**Monthly Environmental Data** **April 2014**

*Contents Page*

# Air Quality

## *High Volume Air Samplers (HVAS)*

## *Tapered Element Oscillation Microbalance Sampling (TEOM)*

## *Dust Deposition Sampling*

# Blasting (Vibration and Overpressure)

# Noise

# Water

## *Ground Water*

## *Surface Water*

# Weather

# Data Log

# Correction Log

# Air Quality

## High Volume Air Samplers

Note: A number of errors have been identified in the air emission data. BHOP has engaged consultants Pacific? to review the data and data will be updated following this review.

EPL10 - Silver Tank - ON Site

|  |  |  |
| --- | --- | --- |
| DATE | TSP (µg/m3) | Lead (µg/m3) |
| 5/04/2014 | 11 | 0.11 |
| 11/04/2014 | 15 | 0.17 |
| 17/04/2014 | 28 | 0.20 |
| 23/04/2014 | 9 | 0.16 |
| 29/04/2014 | 4 | 0.20 |

EPL11 - Silver Tank - On Site

|  |  |  |
| --- | --- | --- |
| DATE | PM10 (µg/m3) | Lead (µg/m3) |
| 5/04/2014 | 16.5 | 0.1 |
| 11/04/2014 | 2.1 | 0.1 |
| 17/04/2014 | 7.1 | 0.1 |
| 23/04/2014 | 7.0 | 0.1 |
| 29/04/2014 | 8.0 | 0.1 |

EPL12 - Blackwoods Pit – On Site

|  |  |  |
| --- | --- | --- |
| DATE | PM10 (µg/m3) | Lead (µg/m3) |
| 5/04/2014 | 12.80 | 0.26 |
| 11/04/2014 | 4.11 | 0.05 |
| 17/04/2014 | 5.83 | 0.08 |
| 23/04/2014 | 3.87 | 0.08 |
| 29/04/2014 | 14.82 | 0.08 |

## Tapered Element Oscillating Microbalance Sampling (TEOM)

|  |  |  |
| --- | --- | --- |
| Particulate Matter <10 Microns 24Hr Average | | |
| Date | TEOM 1 - EPL 13 (μg/m3)  Essential Water – Off Site | TEOM 2 – EPL 14 (μg/m3)  Blackwoods Pit – On Site |
| 1/04/2014 | 16.49 | 7 |
| 2/04/2014 | 16.8 | 9.58 |
| 3/04/2014 | 13.14 | NoData (Invalid)  Machine Down during this period for unknown reasons.  Consultant engaged and booked for 14/05/2014 to complete repairs. |
| 4/04/2014 | 11.45 | NoData (Invalid) |
| 5/04/2014 | 14.79 | NoData (Invalid) |
| 6/04/2014 | 16.9 | NoData (Invalid) |
| 7/04/2014 | 7.75 | NoData (Invalid) |
| 8/04/2014 | 4.39 | NoData (Invalid) |
| 9/04/2014 | 14.65 | NoData (Invalid) |
| 10/04/2014 | 8.12 | 5.72 |
| 11/04/2014 | 7.23 | 8.37 |
| 12/04/2014 | 6.95 | 12.83 |
| 13/04/2014 | 7.85 | 12.7 |
| 14/04/2014 | 9.09 | 16.09 |
| 15/04/2014 | 10.15 | 19.64 |
| 16/04/2014 | 11.17 | 19.05 |
| 17/04/2014 | 13.65 | 15.83 |
| 18/04/2014 | 18.71 | 16.99 |
| 19/04/2014 | 15.95 | 18.46 |
| 20/04/2014 | 19.86 | 19.81 |
| 21/04/2014 | 17.08 | 17.58 |
| 22/04/2014 | 15.67 | 16.02 |
| 23/04/2014 | 14.61 | NoData (Invalid)  Machine began to work again on the 10th April 2014 however failed again on the 23rd April 2014.  Consultant engaged and booked for 14/05/2014 to complete repairs. |
| 24/04/2014 | 13.58 | NoData (Invalid) |
| 25/04/2014 | 11.31 | NoData (Invalid) |
| 26/04/2014 | 11.96 | NoData (Invalid) |
| 27/04/2014 | 12.49 | NoData (Invalid) |
| 28/04/2014 | 17.64 | NoData (Invalid) |
| 29/04/2014 | 14.03 | NoData (Invalid) |
| 30/04/2014 | 10.88 | NoData (Invalid) |
|  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PM10 μg/m3 12 Month Rolling Average | | | | | | | | | | | | |
|  | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 | Jan-14 | Feb-14 | Mar-14 | Apr-13 |
| TEOM 1 EPL13  Essential Water  Off Site | 11.0 | 10.1 | 12.0 | 15.1 | 21.2 | 19.6 | 17.8 | 19.9 | 29.2 | 22.7 | 16.0 | 12.8 |
| TEOM 2 EPL14  Blackwoods Pit On Site | 11.7 | 7.8 | 12.0 | 15.2 | 23.4 | 32.6 | 22.5 | 22.0 | 32.0 | 23.7 | 17.6 | 14.4 |

