Northparkes Mines
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1 April to 30 June 2017 - Quarter 2

Environmental Monitoring Results Summary

Name of Mine	Northparkes Mines
Name of Leaseholder and Mine Operator	CMOC Mining Pty Ltd
Mining Leases	ML 1247, ML 1367, ML 1641 and 1743
Environment Protection Licence	EPL 4784
Development Consent	PA11-0060, (Mod 1-3)

1. SCOPE OF REPORT

This report provides a summary of monitoring results for the period from 1 April 2017 to 30 June 2017. This monitoring is undertaken in accordance with the Environmental Monitoring Program (available at www.northparkes.com.au). Details of air quality, noise and water monitoring locations are available in the Environmental Monitoring Program.

2. AIR QUALITY

The air quality monitoring program utilises PM_{10} (beta attenuated monitors), TSP's (high volume air samplers (HVAS)) and depositional dust gauges. Monitoring locations are strategically positioned around the mine lease and neighbouring properties. TSP and PM_{10} monitoring has been undertaken at three nearby farm residences Hubberstone, Milpose and Hillview. A summary of the monitoring results are provided below.

2.1 PM_{10}

PM10 monitoring results for the 'Hubberstone', 'Milpose' and 'Hillview' monitoring locations, for the reporting period, are displayed in Figure 1, Figure 2 and Figure 3 respectively. The criteria for exceedances (as nominated in the Approval), is >30 µg/m^3 for the annual average and >50 µg/m^3 for a 24-hour monitoring period.

There was one 24hr criteria exceedance recorded at all locations on May 6th. Following an investigation, the result was found to be an isolated environmental anomaly and deemed non-mine related. The missing data for each of the locations was attributed to power surges, most likely the result of nearby lightning strikes, damaging equipment and/or equipment failure due to aging equipment.

The annual average PM10 levels recorded at all PM10 monitoring locations are below the predicted levels within the EA (20 µg/m^3).

