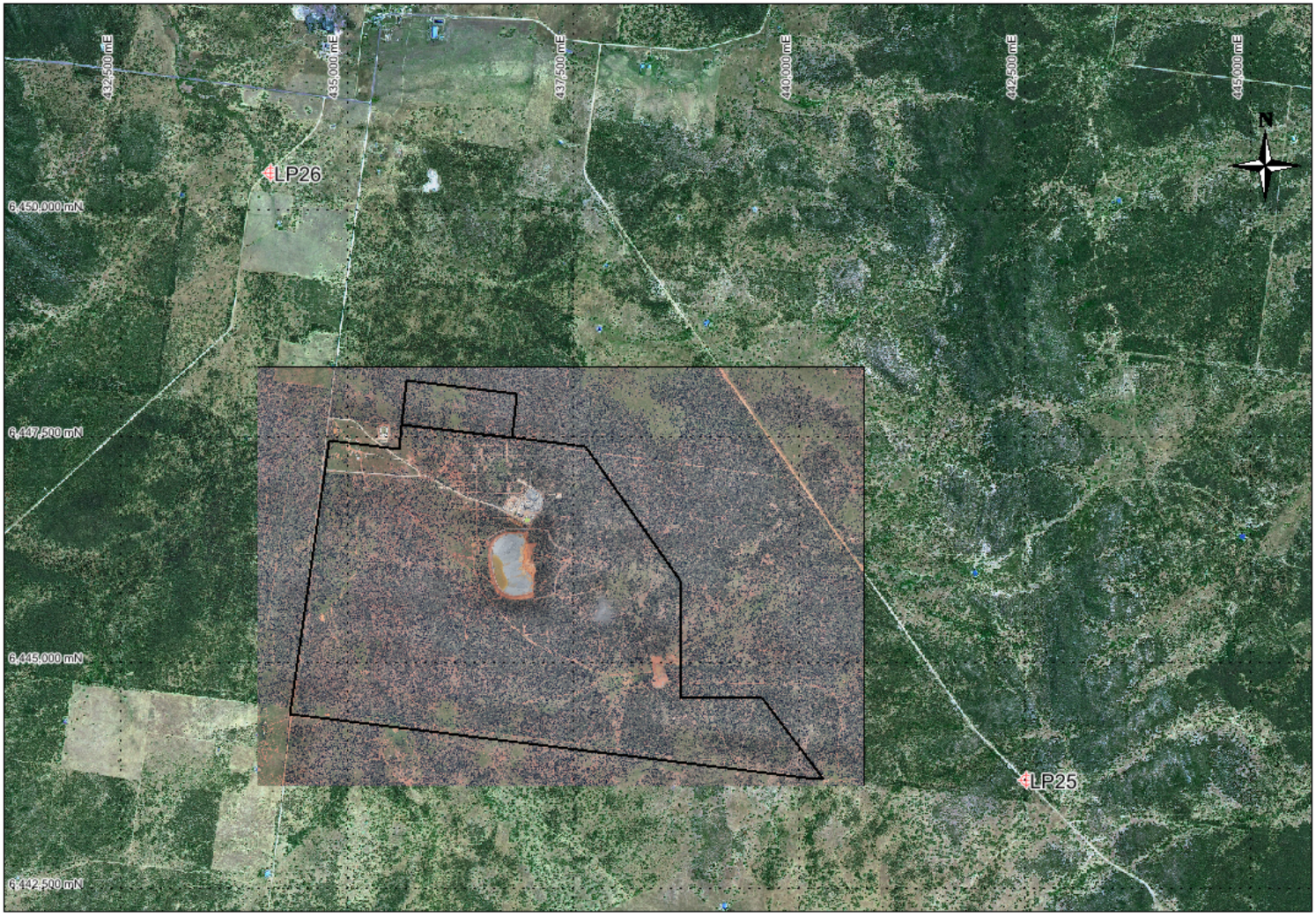

Figure 4. Licensed surface water monitoring points located offsite. The black outline represents the mining leases.

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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.

	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																			
Licence Points																				
1	0	0.00	0	0																
2	0	0.00	0	0																
3	No flow																			
4	No flow																			
25	No flow																			
26	No flow																			

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

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.

