



ENDEAVOR OPERATIONS PTY LTD

ENDEAVOR MINE



MONTHLY ENVIRONMENTAL REPORT

For the Month Ending 30 June 2018

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Name of Licensee	Endeavor Operations Pty Ltd
Environmental Protection Licence	No: 1301
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1 INTRODUCTION

We at Endeavor Mine conduct periodic environmental monitoring 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. Welcome to the June 2018 Environmental Monitoring Report. This report has also been produced to satisfy our reporting obligations under the Protection of the Environment Operations Act 1997 (POEO Act), Mine Operational Plan (MOP) and EP Licence 1301 which requires for Endeavor Mine to publish or make pollution monitoring data available to members of the public. The report provides a summary of monthly environmental monitoring results for June 2018.

Endeavor Mine's environmental monitoring program includes the monitoring of contaminants to air, surface water and ground water at locations within or beyond mine site boundary. The program also involves the monitoring of noise (when required), the management of hazardous and non-hazardous waste, the deposition of tailings and reporting of resources such as raw water usage. All monitoring is conducted in accordance with regulatory requirements and the EOPL Annual Environmental Monitoring Plan.

Samples are periodically 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 Report also compares the results against established internal and external targets and provides critical discussion on environmental issues and sustainability initiatives during the monitoring period.



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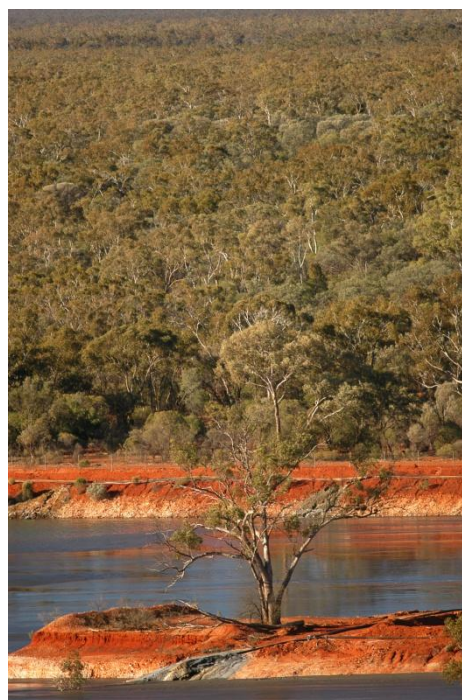
1 Meteorology

The following section presents historical and current weather data for Cobar and the surrounding Shire.

1.1 Temperature and Humidity

History

Cobar has a semi-arid climate with hot summers and cool to mild winters. Winter nights can be quite cold. Average monthly maximum temperatures tend to range from 13C to 20C in winter to between 28C to 39C in summer. Average monthly minimum temperatures range from 2C to 8C in winter to 14C to 24C in summer. The humidity in Cobar is low. During the summer the average relative humidity is about 30% in the afternoon and about 50% at 9am. In winter it is about 45% at 3pm, whilst it is about 75% at 9am.



1.2 Meteorological Data for June 2018

The average temperature for the Cobar region for June 2018 was 24°C with average-low humidity and stable barometric pressure. Table 1 shows the high and low weather summary.

Table 1: High and Low Weather Summary for June 2018 (BoM)

	Temperature	Humidity	Pressure
High	28.5°C (3 June,)	95% (30 June, 2.00am)	1032 mbar (30 June, 2.00am)
Low	2.6°C (31 June)	15%(8 June, 2.00pm)	1014 mbar(3 June, 6:00 pm)
Average	15°C	51%	1017 mbar

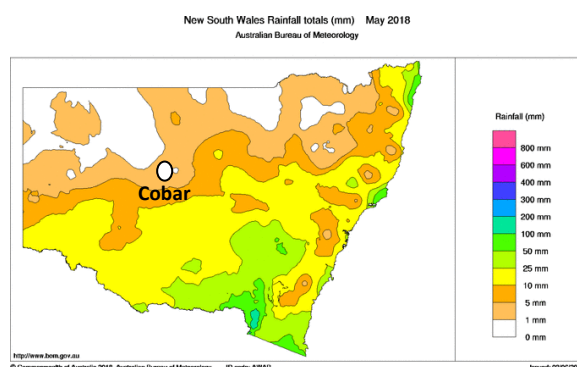
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1.3 Rainfall

History

On average, rainfall in the Cobar region tends to be uniformly distributed throughout the year, with a median annual rainfall of 390-400mm. The average monthly rainfall is 33mm. The mean evaporation rate for the region is 1953mm – 6 times the annual rainfall. The rainfall is however extremely variable, and this is particularly so in late summer and early spring when the highest observed falls have been in excess of 200mm in any one month. This results in the average monthly rainfall being greatly in excess of the median monthly rainfall for some months. In January, February and June, for example, the average rainfall is more than double the median rainfall.



