



**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 December 2020***



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# 1. Introduction

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## 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 December 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	<a href="http://app.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=115339&amp;SYSUID=1&amp;LICID=20821">http://app.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=115339&amp;SYSUID=1&amp;LICID=20821</a>  <a href="https://apps.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=155570&amp;SYSUID=1&amp;LICID=20821">https://apps.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=155570&amp;SYSUID=1&amp;LICID=20821</a>
Link to Notice of Variation of EPA licence	<a href="http://app.epa.nsw.gov.au/prpoeoapp/ViewPOEONotice.aspx?DOCID=-1&amp;SYSUID=1&amp;LICID=20821">http://app.epa.nsw.gov.au/prpoeoapp/ViewPOEONotice.aspx?DOCID=-1&amp;SYSUID=1&amp;LICID=20821</a>  <a href="https://apps.epa.nsw.gov.au/prpoeoapp/ViewPOEONotice.aspx?DOCID=-1&amp;SYSUID=1&amp;LICID=1572566">https://apps.epa.nsw.gov.au/prpoeoapp/ViewPOEONotice.aspx?DOCID=-1&amp;SYSUID=1&amp;LICID=1572566</a>
Complaints Telephone Number	Sydney Office (02) 9119 8111 Woodlawn Office (02) 9119 8140

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**Table 2. Supporting information of EPL monitoring requirements**

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

\*Monitoring undertaken by Veolia

## 1.2 Explanation of units of measurement

- **mg/m<sup>3</sup>** = milligrams per cubic metre
- **g/m<sup>2</sup>/month** = grams per square metre per month
- **µg/m<sup>3</sup>** = 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

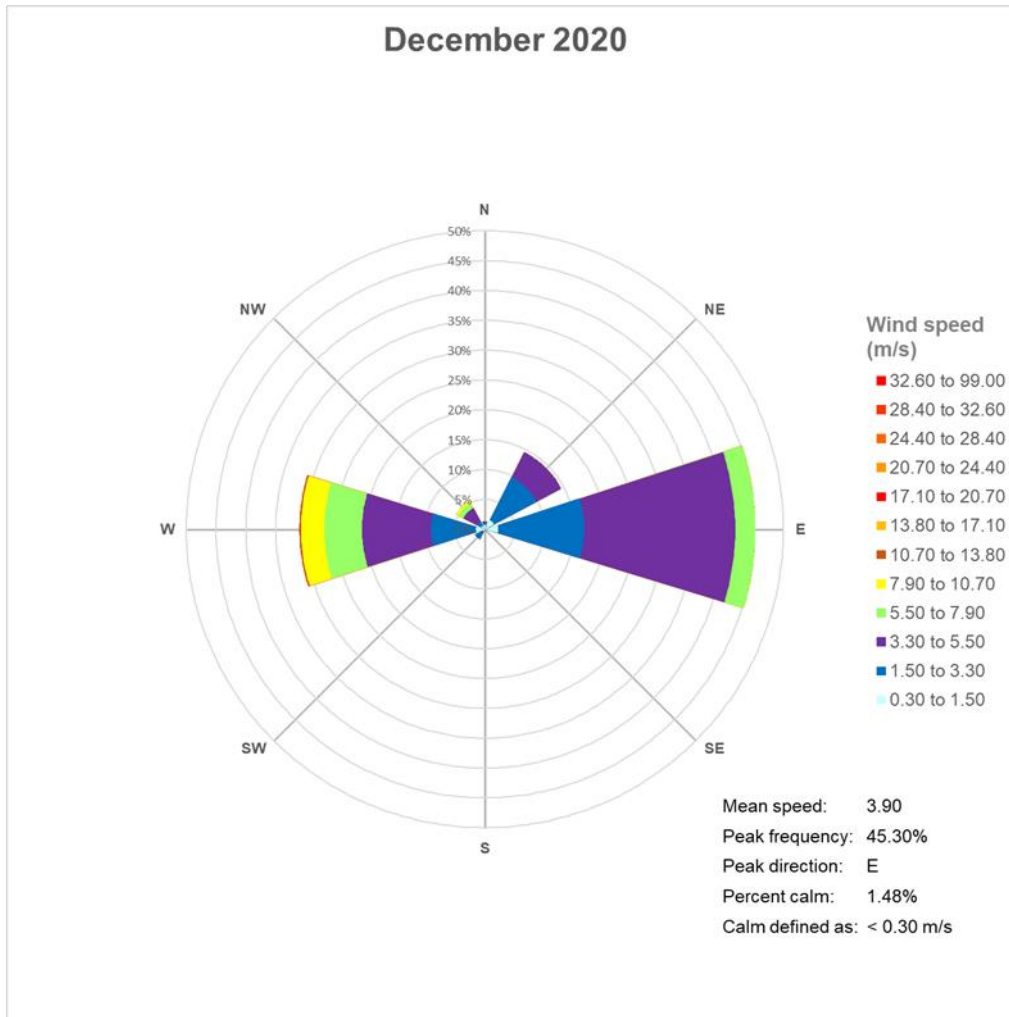
Heron is required to undertake meteorological monitoring on site. Veolia operate the approved weather station (EPA licence 11436, Monitoring Point 9). The detailed December 2020 daily weather data is shown in Table 3.

