



**Licensee:** Perilya Broken Hill Limited  
**Environmental Protection Licenses:** 2688 and 2683  
**Locations:** Southern, Northern and Potosi Operations

## **Air Quality Monitoring**

### ***Methods***

#### **High Volume Air Sampler**

Four High Volume Air Sampler (HVAS) units have been placed at strategic locations within the Southern, Northern and Potosi Operations to allow assessment of dust and associated lead levels. The HVAS collects a continuous sample of air for a 24 hour period every sixth day of a routine cycle and is designed to collect all particles less than 50µm. The sampling method undertaken by Perilya is consistent with the Australian/New Zealand Standard: AS/NZS 3580.9.3:2003.

In accordance with EPL 2688 and EPL 2683, the reportable annual averaged level of lead threshold is 0.5µg/m<sup>3</sup> and total suspended particulates (TSP) threshold is 90µg/m<sup>3</sup>. This report presents all data collected during the month. At times, levels may be elevated due to isolated occurrences. However, results are assessed on an annual basis in accordance with the National Environment Protection Council (NEPC) requirements.

Perilya Broken Hill Ltd (PBHL) has been advised to report these incidences to the EPA although the measurement of TSP, dust and lead is on an annual basis rather than monthly. Given this advice, it is reasonable to expect levels will occasionally be elevated while not being in breach of license conditions.

#### **Dust Gauges**

PBHL has 19 Standard Deposit Dust Gauges (SDDG) that are strategically placed around Broken Hill. These gauges work on the basis of passive or static collection of ambient dust and monitor dust and lead continuously for a period of 30 days. At the end of each 30-day period, matter collected in the gauge bottles is analysed by a NATA accredited laboratory. This method of sample collection is consistent with the Australian/New Zealand Standard: AS/NZS 3580.10.1:2003.

SDDG are used primarily to establish long term trends and to investigate localised dust fall. The sample collected is not restricted in particle size, everything that falls within the funnel reports to the collection bottle. This dust is categorised as nuisance dust and is a procedure

that has been widely used in Australia for over 40 years. The data collected using SDDG is not directly comparable to that obtained with High Volume Air Samplers (Standards Australia 2003) because the SDDG is assessing nuisance dust whereas the HVAS collect dust of a much smaller particle size and reflects different health impacts.

In accordance with EPL2688 and EPS2683, the upper limit for dust levels on an annual basis is 6.0 g/m<sup>2</sup>/month. The following report shows monthly results as well as annual reportable levels of dust. Analysis of results on a monthly or weekly basis per site can show isolated occurrences of elevated dust levels. These isolated occurrences require attention but must be considered on an annual basis.

## **Results**

### ***HVAS***

Average results are presented for the HVAS as more than four samples are collected each month. All average results of TSP were within license conditions for November 2012 (Table 1).

The annual averages for total lead are within license conditions. Figure 1 and Figure 2 show the monthly averages for TSP and total lead for the previous 12 months.

Licenses point 26 did not run as per the Australian standard on the 27/11/2012 therefore the sample was rejected. This was most likely due to a power fault, causing the HVAS to reset. Four samples for the month were still collected as per the license requirements.

**Table 1.** TSP and total lead results from the HVAS for September 2012 and for the period October 2011 - September 2012

Perilya Broken Hill Ltd (PBHL)

EPL No. 2688

Southern Operations

Date sampled submitted for analysis: As required  
 Date results received: 20 days after submission  
 Published on website: 22/01/2013

