

**TOMINGLEY GOLD PROJECT**

# **Monthly Environmental Monitoring Report**

**October 2016**

# TOMINGLEY GOLD PROJECT

## Monthly Environmental Monitoring Report

### October 2016

---

#### Document History

DATE	VERSION	REASON FOR CHANGE	AUTHOR
	Rev 1	Submitted for Information	CH

**Table of Contents**

- 1. INTRODUCTION AND SCOPE ..... 4**
- 2. WEATHER FOR MONTH 2016 ..... 4**
  - A. Weather Station Data ..... 4
- 3. MONITORING LOCATIONS ..... 6**
- 4. AIR QUALITY MONITORING ..... 7**
  - A. PM10 Monitoring ..... 7
  - B. Depositional Dust ..... 9
  - C. High Volume Air Sampler - Total Suspended Particulates ..... 9
- 5. NOISE MONITORING ..... 10**
  - A. Real-Time Noise Monitoring ..... 10
- 6. SURFACE WATER MONITORING ..... 11**
  - A. Gundong Creek ..... 11
  - B. Sedimentation Ponds ..... 11
- 7. GROUNDWATER MONITORING ..... 11**
- 8. BLAST MONITORING ..... 11**
- 9. RESIDUE STORAGE FACILITY ..... 12**
- 10. BIODIVERSITY MONITORING ..... 12**

# 1. Introduction and Scope

This Monthly Environmental Monitoring Report has been prepared to collate environmental monitoring data undertaken for the Tomingley Gold Project during the month of October 2016.

This report also compares data collected to targets and provides commentary on environmental issues during the month.

# 2. Weather for October 2016

## A. Weather Station Data

TGO WEATHER DATA IS PRESENTED BELOW.

Figure 1. October 2016 wind rose

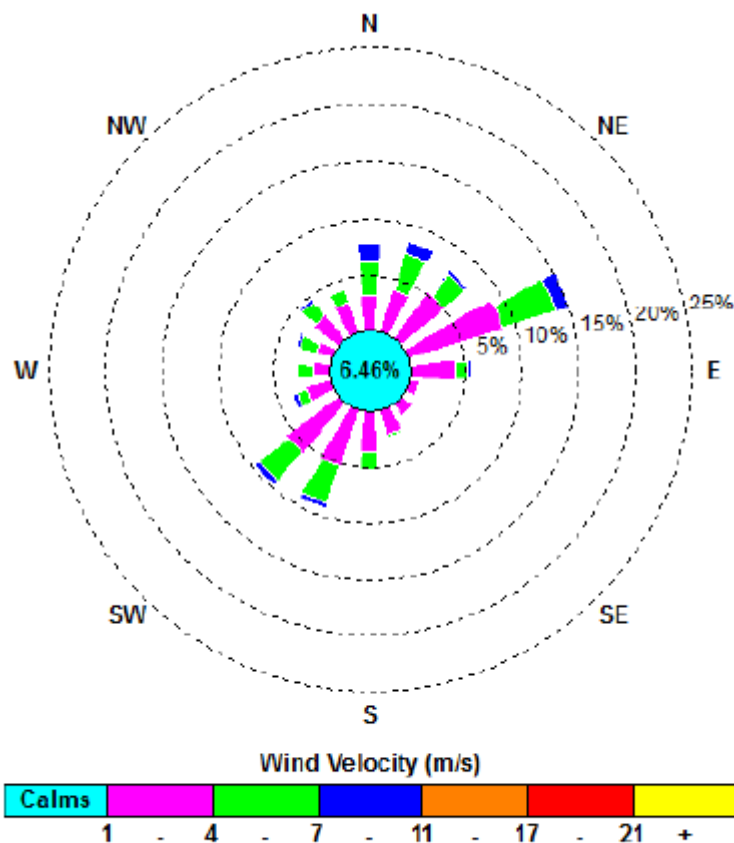


Figure 2.10: Tomingley Gold Operations Wind Rose – October 2016

Figure 2. Rainfall October 2016

October 2016	Rainfall (mm)
October 1	2.2
October 3	8.6
October 4	0.4
October 11	1.4
October 17	19.8
October 18	0.2
October 21	3.6
October 22	1.6
October 30	10.2
Total Rainfall	44.0

### 3. Monitoring Locations

FIGURE 3 indicates the location of where monitoring is undertaken for the project. Any additional monitoring undertaken will be discussed within the body of this report.