Table 3. Daily Weather - December 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	13.1	31.9	0.0		24.0	3.6	187.6	4.033
2	11.4	25.5	0.0		24.0	3.8	224.8	6.331
3	10.6	25.8	0.0		24.0	2.9	175.5	5.759
4	9.1	27.1	0.0		24.0	3.3	202.9	4.443
5	11.9	26.5	10.0		24.0	5.3	195.0	NAN
6	11.0	16.5	0.0		24.0	8.4	264.8	4.812
7	9.0	18.0	0.0		24.0	7.0	265.7	5.129
8	5.7	17.2	0.0		24.0	3.6	241.2	5.589
9	8.2	23.5	0.0		24.0	1.9	180.4	4.836
10	9.3	21.5	2.5		24.0	3.4	139.9	5.403
11	8.0	16.8	0.0		24.0	4.7	93.8	4.448
12	8.0	14.7	0.5		24.0	4.6	95.7	4.519
13	11.1	20.8	0.5		24.0	4.3	79.2	2.933
14	13.2	20.7	0.0		24.0	4.0	79.7	3.997
15	14.4	23.9	0.5		24.0	3.2	72.1	3.197
16	17.5	25.3	20.5		24.0	3.1	82.9	3.255
17	17.2	27.7	0.0		24.0	3.2	240.6	3.458
18	14.1	23.5	0.0		24.0	4.6	258.5	4.561
19	12.1	13.8	0.5		24.0	3.4	79.9	4.851
20	12.1	24.5	0.5		24.0	2.1	137.3	1.021
21	12.9	21.0	7.0		24.0	2.8	69.3	5.117
22	9.8	18.6	6.0		24.0	5.5	241.0	2.78
23	9.1	22.6	0.0		24.0	2.6	206.4	4.201
24	9.1	24.5	0.0		24.0	3.2	162.4	4.066
25	11.1	14.2	0.0		24.0	3.7	86.5	5.848
26	11.0	20.2	12.0		24.0	3.7	54.9	1.538
27	11.1	28.4	0.0		24.0	3.0	245.2	3.07
28	9.4	26.7	0.5		24.0	5.2	192.1	6.241
29	9.6	16.1	1.5		24.0	3.6	91.5	4.122
30	11.6	19.2	0.0		24.0	3.5	79.1	1.691
31	12.9	18.9	0.5		24.0	3.7	76.7	2.691
Average/Total	11.1	21.8	63	14		3.9		123.9

The wind rose at Figure 1 depicts the wind speed and direction recorded at 10 m above ground level. During the period the winds became easterly dominant.

Figure 1. Wind rose data – December 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)
<sup>c</sup> Deposited dust	Annual	<sup>b</sup> 2 g/m <sup>2</sup> /month	<sup>a</sup> 4 g/m <sup>2</sup> /month

- <sup>a</sup> Total impact (i.e. Incremental increase in concentrations due to the project plus background concentrations due to all other sources).
- <sup>b</sup> Incremental impact (i.e. incremental increase in concentrations due to the project on its own)
- <sup>c</sup> 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 December 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 summer 2019/2020.

**Table 5. December 2020 DDG results**

DDG ID	EPL ID	Start date	End date	Insoluble solids (g/m <sup>2</sup> /month)	Rolling annual average (g/m <sup>2</sup> /month)
DG22	2	14 Dec 20	2.0	2.0	4.1
DG28	1	14 Dec 20	31 Dec 20	3.4	3.1
DG33	4	14 Dec 20	31 Dec 20	1.4	2.1
DG34	25	14 Dec 20	31 Dec 20	3.4	4.2

### 3.2 Atmospheric dust – particulate matter

The Project Approval requires monitoring of total suspended particulate (TSP) matter and particulate matter < 10µm (PM<sub>10</sub>) 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 PM<sub>10</sub> are outlined in the Project Approval. The limits are detailed in Table 6 and readings for December 2020 shown in Table 7.

**Table 6. TSP and PM<sub>10</sub> limits**

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

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

**Table 7. PM<sub>10</sub> and TSP results December 2020**

Date	PM <sub>10</sub>	PM <sub>10</sub> rolling annual average <sup>a</sup>	TSP	TSP Rolling annual average <sup>b</sup>
6 Dec 20	13.4	18.4	Torn	32.7
12 Dec 20	6.0	17.3	13.6	31.2
18 Dec 20	6.0	15	13.6	26.4
24 Dec 20	6.0	13.2	13.6	23.0
30 Dec 20	6.0	12.3	13.6	22.8

- 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 PM<sub>10</sub> 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**

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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 December 2020.

## **5. Blasting**

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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 December 2020.

## **6. Complaints**

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No complaints were received during the reporting period.