Northparkes Mines
PO Box 995 Parkes NSW 2870 Australia
T +61 2 6861 3000 F +61 2 6861 3101
www.northparkes.com

Published: 3/12/2018
Sampled: 8/11/2018
Obtained: 19/11/2018

Licensee: Sumitomo Metal Mining Oceana P/L
CMOC Mining Pty Ltd
SC Mineral Resources Pty Ltd

EPL No.: 4784

EPA Identification no.	Monitoring Frequency	Pollutant		Unit	Comments
1 (W14)	Quarterly	Conductivity	8986.5	µS/cm	The Q4 2018 water monitoring results for W14 bore are mostly inline with historical water quality results. There is a decrease (-21cm) in the relative standing water level from the previous quarter which was 263.66m. The conductivity increased (+253.1µS/cm) from last quater which recorded 8733.4µS/cm . The pH increased (+0.89) from last quarter which was 7.38, and identified as being slightly above historical results. Copper concentration also increased (+0.004mg/L) from the last reporting period, which was 0.006mg/L. These minor variances are typically the result of natural groundwater migrations and will be closely monitored during next reporting period.
	Quarterly	Copper	0.01	mg/L	
	Quarterly	pH	8.27		
	Quarterly	Standing Water Level	263.87	m	
	Yearly	Aluminum	0.01	mg/L	
	Yearly	Arsenic	0.001	mg/L	
	Yearly	Barium	0.017	mg/L	
	Yearly	Berylium	<0.001	mg/L	
	Yearly	Bicarbonate	434	mg/L	
	Yearly	Cadmium	0.0002	mg/L	
	Yearly	Calcium	233	mg/L	
	Yearly	Chloride	2870	mg/L	
	Yearly	Chromium	0.001	mg/L	
	Yearly	Cobalt	0.004	mg/L	
	Yearly	Lead	0.003	mg/L	
	Yearly	Magnesium	328	mg/L	
	Yearly	Molybdenum	0.012	mg/L	
	Yearly	Nickel	0.001	mg/L	
	Yearly	Potassium	4	mg/L	
	Yearly	Selenium	0.02	mg/L	
	Yearly	Sodium	1630	mg/L	
	Yearly	Sulfate	957	mg/L	
	Yearly	Total dissolved solids	6140	mg/L	
	Yearly	Zinc	0.039	mg/L	

EPA Identification no.	Monitoring Frequency	Pollutant		Unit	Comments
2 (W19)	Quarterly	Conductivity	5736.9	µS/cm	The Q4 2018 water monitoring results for W19 bore are inline with historical water quality. There is an decrease (-23cm) in the relative standing water level from previous quarter which was 245.51m. The conductivity decreased slightly (-140.2µS/cm) from last quater which recorded 5877.1µS/cm . The pH increased (+0.87) from last quarter which was 7.61 and the copper concentration decreased (-0.006mg/L) from last reporting period, which was 0.02mg/L. These minor variances are typically the result of natural groundwater migrations and are homogenous with previous reporting periods.
	Quarterly	Copper	0.014	mg/L	
	Quarterly	pH	8.48		
	Quarterly	Standing Water Level	245.74	m	
	Yearly	Aluminum	0.01	mg/L	
	Yearly	Arsenic	0.002	mg/L	
	Yearly	Barium	0.148	mg/L	
	Yearly	Berylium	<0.001	mg/L	
	Yearly	Bicarbonate	211	mg/L	
	Yearly	Cadmium	0.0001	mg/L	
	Yearly	Calcium	496	mg/L	
	Yearly	Chloride	1760	mg/L	
	Yearly	Chromium	0	mg/L	
	Yearly	Cobalt	0.002	mg/L	
	Yearly	Lead	0.001	mg/L	
	Yearly	Magnesium	125	mg/L	
	Yearly	Molybdenum	0.006	mg/L	
	Yearly	Nickel	0.001	mg/L	
	Yearly	Potassium	8	mg/L	
	Yearly	Selenium	0.01	mg/L	
	Yearly	Sodium	758	mg/L	
	Yearly	Sulfate	478	mg/L	
	Yearly	Total dissolved solids	4840	mg/L	
	Yearly	Zinc	0.064	mg/L	