Figure 3. TGO water and vegetation monitoring points

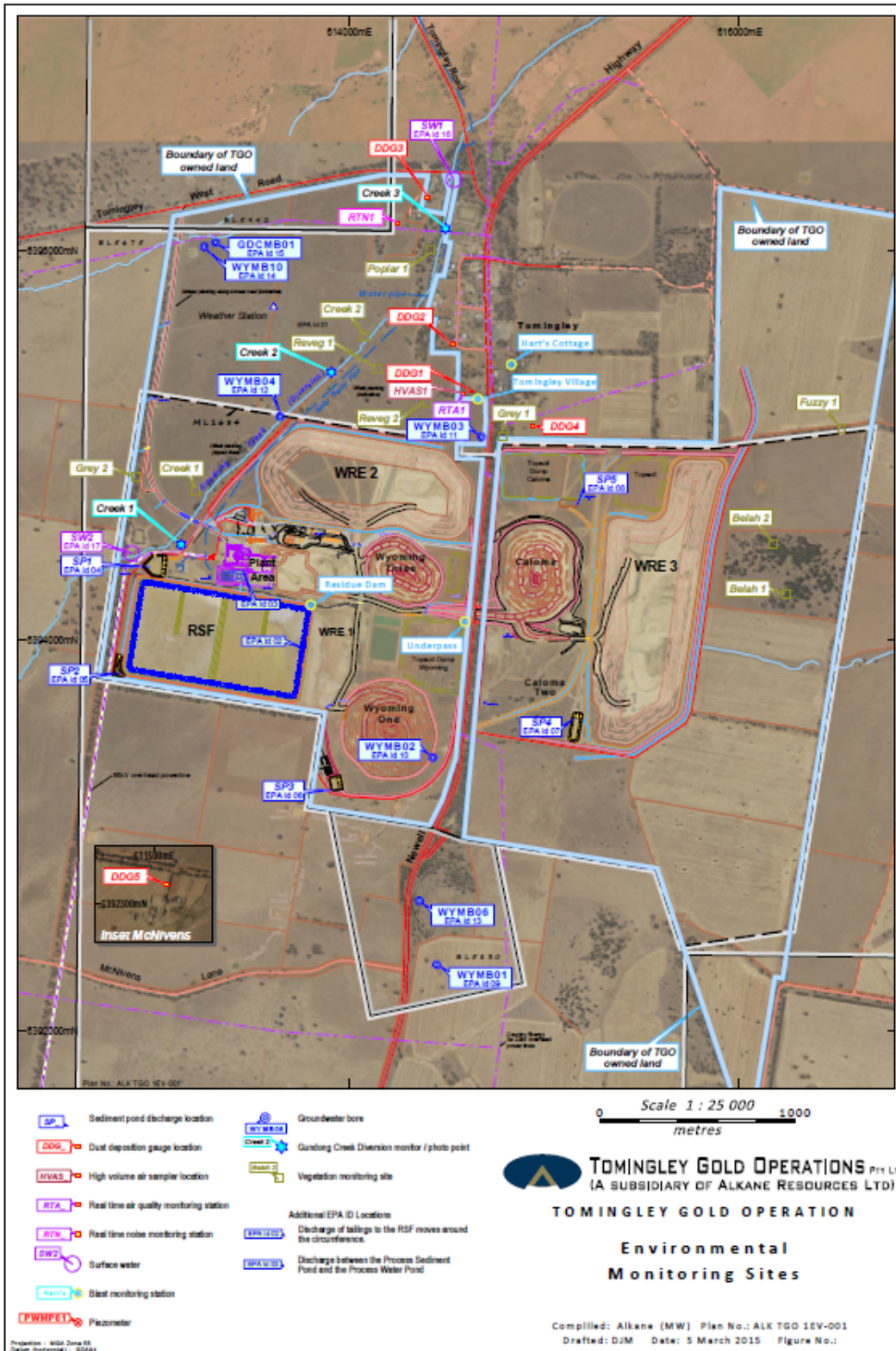
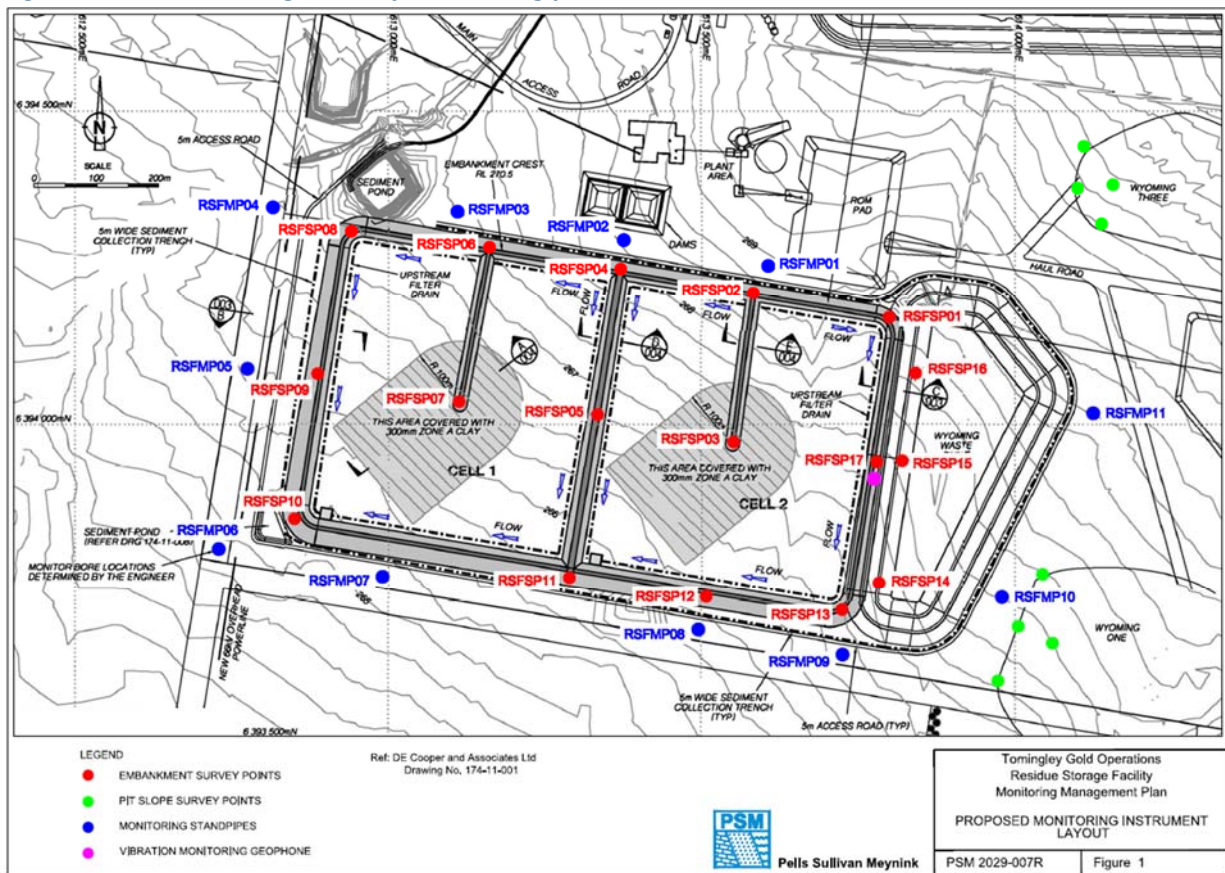


Figure 4 indicates the location of environmental and survey monitoring points on and around the Residue Storage Facility.