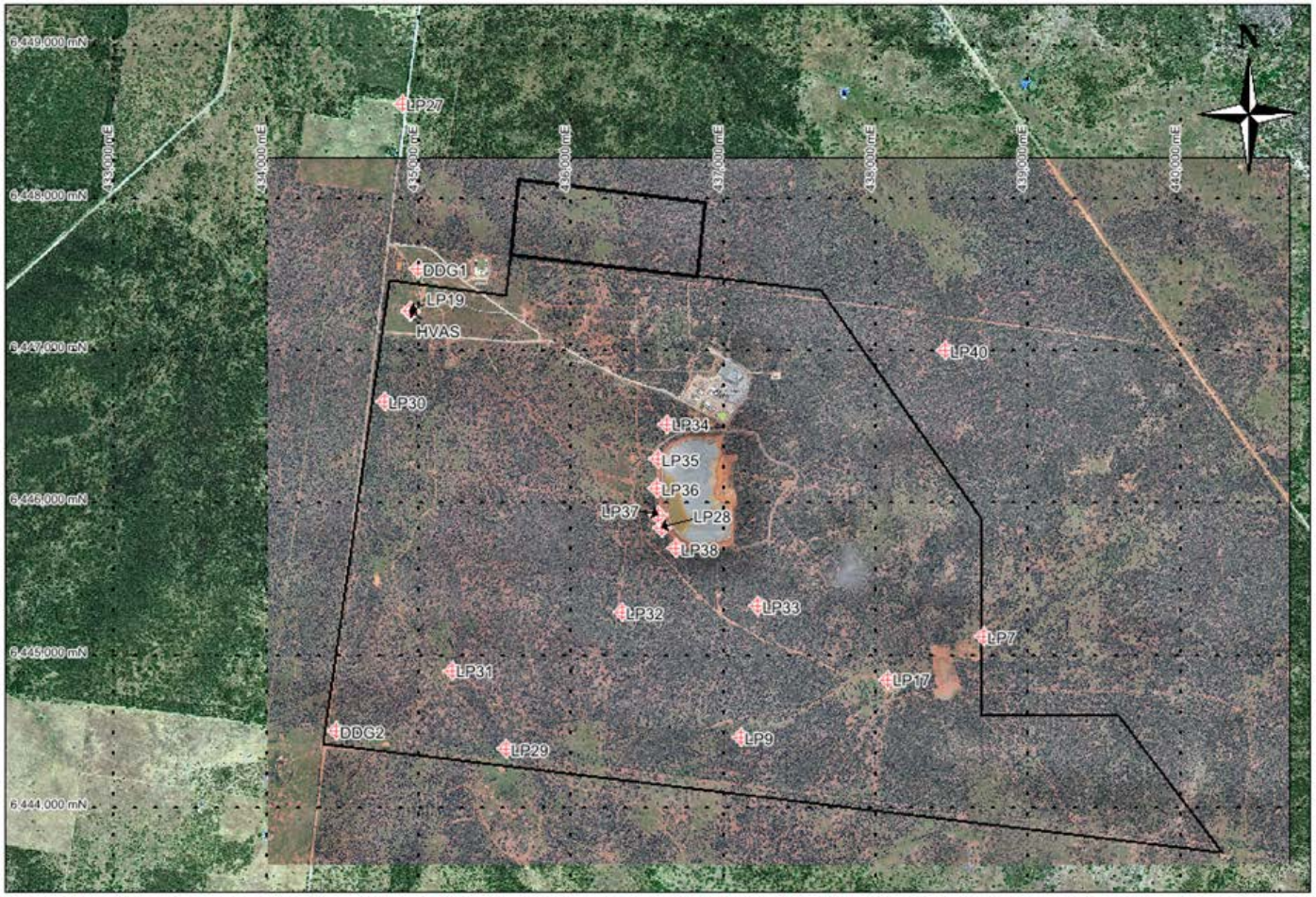

Figure 5. Licensed groundwater and air quality monitoring points.

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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. Monitoring is conducted quarterly. Monitoring was carried out this month. Next quarterly sampling will be carried out in September 2020.