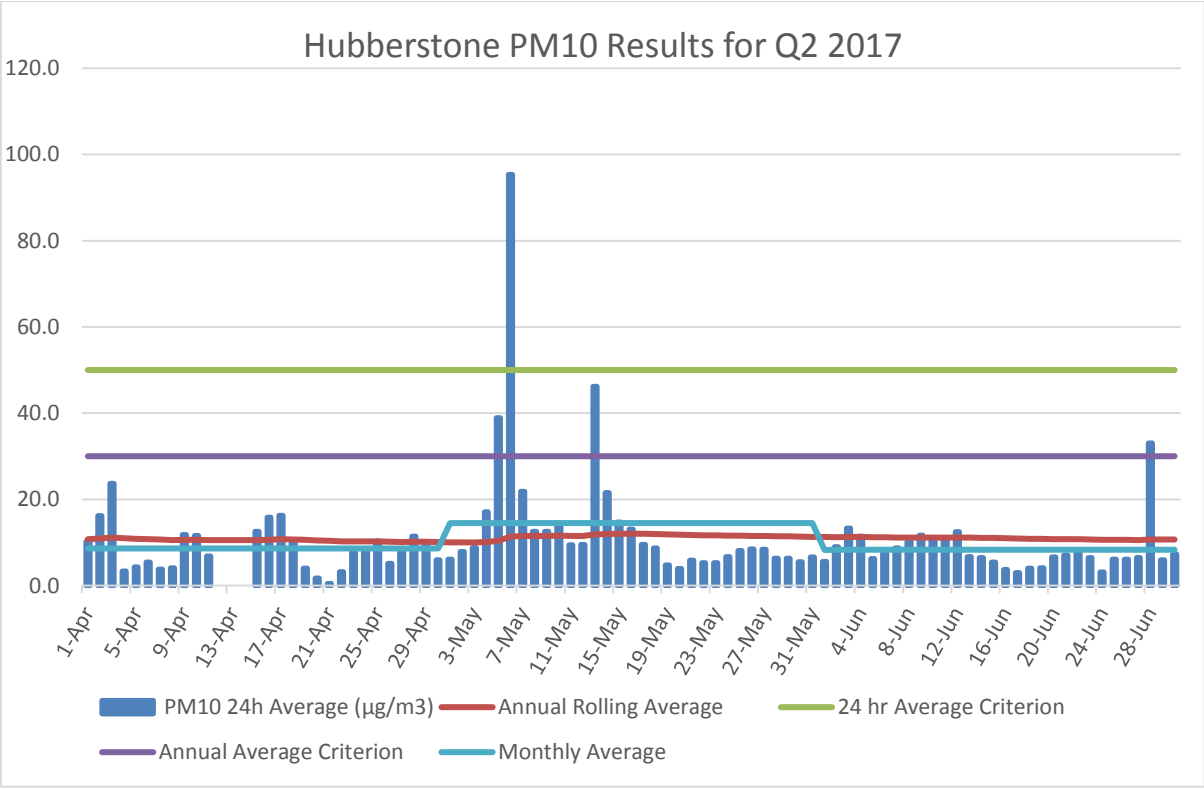

Figure 1: Hubberstone

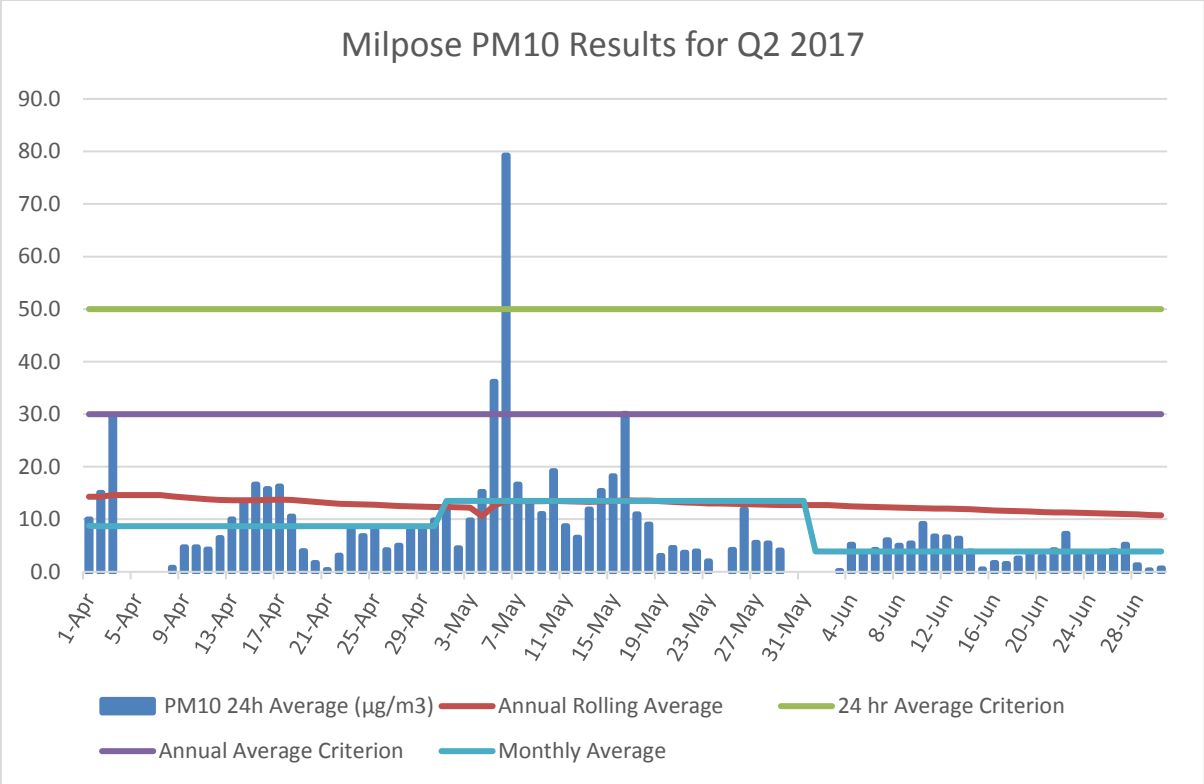

Figure 2: Milpose

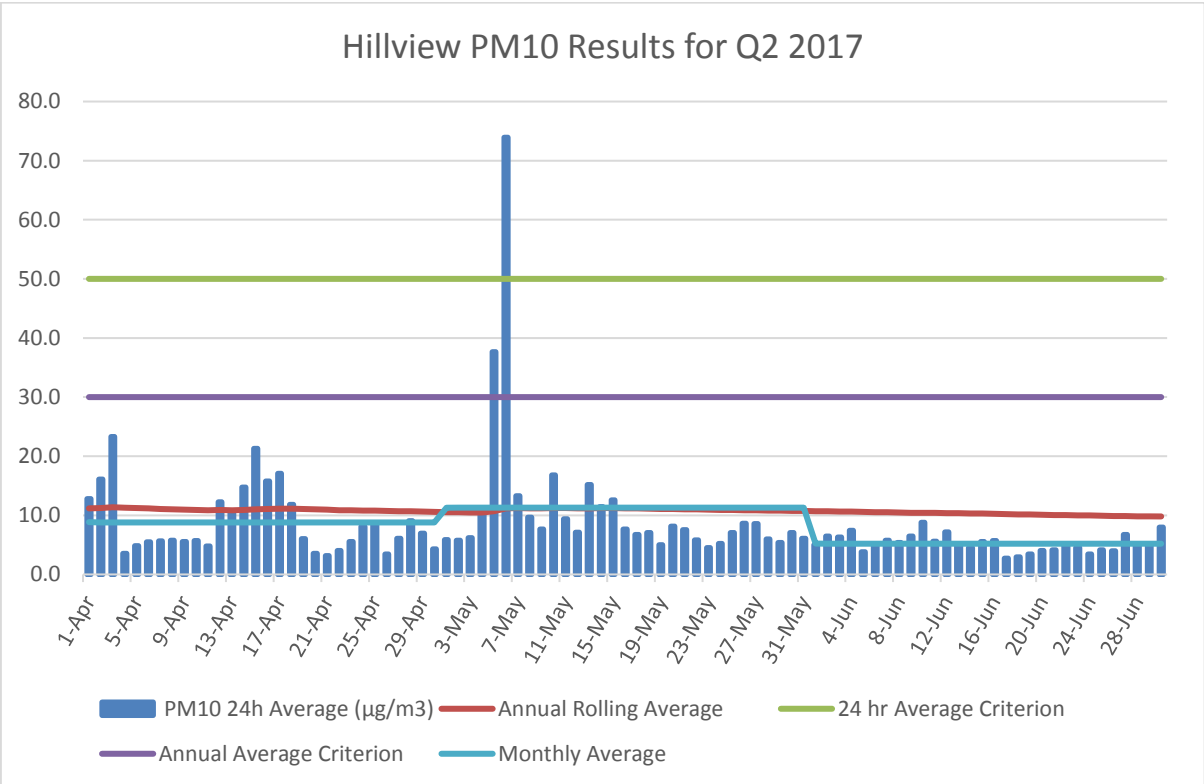

Figure 3: Hillview

2.2 TSP

All recorded dust levels at all TSP monitoring locations were under the required criteria set by the Approval (90 µg/m^3) for the Q2 2017 monitoring period. Results are presented in Figure 4, Figure 5 and Figure 6 respectively. The annual average TSP dust levels recorded at all TSP monitoring locations are below the predicted levels within the EA (50 µg/m^3).

The missing data for each of the locations was attributed to power surges, most likely the result of nearby lightning strikes, damaging equipment and/or equipment failure due to aging equipment.

