ENDEAVOR OPERATIONS PTY LTD

ENDEAVOR MINE

MONTHLY ENVIRONMENTAL REPORT

December 2020

Name of Operation	Endeavor Mine
Name of Licensee	Endeavor Operations Pty Ltd
Environmental Protection Licence	No: 1301
Reporting Period Start Date	1 December 2020
Reporting End Date	31 December 2020

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1 INTRODUCTION

We at Endeavor Mine conduct systematic and periodic environmental monitoring of our operations to substantiate the effectiveness of our environmental controls which are in place to protect the environment, the health of our workers, our neighbours and the greater community. The results in this report correspond to the **December 2020**. This report publishes the summary of the environmental monitoring carried during this month for dust deposition, tailings deposition and groundwater. All monitoring is conducted in accordance with regulatory requirements and the EOPL Annual Environmental Monitoring Plan. Samples are collected and handled in accordance and compliance with regulatory requirements and taken to laboratories accredited by the National Association of Testing Authorities (NATA) for analysis. The current report only presents the results for the groundwater monitoring campaign of December 2020, the results for dust deposition will be added once they are received from the laboratory.

2 MONITORING RESULTS

2.1 Dust Monitoring

Air quality aspects and impacts associated with site operations are managed in accordance with the Air Quality Management Plan (END-PLN-ENV-006) and the requirement detailed in NSW Environmental Protection Licence 1301.

The Endeavor Mine is located 47 km from the nearest town (Cobar) and 4.5 km away for its nearest sensitive receptor (residential property). Therefore, dust deposition at these potential receptors is considered a low environmental risk.

Nevertheless, dust deposition on and beyond the boundary of the lease has the potential to cause environmental harm. Therefore Endeavor Mine manages airborne contaminants on site through the use of water sprays and a water trucks with depositional dust monitoring stations strategically located along the boundary of ML158/159/160/161 to measure performance.

Figure 2.1 Dust monitoring gauge located in the project

2.1.1 Dust Monitoring Methodology and Limits

The Endeavor Mine Dust Monitoring Program measures dust deposition rates on a monthly basis at the main mining lease boundary (4 locations) and at a background location located 11km from the operating mine site (DDG 5 – Point ID 5). EP Licence 1301 does not set limits for dust deposition. However, these results are compared to the recommended limits outlined in *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW 2016*. This guidance document recommends that the deposition rate for total insoluble matter when expressed as a 12 month rolling average should not exceed 4 g/m^2/month and that site activities should not generate dust emissions which result in a dust deposition rate greater than 2 g/m^2/month above background levels on a annual average. Table 2-1 describes the Pollutant, Units of Measure, Monitoring Frequency and Method of Sampling.

2.1.2 Monitoring Locations

Table 2-1 Endeavor Mine Air Monitoring Requirements

Point ID	Pollutant	Unit of measure	Frequency	Sampling Method
1 (DDG1)	Particulates - Deposited matter	grams per square metre per month	Monthly	AM-19
2 (DDG2)	Particulates - Deposited matter	grams per square metre per month	Monthly	AM-19
3 (DDG3)	Particulates - Deposited matter	grams per square metre per month	Monthly	AM-19
4 (DDG4)	Particulates - Deposited matter	grams per square metre per month	Monthly	AM-19
5 (DDG5)	Particulates - Deposited matter	grams per square metre per month	Monthly	AM-19

As shown in the satellite image (Figure 2.2), there are 5 dust monitoring locations on the boundary of the lease, with one located 11kms from the site at the turnoff to the Mine site near the Louth Road. This station was positioned to establish background levels.

Figure 2.2 Endeavor Mine Dust Monitoring Locations

2.1.3 Dust Monitoring Data

This report shows the results from the dust monitoring activities carried out during the month of December 2020 (Table 2-2). All values remain well under the recommended guidance values.

Table 2-2 Dust monitoring results December 2020.