Table 6. Ground Water Monitoring

	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	679	0.44	<0.0001	215	<1	1190	<0.001	0.001	<0.004	<0.004	<0.004	5.02
9	<0.001	<0.001	561	0.69	<0.0001	198	<1	1020	<0.001	<0.001	<0.004	<0.004	<0.004	5.32
17	<0.001	0.002	314	0.29	0.0003	64	<1	334	0.001	0.009	<0.004	<0.004	<0.004	1.51
19	Tap removed, meter reading only													
27	<0.001	<0.001	470	1.37	<0.0001	68	<1	1490	<0.001	<0.001	<0.004	<0.004	<0.004	5.93
28	0.009	<0.001	637	0.64	<0.0001	200	<1	1060	<0.001	0.012	<0.004	<0.004	<0.004	4.94
29	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked
30	<0.001	0.002	634	1.78	<0.0001	74	<1	1510	<0.001	0.002	<0.004	<0.004	<0.004	6.57
31	0.002	<0.001	386	0.9	<0.0001	106	<1	1340	<0.001	0.004	<0.004	<0.004	<0.004	5.41
32	Pump on bore not working													
33	<0.001	0.001	602	0.5	<0.0001	201	<1	841	<0.001	<0.001	<0.004	<0.004	<0.004	4.36
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	652	0.49	<0.0001	200	<1	1250	<0.001	0.001	<0.004	<0.004	<0.004	4.87
	Analyte (mg/L)													
	Fe	Pb	Mg	Hg	Mo	Ni	pH	K	Ag	Na	Sn	TDS	Zn	SWL (m)
7	0.24	<0.001	213	<0.0001	<0.001	<0.001	7.12	19	<0.001	646	<0.001	3440	0.008	53.82
9	11.8	<0.001	249	<0.0001	<0.001	0.173	7.32	28	<0.001	748	<0.001	3900	0.16	Tap
17	<0.05	<0.001	60	<0.0001	<0.001	0.003	7.04	13	<0.001	180	<0.001	928	0.058	67.39
19	Tap removed, meter reading only													Meter
27	0.2	<0.001	163	<0.0001	0.001	0.002	7.09	43	<0.001	1050	<0.001	3780	0.024	57.72
28	<0.05	<0.001	233	<0.0001	<0.001	0.009	7.15	29	<0.001	667	<0.001	3510	0.032	98.75
29	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	69.93
30	<0.05	0.002	105	<0.0001	0.001	0.001	7.41	34	<0.001	1360	<0.001	4190	0.015	62.10
31	<0.05	<0.001	148	<0.0001	<0.001	0.003	7.76	32	<0.001	927	<0.001	3420	0.014	Tap
32	Pump on bore not working													91.33
33	4.91	<0.001	211	<0.0001	<0.001	0.001	6.99	21	<0.001	566	<0.001	3170	0.047	108.30
34														Dry
35														Dry
36														Dry
37														Dry
38														Dry
40	0.08	<0.001	200	<0.0001	<0.001	0.006	7.24	16	<0.001	649	<0.001	3270	0.01	60.66

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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.