1.4 Rainfall for June 2018

There was 1.4mm of rainfall in Cobar and surrounding areas during June 2018. YTD rainfall is shown in Table 2.

Table 2: YTD Rainfall for Cobar, NSW (BoM)

January 2018	February 2018	March 2018	April 2018	June 2018	YTD
6.2mm	0.2mm	0.0mm	0.4mm	1.4mm	8.4mm

Although the Bureau of Meteorology provides up to date and accurate data for the Cobar Township, Endeavor believe it will require more acute information in the future to assist in our environmental activities. Endeavor is currently upgrading to a newer more advanced weather station and expects to obtain more representative data regarding site weather conditions in upcoming reports.

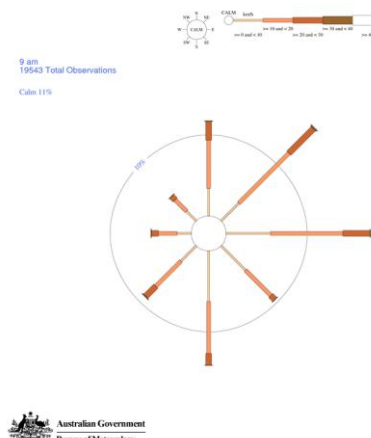
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1.5 Wind

History

The predominant wind direction for the Cobar region is East or North East, but will come from the North occasionally West during the hotter periods. Wind can play a critical role in a site's environmental performance, particularly with dust deposition and noise depending on wind direction.



3 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 requirements detailed in NSW EP Licence 1301.

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



3.1 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. EP Licence 1301 does not set limits for dust deposition. The results are however assessed against the recommended limits outlined in *Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in NSW 2005*. 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/m²/month and that site activities should not generate dust emissions which result in a dust deposition rate greater than 2 g/m²/month above background levels. Table 3 describes the Pollutant, Units of Measure, Monitoring Frequency and Method of Sampling.

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Table 3: Endeavor Mine Air Monitoring Requirements

POINT 1

Pollutant	Units of measure	Frequency	Sampling Method
Particulates - Deposited Matter	grams per square metre per month	Monthly	AM-19

POINT 2

Pollutant	Units of measure	Frequency	Sampling Method
Particulates - Deposited Matter	grams per square metre per month	Monthly	AM-19

POINT 3

Pollutant	Units of measure	Frequency	Sampling Method
Particulates - Deposited Matter	grams per square metre per month	Monthly	AM-19

POINT 4

Pollutant	Units of measure	Frequency	Sampling Method
Particulates - Deposited Matter	grams per square metre per month	Monthly	AM-19

POINT 5

Pollutant	Units of measure	Frequency	Sampling Method
Particulates - Deposited Matter	grams per square metre per month	Monthly	AM-19

3.2 Monitoring Locations

As shown in the satellite image (Figure 1), 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.

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Figure 1: Endeavor Mine Dust Monitoring Locations

3.3 Dust Monitoring Results for June 2018

Table 4 shows the results of Monitoring for June 2018.

Table 4: Dust Monitoring Results for June 2018							
Monitoring Location			DG1	DG2	DG3	DG4	DG5
Date / Sample Collected			09/07/2018	09/07/2018	09/07/2018	09/07/2018	09/07/2018
Dissolved Metals by ICP-MS		Unit					
Lead	7439-92-1	mg/L	<0.001	<0.001	0.002	0.004	<0.001
(Dissolved)							
Total Soluble Matter		g/mÂ².month	0.6	0.5	0.7	0.5	0.7
Total Insoluble Matter		g/mÂ².month	0.3	0.3	0.2	0.4	0.3

3.4 Discussion

Table 4 the results for Soluble Matter (TSM) and Insoluble Matter (TIM). Results for TIM were low and did not exceed the limit of 4 g/m²/month as set in the *Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in NSW 2005*. TSM were consistent with previous month result. Pb levels were undetectable for 3 of the 5 locations with the other two stations well within established guidelines.