Monitoring locations (Monitoring from 10/12/2020 to 08/01/2021						
Parameters	**Unit**	**DDG1**	**DDG2**	**DDG3**	**DDG4**	**DDG5**
Total soluble matter	g/m2*month	1.7	1.5	1.0	2.5	2.1
Total insoluble matter	g/m2*month	1.5	1.2	1.2	1.5	1.2

2.2 Groundwater Monitoring

Deep regional groundwater flows to the south west, conforming to the structural dip of the underlying sedimentary rocks. Groundwater inflow into the mine is observed at a depth range of between 60 to 80 m below ground surface. A shallow, perched aquifer occurs is found in the vicinity of the Central Tailings Discharge CTD between approximately 0.5 to 13 m below ground surface. This aquifer is recharged by rainfall and seepage water from the operational TSF via a permeable gravelly soil layer in the area.

A review of groundwater characteristics undertaken by consultants Environmental Earth Sciences (EES) in 2013 indicates there is no interface between the shallow perched water and the deep regional aquifer.

Groundwater quality at the mine is generally poor due to the high salinity. The water has been sampled by NSW Water Conservation and Irrigation for the original Environmental Impact Statement (EIS) could be considered "brackish" and was found to have an electrical conductivity (EC) of 26,000 µS/cm (sea water is approximately 30,000 us/cm). Further, it was noted that the water was not suitable for stock, domestic or farm use. Potential contamination of the groundwater would be of low risk due to the naturally poor quality of the water.

2.2.1 Monitoring Locations

Endeavor Mine's groundwater monitoring locations are concentrated around the perimeter of the Central Tailings Discharge (CTD) and the Sector 5 Tailings Storage Facility (CTF), while surface water monitoring locations are focused on water storages that could potentially discharge to environment during a major rain or storm event. Table 2-3 describes the monitoring stations, where Figure 2.3 shows the locations of the piezometers. Depending on availability of water or flow, unfortunately on some occasions, piezometers cannot be monitored as a result of being dry. Parameters to be monitored are described in

Table 2-4.

Table 2-3 EPA Monitoring Stations

EPA ID	Type of monitoring point	Location description
9	Groundwater monitoring point	PZ Labeled as BH02
10	Groundwater monitoring point	PZ Labeled as BH02B
11	Groundwater monitoring point	PZ Labeled as BH03
12	Groundwater monitoring point	PZ Labeled as BH06
13	Groundwater monitoring point	PZ Labeled as BH08A
14	Groundwater monitoring point	PZ Labeled as BH09
15	Groundwater monitoring point	PZ Labeled as BH10
16	Groundwater monitoring point	PZ Labeled as BH10B
17	Groundwater monitoring point	PZ Labeled as BH12B
18	Groundwater monitoring point	PZ Labeled as BH14
19	Groundwater monitoring point	PZ Labeled as BH15
20	Groundwater monitoring point	PZ Labeled as BH16
25	Groundwater monitoring point	PZ Labeled as BH13

Table 2-4 EPA Monitoring Parameters

Pollutant	Unit of measure	Frequency	Sampling method
Arsenic	milligrams per litre	Quarterly	Representative sample
Cadmium	milligrams per litre	Quarterly	Representative sample
Calcium	milligrams per litre	Quarterly	Representative sample
Chloride	milligrams per litre	Quarterly	Representative sample
Copper	milligrams per litre	Quarterly	Representative sample
Cyanide (total)	milligrams per litre	Quarterly	Representative sample
Electrical conductivity	milligrams per litre	Quarterly	Representative sample
Iron	milligrams per litre	Quarterly	Representative sample
Lead	milligrams per litre	Quarterly	Representative sample
Magnesium	milligrams per litre	Quarterly	Representative sample
Manganese	milligrams per litre	Quarterly	Representative sample
Mercury	milligrams per litre	Quarterly	Representative sample
pH	pH	Quarterly	Representative sample
Potassium	milligrams per litre	Quarterly	Representative sample
Sodium	milligrams per litre	Quarterly	Representative sample
Standing water level	metres	Quarterly	Representative sample
Sulfate	milligrams per litre	Quarterly	Representative sample
Total dissolved solids	milligrams per litre	Quarterly	Representative sample
Zinc	milligrams per litre	Quarterly	Representative sample