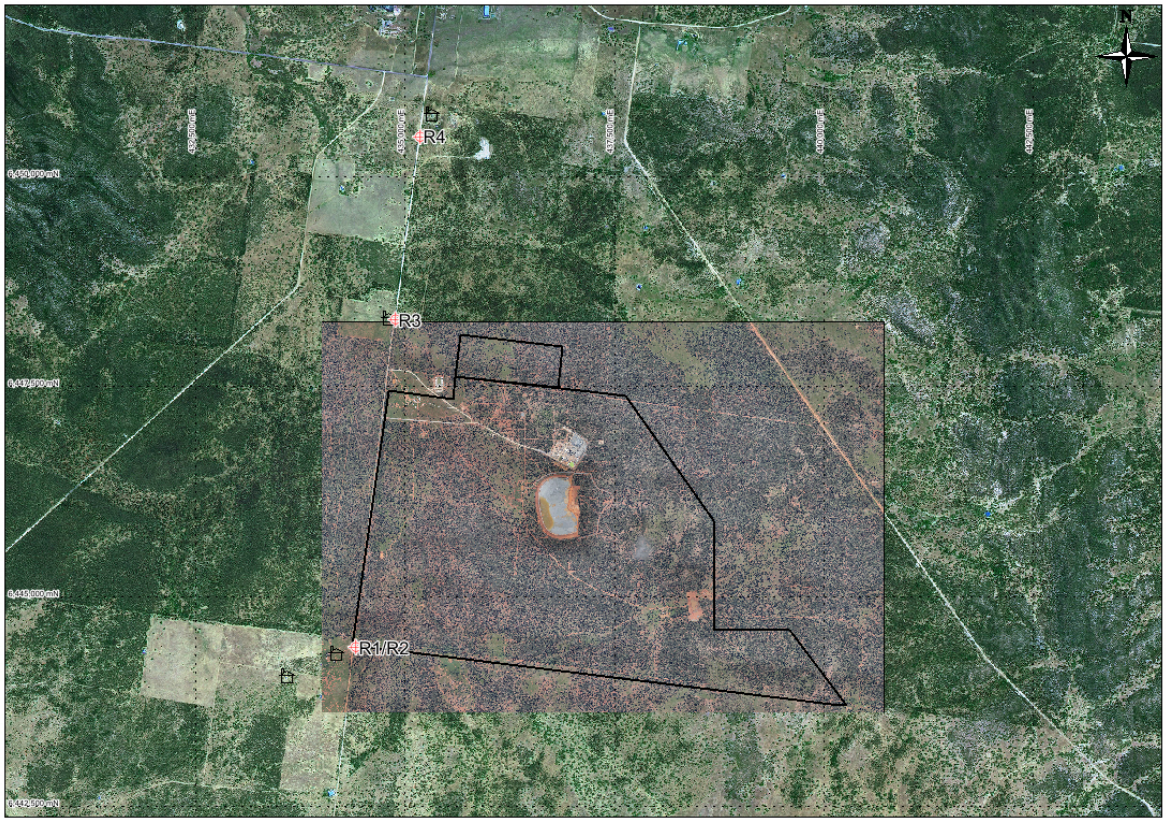

Figure 6. Licensed noise monitoring locations. The black outline represents the Mining Lease areas.

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 on 4 December 2019. The site was found to be fully compliant. The next annual noise monitoring is due to be undertaken in August 2020.

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 *(monitor for every blast)*	All times	10 mm/s (max.)
		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 28 blasts this month with the blast schedule undertaken at the beginning and end of the shift change, which is 6:30am and 6:30pm. The characteristics of each blast are presented in Table 9.

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

Date	Time	Time period	Vibration (mm/s)	Overpressure (dB)
01/06/2020	11:37:00	DAY	0.16	90.2
03/06/2020	01:29:30	NIGHT	0.14	75.6
04/06/2020	14:01:07	DAY	0.55	78.1
04/06/2020	14:01:07	DAY	0.55	78.1
04/06/2020	23:59:15	NIGHT	0.19	75.6
06/06/2020	13:29:40	DAY	0.08	75.6
10/06/2020	18:15:00	EVENING	0.07	75.6
11/06/2020	12:27:35	DAY	0.09	76.9
11/06/2020	12:43:17	DAY	0.36	82.3
12/06/2020	13:35:45	DAY	0.07	80.8
12/06/2020	13:35:45	DAY	0.07	80.8
12/06/2020	17:59:00	DAY	0.07	76.9
15/06/2020	18:08:45	EVENING	0.09	75.6
16/06/2020	15:27:50	DAY	0.09	92.6
16/06/2020	15:27:50	DAY	0.09	92.6
17/06/2020	17:00:00	DAY	0.09	75.6
17/06/2020	17:00:00	DAY	0.09	75.6
18/06/2020	15:44:45	DAY	0.09	85.1
18/06/2020	15:45:15	DAY	0.07	86.6
19/06/2020	15:01:24	DAY	0.26	89.8
21/06/2020	14:35:31	Sunday	0.37	91.0
21/06/2020	14:35:31	Sunday	0.37	91.0
22/06/2020	14:18:00	DAY	0.12	91.9
22/06/2020	14:18:00	DAY	0.12	91.9
23/06/2020	14:00:00	DAY	0.12	86.6
24/06/2020	14:50:05	DAY	0.08	76.9
25/06/2020	17:47:45	DAY	0.09	74.8
28/06/2020	12:34:36	Sunday	0.40	76.9

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	25 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.