4 Groundwater Monitoring

Deep and Shallow Aquifers

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 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.

Ground Water Quality

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 $\mu\text{S}/\text{cm}$ (sea water is approximately 30,000 $\mu\text{S}/\text{cm}$). 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.



4.1 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 5 describes the monitoring stations where Figure 2 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.

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Table 5: EPA Monitoring Stations

8	Discharge to tailings dam	Discharge to tailings dam	End of tailings line pipe that discharges "Sector Five" tailing dam as shown on map titled "Sector 5-tailing facility" and submitted to the DEC in document BTF 9027.
9	Groundwater monitoring Point		Piezometer labelled as "BH02" on map titled "Statutory Groundwater Monitoring Locations" received by the EPA on 12/12/14 (DOC14/317060).
10	Groundwater Monitoring Point		Piezometer labelled as "BH02B" on map titled "Statutory Groundwater Monitoring Locations" received by the EPA on 12/12/14 (DOC14/317060).
11	Groundwater Monitoring Point		Piezometer labelled as "BH03" on map titled "Statutory Groundwater Monitoring Locations" received by the EPA on 12/12/14 (DOC14/317060).
12	Groundwater Monitoring Point		Piezometer labelled as "BH06" on map titled "Statutory Groundwater Monitoring Locations" received by the EPA on 12/12/14 (DOC14/317060).
13	Groundwater Monitoring Point		Piezometer labelled as "BH08A" on map titled "Statutory Groundwater Monitoring Locations" received by the EPA on 12/12/14 (DOC14/317060).
14	Groundwater Monitoring Point		Piezometer labelled as "BH09" on map titled "Statutory Groundwater Monitoring Locations" received by the EPA on 12/12/14 (DOC14/317060).
15	Groundwater Monitoring Point		Piezometer labelled as "BH10" on map titled "Statutory Groundwater Monitoring Locations" received by the EPA on 12/12/14 (DOC14/317060).
16	Groundwater Monitoring Point		Piezometer labelled as "BH10B" on map titled "Statutory Groundwater Monitoring Locations" received by the EPA on 12/12/14 (DOC14/317060).
17	Groundwater Monitoring Point		Piezometer labelled as "BH12B" on map titled "Statutory Groundwater Monitoring Locations" received by the EPA on 12/12/14 (DOC14/317060).
18	Groundwater Monitoring Point		Piezometer labelled as "BH14" on map titled "Statutory Groundwater Monitoring Locations" received by the EPA on 12/12/14 (DOC14/317060).

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Table 5: EPA Monitoring Stations

19	Groundwater Monitoring Point	Piezometer labelled as "BH15" on map titled "Statutory Groundwater Monitoring Locations" received by the EPA on 12/12/14 (DOC14/317060).
20	Groundwater Monitoring Point	Piezometer labelled as "BH16" on map titled "Statutory Groundwater Monitoring Locations" received by the EPA on 12/12/14 (DOC14/317060).
25	Groundwater Monitoring	Piezometer labelled as "BH13" on map titled "Statutory Groundwater Monitoring Locations" received by the EPA on 12/12/14.



Figure 2: Location of the Piezometer Monitoring Locations

4.2 Groundwater Monitoring Results

Groundwater sampling was undertaken on June 18 2018. Several bores were not sampled due to a lack of water or too low to obtain a representative sample. These were: EPA 15 and EPA 25. Table 6 shows the results of the monitoring.

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Table 6: 2nd Quarter Groundwater Monitoring Results June 2018

