



**Heron Resources Limited
Tarago Operations Pty Limited**

Woodlawn Mine

SML 20

Summary of Environmental Monitoring Data

Environmental Protection Licence Number 20821

Project Approval 07_0143MOD2

Record Update – 31 August 2020



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1. Introduction

1.1 Introduction

Tarago Operations Pty Ltd, a wholly owned subsidiary of Heron Resources Limited, holds Environment Protection Licence 20821 (EPL 20821) issued by the Environment Protection Agency (EPA) under the Protection of the Environment operations Act 1997 (the Act) and operates under the conditions of Project Approval 07_0143MOD2 granted by the NSW Department of Planning and Infrastructure for the Woodlawn Mine Project. This report has been prepared to satisfy the reporting requirements of the Act as directed by the EPA and also for Condition 11, Schedule 6 of the Project Approval. These documents can be found on the Heron Resources web site.

This report summarises environmental monitoring results for the Woodlawn Mine for the period 1 – 31 August 2020.

On 25 March 2020 Woodlawn Mine suspended operations and entered a period of care and maintenance (C&M). Environmental monitoring and reporting for air quality and will continue during the C&M period. As there are no noise emissions nor blasting operations being undertaken during care and maintenance, no monitoring for these activities was undertaken.

A summary of the EPL information is provided in the following tables. Table 1 shows the licence information and Table 2 summarises the frequency and units for monitoring data for the reporting period. The EPL was last subject to variation on 18 Jan 2019. Links to the previous version and the 18 January 2019 version are shown in [Table 1](#).

Table 1. Licence information

Environment Protection Licence number	20821
Licensee	Tarago Operations Pty Ltd
Licensee address	Level 7, Suite 702 191 Clarence Street SYDNEY NSW 2000
Premises	Woodlawn Mine Project 507 Collector Road TARAGO NSW 2580
Link to full licence on the EPA website	http://app.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=115339&SYSUID=1&LICID=20821 https://apps.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=155570&SYSUID=1&LICID=20821
Link to Notice of Variation of EPA licence	http://app.epa.nsw.gov.au/prpoeoapp/ViewPOEONotice.aspx?DOCID=-1&SYSUID=1&LICID=20821 https://apps.epa.nsw.gov.au/prpoeoapp/ViewPOEONotice.aspx?DOCID=-1&SYSUID=1&LICID=1572566
Complaints Telephone Number	Sydney Office (02) 9119 8111 Woodlawn Office (02) 9119 8140

Table 2. Supporting information of EPL monitoring requirements

Parameter	Monitoring site	Monitoring frequency	Unit of measure
Air quality monitoring: Deposited Dust (insoluble solids)	DG 22*, DG28*, DG33* DG34	Monthly	g/m ² /month
TSP	HVAS-1	24 hours every six days	µg/m ³
PM10	HVAS-2	24 hours every six days	µg/m ³

*Monitoring undertaken by Veolia

1.2 Explanation of units of measurement

- **mg/m³** = milligrams per cubic metre
- **g/m²/month** = grams per square metre per month
- **µg/m³** = micrograms per cubic metre
- **Day** = 7am to 6pm Monday to Saturday and 8am to 6pm Sunday and public holidays
- **Evening** = 6pm to 10pm on any day
- **Night** = 10pm to 7am Monday to Saturday and 10pm to 8am Sunday and public holidays

1.3 Abbreviations

- TOP – Tarago Operations

2. Meteorological Monitoring

Heron is required to undertake meteorological monitoring on site. Veolia operate the approved weather station (EPA licence 11436, Monitoring Point 9). The detailed August 2020 daily weather data is shown in Table 1. Extraordinary rainfall fell over the weekend of 7-9 August 2020.