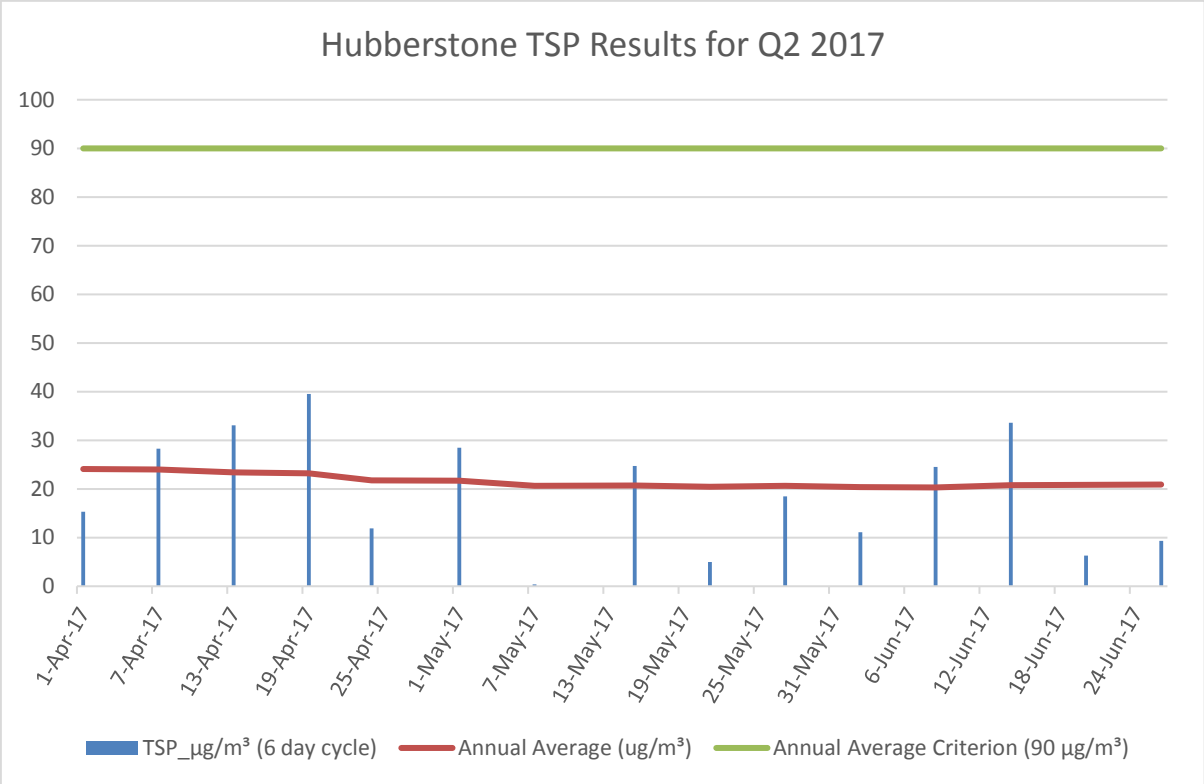

Figure 4: Hubberstone

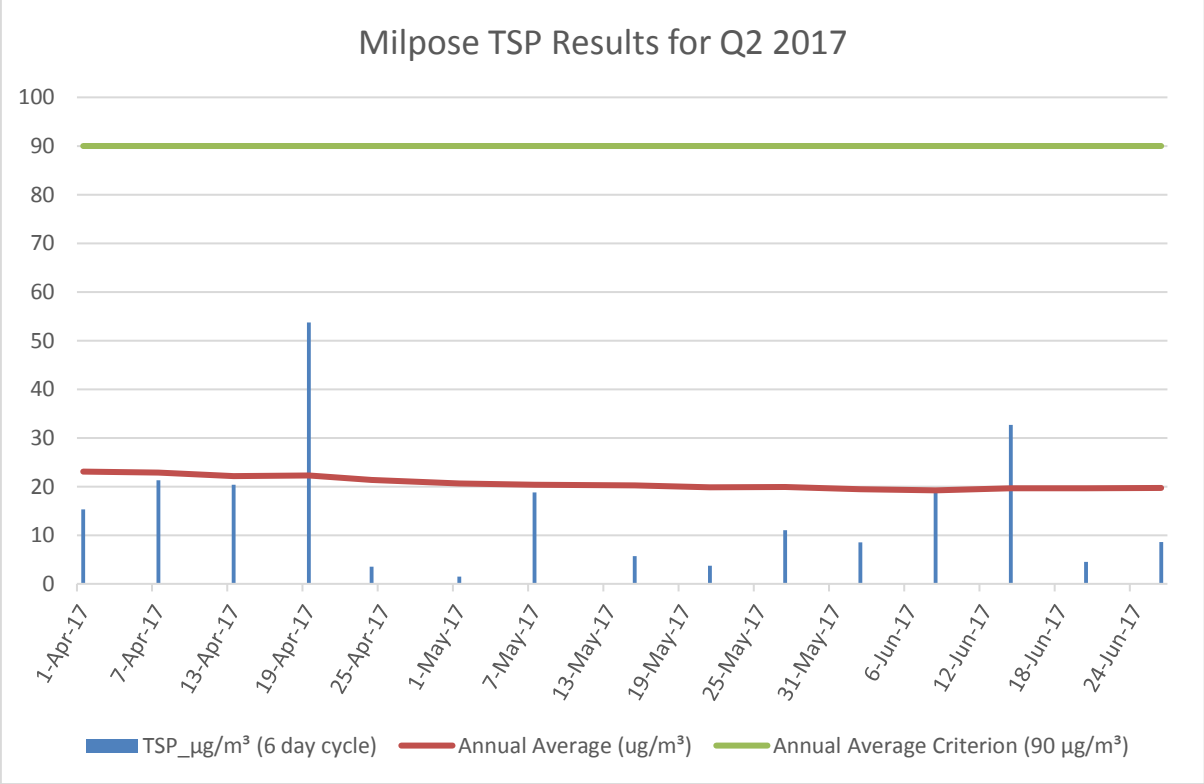

Figure 5: Milpose

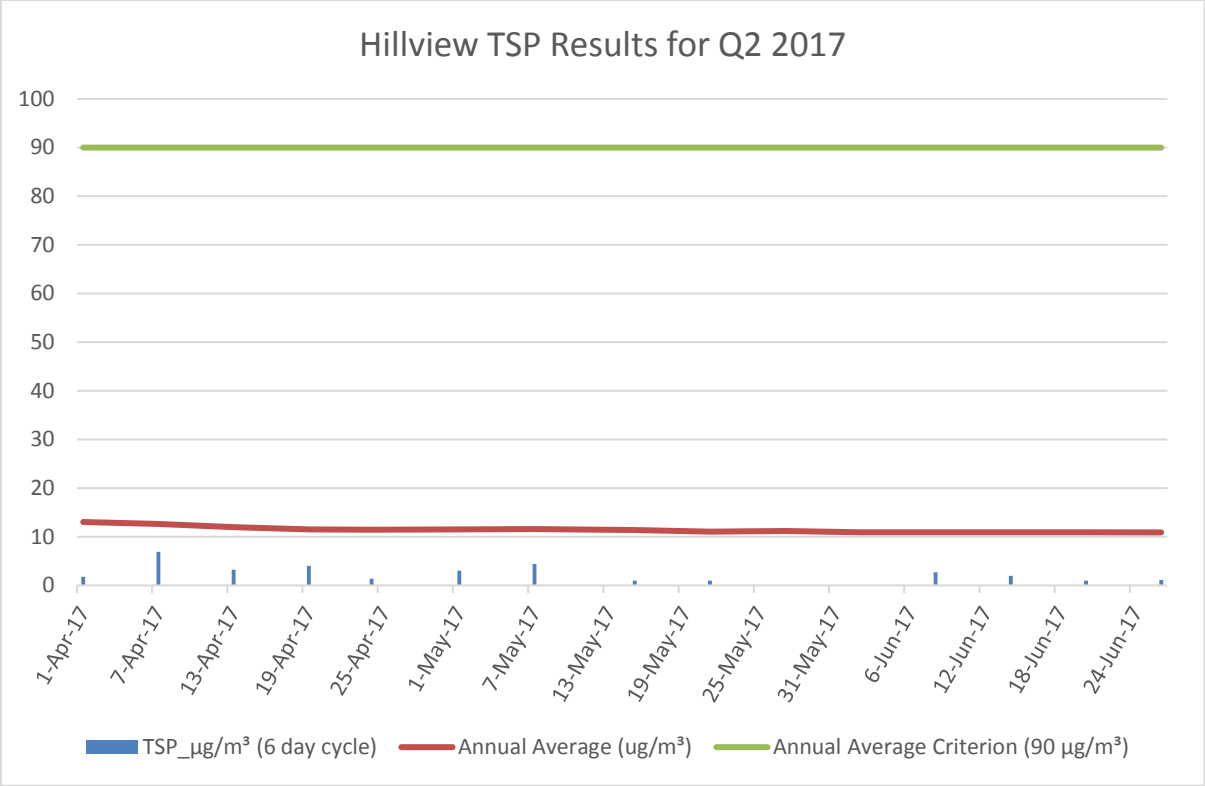

Figure 6: Hillview

2.3 Depositional Dust

Depositional dust gauges record the total of deposited dust for a month long period and are a useful measure of broad scale changes to the local air quality.

Eleven depositional dust gauges are located across the mining lease and neighbouring residential properties to monitor atmospheric dust. A summary of the monthly monitoring results at each monitoring location are presented in Figure 7, Figure 8 and Figure 9 respectively.

Although the indicative rolling average for the TDE and TDNE locations were slightly above the specified criteria for April, May and June, investigations determined that each location is consistently impacted by extraneous sources and does not represent Project generated dust, these months also coincide with an increase of localised agricultural activity. All other dust results remain below the criteria specified in the Approval.