Sample Date:		18/06/18	18/06/18	18/06/18	18/06/18	18/06/18	18/06/18	18/06/18	18/06/18	18/06/18	18/06/18	18/06/18
Monitoring Location ID (Primary):		EPA ID 9	EPA ID 10	EPA ID 11	EPA ID 12	EPA ID 13	EPA ID 14	EPA ID 18	EPA ID 16	EPA ID 17	EPA ID 19	EPA ID 20
Standing Water Levels	Meters	3.30	3.70	3.65	3.05	5.51	3.28	5.23	5.23	10.83	9.27	3.25
pH Value	pH Unit	7.37	7.13	6.86	7.3	6.97	7.56	7.25	6.89	6.57	7.3	6.97
Electrical Conductivity	ÂµS/cm	13600	15100	16300	22600	16100	14200	19400	15300	14400	22600	16100
Total Dissolved Solids	mg/L	10300	18900	19300	28800	21500	11900	28900	17900	16100	28800	21500
Total Alkalinity as CaCO3	mg/L	924	976	197	798	201	626	518	195	305	798	201
Sulphate as SO4	mg/L	5270	6140	4230	4820	4180	7960	9520	4420	9330	4820	4180
Chloride	mg/L	2870	3380	4630	6790	4680	2850	4640	4690	1800	6790	4680
Calcium	mg/L	646	618	737	680	744	563	592	709	592	680	744
Magnesium	mg/L	939	1060	592	858	600	1380	1500	606	1330	858	600
Sodium	mg/L	1670	2120	2490	4040	2540	1820	3310	2610	1790	4040	2540
Potassium	mg/L	106	106	91	234	93	146	157	91	96	234	93
Aluminium	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic	mg/L	0.06	0.073	0.002	0.009	0.003	0.009	0.007	0.001	0.204	0.009	0.003
Cadmium	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

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Table 6: 2nd Quarter Groundwater Monitoring Results June 2018

Sample Date:		18/06/18	18/06/18	18/06/18	18/06/18	18/06/18	18/06/18	18/06/18	18/06/18	18/06/18	18/06/18	18/06/18
Monitoring Location ID (Primary):		EPA ID 9	EPA ID 10	EPA ID 11	EPA ID 12	EPA ID 13	EPA ID 14	EPA ID 18	EPA ID 16	EPA ID 17	EPA ID 19	EPA ID 20
Copper	mg/L	<0.001	0.001	<0.001	0.002	<0.001	0.003	0.006	<0.001	<0.001	0.002	<0.001
Lead	mg/L	<0.001	<0.001	0.037	0.037	0.012	0.002	0.041	<0.001	<0.001	0.037	0.012
Manganese	mg/L	9.81	5.29	22.5	0.105	22.9	1.22	0.037	23	9.18	0.105	22.9
Nickel	mg/L	0.007	0.03	0.029	0.003	0.03	0.01	0.006	0.032	0.114	0.003	0.03
Selenium	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	mg/L	0.019	0.012	0.407	0.09	0.415	0.028	0.075	0.38	0.198	0.09	0.415
Iron	mg/L	<0.05	<0.05	13.4	<0.05	14.1	0.06	0.06	12.6	473	<0.05	14.1
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	<0.010	<0.004	<0.004	<0.004	<0.004	0.096	<0.010	<0.004
Total Anions	meq/L	209	243	223	308	223	259	339	228	251	308	223
Total Cations	meq/L	185	213	196	286	199	224	301	201	219	286	199
Ionic Balance	%	6.16	6.51	6.32	3.63	5.61	7.05	6	6.31	6.76	3.63	5.61

4.3 Discussion

There has been no obvious change in the quality of the groundwater since the first quarter monitoring. As mentioned in previous reports, the groundwater quality within the Endeavor Mine lease is of a naturally poor quality. pH is elevated, high EC and contains elevated TDS, Cl, Mg which is consistent with elevated elements consistent in seawater. It could be considered brackish and unsafe to drink or use for agricultural or stock use. Although quantitative definitions of this term vary, it is generally understood that brackish groundwater is water that has greater dissolved-solids content than occurs in freshwater, but not as much as seawater (35,000 milligrams per litre). As shown in Table 6, this is the case for the groundwater at Endeavor. It is considered brackish if the source has dissolved-solids concentration between 1,000 and 10,000 milligrams per litre (mg/L). The term "saline" commonly refers to any water having dissolved-solids concentration greater than 1,000 mg/L and includes the brackish concentration range. Some bores could not be monitored due to a lack of water and recharge. EPA ID Piezometer 17 recorded elevated levels of CN in comparison to other EPA monitoring locations. Historically, CN levels in this Piezometer have recorded elevated levels in the past, but other monitoring sites in the vicinity or downstream have recorded low levels. It appears to be a result of a historical source. Nevertheless, levels have reduced over time, and this has had no detrimental impact on the existing groundwater quality due to the baseline conditions.