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

Pollutant	Unit	Limit	Averaging Period	Result
TSP	µg/m^3	90	Annual	67.05
PM-10 (µg/m^3)	µg/m^3	25	Annual	23.58
1/06/2020	µg/m^3	50	24 hour	12.00
7/06/2020	µg/m^3	50	24 hour	7.00
13/06/2020	µg/m^3	50	24 hour	12.00
19/06/2020	µg/m^3	50	24 hour	4.00
25/06/2020	µg/m^3	50	24 hour	2.00
Deposited Dust (DDG1)	g/m^2/month	4	Annual	2.85
Deposited Dust (DDG2)	g/m^2/month	4	Annual	3.53

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/m³)

Gold Room stack monitoring is conducted on an annual basis. Table 13 is a summary of the annual monitoring which was conducted on 4 December 2019. No exceedances were recorded. The next annual monitoring is due to be undertaken in September 2020.

Table 13. Summary of gold room stack monitoring conducted in December 2019.

EPA ID No.	Nitric Oxide (mg/m³)
24	11
39	5.2

Concentrate Transport

The Company is licenced to transport 60,000 tonnes of lead/zinc concentrate from site averaged over a calendar year and during daylight hours only. The company 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 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
01-Jun-20	16:00:00	48.65
01-Jun-20	15:30:00	48.74
01-Jun-20	15:00:00	49.09
01-Jun-20	13:05:00	48.64
01-Jun-20	12:56:00	48.55
01-Jun-20	12:00:00	48.65
01-Jun-20	11:35:00	48.71
01-Jun-20	10:00:00	24.73
01-Jun-20	08:40:00	48.62
01-Jun-20	08:10:00	48.62
01-Jun-20	07:15:00	48.64
02-Jun-20	07:15:00	48.73
05-Jun-20	10:40:00	48.60
05-Jun-20	10:30:00	48.73
05-Jun-20	07:20:00	48.65
05-Jun-20	07:10:00	48.89
07-Jun-20	12:40:00	48.74
07-Jun-20	12:30:00	48.69
07-Jun-20	09:40:00	48.73
07-Jun-20	09:30:00	48.69
08-Jun-20	07:15:00	48.69
10-Jun-20	13:50:00	48.67
10-Jun-20	13:40:00	48.83
10-Jun-20	10:35:00	48.64
10-Jun-20	10:30:00	48.71

10-Jun-20	10:20:00	48.75
10-Jun-20	07:20:00	48.62
10-Jun-20	07:15:00	48.78
11-Jun-20	13:15:00	48.63
11-Jun-20	10:15:00	48.90
11-Jun-20	07:15:00	48.76
13-Jun-20	14:30:00	47.72
14-Jun-20	13:45:00	48.51
14-Jun-20	13:45:00	48.85
14-Jun-20	10:30:00	48.24
14-Jun-20	09:45:00	48.60
15-Jun-20	08:00:00	47.79
16-Jun-20	07:45:00	48.74
16-Jun-20	07:38:00	48.73
17-Jun-20	16:05:00	48.62
17-Jun-20	13:15:00	48.62
17-Jun-20	10:30:00	48.80
17-Jun-20	07:20:00	48.78
18-Jun-20	07:20:00	48.67
18-Jun-20	07:15:00	48.64
21-Jun-20	07:50:00	48.35
21-Jun-20	07:30:00	48.69
21-Jun-20	07:20:00	48.67
22-Jun-20	07:10:00	48.69
23-Jun-20	18:30:00	48.78
23-Jun-20	16:00:00	48.82
23-Jun-20	15:20:00	48.58
23-Jun-20	15:15:00	48.53
23-Jun-20	14:20:00	48.60
23-Jun-20	13:00:00	48.69
23-Jun-20	11:50:00	48.56
23-Jun-20	11:50:00	48.49
23-Jun-20	11:05:00	48.74
23-Jun-20	08:20:00	48.47
23-Jun-20	07:40:00	48.91
23-Jun-20	07:20:00	49.14
23-Jun-20	07:10:00	49.21
24-Jun-20	07:40:00	49.34
24-Jun-20	07:25:00	48.71
24-Jun-20	07:15:00	48.82
24-Jun-20	07:15:00	49.18
Total Tonnes		**3189.33**

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Average Truck Movements per day		**4.40**

Complaints

No complaints were received this month, presented in Table 15.

Table 15. Summary of the complaints received this month

Date	Complaint category
	Nil