**Figure 4. Residue Storage Facility monitoring points**



## 4. Air Quality Monitoring

### A. PM10 Monitoring

PM10 is measured via a Tapered Element Oscillating Microbalance (TEOM) located at the southern edge of the Tomingley Village. This machine transmits real-time data via the internet to a computer located on site.

The Performance Criteria for PM10 has been set at an Annual Average of 30ug/m<sup>3</sup> and a 24-Hour Average of 50ug/m<sup>3</sup>.

The 24 hour average limit not exceeded on any occasions during October.



Figure 5. TEOM Data October 2016

Date	24 Hr Averages	Running Average	Comment
	(µg/m3)		
1/10/2016	6.8	18.2	
2/10/2016	8.2	18.2	
3/10/2016	10.2	18.2	
4/10/2016	10.2	18.1	
5/10/2016	12.2	18.1	
6/10/2016	12.3	18.1	
7/10/2016	11.6	18.0	
8/10/2016	15.7	17.9	
9/10/2016	15.2	17.9	
10/10/2016	17.1	17.9	
11/10/2016	15.5	17.9	
12/10/2016	18.3	17.9	
13/10/2016	10.8	17.8	
14/10/2016	13.0	17.8	
15/10/2016	14.1	17.8	
16/10/2016	36.4	17.9	
17/10/2016	9.6	17.8	
18/10/2016	7.6	17.8	1 hr average data used
19/10/2016	14.9	17.8	
20/10/2016	9.2	17.8	
21/10/2016	22.7	17.8	
22/10/2016	20.7	17.8	
23/10/2016	14.6	17.9	
24/10/2016	11.9	17.9	
25/10/2016	10.0	17.8	
26/10/2016	12.8	17.8	
27/10/2016	28.0	17.9	
28/10/2016	15.7	17.9	
29/10/2016	15.7	17.9	
30/10/2016	27.4	17.9	
31/10/2016	27.6	18.0	
<b>Average</b>	<b>15.3</b>		
			<b>24 Hour criteria exceedance</b>

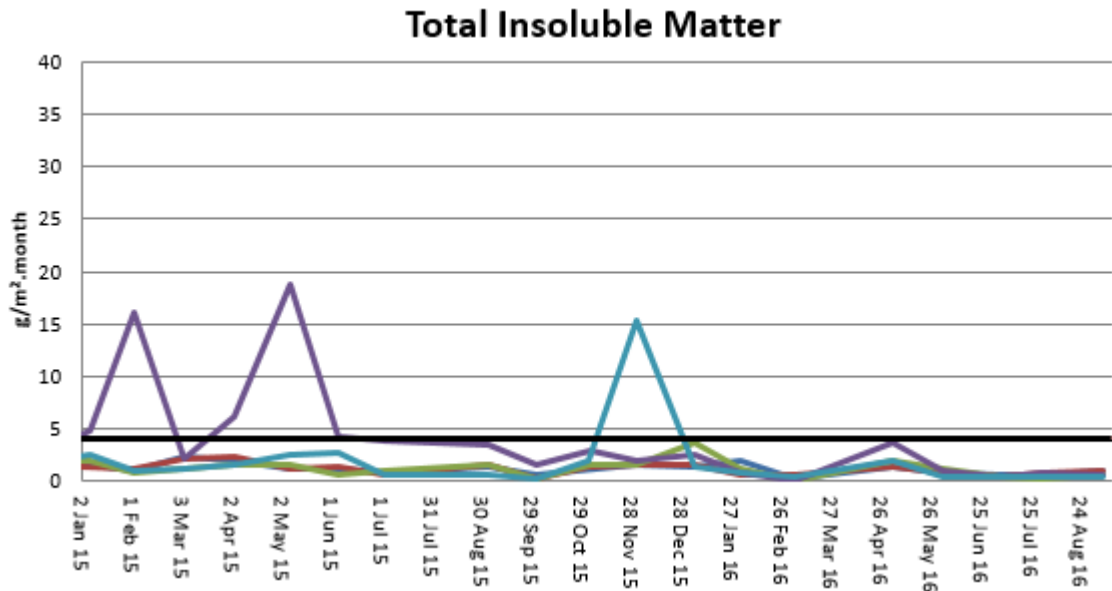
Note: For comparison purposes highlighted results indicate levels above the EPA and NEPM 24-hour maximum criteria for PM<sub>10</sub>