***EPL13 – Essential Water – Off Site***

***EPL14 – Blackwoods Pit – On Site***

Invalid Data

Invalid Data

SW Winds of up to 81Km/h During the month of October 2013 with an Average Temp of 27˚C .

S Winds of up to 72km/h during the month of January 2014 with an average Temperature of 36˚C  
Dust suppression was reapplied during the month of January 2013.

## Dust Deposition Sampling

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Total Deposited Dust (g/m2/Month) | | | | | | | | |
| Date | D1  (off site) | D2 | D3 | D4 | D5 | D6  (off site) | D7 |
| Mar 2014 | 0.17 | 0.11 | 0.34 | 1.53 | 0.79 | 0.23 | 0.40 |
| Background Average | 4.0 | 3.1 | 4.3 | 5.7 | n/a | 5.8 | n/a |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Total Deposited Lead (g/m2/Month) | | | | | | | |
| Date | D1  (Off Site) | D2 | D3 | D4 | D5 | D6  (Off Site) | D7 |
| Mar 2014 | 0.002 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.002 |
| Background Average | 0.0034 | 0.0045 | 0.0046 | 0.0060 | n/a | 0.0036 | n/a |

# **Blasting (Vibration and Overpressure)**

***Note:***

***Vibration is recorded in Peak Particle Velocity (ppv)***

***Overpressure is recorded in Decibels (dBL)***

* During the month of April blasting occurred daily there was a total number of 62 blasts 8 of which were production firings all inside licensing criteria.
* 54 blast were below a ppv of 0.75mm/s and did not trigger an event
* 4 Blasts recorded a ppv of >5mm/s
* 0 Blasts recorded a ppv of >10mm/s
* All overpressure readings were inside limits.

|  |  |  |
| --- | --- | --- |
| Date / Location | Peak Vibration  (PPV mm/s) | Peak Over Pressure  (dBL) |
| 03/04/2014 | 5.69 | 109.2 |
| V1 | >0.75 | No Event Triggered |
| V2 | 3.72 | 109.2 |
| V3 | 5.69 | 101.9 |
| 04/04/2014 | 0.779 | 88 |
| V1 | >0.75 | No Event Triggered |
| V2 | >0.75 | No Event Triggered |
| V3 | 0.779 | 88 |
| 07/04/2014 | 8.07 | 101.9 |
| V1 | >0.75 | No Event Triggered |
| V2 | 5.4 | 98.8 |
| V3 | 7.07 | 101.9 |
| 12/04/2014 | 3.84 | 100 |
| V1 | >0.75 | No Event Triggered |
| V2 | 1.27 | 100 |
| V3 | 3.84 | 100 |
| 16/04/2014 | 4.5 | 101.9 |
| V1 | >0.75 | No Event Triggered |
| V2 | >0.75 | No Event Triggered |
| V3 | 4.5 | 101.9 |
| 19/04/2014 | 4.41 | 103.5 |
| V1 | >0.75 | No Event Triggered |
| V2 | 1.01 | 94 |
| V3 | 4.41 | 103.5 |
| 23/04/2014 | 6.84 | 105.5 |
| V1 | >0.75 | No Event Triggered |
| V2 | >0.75 | No Event Triggered |
| V3 | 6.84 | 105.5 |
| 27/04/2014 | 5.15 | 104.9 |
| V1 | >0.75 | No Event Triggered |
| V2 | 1.3 | 94.4 |
| V3 | 5.15 | 104.9 |

# Noise

Note:

* No noise monitoring was scheduled for the month of April 2014
* Last sampled March 2014 by EMM consultants for crusher project approval modification

# Water

## Ground Water

Note: Awaiting Analysis From Lab.