Table 3. Daily Weather - August 2020

Date	Temp min @ 10m (°C)	Temp max @ 10m (°C)	Rain (mm)	Number of wet days (total)	Weather station - Hours recorded (n)	Avg wind speed (m/s)	Avg wind direction (deg)	Evapo-transpiration (mm)
1	3.0	11.7	0.0		24.0	3.2	258.6	1.407
2	2.4	12.5	0.0		24.0	2.5	256.2	1.571
3	3.5	11.6	0.0		24.0	3.9	259.2	1.529
4	1.0	9.0	0.0		24.0	6.4	268.3	1.83
5	0.0	5.8	0.0		24.0	7.0	261.6	1.796
6	-0.9	8.7	0.0		24.0	2.5	225.6	1.53
7	2.3	6.3	24.0		24.0	5.2	92.2	1.378
8	5.6	8.9	58.0		24.0	4.1	143.3	0.308
9	5.2	7.7	80.0		24.0	4.5	136.4	0.528
10	5.2	9.0	2.0		24.0	4.0	127.2	0.483
11	0.1	10.8	0.0		24.0	1.4	199.2	1.382
12	1.5	11.9	0.5		24.0	2.2	279.8	1.113
13	7.0	13.5	4.0		24.0	2.9	269.5	1.123
14	3.7	13.6	6.0		24.0	0.9	200.5	1.712
15	6.7	8.2	10.0		24.0	2.5	233.8	1.071
16	6.5	8.6	0.0		24.0	6.4	273.4	0.592
17	5.4	9.1	0.0		24.0	5.7	272.8	1.315
18	4.8	10.6	1.5		24.0	5.1	279.5	1.765
19	4.3	8.3	11.0		24.0	6.4	280.1	1.393
20	4.3	6.6	0.5		24.0	7.2	271.8	1.199
21	3.0	7.0	5.0		24.0	7.8	276.8	1.259
22	1.6	3.5	4.0		24.0	6.3	272.6	1.19
23	1.4	5.9	0.0		24.0	6.4	270.0	0.907
24	1.0	7.7	0.0		24.0	4.2	266.6	1.499
25	-0.1	9.8	1.5		24.0	2.3	260.7	1.846
26	-1.5	11.7	0.0		24.0	2.2	270.6	2.027
27	2.5	11.5	0.0		24.0	4.6	266.6	2.072
28	2.8	11.6	0.0		24.0	4.0	264.0	2.312
29	0.8	16.7	0.0		24.0	2.1	263.2	2.423
30	5.6	15.8	0.0		24.0	5.0	274.3	2.58
31	6.6	12.3	0.0		24.0	3.8	241.0	3.313
Average/Total	3.1	9.9	208	14		4.28		46.5

The wind rose at Figure 1 depicts the wind speed and direction recorded at 10 m above ground level. During the period the winds were predominantly from the west.

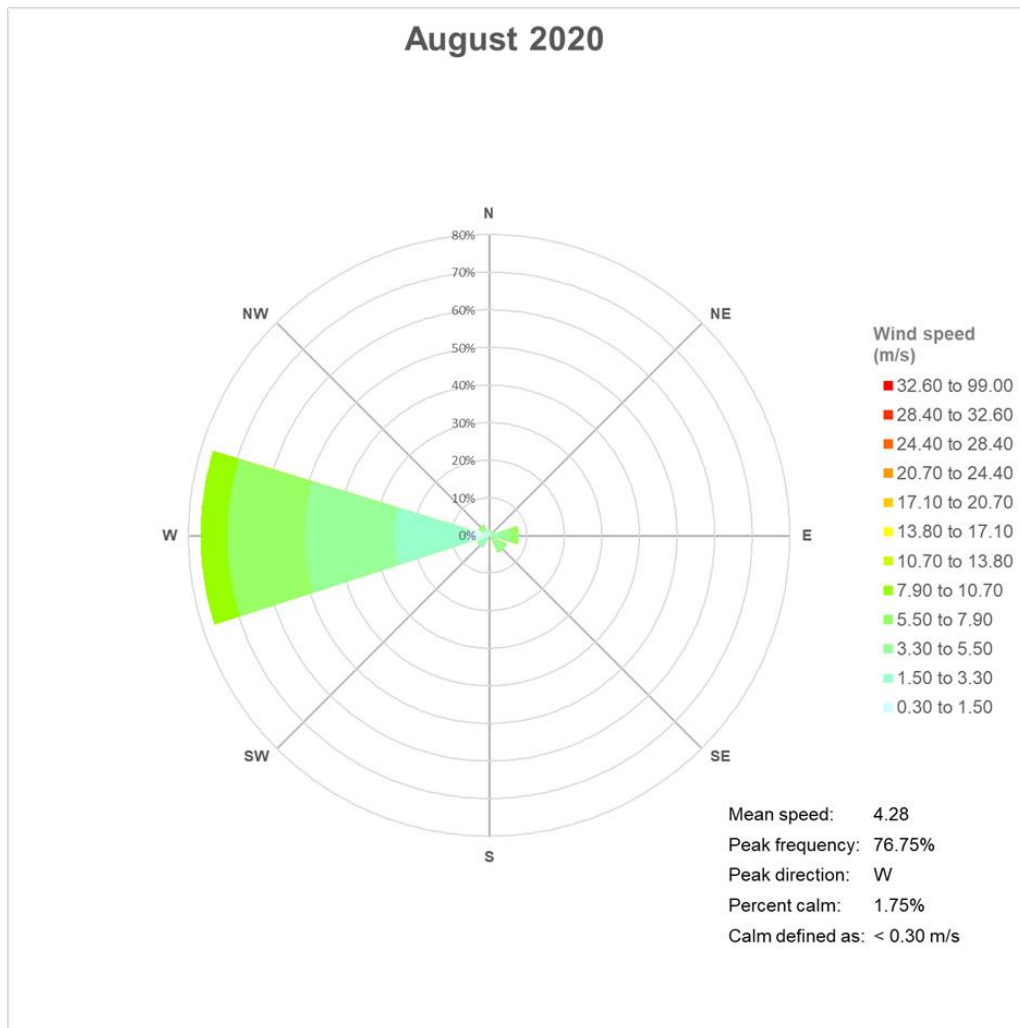


Figure 1. Wind rose data – August 2020

3. Air Quality Monitoring

The Air quality monitoring results for Woodlawn Mine are summarised in the following sections.