## B. Depositional Dust

Depositional Dust monitoring undertaken during this month returned the results indicated in the table below. The performance criteria for deposited dust is averaged over 12 months.

Figure 6. Dust Deposition Results 2015 - 2016

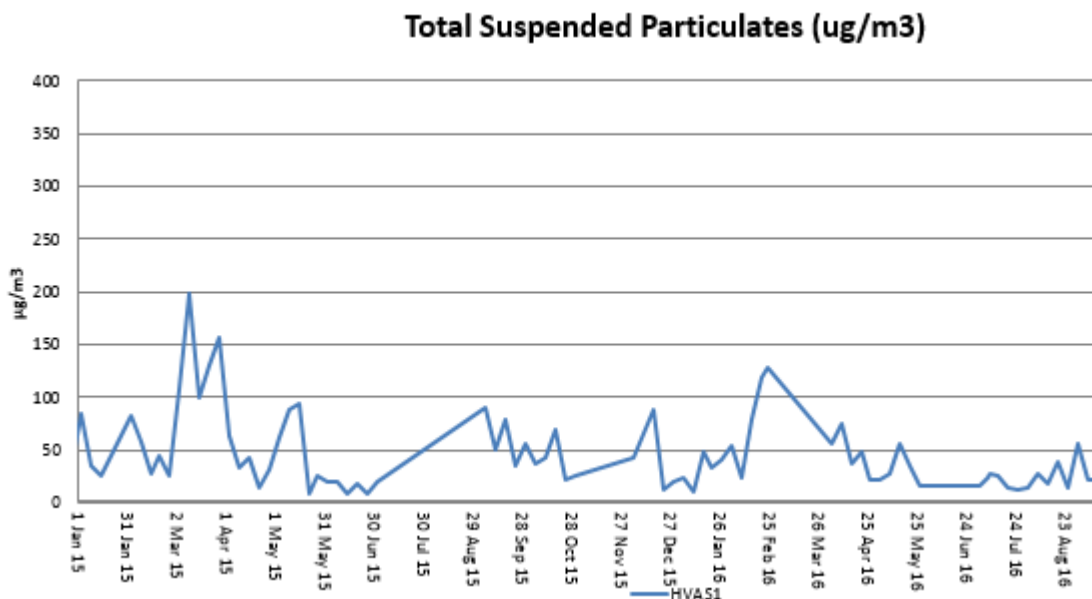


## C. High Volume Air Sampler - Total Suspended Particulates

High Volume Air Sampling (HVAS) for Total Suspended Particulates (TSP) was undertaken this month. Figure 7 below provides the results.