### 

|  |  |  |
| --- | --- | --- |
| Water Sample Results March 2014 | | |
| Date |  |  |
| Sample ID |  |  |
| pH Value (pH) |  |  |
| Electrical conductivity (uS/cm) |  |  |
| Total Dissolved Solids (mg/L) |  |  |
| Hydroxide Alkalinity as CaC03 (mg/L) |  |  |
| Carbonate Alkalinity CaCO3 (mg/L) |  |  |
| Bicarbonate Alkalinity as CaCO3 (mg/L) |  |  |
| Total Alkalinity (mg/L) |  |  |
| Sulphate as SO4 (mg/L) |  |  |
| Chloride (mg/L) |  |  |
| Calcium (mg/L) |  |  |
| Magnesium (mg/L) |  |  |
| Sodium (mg/L) |  |  |
| Cadmium (mg/L) |  |  |
| Manganese (mg/L) |  |  |
| Lead (mg/L) |  |  |
| Zinc (mg/L) |  |  |
| Iron (mg/L) |  |  |

Groundwater Table

|  |  |  |
| --- | --- | --- |
| EPA Identification Number | Frequency | Comment |
| EPL37 | Quarterly | Awaiting Analysis |
| EPL38 | Quarterly | Awaiting Analysis |
| EPL39 | Quarterly | Awaiting Analysis |
| EPL40 | Quarterly | Awaiting Analysis |
| EPL41 | Quarterly | Awaiting Analysis |
| EPL42 | Quarterly | Awaiting Analysis |
| EPL43 | Quarterly | Awaiting Analysis |
| EPL44 | Quarterly | Awaiting Analysis |
| EPL45 | Quarterly | Awaiting Analysis |
| EPL46 | Quarterly | Awaiting Analysis |
| EPL47 | Quarterly | Awaiting Analysis |
| EPL48 | Quarterly | Awaiting Analysis |
| EPL49 | Quarterly | Awaiting Analysis |
| EPL50 | Quarterly | Awaiting Analysis |
| EPL51 | Quarterly | Awaiting Analysis |
| EPL52 | Quarterly | Awaiting Analysis |
| EPL53 | Monthly | Awaiting Analysis |
| EPL54 | Monthly | Awaiting Analysis |

## Surface Water

Insufficient water was available for samples at surface water locations.

Surface Water Table

|  |  |  |
| --- | --- | --- |
| EPA Identification Number | Frequency | Comment |
| EPL29 | 2 x Per year when contains water | Insufficient water for sample |
| EPL30 | 2 x Per year when contains water | Insufficient water for sample |
| EPL31 | 2 x Per year when contains water | Insufficient water for sample |
| EPL32 | 2 x Per year when contains water | Insufficient water for sample |
| EPL33 | 2 x Per year when contains water | Insufficient water for sample |
| EPL34 | 2 x Per year when contains water | Insufficient water for sample |
| EPL35 | 2 x Per year when contains water | Insufficient water for sample |