EPA Identification no.	Monitoring Frequency	Pollutant		Unit	Comments
3 (W21)	Quarterly	Conductivity	13531.6	µS/cm	The Q4 2018 water monitoring results for W21 bore are inline with historical water quality. There is a decrease (-7cm) in the relative standing water level from previous quarter which was 268.14m. The conductivity increased (+564.9µS/cm) from last quater which recorded 12966.7µS/cm. The pH increased (+0.44) from last quarter which was 10.75. Copper concentration slightly increased (+0.007mg/L) from the last reporting period, which was 0.005 mg/L. These minor variances are typically the result of natural groundwater migrations and are homogenous with previous reporting periods.
	Quarterly	Copper	0.012	mg/L	
	Quarterly	pH	11.19		
	Quarterly	Standing Water Level	268.21	m	
	Yearly	Aluminum	0.04	mg/L	
	Yearly	Arsenic	0.001	mg/L	
	Yearly	Barium	0.103	mg/L	
	Yearly	Berylium	0.001	mg/L	
	Yearly	Bicarbonate	4	mg/L	
	Yearly	Cadmium	0.0001	mg/L	
	Yearly	Calcium	967	mg/L	
	Yearly	Chloride	5260	mg/L	
	Yearly	Chromium	0.001	mg/L	
	Yearly	Cobalt	0.001	mg/L	
	Yearly	Lead	0.001	mg/L	
	Yearly	Magnesium	1	mg/L	
	Yearly	Molybdenum	0.029	mg/L	
	Yearly	Nickel	0.001	mg/L	
	Yearly	Potassium	31	mg/L	
	Yearly	Selenium	0.01	mg/L	
	Yearly	Sodium	2010	mg/L	
	Yearly	Sulfate	932	mg/L	
	Yearly	Total dissolved solids	8940	mg/L	
	Yearly	Zinc	0.028	mg/L	

EPA Identification no.	Monitoring Frequency	Pollutant		Unit	Comments
4 (W23)	Quarterly	Conductivity	17519.9	µS/cm	The Q4 2018 water monitoring results for W23 bore are generally inline with historical water quality. There is an decrease (-12cm) in the relative standing water level from the previous quarter which was 258.36m. The conductivity slightly increased (+254.1µS/cm) from the last quater which recorded 17265µS/cm . The pH increased (+0.74) from the last reporting period, which was 7.66 and the copper concentration decreased (-0.039mg/L) from the last reporting period, which was 0.133 mg/L. The copper concentration result remains above historic results and will be part of a third party review during 2019. All other variances in monitoring parameters are homogenous with previous reporting periods.
	Quarterly	Copper	0.094	mg/L	
	Quarterly	pH	8.4		
	Quarterly	Standing Water Level	258.48	m	
	Yearly	Aluminum	0.01	mg/L	
	Yearly	Arsenic	0.002	mg/L	
	Yearly	Barium	0.054	mg/L	
	Yearly	Berylium	<0.001	mg/L	
	Yearly	Bicarbonate	395	mg/L	
	Yearly	Cadmium	0.0006	mg/L	
	Yearly	Calcium	492	mg/L	
	Yearly	Chloride	6640	mg/L	
	Yearly	Chromium	0.001	mg/L	
	Yearly	Cobalt	0.92	mg/L	
	Yearly	Lead	0.001	mg/L	
	Yearly	Magnesium	744	mg/L	
	Yearly	Molybdenum	0.008	mg/L	
	Yearly	Nickel	0.003	mg/L	
	Yearly	Potassium	8	mg/L	
	Yearly	Selenium	0.01	mg/L	
	Yearly	Sodium	3030	mg/L	
	Yearly	Sulfate	2040	mg/L	
	Yearly	Total dissolved solids	14500	mg/L	
	Yearly	Zinc	0.16	mg/L	