The performance criteria for TSP is averaged over 12 months

Figure 7. Hi-Volume Air Sampler Data 2015 - 2016

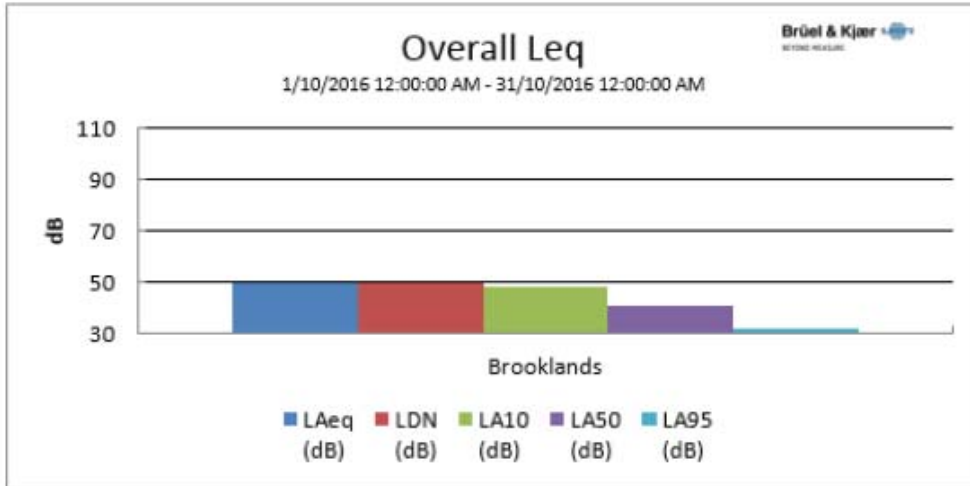


## 5. Noise Monitoring

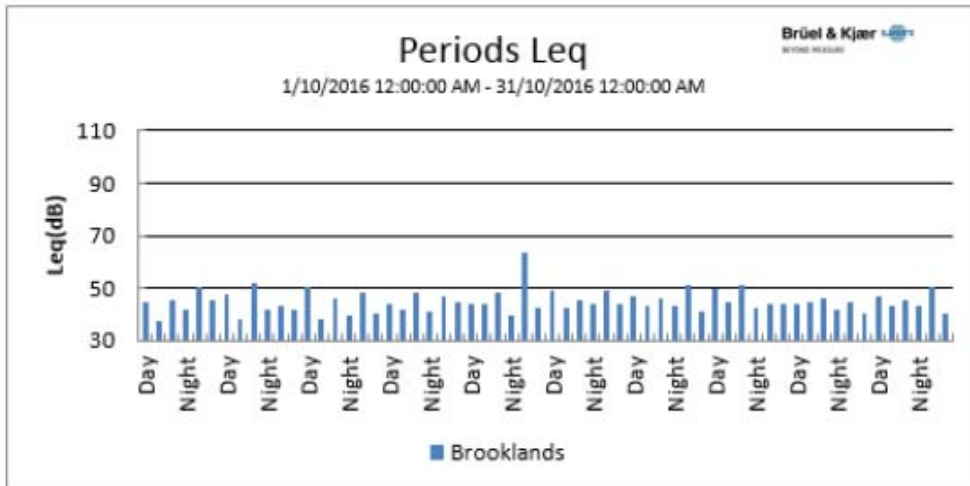
### A. Real-Time Noise Monitoring

See real-time noise monitoring data presented below.

Figure 8. TGO Noise Monitoring 1/10/2016 - 31/10/2016



Location	Start Time	End Time	Activity	LDN (dB)	L <sub>Aeq</sub> (dB)	L <sub>AF</sub> (dB)	L <sub>AMin</sub> (dB)	L <sub>A10</sub> (dB)	L <sub>A50</sub> (dB)	L <sub>A</sub> (dB)
Brooklands	1/10 12:00:00 AM	31/10 12:00:00 AM	100%	50.0	50.0		24.6	47.8	40.7	31



## 6. Surface Water Monitoring

---

### A. Gundong Creek

Gundong Creek flowed strongly over the course of the month.

Results of this sampling fell within the expected range.

Weekly sampling will be undertaken while the creek continues to flow.

### B. Sedimentation Ponds

Sediment basins did not experience any discharges during the month of October.

## 7. Groundwater Monitoring

---

Groundwater monitoring was undertaken during September in line with statutory requirements.

Results showed all samples fell within the expected parameters.

Further samples are expected to be taken in November.

## 8. Blast Monitoring

---

Blasts are carried out in all open cut pits and vibration and decibels are monitored from several locations.

Below are the vibration results recorded from the monitors at Hart's Cottage and Tomingley Village.