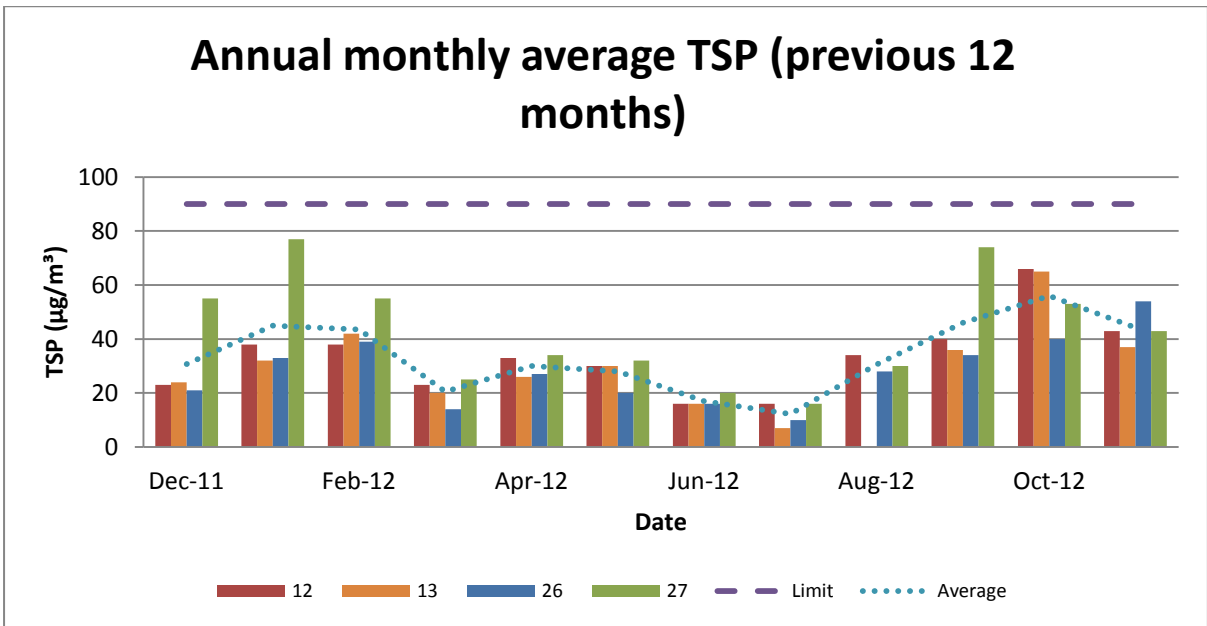
Sampling Point	Method	Monitoring frequency required by licence	Sampling Dates	Pollutant	Unit	Limit	Measurement	
12	High Volume Air Sampler	Monthly Average (6 day cycle)	November	Total suspended particulates	µg/m <sup>3</sup>	90	43	
			November	Total Lead	µg/m <sup>3</sup>	0.5	0.35	
		<b>Averaged reporting period required by National Environment Protection Council</b>						
		Annual	Dec 11 - Nov 12	Total Lead	µg/m <sup>3</sup>	0.5	0.272	
Sampling Point	Method	Monitoring frequency required by licence	Sampling Dates	Pollutant	Unit	Limit	Measurement	
13	High Volume Air Sampler	Monthly Average (6 day cycle)	November	Total suspended particulates	µg/m <sup>3</sup>	90	37	
			November	Total Lead	µg/m <sup>3</sup>	0.5	0.17	
		<b>Averaged reporting period required by National Environment Protection Council</b>						
		Annual	Dec 11 - Nov 12	Total Lead	µg/m <sup>3</sup>	0.5	0.186	

**Table 1. cont.**

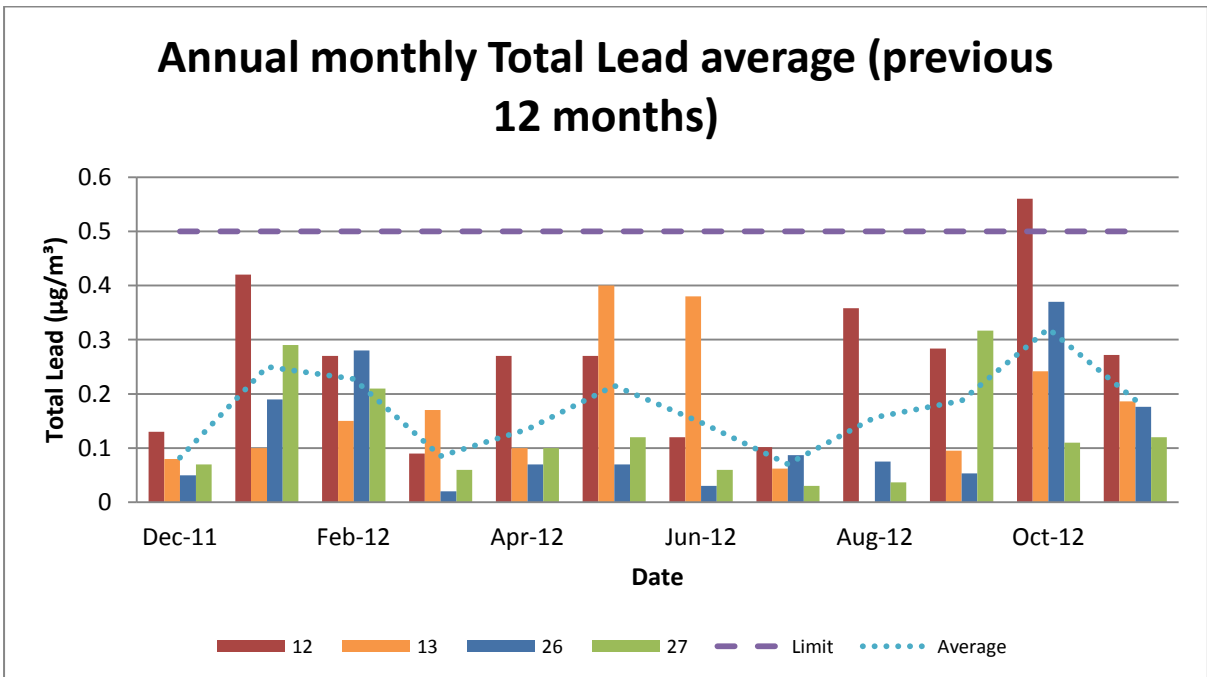
Perilya Broken Hill Ltd (PBHL)  
 EPL No. 2688  
 Northern and Potosi Operations