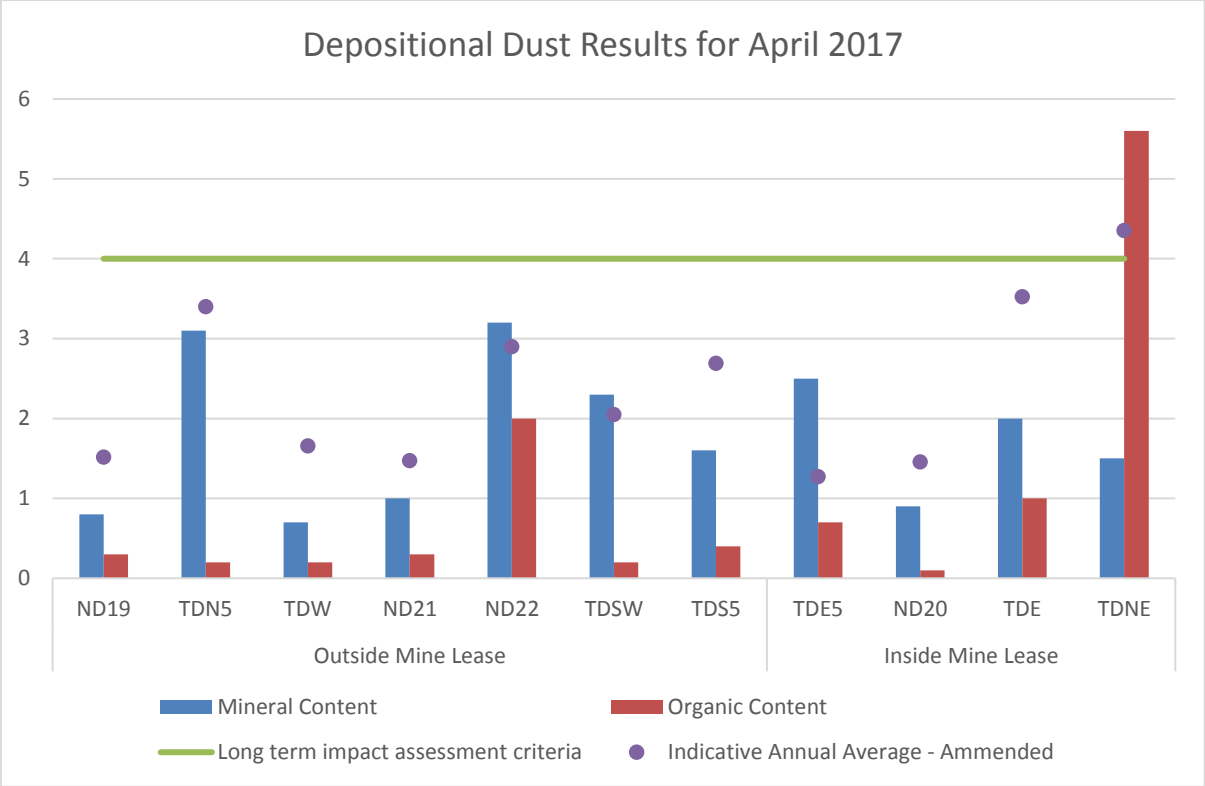

Figure 7: April depositional dust results for all locations

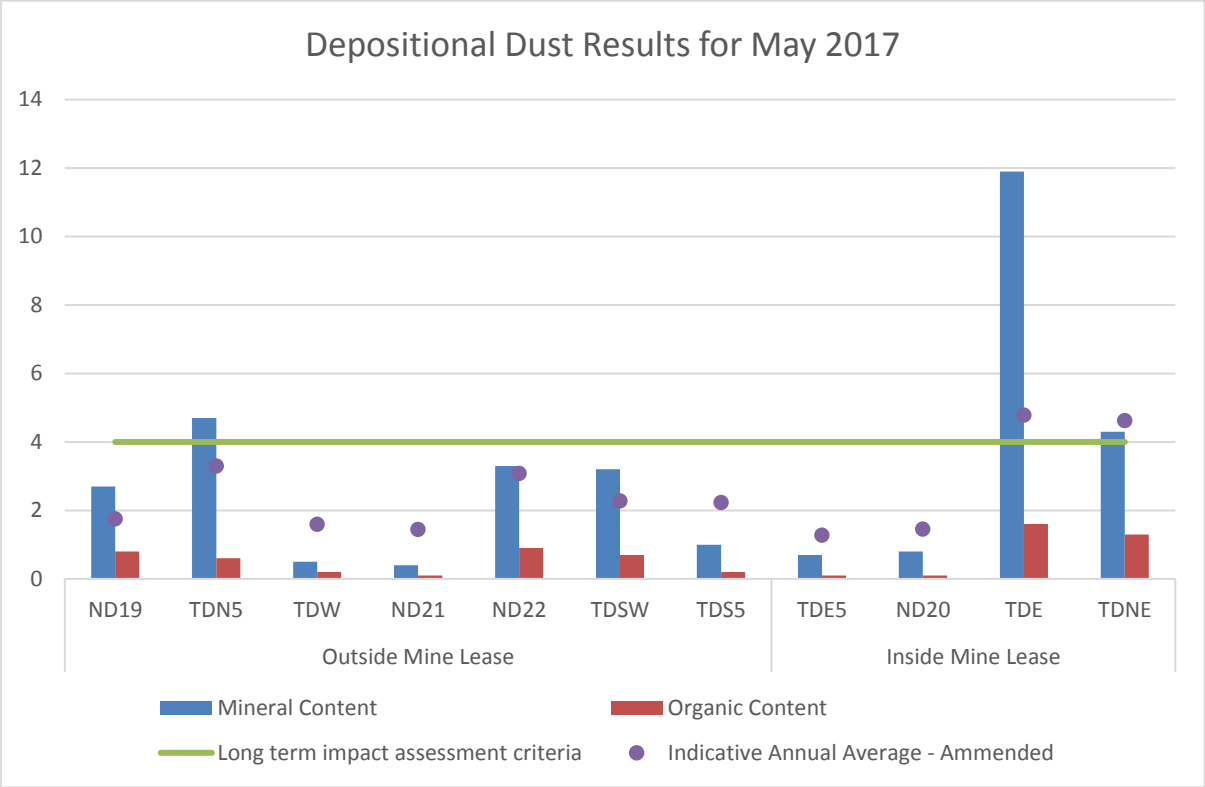

Figure 8: May depositional dust results for all locations

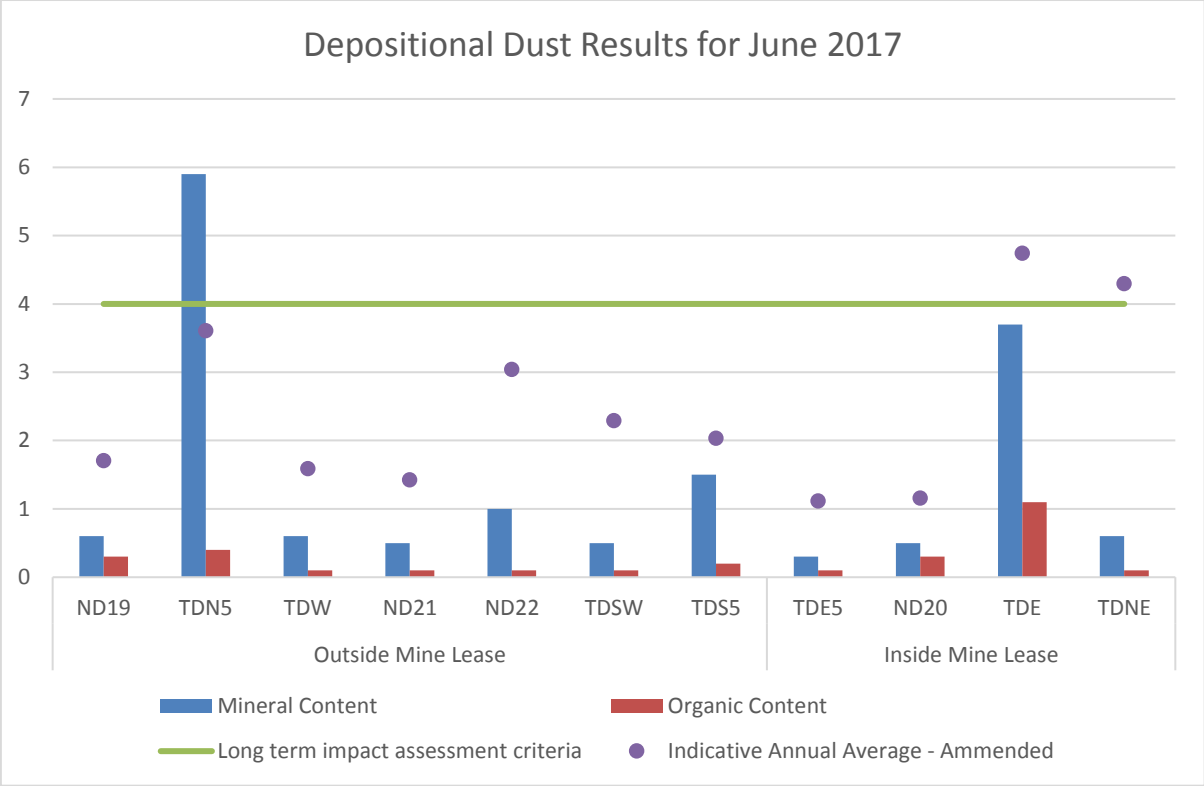

Figure 9: June depositional dust results for all locations

3. WATER

3.1 Overview

Water management at Northparkes is undertaken in accordance with approved management plans, prepared in accordance with Approval. All water samples are analysed at an independent National Association of Testing Authorities (NATA) accredited laboratory.

Surface water quality monitoring is undertaken at Northparkes specifically within the three defined water management systems of;

- Clean water management system, which includes farm dams and watercourses;
- Dirty water management system, which includes settlement ponds; and
- Contaminated water management system, which includes all aspects of ore processing, and retention ponds.

CMOC's groundwater monitoring program aims to identify any changes to the natural groundwater system as a result of mining operations and ensure compliance with the Approval. It focuses on potential impacts to environmental assets and groundwater users in the area surrounding Northparkes.

Monitoring results are assessed and interpreted utilising historical trend analysis and internal water quality criteria and trigger levels to identify potential changes.

3.2 Quarterly Monitoring Analysis