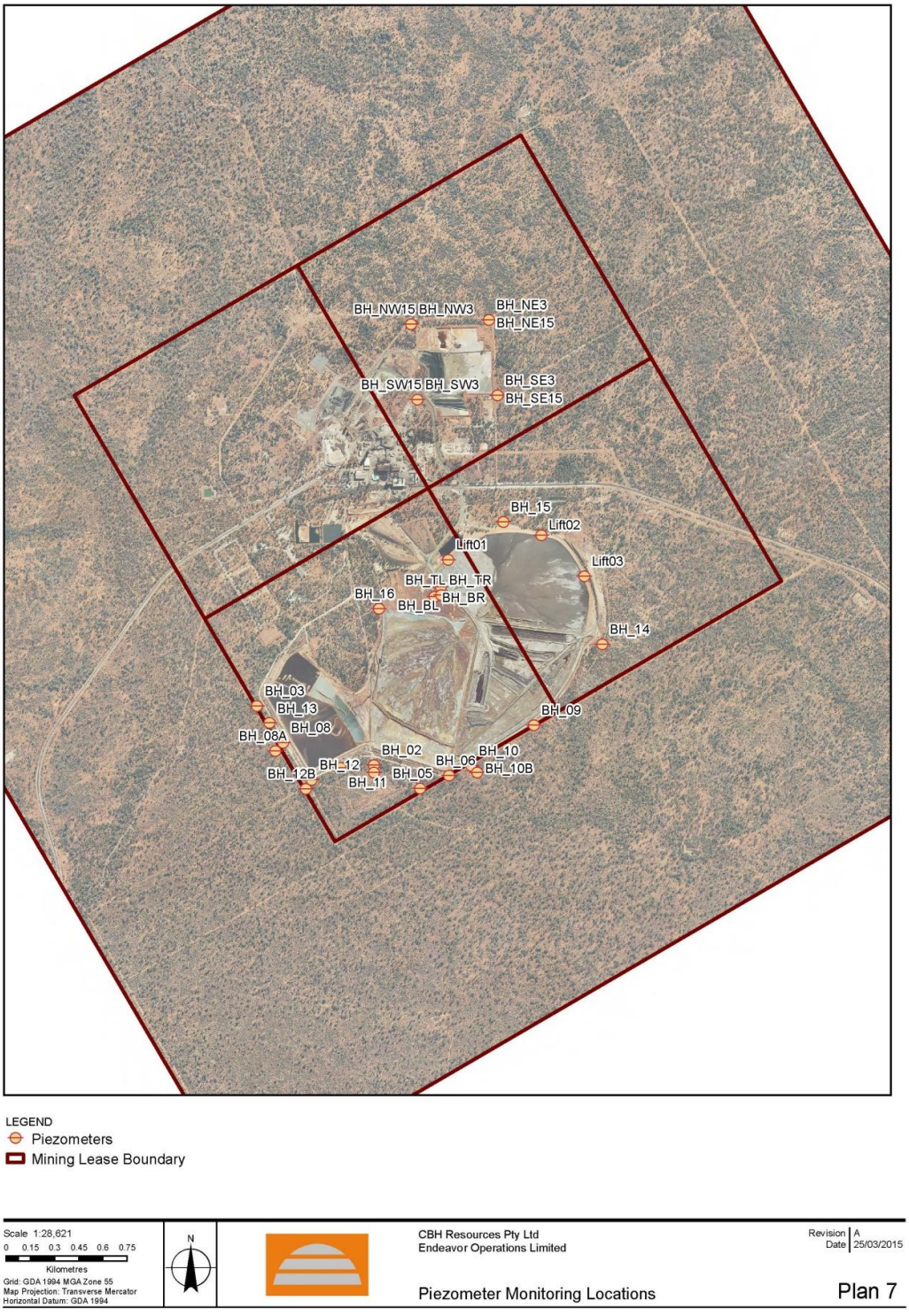

Figure 2.3 Location of the Piezometer Monitoring Locations

2.2.2 Monitoring Results Data

Groundwater monitoring was carried out during the 8th and 9th of December 2020, the results are in Table 2-5.

