TOMINGLEY
GOLD OPERATIONS PTY LTD
(A wholly owned subsidiary of Alkane Resources Ltd)
ABN 53 149 040 371

TOMINGLEY GOLD PROJECT

Monthly Environmental Monitoring Report

December 2019

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Document History

DATE	VERSION	REASON FOR CHANGE	AUTHOR
	1	Submitted for Information	DP

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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 December 2019.

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

2. Weather for December 2019

A. Weather Station Data

TGO WEATHER DATA IS PRESENTED BELOW.

Figure 1. December 2019 wind rose

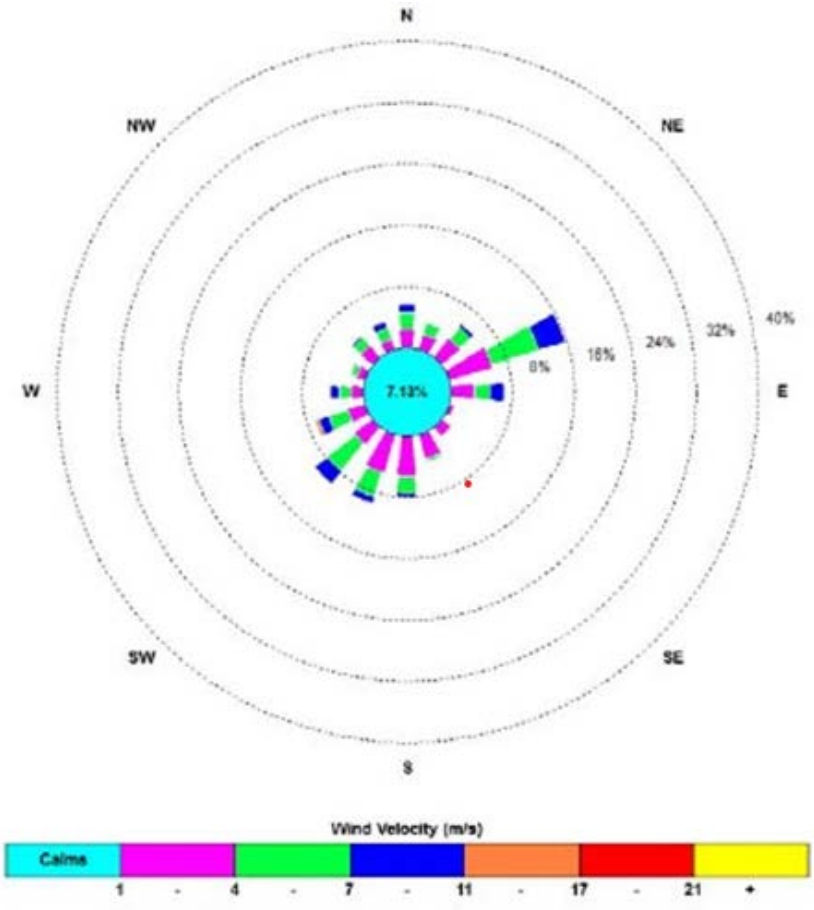


Figure 2. Rainfall December 2019

December 2019	Rainfall (mm)
Total Rainfall	3.2

3. Monitoring Locations

Figure 3 indicates the location of where monitoring is undertaken for the project. Any additional monitoring undertaken during the month is discussed within the body of this report.