Date sampled submitted for analysis: As required  
 Date results received: 20 days after submission  
 Published on website: 22/01/2013

Sampling Point	Method	Monitoring frequency required by licence	Sampling Dates	Pollutant	Unit	Limit	Measurement	
26	High Volume Air Sampler	Monthly Average (6 day cycle)	November	Total suspended particulates	µg/m <sup>3</sup>	90	54	
			November	Total Lead	µg/m <sup>3</sup>	0.5	0.560	
		<b>Averaged reporting period required by National Environment Protection Council</b>						
		Annual	Dec 11 - Nov 12	Total Lead	µg/m <sup>3</sup>	0.5	0.176	
Sampling Point	Method	Monitoring frequency required by licence	Sampling Dates	Pollutant	Unit	Limit	Measurement	
27	High Volume Air Sampler	Monthly Average (6 day cycle)	November	Total suspended particulates	µg/m <sup>3</sup>	90	43	
			November	Total Lead	µg/m <sup>3</sup>	0.5	0.110	
		<b>Averaged reporting period required by National Environment Protection Council</b>						
		Annual	Dec 11 - Nov 12	Total Lead	µg/m <sup>3</sup>	0.5	0.120	



**Figure 1.** Monthly average TSP from the HVAS for the previous 12 months.



**Figure 2.** Monthly average total lead from the HVAS for the previous 12 months.

## ***Dust Deposition Gauges***

Particulates – deposited matter was within license conditions for November 2012 (Table 2).

All annual average particulate-deposited matter results were below the license requirement.

**Table 2.** Results from the dust deposition gauges for November 2012 and the previous 12 months as per the license.

Perilya Broken Hill Ltd (PBHL)  
EPL No. 2688  
Southern Operations

Date sample submitted for analysis: 6/12/2012  
Date results received: 8/01/2013  
Published on website: 22/01/2013

Sampling Point	Method	Monitoring frequency required by licence	Pollutant	Unit	Limit	Measurement
3	Dust gauge	Monthly	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	NR
4	Dust gauge	Monthly	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	2.7
5	Dust gauge	Monthly	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	1.7
6	Dust gauge	Monthly	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	2.8
7	Dust gauge	Monthly	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	1.3
8	Dust gauge	Monthly	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	1.1
9	Dust gauge	Monthly	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	2.2
10	Dust gauge	Monthly	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	<0.1
11	Dust gauge	Monthly	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	1.6

**Table 2. cont.**

<b>Sampling Point</b>	<b>Method</b>	<b>Monitoring frequency required by licence</b>	<b>Pollutant</b>	<b>Unit</b>	<b>Limit</b>	<b>Measurement</b>
3	Dust gauge	Annual	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	NR
4	Dust gauge	Annual	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	1.7
5	Dust gauge	Annual	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	3
6	Dust gauge	Annual	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	1.6
7	Dust gauge	Annual	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	1.2
8	Dust gauge	Annual	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	2.1
9	Dust gauge	Annual	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	4
10	Dust gauge	Annual	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	3
11	Dust gauge	Annual	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	1.6

**Table 3.** Dust gauge results for November 2012 and the previous 12 months as per the license.

Perilya Broken Hill Ltd (PBHL)  
 EPL No. 2683  
 Northern Operations

Date sample submitted for analysis: 6/12/2012  
 Date results received: 8/01/2013  
 Published on website: 22/01/2013

Sampling Point	Method	Monitoring frequency required by licence	Pollutant	Unit	Limit	Measurement
15	Dust gauge	Monthly	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	3.9
16	Dust gauge	Monthly	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	1.3
17	Dust gauge	Monthly	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	1.1
18	Dust gauge	Monthly	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	2.1
19	Dust gauge	Monthly	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	1.9
20	Dust gauge	Monthly	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	2.7
21	Dust gauge	Monthly	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	3.1
22	Dust gauge	Monthly	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	1.6
23	Dust gauge	Monthly	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	2.5
24	Dust gauge	Monthly	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	2.3
25	Dust gauge	Monthly	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	1.1



**Table 3.** cont.

Sampling Point	Method	Monitoring frequency required by licence	Pollutant	Unit	Limit	Measurement
15	Dust gauge	Annual	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	3.5
16	Dust gauge	Annual	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	3.3
17	Dust gauge	Annual	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	1.6
18	Dust gauge	Annual	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	1.7
19	Dust gauge	Annual	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	2.3
20	Dust gauge	Annual	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	1.7
21	Dust gauge	Annual	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	2.6
22	Dust gauge	Annual	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	2.3
23	Dust gauge	Annual	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	1.7
24	Dust gauge	Annual	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	1.7
25	Dust gauge	Annual	Particulates - deposited matter	g/m <sup>2</sup> /month	6.0	1.9