Table 2-5 Groundwater monitoring results December 2020

Monitoring Locations (EPA ID)			BH 02	BH 02B	BH 03	BH 06	BH 8A	BH 9	BH 10	BH 10B	BH 12B	BH 14	BH 15	BH 16	BH 13
			9	10	11	12	13	14	15	16	17	18	19	20	25
Standing Water Levels (m)			3.06	3.93	3.38	3.51	4.34	4.35	11.84	5.35	9.1	6.05	12.8	4.1	7.18
pH Value	Lab	pH Unit	7.4	7.4	7.57	6.38	7.55	7.53		7.59	7.43	7.6		6.97	7.51
Elect. Cond.	Lab	µS/cm	15200	17800	32100	13700	25700	19300		20200	26600	16800		17100	29000
Temp	Field	C	23.9	23.3	20.6	24.1	29.7	23.6		26.8	21.5	29.3		20.3	24.2
Total Dissolved Solids @180Â°C		mg/L	14400	16600	26400	12800	21700	19600		22000	22100	16300		13500	25600
Sulfate as SO4 -		mg/L	4750	5660	4670	4440	5110	7200		8120	4550	5860		2810	4990
Chloride		mg/L	2280	2920	8160	2150	5770	2620		2490	6800	2650		4000	6990
Calcium		mg/L	644	625	563	565	745	564		569	781	549		763	797
Magnesium		mg/L	1330	1500	1710	893	1400	1550		2160	1340	1440		587	1950
Sodium		mg/L	1610	1940	5080	1410	3690	2460	*	2350	3800	1820	*	2190	3920
Potassium		mg/L	96	91	224	79	164	244		190	227	150		87	173
Arsenic		mg/L	0.159	0.081	0.005	2.47	0.003	0.008		0.006	0.007	0.008		0.002	0.007
Cadmium		mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001	<0.0001	<0.0001		<0.0001	<0.0001
Copper		mg/L	<0.001	<0.001	0.001	<0.001	0.002	0.002		0.002	0.001	0.001		<0.001	<0.001
Lead		mg/L	<0.001	0.003	0.002	<0.001	0.005	0.061		<0.001	0.029	0.001		<0.001	<0.001
Manganese		mg/L	9.8	5.27	5.27	5.08	10.9	3.62		5.08	2.32	0.017		17.4	18.6
Zinc		mg/L	<0.005	<0.005	0.01	0.489	0.07	0.024		<0.005	0.008	0.006		0.387	<0.005
Iron		mg/L	3.55	<0.05	0.64	300	<0.05	0.09		<0.05	<0.05	<0.05		14.9	2.34
Mercury		mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001	<0.0001	<0.0001		<0.0001	<0.0001
Total Cyanide		mg/L	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004		<0.004	<0.004	<0.004		<0.004	<0.004

*Not enough water to sample

2.3 Tailings Deposition

Tailings (also known as tails or residue) are the material left over after the process of separating the valuable fraction from the uneconomic fraction (waste) of the ore. Tailings are distinct from overburden or waste rock or other material that overlies an ore or mineral body and is displaced during mining without being processed.

The volumes of tailings can be large and require an engineered storage and capacity to safely house them, Depending on the nature of the ore or the type of extraction process, tailings can have the potential to harm the environment unless they are deposited and managed correctly.

The reporting of monthly tailings deposition is a legislative requirement as part of EPL 1301.

2.3.1 Tailings Deposition: Data and Discussion

From the 1st of January 2020 the Mine has entered into Care and Maintenance, no tailings have been produced as there are no ongoing operations.

Table 2-6 Tailings Deposition for December 2020

	Environment Protection Licence Monitoring Point 7		**Environment Protection Licence Monitoring Point 8**		**TOTAL**
	Volume of tailings deposited (m^3)	Mass of tailing solids deposited (DMT)	Volume of tailings deposited (KL)	Mass of tailing solids deposited (DMT)	Mass of tailing solids deposited (DMT) YTD
December 2020	-	-	-	-	**-**

3 RESULTS LOG

Table 3-1 Laboratory results log

Samples	Results received from laboratory
Dust deposition	29 January 2021
Groundwater	18 December 2020
Date report posted on website	04 January 2021

4 COMPLAINTS HOTLINE

Endeavor Mine has established a complaints hotline for members of the Public to voice any concerns they have with Endeavor Mine activities. The phone number to call is (02) 68306555 or email on enquiries@endeavor.com.au. Endeavor will investigate any complaint and take immediate action if the complaint is validated.