Figure 3. TGO water and vegetation monitoring points

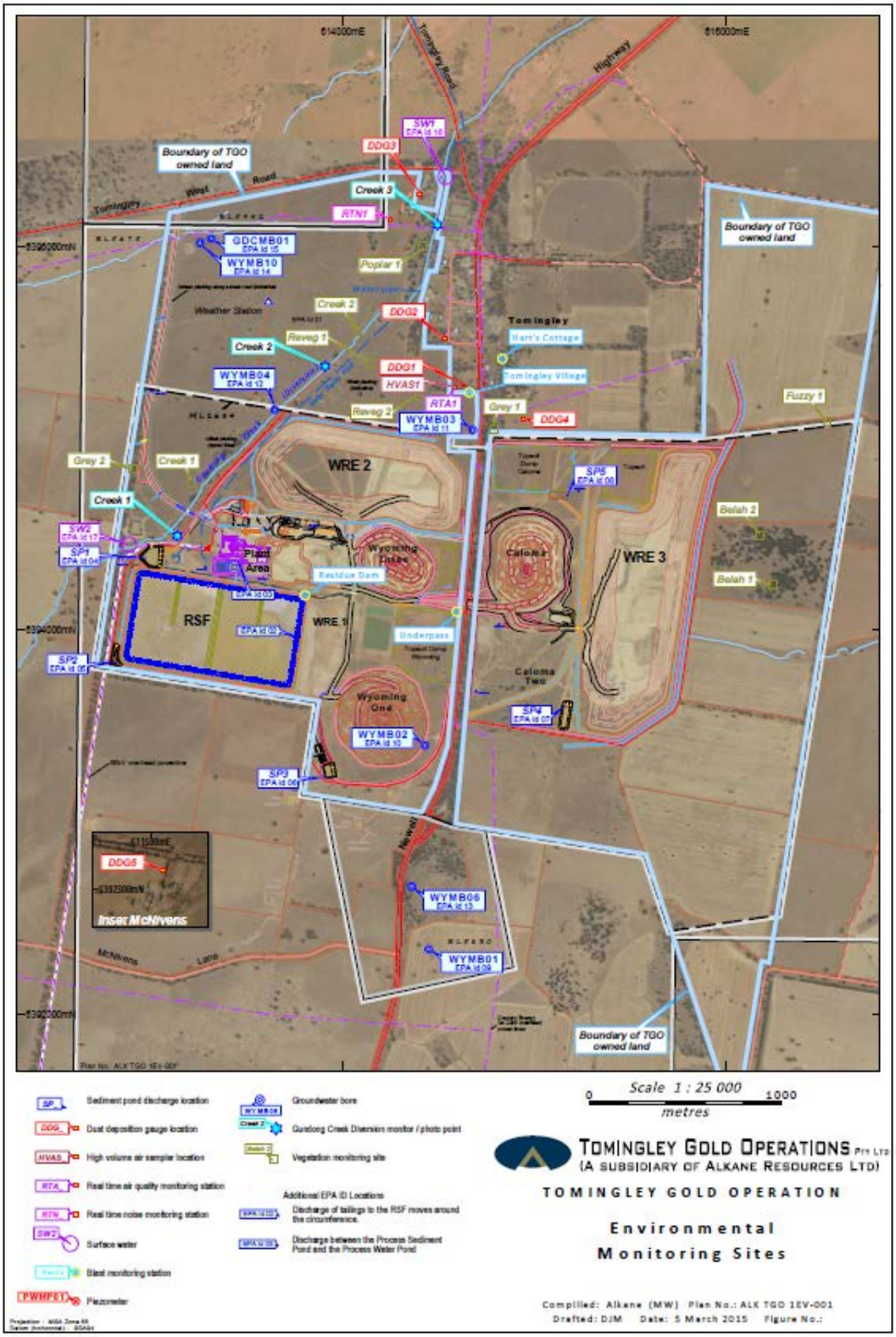
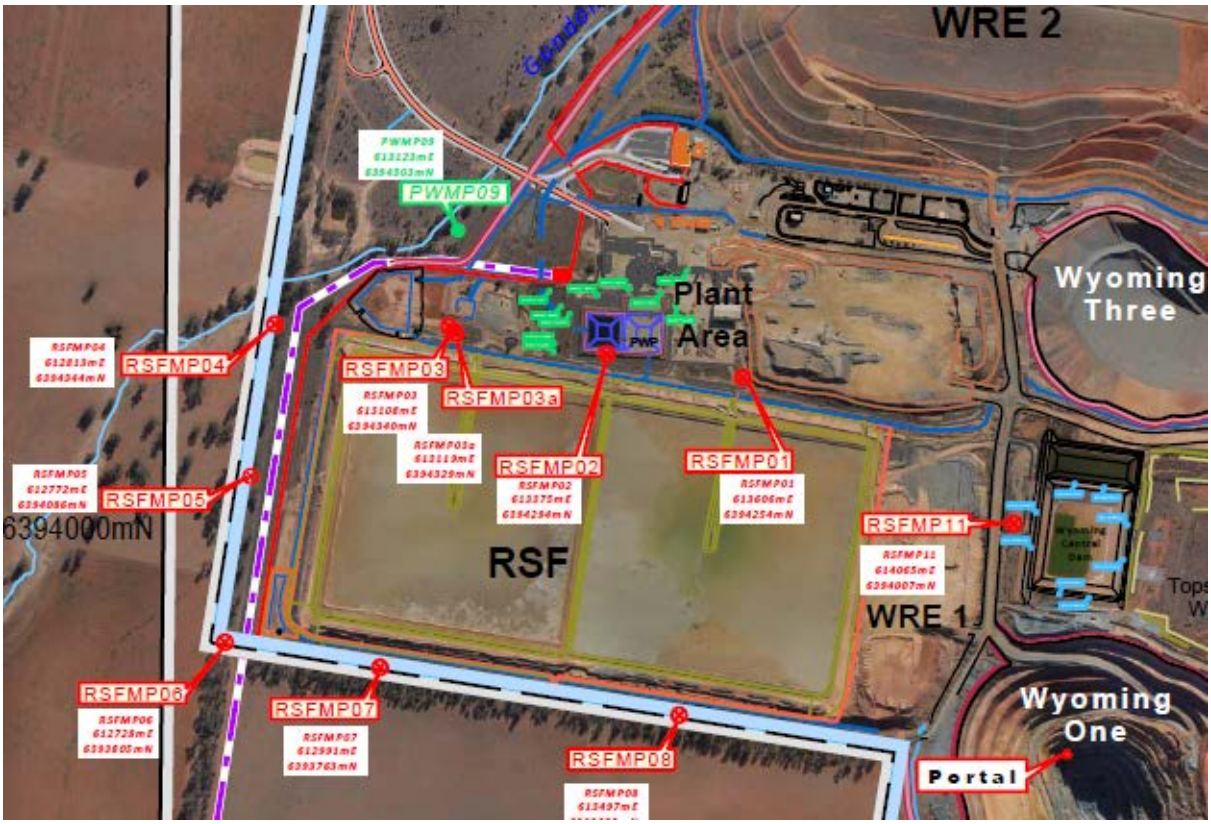