Water quality monitoring was successfully carried out for the reporting period with no significant changes to the pH, EC or copper concentrations for all locations. Due to below average rainfall prior to monitoring, many locations were deemed dry and unable to be sampled. A summary of the monitoring results at each sampled location are presented in Tables 1-5 below.

Table 1: Sediment Ponds

	SP3	SP4	SP10	SP15
pH	8.5	9.59	8.44	8.6
EC (uS/cm)	2000	549	175	249
Cu (mg/L)	0.029	0.018	0.015	0.277

Table 2: Watercourses

	WC3	WC4	WC11	WC14
pH	8.5	9.59	8.44	8.6
EC (uS/cm)	2000	549	175	249
Cu (mg/L)	0.029	0.018	0.015	0.277

Table 3: Farm Dams

	FD6	FD7	FD13	FD16
pH	8.5	9.59	8.44	8.6
EC (uS/cm)	2000	549	175	249
Cu (mg/L)	0.029	0.018	0.015	0.277

Table 4: Opencut Bores

	W14	W19	W20	W21	W23	W25
pH	7.4	7.85	7.64	10.1	7.95	8.85
EC (uS/cm)	12850	6214	15980	14256	16030	1396
Cu (mg/L)	0.006	0.006	0.015	0.008	0.015	0.016

Table 5: Underground Bores

	P71	P104	P139	P145	MB17	MB18	MB19	MB20
pH	7.4	7.85	7.64	10.1	7.95		8.85	
EC (uS/cm)	12850	6214	15980	14256	16030		1396	
Cu (mg/L)					0.005	0.007	0.007	0.015

4. NOISE AND VIBRATION

Operational noise is managed by CMOC in accordance with the approved Noise Management Plan (NMP). The NMP covers all operational activities with the potential to generate noise at Northparkes. It details specific noise management and mitigation measures, outlines monitoring and reporting requirements and provides clear definition of the roles and responsibilities for noise management.