3.1 Depositional Dust

Depositional dust monitoring around the Woodlawn site is undertaken on a monthly basis. Four depositional dust gauges DG22, DG28, DG33 and DG34 are present to monitor the levels of depositional dust. They are located on Site as follows:

- DG22 – East side of void
- DG28 – Pylara
- DG33 – MBT plant
- DG34 – Behind core shed

The limits for deposited dust are outlined in the Project Approval. The limits are detailed in Table 4.

Table 4. Deposited dust limits

Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level (Australian standard Limit)
^c Deposited dust	Annual	^b 2 g/m ² /month	^a 4 g/m ² /month

- ^a Total impact (i.e. Incremental increase in concentrations due to the project plus background concentrations due to all other sources).
- ^b Incremental impact (i.e. incremental increase in concentrations due to the project on its own)
- ^c Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air – Determination of Particulate Matter – Deposited Matter – Gravimetric Method.

Air quality results derived from the depositional dust gauges for August 2020 are shown in Table 5. The rolling annual average continues to be influenced by high readings obtained through off-site influences including drought, regional dust storms and bushfires impacting Site during spring 2019 and summer 2019/2020.

Table 5. August 2020 DDG results

DDG ID	EPL ID	Start date	End date	Insoluble solids (g/m ² /month)	Rolling annual average (g/m ² /month)
DG22	2	3 August 2020	8 Sept 2020	1.1	4.0
DG28	1	3 August 2020	8 Sept 2020	1.1	3.9
DG33	4	3 August 2020	8 Sept 2020	1.8	2.1
DG34	25	3 August 2020	8 Sept 2020	0.9	4.7

3.2 Atmospheric dust – particulate matter

The Project Approval requires monitoring of total suspended particulate (TSP) matter and particulate matter < 10µm (PM₁₀) to ensure particulate matter emissions generated by the project do not exceed the criteria listed at any residence on privately owned land. High volume air sampling (HVAS) equipment for atmospheric monitoring was installed on 16 October 2017 at Pylara, the nearest residence located to the east of Woodlawn Mine. Monitoring commenced on 17 October 2017 and is undertaken for a 24 hour cycle every 6 days.

The limits for TSP and PM₁₀ are outlined in the Project Approval. The limits are detailed in Table 6.

Table 6. TSP and PM₁₀ limits

Pollutant	Averaging Period	^d Criterion
Total suspended particulate (TSP) matter	Annual	^a 90 µg/m ³
Particulate matter < 10 µm (PM ₁₀)	Annual	^a 30 µg/m ³
Particulate matter < 10 µm	24 hour	^a 50 µg/m ³

- ^a Total impact (i.e. Incremental increase in concentrations due to the project plus background concentrations due to all other sources).
- ^d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fog, fire incidents or any other activity agreed by the Director-General.

Table 7. PM₁₀ and TSP results August 2020

Date	PM ₁₀	PM ₁₀ rolling annual average ^a	TSP	TSP Rolling annual average ^b
2 Aug 20	5.9	24.0	8.0	39.3
8 Aug 20	3.3	23.9	5.0	39.3
14 Aug 20	4.8	23.9	6.2	39.2
20 Aug 20	4.1	23.9	5.9	38.8
26 Aug 20	13.7	24.0	27.5	39.1

- a. Outlier removed for 23 Jan 20 (extreme regional dust storm)
- b. Outliers removed for 30 Dec 19 and 23 Jan 20 (extreme regional dust storms)

Compliance summary:

The PM₁₀ and TSP results for 24 hour period are within the criteria set out in the PA.

The annual average emissions are within the criteria set out in the PA.

4. Noise Monitoring

Following the announcement that Woodlawn mine would enter a period of care and maintenance on 25 March 2020, and that as a consequence there was no operational activity undertaken during April, there were no noise emissions from the site. Consequently noise monitoring was not undertaken during August 2020.

5. Blasting

Following the announcement that Woodlawn mine would enter a period of care and maintenance on 25 March 2020, and that as a consequence there was no operational activity undertaken during April, and there were no blasting activities. Consequently blast vibration monitoring was not undertaken during August 2020.

6. Complaints

No complaints were received during the reporting period.