Figure 4 indicates the location of environmental and survey monitoring points on and around the Residue Storage Facility.

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^3 and a 24-Hour Average of 50ug/m^3.

The current annual average of all PM10 data at the end of December was 42.5ug/m^3, above the Approval limit. This average has been calculated using all recorded data which includes each of the numerous recent dust storms and smoke from bushfires.

There were twenty-two elevated readings recorded during December, recorded on the 1st, 2nd, 5th, 8th - 12th, 16th- 25th, 27th, 28th, 30th and 31st. Following internal investigations, which included visual inspections and an assessment of prevailing wind direction during elevated days, it was concluded that the anomalous readings were the result of numerous dust storms and smoke that have been impacting the district associated with the ongoing severe drought, high winds and the bushfires burning throughout NSW and were not generated by the project.

Figure 5. TEOM Data December 2019

Date	24-hour Average	Running Average	Comment/s
	($\mu g/m^3$)		
1/12/2019	66.7	38.2	
2/12/2019	88.1	38.3	
3/12/2019	28.7	38.2	
4/12/2019	37.6	38.2	
5/12/2019	57.5	38.3	
6/12/2019	44.9	38.3	Recalc using 1hr average data. 1hr of high negative data excluded
7/12/2019	45.8	38.4	
8/12/2019	74.0	38.5	
9/12/2019	164.1	38.9	
10/12/2019	68.5	39.0	Recalc using 1hr average data. 2 hrs of high negative data excluded
11/12/2019	137.9	39.4	Recalc using 1hr average data. 2 hrs of high negative data excluded
12/12/2019	68.0	39.5	Recalc using 1hr average data. 1hr of high negative data excluded
13/12/2019	43.2	39.6	Recalc using 1hr average data. 3 hrs of high negative data excluded
14/12/2019	48.4	39.5	
15/12/2019	40.9	39.2	
16/12/2019	76.6	39.3	
17/12/2019	185.6	39.7	
18/12/2019	129.2	40.0	
19/12/2019	73.2	40.1	
20/12/2019	199.6	40.5	
21/12/2019	211.2	40.9	Recalc using 1hr average data. 3.33 hrs machine outage excluded
22/12/2019	232.8	41.4	
23/12/2019	128.8	41.8	
24/12/2019	122.1	42.1	
25/12/2019	92.1	42.3	
26/12/2019	45.9	42.3	
27/12/2019	62.5	42.4	
28/12/2019	77.9	42.5	
29/12/2019	48.5	42.5	
30/12/2019	60.4	42.4	
31/12/2019	241.0	42.5	
Average	**96.8**		
	24 Hour Criteria Exceedance		

B. Depositional Dust

Depositional Dust monitoring undertaken during this month returned the results indicated in Table 1 below. This also provides the figures for the previous month for comparison. The above average December results coincided with the increase of regional wind blown dust and dust storms resulting from the ongoing drought conditions and were not generated by the project. The performance criteria for deposited dust is averaged over 12 months.

Table 1. Dust Deposition Results December 2019

Location	Date Monitored	Total Insoluble Matter (g/m2/month) Dec	Total Insoluble Matter (g/m2/month) Nov	Change in Total Insoluble Matter
DDG1	3/12/2019-06/01/2020	5.6	4.8	0.8
DDG2	3/12/2019-06/01/2020	1.4	3	-1.6
DDG3	3/12/2019-06/01/2020	4	3.8	0.2
DDG4	3/12/2019-06/01/2020	12.8	3.6	9.2
DDG5	3/12/2019-06/01/2020	2.2	3.3	-1.1

C. High Volume Air Sampler - Total Suspended Particulates

High Volume Air Sampling (HVAS) for Total Suspended Particulates (TSP) was undertaken this month. Table 2 below provides the results. The above average results during December coincided with the occurrence of severe regional dust storms due to ongoing drought conditions and smoke in the area generated from the NSW bushfires, and were not generated by the project.

The performance criteria for TSP is averaged over 12 months.

Table 2. Hi-Volume Air Sampler Data December 2019

Location	Sample Date	Results (TSP µg/m³)	Performance Criteria (Annual Average)
HVAS1	1/12/2019	231	90 µg/m3.
HVAS1	7/12/2019	95.2	
HVAS1	13/12/2019	120	
HVAS1	19/12/2019	176	
HVAS1	25/12/2019	227	

5. Noise Monitoring

A. Real-Time Noise Monitoring

Real-time noise monitoring data showed no exceedances during the month of December. The full report for December can be viewed separately on the Alkane webpage.

6. Surface Water Monitoring

A. Gundong Creek

Gundong Creek did not flow during December and as such no samples were taken.

B. Sedimentation Ponds

No discharge was experienced from any of the sediment ponds during the month.

7. Groundwater Monitoring

Quarterly groundwater monitoring was undertaken during December in line with licence requirements.

Results from the monitoring fell within expected limits. The next round of monitoring is due to be completed in March 2020.

8. Blast Monitoring

Blasting is no longer carried out in the TGO open cut pits and vibration and decibels are monitored from several locations. Underground blasting commenced during January however since then, the blasts recorded vibrations below the trigger for the site monitoring equipment.

Blasts that trigger the monitoring equipment are recorded and the data is retained on site.

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 below the 100th percentile limit of 30ppm.

- Monthly average: 1.95ppm
- Daily maximum: 4.23ppm
- Daily minimum: 0.55ppm
- Number of exceedances: zero

10. Biodiversity Monitoring

Fauna deaths:

- No fauna deaths were recorded during December.