4.4 Seepage

There appears to be no evidence of any leaching into groundwater from both the CTD and the Sector 5 TSF. Monthly observations show no seepage into surface interception trenches. As shown in the meteorological data, the region has received very little to no rainfall during 2018.

Groundwater levels around the boundaries of Sector 5 could not be measured due to the lack of water, recharge and flow. Based on a review of pH, EC and the absence of high levels of dissolved metals, there appears to be no signs of any environmental harm caused at both storage facilities and show and no signs of leaching into either the shallow or deep aquifers.

5 Surface Water

History

Surface water is categorised in two the following categories:

Clean Water: *Water that has not been degraded by contact with mine operations and is of a suitable quality for release to the off lease receiving environment. Clean water includes: Raw Water, Potable Water, and Clean Stormwater. However in an arid and water starved environment like the Cobar Shire, water is reused and recycled at every opportunity.*

Contaminated Water: *Water containing potential contaminants or pollutants and not fit for discharge, water that has had contact mining and ore processing operations. Contaminated water includes: Process Water, Tailings Supernatant, Mine Water, and Contaminated Stormwater.*



5.1 Monitoring Methodology

Although not part of the legislative commitments, Endeavor monitors surface waters on the lease as part of its internal and operational commitment. The site does not release any water directly into the environment. It operates with a closed circuit. However Endeavor remains vigilant in understanding the risks associated of impacted surface water. The main surface water monitoring point is the Evaporation Pond which is measured monthly (Volumes and pH) and biannually along with all other site dams for pH, electrical conductivity (EC), total dissolved solids (TDS), Cations (Ca, Mg, Na, K, ionic balance), Anions (SO₄, Cl, alkalinity, flouride), Cyanide (total) and dissolved metals (As, Cd, Cr, Cu, Pb, Ni, Mn, Zn, Al, Fe, Se, Hg). Water in the Supergene Pit and Pontoon Dam could not be sampled due to a lack of water and unsafe access to any surface water.

5.2 Monitoring Locations

Figure 3 shows the location of the surface water dams on site that are monitored for water quality bi-annually.

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Figure 3: The Endeavor Mine: Main Water Storages

5.3 Results

Table 7 shows the analytical results of surface water monitoring.

Table 7: 2 nd Quarter Surface Water Monitoring 2018					
Sample date:		26/06/2018	26/06/2018	26/06/2018	26/06/2018
Sample Location ID (Primary):		Scotty's Dam	Retention Dam	Evaporation Dam	Decant Pond
Analyte	Units				
Water Levels	% Capacity	5	65	10	5
pH Value	pH Unit	5.04	3.73	1.65	2.77
Electrical Conductivity @ 25Â°C	ÂµS/cm	355	11100	47900	18200
Total Dissolved Solids @180Â°C	mg/L	278	9110	62700	29100
Total Alkalinity as CaCO3	mg/L	1	<1	<1	<1
Sulphate as SO4	mg/L	109	2980	26100	8830
Chloride	mg/L	11	3000	10900	4140
Calcium	mg/L	23	845	731	652
Magnesium	mg/L	12	279	2690	764

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Table 7: 2nd Quarter Surface Water Monitoring 2018

Sample date:		26/06/2018	26/06/2018	26/06/2018	26/06/2018
Sample Location ID (Primary):		Scotty's Dam	Retention Dam	Evaporation Dam	Decant Pond
Sodium	mg/L	6	1450	6260	1880
Potassium	mg/L	7	103	42	139
Aluminium	mg/L	0.11	0.03	368	79.7
Arsenic	mg/L	0.006	0.01	8.03	0.816
Cadmium	mg/L	0.0074	0.0337	3.11	1.06
Chromium	mg/L	<0.001	<0.001	0.392	0.049
Copper	mg/L	0.028	0.011	48.7	6.28
Lead	mg/L	0.207	1.05	1.1	4.55
Manganese	mg/L	1.52	7.72	250	85.6
Nickel	mg/L	0.009	0.012	0.742	0.186
Selenium	mg/L	<0.01	<0.01	0.02	<0.01
Zinc	mg/L	6.33	30.5	1260	452
Iron	mg/L	<0.05	3.56	1710	1390
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001
Total Cyanide	mg/L	----	<0.004	----	----