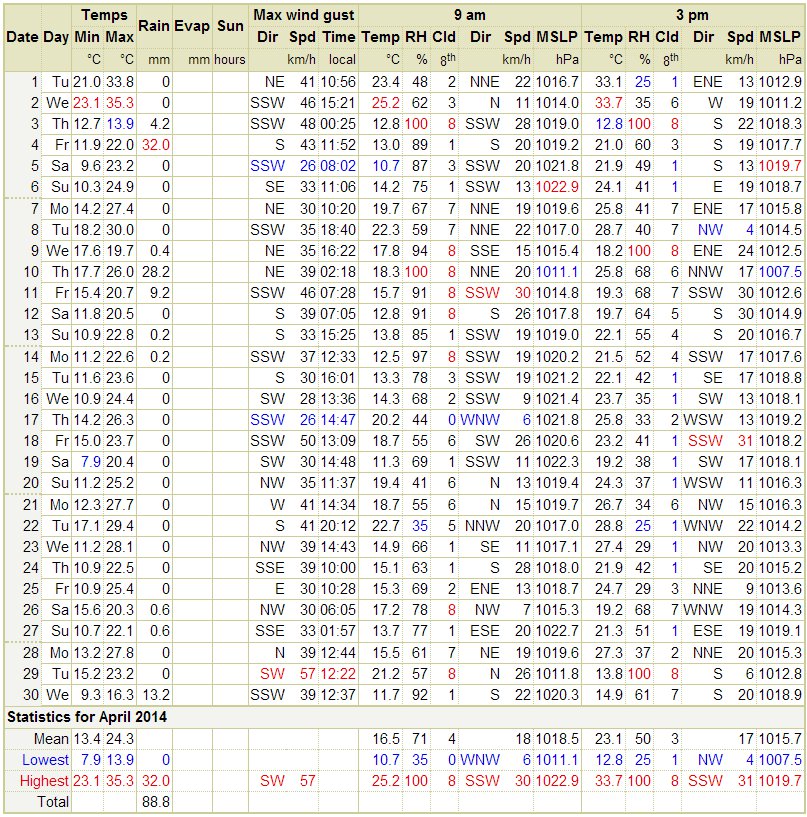
# 

# Weather Data

Note:

(BHOP – Automatic Weather Station was unavailable for the month of April, repairs are scheduled for June 2014.

The following data was obtained from the Bureau of Meteorology Broken Hill)



***Legend***

**Dir** = Direction, **Spd**=Wind Speed, **Temp**=Temperature, **RH**=Relative Humidity, **CLD**=Cloud, **MSLP**=Mean Sea Level Pressure

# Data Log

|  |  |  |  |
| --- | --- | --- | --- |
| Sample | Date sent to lab | Result Received | Date Published |
| Hi Volume Samples | 26/05/2014 | 16/06/2014 | 18/06/2014 |
| TEOM | Real time (Downloading Issues) | Corrected by Lear Siegler (14/05/2014) | 18/06/2014 |
| Dust Deposition | 26/05/2014 | 16/06/2014 | 18/06/2014 |
| Water | 30/05/2014 | Awaiting Analysis | 18/06/2014 |
| Blast Vibration and overpressure | Real Time | Real Time | 18/06/2014 |

# Correction Log 1st May 2013 to 31st April 2014

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample ID# | Date Of Sample | Original Data | | Corrected Data | | Date Corrected | Date Originally Published | Reason |
| EPL10 | 3/06/2013 | TSP | Lead | TSP | Lead | 07/05/2014 | 14/06/2013 | Contamination during analysis at lab |
| 52.26 | 2.90 | 52.26 | 0.70 |
| EPL10 | 9/06/2013 | TSP | Lead | TSP | Lead | 07/05/2014 | 14/06/2013 | Contamination during analysis at lab |
| 18.99 | 1.43 | 18.99 | 0.24 |
| EPL11 | 3/06/2013 | TSP | Lead | TSP | Lead | 07/05/2014 | 14/06/2013 | Contamination during analysis at lab |
| 7.3 | 3.1 | 7.32 | 0.54 |
| EPL11 | 9/06/2013 | TSP | Lead | TSP | Lead | 07/05/2014 | 14/06/2013 | Contamination during analysis at lab |
| 10.8 | 2.2 | 10.83 | 0.30 |
| EPL12 | 3/06/2013 | TSP | Lead | TSP | Lead | 07/05/2014 | 14/06/2013 | Contamination during analysis at lab |
| 11.43 | 5.05 | 4.35 | 0.52 |
| EPL12 | 9/06/2013 | TSP | Lead | TSP | Lead | 07/05/2014 | 14/06/2013 | Contamination during analysis at lab |
| 5.30 | 0.25 | 3.21 | 0.13 |
| EPL12 | 15/06/2013 | TSP | Lead | TSP | Lead | 07/05/2014 | 14/06/2013 | Contamination during analysis at lab |
| 2.86 | .024 | 5.36 | 0.13 |
| EPL12 | 21/06/2013 | TSP | Lead | TSP | Lead | 07/05/2014 | 14/06/2013 | Contamination during analysis at lab |
| 3.10 | 0.48 | 3.87 | 0.10 |
| EPL12 | 27/06/2013 | TSP | Lead | TSP | Lead | 07/05/2014 | 14/06/2013 | Contamination during analysis at lab |
| 3.27 | 0.25 | 9.64 | 0.10 |