**Figure 9. Blast Monitoring**

EventKey	Date/Time	Max R (mm/s)	Location
73146	1/10/2016 13:00	0	Harts Cottage
73146	1/10/2016 13:00	0.01	Tomingley Village
72992	4/10/2016 13:50	0.71	Harts Cottage
72992	4/10/2016 13:50	0.93	Tomingley Village
73111	7/10/2016 13:34	0.44	Harts Cottage
73111	7/10/2016 13:34	0.72	Tomingley Village
73119	8/10/2016 13:00	0.72	Harts Cottage
73119	8/10/2016 13:00	0.91	Tomingley Village
73144	10/10/2016 12:59	0.6	Harts Cottage
73144	10/10/2016 12:59	0.8	Tomingley Village
73190	13/10/2016 12:05	0.7	Harts Cottage
73190	13/10/2016 12:05	0.9	Tomingley Village
73219	14/10/2016 15:24	0.1	Harts Cottage
73219	14/10/2016 15:24	0.08	Tomingley Village
73247	17/10/2016 14:49	0.48	Harts Cottage
73247	17/10/2016 14:49	0.52	Tomingley Village
73529	19/10/2016 13:00	0.07	Harts Cottage
73529	19/10/2016 13:00	0.07	Tomingley Village
73530	21/10/2016 12:59	0.13	Harts Cottage
73530	21/10/2016 12:59	0.11	Tomingley Village
73373	22/10/2016 13:01	0.64	Harts Cottage
73373	22/10/2016 13:01	0.77	Tomingley Village
73443	25/10/2016 12:59	0.21	Harts Cottage
73443	25/10/2016 12:59	0.34	Tomingley Village
73524	26/10/2016 12:59	0.13	Harts Cottage
73524	26/10/2016 12:59	0.17	Tomingley Village
73592	28/10/2016 13:35	0.11	Harts Cottage
73592	28/10/2016 13:35	0.13	Tomingley Village
73601	29/10/2016 14:02	0.12	Harts Cottage
73601	29/10/2016 14:02	0.23	Tomingley Village
73623	31/10/2016 13:01	0.27	Harts Cottage
73623	31/10/2016 13:01	0.31	Tomingley Village

## 9. Residue Storage Facility

---

Residue from the processing plant is discharged into the Residue Storage Facility or RSF. The Environmental Protection Licences dictates that the Weak Acid Dissociable (WAD) Cyanide found in this residue must be less than 20 milligrams per litre for 90% of the time and less than 30 milligrams per litre for 100% of the time.

WAD cyanide discharge levels are shown below with the maximum reading well below the 100<sup>th</sup> percentile limit of 30ppm.

- Monthly average: 1.37 ppm
- Daily maximum: 6.05 ppm on 20<sup>th</sup> October
- Daily minimum: 0.48 ppm on 9<sup>th</sup> October
- Number of exceedances: zero

## 10. Biodiversity Monitoring

---

### Fauna deaths:

- There were no fauna deaths in the RSF for the month.

### Site Fauna

- On site fauna sightings for September included:
  - On site fauna sightings for month included:
  - Two snakes, suspected to be *Pseudechis porphyriacu*, were captured and relocated from the mill area.
  - A single Red Backed Kingfisher, *Todiramphus pyrrhopygius*, was spotted roosting in trees around the Caloma 2 footprint
  - A wedge tailed eagle, *Aquila audax*, was sighted in the tree corridor along the site access road
  - Regularly throughout October Grey Crowned Babblers, *Pomatostomus temporalis*, were seen in the tree corridor to the South of the RSF.
  - 2 Tawny Frogmouth owls, *Podargus strigoides*, remain in residence adjacent to administration building
  - A number of Eastern Grey Kangaroos, *Macropus giganteus*, have been visible grazing in the Caloma 2 footprint and wester biodiversity area
  - Australian Wood Ducks, *Chenonetta jubata*, have been regularly spotted on sediment dams and farm dams around the site throughout August
  - A number of White Faced Herons, *Egretta novaehollandiae*, are continually spotted at the water point on the site access road.

### Vertebrate pests

- A program of trapping feral cats and foxes has continued with no animals being captured throughout October