4.1 Overview

CMOC undertakes a noise monitoring program at four locations on privately owned properties outside the mining leases. The program consists of both operator-attended and unattended surveys at the four nearest occupied residences 'Hubberstone', 'Milpose', 'Lone Pine' and 'Hillview'.

Operator-attended noise measurements and recordings are undertaken at four locations on privately owned properties outside the mining leases in order to quantify the intrusive noise emissions from construction and of general mine activity as well as the overall level of ambient noise. This noise monitoring was undertaken by an independent and suitably qualified noise professional.

4.2 Quarterly Monitoring Analysis

Attended noise monitoring was undertaken from the 14th to the 16th of June 2017 during favourable atmospheric conditions. Several measurements were impacted by non-NPM related noise, specifically, bird and livestock noise. Attended noise monitoring results indicate that noise emissions from the mine site comply with the development consent and project approval criteria. A summary of the monitoring results at each monitoring location are presented in Tables 6-8 below.

Table 6: Attended noise monitoring results (daytime)

Location	Date and Time	L_{A1} dB	L_{A10} dB	L_{Aeq} dB	L_{A90} dB	Compliance?	Notes
Hillview	14/06/17 13:00	37	31	**29**	23	Yes	Some bird & traffic noise. Mine just audible.
	14/06/17 13:15	44	34	**32**	23	Yes	
	14/06/17 13:45	46	35	**33**	23	Yes	
Hubberstone	14/06/17 13:55	46	33	**33**	24	Yes	Some bird noise. Frequent traffic noise. Mine just audible.
	14/06/17 14:10	41	33	**33**	25	Yes	
	14/06/17 14:25	39	34	**34**	26	Yes	
Milpose	14/06/17 14:55	42	35	**32**	23	Yes	Bird & sheep noise. Incessant sheep noise during final measurement. Mine just audible.
	14/06/17 15:10	41	34	**32**	25	Yes	
	14/06/17 15:25	43	38	**35**	26	Yes	
Lonepine	14/06/17 15:50	39	33	**30**	20	Yes	Some bird noise. Aircraft & traffic noise. Farm machinery noise in distance. Mine inaudible.
	14/06/17 16:05	38	33	**30**	19	Yes	
	14/06/17 16:20	39	31	**30**	19	Yes	

Table 7: Attended noise monitoring results (evening)

Location	Date and Time	L_{A1} dB	L_{A10} dB	L_{Aeq} dB	L_{A90} dB	Compliance?	Notes
Hillview	14/06/17 19:00	39	35	**33**	30	Yes	Incessant traffic noise. Mine inaudible.
	14/06/17 19:15	37	33	**29**	21	Yes	
	14/06/17 19:30	37	33	**29**	18	Yes	
Hubberstone	14/06/17 18:10	33	29	**26**	22	Yes	Mine clearly audible.
	14/06/17 18:25	38	30	**33**	24	Yes	
	14/06/17 18:40	35	30	**27**	22	Yes	
Milpose	15/06/17 21:00	36	30	**29**	24	Yes	Livestock noise. Shot from scare-gun approximately every 10 minutes. Mine clearly audible.
	15/06/17 21:15	36	30	**29**	25	Yes	
	15/06/17 21:30	34	29	**28**	24	Yes	
Lonepine	15/06/17 20:00	31	24	**23**	17	Yes	Mine audible.
	15/06/17 20:15	31	25	**23**	18	Yes	
	15/06/17 20:30	33	26	**23**	18	Yes	

Table 8: Attended noise monitoring results (night)

Location	Date and Time	L_{A1} dB	L_{A10} dB	L_{Aeq} dB	L_{A90} dB	Compliance?	Notes
Hillview	16/06/17 00:40	**33**	27	**25**	20	Yes	Concentrate truck passed during second measurement. Traffic during final measurement. Mine clearly audible.
	16/06/17 00:55	**34**	29	**25**	17	Yes	
	16/06/17 01:10	**33**	27	**26**	18	Yes	
Hubberstone	15/06/17 23:45	**32**	23	**22**	17	Yes	Mine audible.
	16/06/17 00:00	**32**	24	**22**	16	Yes	
	16/06/17 00:15	**35**	29	**26**	20	Yes	
Milpose	15/06/17 22:00	**37**	32	**31**	22	Yes	Continuous livestock noise. Aircraft noise. Mine audible.
	15/06/17 22:15	**37**	33	**31**	25	Yes	
	15/06/17 22:30	**38**	35	**33**	30	Yes	
Lonepine	15/06/17 22:45	**35**	29	**26**	22	Yes	Mine clearly audible.
	15/06/17 23:00	**36**	30	**27**	21	Yes	
	15/06/17 23:15	**35**	28	**27**	22	Yes	