5.4 Results Discussion

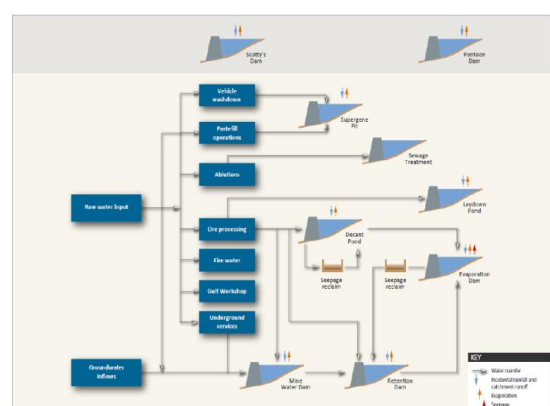
Three of the dam locations monitored are used in operations (Decant Pond, Evaporation Dam and the Retention Dam) and therefore it is expected that the water quality in these structures will be impacted. In both the Decant Pond and the Evaporation Dam, analysis shows that pH is low; EC (salts) and dissolved metals are high. Concentrations are exacerbated by the extremely low water levels in both the Decant Pond and Evaporation Dam. Both these dams act as evaporation receptacles for the CTD. The Retention Dam remains at 70% capacity due to the recirculation of its water through the milling process. As shown, the levels of metals are much lower in comparison. Nevertheless, all of the problematic solution remains in the site closed circuit is not released.

6 Raw Water Usage

History

The Cobar Water Board supplies raw water to the Endeavor Mine via a pipeline along the rail corridor. This water is sourced from Burrendong Dam (right) via a system of open channels, weirs and pipelines. Endeavor Mine currently holds a high security license for 1,280 ML per annum, with average usage being 58,000KL per month. Supply of this water is controlled by the Cobar Water Board. The licensed volume of water is generally sufficient to support mining operations. If required, an above allocation water purchase can be made through the CWB depending on the level of drought and/or water restrictions placed on the area.

Raw water is reticulated across site for use as make up water for the Retention Dam (process water) and for “clean water” uses such as vehicle and equipment wash down and dust suppression. Raw water is initially stored in 5ML holding tank from where it is distributed to either: the raw water system, the potable water treatment plant or the fire water reticulation system.



6.1 Monitoring Methodology

Joint readings by personnel from Endeavor Mine Environmental Department and the Cobar Shire Council are conducted monthly.

6.2 Results

Table 8 shows water usage year to date usage as well as usage for June 2018. Less water was used during June compared to previous months.

Table 8: Raw Water Use for June 2018

Date	YTD (KL)	Usage (KL) for June 2018
31/06/2018	410,678	66,748

7 Noise Management

Environmental noise is the propagation of noise with harmful impact on the activity of human or animal life. According to the World Health Organization, sound levels less than 70 dB are not damaging to living organisms, regardless of how long or consistent the exposure is. Exposure for more than 8 hours to constant noise beyond 85 dB is deemed hazardous. A "Nuisance" Noise is a noteworthy and unreasonable amount of sound from neighbouring premises.



Endeavor Operations has never received a noise complaint from its neighbours. The closest sensitive receptor (neighbouring property) is Poon Boon Station, which is located 4.5 kms away from operations and has never reported a complaint for noise, dust, vibration or visual amenity. The predominant wind direction is from the east to north-east, therefore; the greatest potential noise risk is for 'Bundella', 11.8 km from the mine. Again, no complaints have been registered.

7.1 Noise and Vibration Assessment

If a noise complaint is registered, Endeavor Mine will identify the acoustic values where a potential source is emanating as well as determine background levels at the nearest sensitive receptor (nearest Property).

Acoustic values to be measured and considered include:

- Health and biodiversity of ecosystems;
- Human health and wellbeing, including ensuring a suitable acoustic environment for individuals to sleep, study or learn, and be involved in recreation, including relaxation and conversation; and
- The amenity of the community.

The noise and vibration assessment will involve the identification of a baseline noise environment, modelling of potential noise sources and assessment of potential impacts associated with the operation. Any impact assessment will be based on likely sources including indicative operating equipment.

7.1.1 Neighbours (Sensitive Receptor)

A sensitive receptor is considered to be a location in the vicinity of the operation, where noise June affect the amenity of the land use.