EPA Identification no.	Monitoring Frequency	Pollutant		Unit	Comments
5 (W25)	Quarterly	Conductivity	1239.5	µS/cm	The Q4 2018 water monitoring results for W25 bore are mostly inline with historical water quality. There was a slight increase (+4cm) in the relative standing water level from previous quarter which was 282.97m. The conductivity slightly increased (+27.3µS/cm) from last quater which recorded 1212.2µS/cm . Copper concentration increased (+0.006mg/L) from the last reporting period, which was 0.016 mg/L. The pH increased significantly (+1.59) from last quarter which was 8.16, resulting above historic records. This monitoring bore will be sampled again in Q1 2019 to identify any potential concerns . All other variances in monitoring parameters are homogenous with previous reporting periods.
	Quarterly	Copper	0.022	mg/L	
	Quarterly	pH	9.75		
	Quarterly	Standing Water Level	282.93	m	
	Yearly	Aluminum	0.03	mg/L	
	Yearly	Arsenic	<0.001	mg/L	
	Yearly	Barium	0.012	mg/L	
	Yearly	Berylium	<0.001	mg/L	
	Yearly	Bicarbonate	189	mg/L	
	Yearly	Cadmium	0.0001	mg/L	
	Yearly	Calcium	86	mg/L	
	Yearly	Chloride	44	mg/L	
	Yearly	Chromium	0.001	mg/L	
	Yearly	Cobalt	<0.001	mg/L	
	Yearly	Lead	0.001	mg/L	
	Yearly	Magnesium	65	mg/L	
	Yearly	Molybdenum	0.001	mg/L	
	Yearly	Nickel	0.001	mg/L	
	Yearly	Potassium	4	mg/L	
	Yearly	Selenium	0.02	mg/L	
	Yearly	Sodium	161	mg/L	
	Yearly	Sulfate	501	mg/L	
	Yearly	Total dissolved solids	1070	mg/L	
	Yearly	Zinc	0.043	mg/L	

EPA Identification no.	Monitoring Frequency	Pollutant		Unit	Comments
6 (W20)	Quarterly	Conductivity	13787.4	µS/cm	The Q4 2018 water monitoring results for W20 bore are inline with historical water quality. There is a decrease (-3cm) in the relative standing water level from the previous quarter which was 265.88m. The conductivity increased (+208.6µS/cm) from last quater which recorded 13578.8µS/cm . The pH increased (+0.67) from the last quarter which was 7.39 and the copper concentration increased slightly (+0.001mg/L) from the last reporting period, which was 0.009 mg/L. These minor variances are typically the result of natural groundwater migrations and are homogenous with previous reporting periods.
	Quarterly	Copper	0.01	mg/L	
	Quarterly	pH	8.06		
	Quarterly	Standing Water Level	265.91	m	
	Yearly	Aluminum	0.01	mg/L	
	Yearly	Arsenic	0.001	mg/L	
	Yearly	Barium	0.01	mg/L	
	Yearly	Berylium	<0.001	mg/L	
	Yearly	Bicarbonate	493	mg/L	
	Yearly	Cadmium	0.0005	mg/L	
	Yearly	Calcium	386	mg/L	
	Yearly	Chloride	5020	mg/L	
	Yearly	Chromium	0.001	mg/L	
	Yearly	Cobalt	0.004	mg/L	
	Yearly	Lead	0.001	mg/L	
	Yearly	Magnesium	409	mg/L	
	Yearly	Molybdenum	0.002	mg/L	
	Yearly	Nickel	0.001	mg/L	
	Yearly	Potassium	9	mg/L	
	Yearly	Selenium	0.01	mg/L	
	Yearly	Sodium	2410	mg/L	
	Yearly	Sulfate	1450	mg/L	
	Yearly	Total dissolved solids	10800	mg/L	
	Yearly	Zinc	0.074	mg/L	