7.1.2 Noise Management Plan

Based on the results of the assessment, a noise management plan is in place to address how plan activities will be carried out, according to best practice noise management principles.

Best-practice noise management principles include:

- Noise impact assessments and emission calculations;
- Administration of activities;
- Stakeholder engagement;
- Adoption of noise attenuating technologies for plant and equipment (if practicable);
- Minimising background creep; and
- Containing and minimising variable noise;

7.2 Monitoring Locations

Potential Monitoring locations will include neighbouring properties. Figure 4 shows the location of the neighbouring properties.



Figure 4: Closest Neighbours to Endeavor Mine

7.3 Noise Monitoring Results for June 2018

No noise complaints were registered during June 2018. The Noise Management Action Plan was not activated. Year to date, Endeavor Mine has received no complaints regarding noise or any other nuisance issue.

8 Waste Management

Endeavor Mine has developed and implemented a Waste Management Plan to provide a framework for managing process and non-process wastes, both liquid and solid, excluding waste rock, overburden and tailings. Detailed internal procedures are used to support both the operation and maintenance of the waste. The primary objectives are to:

- Reduce potential health and environmental risks associated with waste generation and disposal;*
- Promote the efficient use and conservation of resources, reduce the need for waste treatment facilities and reduce the requirement for raw materials;*
- Minimise the use of hazardous materials and seek safer alternative materials where possible; and*
- Comply with statutory requirements, specifically the conditions set out in Environmental Protection Licence 1301 and site Mining Leases and other statutory requirements.*



As stated in EP1301, Endeavor Mine “must not cause, permit or allow any waste to be received at the premises, except the wastes expressly meeting the definition as stated in its License”. Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled “Activity” in the Table 8 below. Any waste received at Endeavor Mine is subject to the limits or conditions listed in Table 8.

Monthly Environmental Report

For Month Ending 30 June 2018

Code	Waste	Description	Activity	Other Limits
NA	General or Specific exempted waste	Waste that meets all the conditions of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2005	As specified in each particular resource recovery exemption	NA
NA	Waste	Any waste received on site that is below licensing thresholds in Schedule 1 of the POEO Act, as in force from time to time	-	NA

Table 9: Requirements for the Storage and Handling of Waste under EP 1301.

8.1 Waste Discussion

In coming months, Endeavor Mine will undertake a site wide Waste Reduction Program to will see a dramatic is stored waste such as:

- Steel and other metals;
- Lighting;
- Fire Extinguishers;
- Tyres;
- E-Waste;
- Batteries;
- Poly Pipe;
- Timber;
- Empty chemical containers; and
- Waste hydrocarbons and containers.
- Any hazardous and/or trackable waste removed from site will be done so in accordance with NSW legislation.

It is our intention to waste levels to sustainable levels to enable the business to better manage its “non-problematic” waste.

9 Tailings Deposition

History

Tailings (also known as “tails” or “residue” is the material left over after the process of separating the valuable fraction from the uneconomic fraction (waste) of ore. Tailings are distinct from overburden, which is the 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 required engineered storage and capacity to safely house them. Depending on the nature of the ore or the type of chemicals used in the 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 EP 1301.

9.1 Results

Table 10 shows the volumes of tailings deposited for June 2018. All tailings were deposited in Sector 4.

	Environment Protection Licence Monitoring Point 7		Environment Protection Licence Monitoring Point 8		
	Volume of tailings deposited (KL)	Mass of tailing solids deposited (DMT)	Volume of tailings deposited (KL)	Mass of tailing solids deposited (DMT)	Mass of tailing solids deposited (DMT) YTD
June 2018	0	0	88570	53250	252,906

Table 10: Tailings Deposition for June 2018

10 Rehabilitation and Research

As the majority of the site will remain active for the life of the mine, only limited progressive rehabilitation is possible. However extensive planning and research into the rehabilitation of facilities such as the tailings dams are ongoing.

There are two other significant projects in progress:

- *Grass Pod Trials; and*
- *Contaminated land (Grass Plot) trials.*

Endeavor Mine are currently in discussion with industry experts to look at collaborative research into sustainable final landforms.



11 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) 68306475 or email on enquiries@endeavor.com.au. The number can be called 24 hours a day / 7 days a week. Endeavor will investigate any complaint and take immediate action if the complaint is validated. The Hotline details were also advertised and published in the Cobar Weekly during June 2018.